November 2022
Issue 134

# Army Industrial Hygiene News and Regulatory Summary

## Hazardous Substances

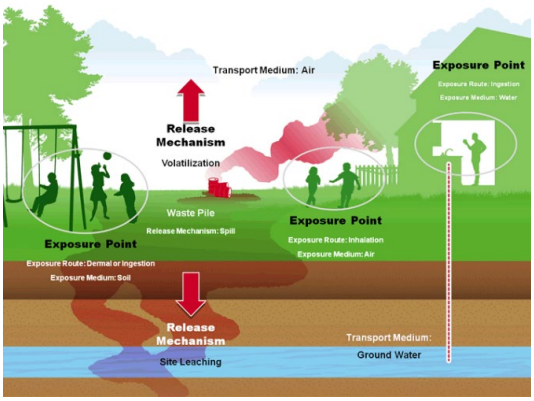
### A New Tool for Estimating People's Total Exposure to Potentially Harmful Chemicals

*Special Interest Articles:*



A novel metric that estimates our "burden," or cumulative exposure, to a family of thousands of synthetic chemicals that we encounter in everyday life with potentially adverse health impacts, has been created by a team of researchers at Mount Sinai.

In a paper published in Environmental Health Perspectives, the team reported that its sophisticated tool could have distinct advantages for epidemiologists and researchers who routinely measure exposure levels to this class of chemicals, known as PFAS (per- and polyfluoroalkyl substances), which have been associated with high cholesterol, liver damage, thyroid disease, and hormone disorders.




*Read more:*
https://www.sciencedaily.com/releases/2022/11/221102085432.htm

***Contents:***



# NIOSH Study Estimates Current Rates of Workplace Inhalation Injury


Workplace exposure to hazardous substances in the air, such as smoke or fumes, can damage the lungs. More than two decades ago, a NIOSH study found a higher rate of workplace inhalation injuries in U.S. emergency departments than in medical reports from Canada and the United Kingdom. For comparison, a new study looked at U.S. emergency department records for these injuries. Lead author Kitty J. Hendricks, NIOSH research epidemiologist, explains the study, recently published in the American Journal of Industrial Medicine.

Q: How did you do the study?

A: We defined a workplace inhalation injury as an event that required treatment in a U.S. emergency department for inhaling a harmful substance while at work. We then used NEISS-Work, a nationwide surveillance system, administered by NIOSH and the Consumer Product Safety Commission, to identify all nonfatal workplace inhalation injuries treated in U.S. emergency departments from 2014 through 2017.

*Read more:*
https://www.cdc.gov/niosh/enews/enewsv20n7.html#research2

# New Insight into How Long-Banned Chemicals (PCBs) Unleash Their Toxicity inside the Body

Polychlorinated biphenyls (PCBs) (*1) were widely used in industrial and commercial products including plastics, paints, electronic equipment and insulating fluids. Their manufacture was extensively banned from the late 70s onwards due to their toxicity, however large amounts still remain in our environment and accumulate inside animals' bodies.

Chiral PCBs (*2) are PCBs that have two mirror-image isomers (*3); these isomers are identical reflections of each other with the same composition. Chiral PCBs are particularly dangerous because they have more chlorine atoms, which are hard for the body to break down, so they can accumulate in the body easily and their isomers are metabolized differently, causing isomer-specific toxicity (particularly neurodevelopmental issues). However, the process behind this selective metabolism was not known. To address this, a research group has illuminated how enzymes produced by the body unevenly metabolize the mirror-image isomers. These results will


make it possible to estimate PCB metabolism and detoxification pathways in animals. They will also contribute towards the development of technology to make predictions about chiral PCBs' mirror isomers, so that we can obtain a better understanding of potential toxicity in humans and other mammals.

*Read more:*
https://www.eurekalert.org/news-releases/972077

## Unequal Airborne Exposure to Toxic Metals Associated with Race, Ethnicity, and Segregation in the USA

ENVIRONMENTAL JUSTICE

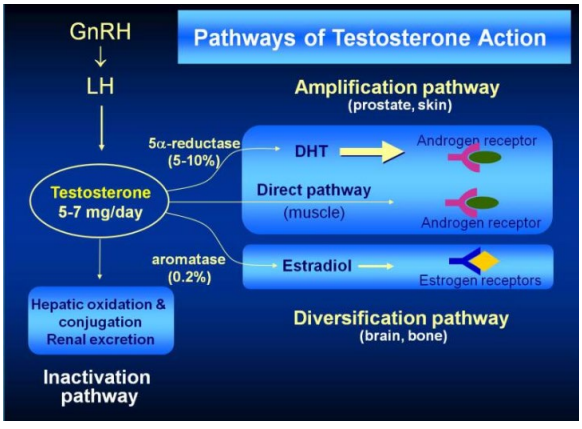
Persons of color have been exposed to a disproportionate burden of air pollution across the United States for decades. Yet, the inequality in exposure to known toxic elements of air pollution is unclear. Here, we find that populations living in racially segregated communities are exposed to a form of fine particulate matter with over three times higher mass proportions of known toxic and carcinogenic metals. While concentrations of total fine particulate matter are two times higher in racially segregated communities, concentrations of metals from anthropogenic sources are nearly ten times higher. Populations living in racially segregated communities have been disproportionately exposed to these environmental stressors throughout the past decade. We find evidence, however, that these disproportionate exposures may be abated though targeted regulatory action. For example, recent regulations on marine fuel oil not only reduced vanadium concentrations in coastal cities, but also sharply lessened differences in vanadium exposure by segregation.

*Read more:*
https://www.nature.com/articles/s41467-022-33372-z

## Anti-Androgenic Chemicals as a Class of Related Substances with Cumulative Toxicological Effects

Scientists and regulators have known for decades that certain chemicals disrupt the actions of male hormones—identified collectively as androgens—in the body. Because of their effects, these chemicals are called anti-androgens or anti-androgenic chemicals.

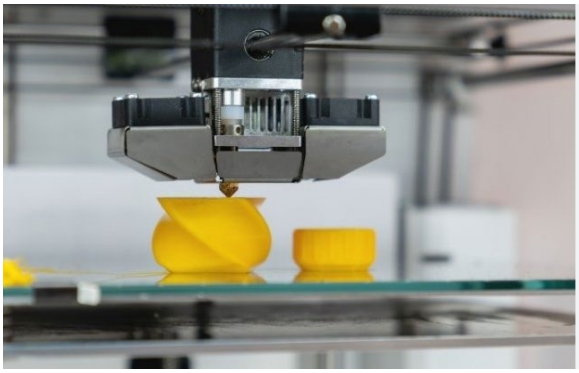
During gestation, fetal testes begin producing testosterone, the critical hormone required to develop reproductive



organs and genitalia. Insufficient production of testosterone leads to malformation of the genital tract that may need corrective surgery in infant boys and may result in reproductive health problems later in life. Ortho-phthalates (aka phthalates), known to interfere with the production of fetal testosterone, are considered anti-androgenic chemicals.problems.

*Read more:*
https://blogs.edf.org/health/2022/11/14/anti-androgenic-chemicals-as-a-class-of-related-substances-with-cumulative-toxicological-effects/

## 3D Printing Process Emissions May Compromise Cell Function and DNA: Study



Even low-level exposure to emissions from 3D printers that use fused filament fabrication technology can adversely affect cells in the human body, results of a recent study show.

Researchers from Chemical Insights, an institute of Underwriters Laboratories Inc., and the Georgia State University School of Public Health measured emissions from 3D printers in separate high school and university locations over a three-hour printing duration. They examined emissions from two common 3D printing filaments: acrylonitrile butadiene styrene and polylactic acid.

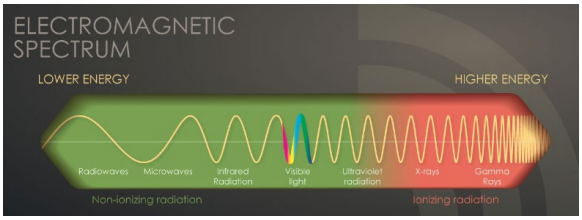
Findings show that exposure to fused filament fabrication emissions near the printing source may trigger cell injury and inflammation while compromising DNA and other molecules that assist living cells. Exposure was associated with a 49.5%-56% reduction in cellular viability, while exposure in an adjacent room or other low-level source was associated with cellular viability reductions of 15.4%-18.2%.

*Read more:*
https://www.safetyandhealthmagazine.com/articles/23222-3d-printing-process-emissions-may-compromise-cell-function-and-dna-study

# Radiation

## Scientists Patent a New High-Performance Radio-Absorbing Material

As part of the New Advanced Materials strategic project under the Priority 2030 program, SUSU scientists have patented the development of radio-absorbing composite materials, the composition and structure of which provide efficient absorption of electromagnetic radiation and the ability to control this process. Currently radio-absorbing materials are compositions and paints consisting of a polymeric binder and filler, which can absorb electromagnetic radiation effectively. The disadvantages of this material include the inability to control the absorption spectrum of electromagnetic radiation. SUSU scientists have created a new material that allows it to regulate the absorption spectrum of the material

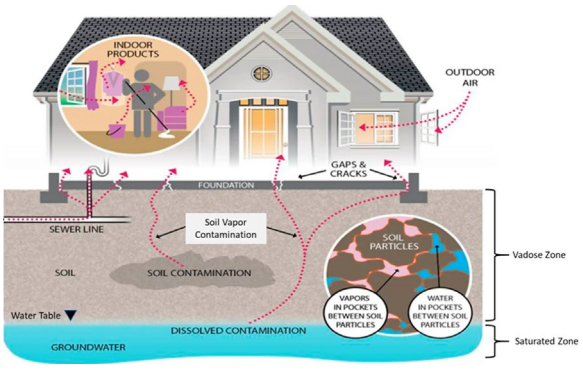



electromagnetic radiation and fine-tune its microwave magnetic properties. This effect is achieved due to the use of high-entropy powder material with an M-type hexaferrite structure as the basis of the filler.

*Read more:* https://sciencex.com/wire-news/430811508/scientists-patent-a-new-high-performance-radio-absorbing-materia.html

# Ventilation

## Overview of TVOC and Indoor Air Quality




The aim of this white paper is to cover the basics of total volatile organic compounds (TVOC) and indoor air quality (IAQ). Volatile organic compounds are the main source for poor indoor air quality, which can affect a person's daily life. Recommendations from various institutions and agencies regarding TVOC levels that are deemed hazardous to human health are given in the "Hazardous Condition Limits and Standards for TVOC"

section. Monitoring objects that outgas in indoor areas is recommended, especially in critical places, such as schools and public buildings as well as in homes. Hence, sensitive and robust instrumentation is needed. Renesas provides TVOC gas sensors in two gas sensor families, ZMOD and SGAS, which are small and easy to implement and therefore offer a unique capability to monitor the TVOC in various places over a long product lifetime.

*Read more:*
https://semiengineering.com/overview-of-tvoc-and-indoor-air-quality/

## *PPE*

### Plasma-Generated Reactive Water Mist for Disinfection of N95 Respirators Laden With MS2 and T4 Bacteriophage Viruses

Due to the shortage of personal protective equipment (PPE) during the COVID-19 pandemic, the interest and demand for sterilization devices to reuse PPE has increased. For reuse of face masks, they must be effectively decontaminated of potential infectious agents without compromising its filtration ability during sterilization. In this study, we utilized an atmospheric pressure pulsed dielectric barrier discharge (DBD), combined with nebulized liquid microdroplets to generate plasma-activated mist (PAM). MS2 and T4 bacteriophages were used to conduct the decontamination tests on two types of N95 respirators. Results showed at least a 2-log reduction of MS2 and T4 on N95 respirators treated in one cycle with 7.8% hydrogen peroxide PAM and at least a 3-log reduction treated in 10% hydrogen peroxide PAM. In addition, it was found that there was no significant degradation in filtration


efficiency of N95 respirators (3M 1860 and 1804) treated in 10% hydrogen peroxide PAM found after 20 cycles. In terms of re-useability of masks after treatment as determined, it was shown that the elastic straps of 3M 1804 were fragmented after 20 treatment cycles rendering them unusable, while the straps of 3M 1860 were not negatively affected even after 20 disinfection cycles.

*Read more:*
https://www.nature.com/articles/s41598-022-23660-5

## *Noise*

### Orthopedic Surgeons Risk Noise-Induced Hearing Loss in the OR


Published results showed orthopedic surgeons are at risk for developing noise-induced hearing loss and permanent hearing loss due to damaging decibel levels in the OR.

Stephanie A. Kwan, DO, and colleagues prospectively reviewed 300 intraoperative audio recordings from the following six orthopedic subspecialties: adult reconstruction, foot and ankle, hand and wrist, shoulder and elbow, spine, and sports medicine.

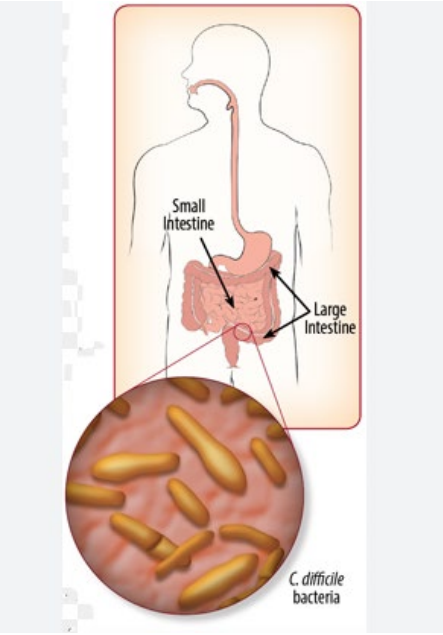
Researchers compared decibel (dB) levels of intraoperative recordings with dB levels of preoperative recordings, which served as baseline controls. Researchers also analyzed the maximum dB level (MDL), defined as the highest sound pressure level during the measurement period, and time-weighted average (TWA), defined as the projected average dB level for more than 8 hours, according to the study.

*Read more:*
https://www.healio.com/news/orthopedics/20221129/orthopedic-surgeons-risk-noiseinduced-hearing-loss-in-the-or

## *Preventive Medicine*

### Antibiotic-Resistant Microbes in the Gut Make C. Difficile More Infectious

Clostridioides difficile, often referred to as C. difficile or C. diff, is a bacterium that causes severe intestinal illness and, as its name suggests, can be difficult to study and treat. Approximately 1 in 6 patients infected with C. difficile will be reinfected within two months. Yet scientists have not figured out why C. difficile infection is more difficult to treat in some patients versus others. The human gut is filled with trillions of microbes, and these microbes influence the virulence of various pathogens, but until now, scientists had little understanding of how C. difficile cooperates with the rich collection of microorganisms in the gastrointestinal tract.




In a new study in Nature, researchers at Children's Hospital of Philadelphia (CHOP) have found that Enterococcus – an antibiotic-resistant, opportunistic pathogen – works together with C. difficile, reshaping and enhancing the metabolic environment in the gut so that C. difficile can thrive.

*Read more:* https://www.technologynetworks.com/immunology/news/antibiotic-resistant-microbes-in-the-gut-make-c-difficile-more-infectious-367686

### WHO Recommends New Name for Monkeypox

The World Health Organization (WHO) today announced that it is recommending mpox as the new name for monkeypox disease, following expert consultations that addressed racist and stigmatizing language.


Both names will be used simultaneously for 1 year as the monkeypox term is phased out, the WHO said in its announcement. The group followed the naming process under the International Classification of Diseases (ICD) and the WHO Family of International Health Related Classifications. It said the ICD updating process can take several years, but was accelerated while following the usual steps. The expert groups weighed several considerations, including rationale, scientific appropriateness, extent of current usage, pronounceability, usability in different languages, absence of geographical or zoological references, and the ease of retrieval of historical scientific information.

*Read more:*
https://www.cidrap.umn.edu/news-perspective/2022/11/who-recommends-new-name-monkeypox

## Blood Group Can Predict Risk of Contracting Viral Disease

The risk of being infected by parvovirus is elevated in those people who have blood group Rh(D), according to a study published in The Journal of Infectious Diseases by researchers from Karolinska Institutet in Sweden in collaboration with Octapharma.

Fifth disease is a viral disease caused by parvovirus. Most often, school-age children are affected with common symptoms such as red blotches on the cheeks that can also spread to the arms and legs. Even adults can become infected, but many do not show any symptoms.

In a new study, researchers can now demonstrate that the risk of contracting the disease is elevated if the person belongs to the blood group Rhesus D antigen or what is called Rh(D). In addition to the blood typing in the AB0 system, the Rh system is the most common.

| ABO genotype in the offspring | | ABO alleles inherited from the mother | | |
|---|---|---|---|---|
| | | A | B | O |
| ABO alleles inherited from the father | A | A | AB | A |
| | B | AB | B | B |
| | O | A | B | O |

*Read more:*
https://www.eurekalert.org/news-releases/972543

## CDC: Healthcare-Associated Infections Continued to Climb in 2021


A new report from the Centers for Disease Control and Prevention (CDC) shows that healthcare-associated infections (HAIs) in US hospitals remain elevated above pre–COVID-19 pandemic levels.

Findings from the review of quarterly 2021 National Healthcare Safety Network data show continued increases in the quarterly standardized infections ratios (SIRs) for central line-associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs), ventilator-associated events (VAEs), and methicillin-resistant Staphylococcus aureus (MRSA) bacteremia compared with 2019. The report analyzed data from acute care hospitals, critical access hospitals, inpatient rehabilitation facilities, and long-term acute care hospitals.

Overall, CLABSIs rose by 7% from 2020 to 2021, CAUTIs increased 5%, VAEs climbed by 12%, and hospital-onset MRSA bacteremia rose by 14%. The largest increases were seen in intensive care units. Among other HAIs, surgical-site infections saw no significant changes from 2020 to 2021, and hospital-onset Clostridioides difficile infections fell by 3%.

*Read more:*
https://www.cidrap.umn.edu/news-perspective/2022/11/asp-scan-weekly-nov-11-2022

## Research Shows Emphysema More Common in Marijuana Smokers than Cigarette Smokers

Researchers have found marijuana smokers have a higher rate of emphysema and airway diseases compared to cigarette smokers. The findings, from the University of Ottawa and The Ottawa Hospital, will be published today (November 15) in the journal Radiology.

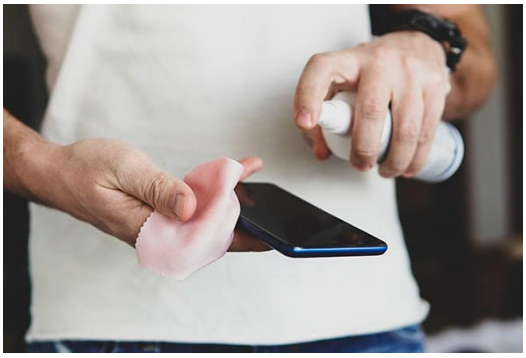
In the study, the chest CT examinations of 56 marijuana smokers, 57 non-smokers, and 33 tobacco-only smokers between 2005 and 2020 were analyzed. The investigators

determined higher rates of paraseptal emphysema (PSE) and airway inflammatory

changes, such as bronchiectasis, bronchial wall thickening, and mucoid impaction, in the marijuana smokers.

*Read more:*
https://scitechdaily.com/research-shows-emphysema-more-common-in-marijuana-smokers-than-cigarette-smokers/

## Your Smartphone Is a Haven for Allergens



That smartphone in your hand could be triggering your allergies, a new study by an 18-year-old high school student suggests.

A project done by Hana Ruran of Hopkinton, Mass., as part of her school's Research Methods Program, found that cellphones are often loaded with cat and dog allergens, bacteria and fungi

"I have my phone always with me. It's always in my hand. I never put it down for anything," said study author Hana Ruran, a senior at Hopkinton High School. "And I have a lot of allergies. I just got interested in doing something that affects me."

The bottom line: It's a good idea to wipe down the surface of your phone, especially if you have allergies.

The research is being presented Thursday at the American College of Allergy, Asthma and Immunology (ACAAI) annual meeting in Louisville, Ky.

*Read more:*
https://consumer.healthday.com/allergy-2658598807.html

# *Environmental Health*

## Environmental Pollutants Associated With IBS Incidence

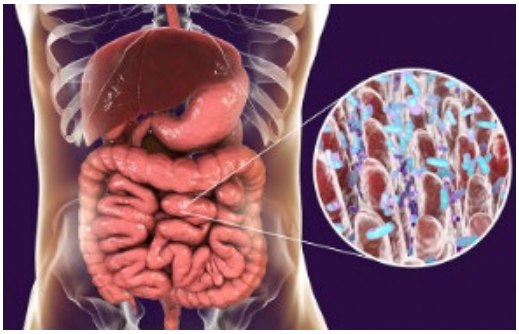
Exposure to particulate matter less than 2.5 microns (PM2.5) and airborne toxic releases from industrial facilities is associated with the incidence of irritable bowel syndrome (IBS), according to a study in Clinical Gastroenterology and Hepatology.

Researchers sought to quantify associations among several air pollutants, water contaminants, and the incidence of IBS, functional dyspepsia (FD), ulcerative colitis (UC), Crohn disease (CD), and eosinophilic

esophagitis (EoE) in a large cohort of individuals.

Data were obtained from the Clinformatics Data Mart Database (CDM), which includes commercially insured California residents. Participants aged over 18 years with 1 of the gastrointestinal diseases were identified from January 1, 2009, to December 31, 2014 (International Classification of

*Read more* https://weather.com/en-IN/india/news/news/2022-10-25-air-



pollution-damage-goes-beyond-lungs-affects-brain-heart-fetal-growth

## A Waste Windfall: New Process Shows Promise Turning Plastic Trash into Pharmaceuticals

Catalina Island, located 22 miles off the coast of Los Angeles, once collected Hollywood royalty, smugglers and silver miners. Now, it collects trash. Its windward-facing harbor is a collection point of the Great Pacific Garbage Patch, an enormous spread of microplastics with accumulated larger debris that stretches more 1.6 million square kilometers. It is stark evidence of the impact of ever-increasing production of plastics globally, which is estimated to reach a volume of 1.1 billion tons annually by 2040.

Inspired by this problem, USC researchers have devised a method to transform post-consumer mixed plastics into a variety of diverse and valuable secondary products with unprecedented efficiency. This two-stage method, described this week in Angewandte Chemie, has exciting potential applications for pharmaceutical development, manufacturing materials and other products.

R*ead more*: https://www.eurekalert.org/news-releases/972590

## Scientists Reveal Why You Should Clean Your Dirty Windows

Dirty windows may harbor potentially harmful pollutants behind protective films of fatty acids from cooking emissions, which can linger for extended periods of time.

A recent study conducted by scientists at the University of Birmingham found that the fatty acids present in cooking emissions are extremely stable and difficult to break down in the atmosphere.

This means that when they collide with a solid surface, like a window, they create a thin, self-organized film that slowly accumulates and can only be gradually broken down by other chemicals in the atmosphere. The film will become rougher throughout this process and draw more water from the humidity in the air. Furthermore, harmful pollutants have the potential to become trapped within this resilient crust, where they are then shielded from breakdown in the atmosphere.

*Read more:*
https://scitechdaily.com/scientists-reveal-why-you-should-clean-your-dirty-windows/

## New Study Provides a Unique Resource for Understanding How Environmental Exposures in Early Life Affect Our Health

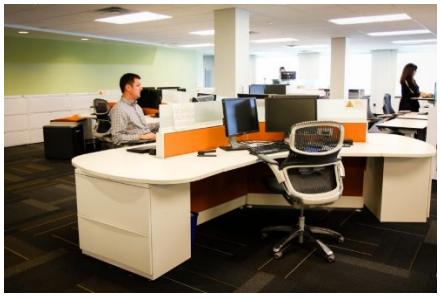

Researchers now have a unique resource for identifying new biomarkers of environmental exposures in early life and understanding their health effects. This is thanks to a study led by the Barcelona Institute for Global Health (ISGlobal), an institution supported by "la Caixa" Foundation, which systematically documented all associations between a wide range of early life exposures and molecular profiles at different levels, including the epigenome (DNA methylation), transcriptome (gene expression) and metabolome (metabolites). The findings, which are part of the EU-funded ATHLETE project, have been published in Nature Communications and are publicly available in https://helixomics.isglobal.org.

Our health depends greatly on the environment we live in. In fact, 70 -90% of the risk of developing a disease is determined by our exposome: a multitude of environmental factors (i.e. non-genetic factors) to which we are exposed throughout our life. And yet, we still have limited knowledge on which are these environmental hazards, how they interact, and what biological processes they trigger.

*Read more*:
https://www.eurekalert.org/news-releases/971699

## PFAS Levels Lower In Buildings with Healthier Furnishings

Buildings renovated with healthier furnishings had significantly lower levels of the entire group of per- and polyfluoralkyl substances (PFAS)—toxic chemicals linked with many negative health effects—than buildings with conventional furnishings, according to a new study led by Harvard T.H. Chan School of Public Health.



The study was published online Nov. 4, 2022 in Environmental Science & Technology.

"We have decades of research showing that PFAS are concerning for human health and the environment. Our findings provide desperately needed scientific evidence for the success of healthier materials—which don't have to be more expensive or perform less well—as a real-world solution to reduce indoor exposure to forever chemicals as a whole," said Anna Young, research associate in the Department of Environmental Health, associate director of the Healthy Buildings program, and lead author of the study.

*Read more:*
https://www.hsph.harvard.edu/news/press-releases/pfas-levels-lower-in-buildings-with-healthier-furnishings/

## Air Pollution Harms the Brain and Mental Health, Too – A Large-Scale Analysis Documents Effects on Brain Regions Associated with Emotions


People who breathe polluted air experience changes within the brain regions that control emotions, and as a result, they may be more likely to develop anxiety and depression than those who breathe cleaner air. These are the key findings of a systematic review that my colleagues and I recently published in the journal NeuroToxicology.

Our interdisciplinary team reviewed more than 100 research articles from both animal and human studies that focused on the effects of outdoor air pollution on mental health and regions of the brain that regulate emotions. The three main brain regions we focused on were the hippocampus, amygdala and the prefrontal cortex.

*Read more:*
https://theconversation.com/air-pollution-harms-the-brain-and-mental-health-too-a-large-scale-analysis-documents-effects-on-brain-regions-associated-with-emotions-193600

## Ergonomics

### 84% More Successful – Scientists Reveal the Most Effective Treatment for Back Pain

Back pain is a common condition with numerous causes, including poor posture, overexertion, constant stress at work or at home, lack of exercise, and poor posture. For a considerable number of patients, the symptoms are chronic, meaning they last a long period or reoccur repeatedly. However, port and exercise therapy, when done properly, can provide alleviation.

Physiotherapy, as well as strength and stability exercises, are common treatment options. But how can the treatment be as effective as possible? Which method reduces pain the most effectively? A recent meta-analysis published in the Journal of

Pain by Goethe University Frankfurt revealed new insights.

*Read more:*
https://scitechdaily.com/84-more-successful-scientists-reveal-the-most-effective-treatment-for-back-pain/

## Safety

### CDC Warns of Rare Bacterial Infections from Dentists' Water Lines

The U.S. Centers for Disease Control and Prevention is warning that a number of U.S. children have picked up a serious infection from contaminated water lines at the dentist's office.

Although rare, outbreaks of nontuberculous Mycobacteria (NTM) infections have been

reported in kids treated at the dentist, one cluster in 2015 and another in 2016, the CDC says. A third cluster identified at a pediatric dental clinic last March is under investigation.

These harmful bacteria lodge in the narrow water lines in dental equipment.

"NTM infections following dental procedures are very serious," said Dr. Michele Neuburger, a dental officer in CDC's Division of Oral Health. "These infections can be resistant to antibiotic treatment and are difficult to treat."

In all the cases of NTM infection following dental treatment, surgical procedures were required to resolve infections, she said.

*Read more:*
https://consumer.healthday.com/dentist-2658586592.htm

## Risky Driving in Oil and Gas Extraction Linked to Long Work Hours, Lengthy Commutes, and Insufficient Sleep

Long work hours, lengthy commutes, and insufficient sleep contributed to risky driving among oil and gas extraction workers, according to a study recently published in the American Journal of Industrial Medicine. In addition, insufficient employer policies in these areas were associated with a greater likelihood of risky driving.

Compared to all U.S. workers, oil and gas extraction workers were more likely to die on the job during 2003–2013, according to a previous CDC study. Motor vehicle crashes are the leading cause of work-related death in the industry, yet the underlying causes are unclear.

To learn more, NIOSH researchers looked at factors linked to risky driving among oil and gas extraction workers based in Colorado,

North Dakota, and Texas. Between October 2017 and February 2019, 498 of these workers responded to a survey about work schedules, workplace policies, and risky driving events, including feeling drowsy while driving, falling asleep, or nearly experiencing a motor vehicle crash. Nearly all respondents were male, more than one third were Hispanic, and the largest percentage was 25–34 years old.

*Read more:*
https://www.cdc.gov/niosh/enews/enewsv20n7.html#research1

## Scientists Are Close to Developing a Marijuana Breath Analyzer

A chemist from the University of California, Los Angeles, and colleagues are one step closer to developing a handheld device that can detect THC on a person's breath after they've smoked marijuana, similar to an alcohol Breathalyzer.

Professor of organic chemistry at UCLA Neil Garg and researchers from the UCLA start-up ElectraTect Inc. describe the method by which THC introduced, in a solution, into their laboratory-built device can be oxidized, producing an electric current whose strength indicates how much of the psychoactive compound is present. Their research was recently published in the journal Organic Letters.

*Read more:*
https://scitechdaily.com/scientists-are-close-to-developing-a-marijuana-breath-analyzer/

## Study Finds Enhanced Engineering and Administrative Controls Needed In Sterile Processing Units

Current NIOSH and industry regulations and professional guidelines aimed at preventing unintentional exposure to pathogens during the sterile processing of medical devices may not be sufficient to ensure provider and patient safety, results of a recent study suggest.

"Guidelines and standards define the optimal processing environment as a two-room unit with physical separation and unidirectional workflow between dirty and clean activities, or at least 4 feet of

separation between the dirty and clean areas in a one-room design," researchers

from the independent research company Ofstead & Associates write.

The study builds off previous research conducted by researchers at Ofstead showing that workers who process reusable medical instruments and equipment may be regularly exposed to tissue, blood and bodily fluids from patients – even when wearing personal protective equipment. The researchers next wanted to identify processing activities that generate splashes, characterizing splash amount and dispersal patterns in manual cleaning areas, evaluating visitor splash exposure, characterizing the impact of practices and equipment on splash generation, and assessing PPE effectiveness at preventing exposure during routine activities.

*Read more:*
https://www.safetyandhealthmagazine.com/articles/23240-study-finds-enhanced-engineering-and-administrative-controls-needed-in-sterile-processing-units

## Marijuana and Work-Related Asthma: New Hazard Alert

Exposure to cannabis dust, fume or smoke can lead to the development of work-related asthma, warns a new hazard alert from the Washington State Department of Labor & Industries.

Workers at risk include cannabis growers, production staff, extract manufacturers, retail stockers, laboratory and research personnel, and police and drug enforcement officers. According to the alert, exposure to dust from a marijuana plant's leaves, buds and stem – along with pollen and smoke – are linked to allergic reactions. Additionally, exposure can lead to a rash or potentially fatal anaphylactic shock.

After exposure, workers may experience:

- Difficulty breathing, along with wheezing, coughing and chest tightness.
- Asthma symptoms from ongoing everyday exposures or a one-time event.
- Asthma development despite having been exposed to cannabis for years.

*Read more:*
https://www.safetyandhealthmagazine.com/articles/23239-marijuana-and-work-related-asthma-new-hazard-alert

## Emergency Preparedness

### New Toolkit Offers Tips on Emergency Response and Preparation for Rural Communities

During a weeklong winter storm in Texas in February 2021, officials with the library in the tiny town of Pottsboro coordinated community response to help residents access clean water, make food available, offer restroom access, and much more when the power went out for a long period. The library used social media to get the word out about the efforts and created proactive community responses.

"How innovative – they had that incredible social media presence, they were well connected with the community. They were able to really be that entity where people


would not only get information right away but to be able to share information," said Alana Knudson, who directs NORC's Walsh Center for Rural Health Analysis.

*Read more:* https://dailyyonder.com/new-toolkit-offers-tips-on-emergency-response-and-preparation-for-rural-communities/2022/11/29/

## Deployment Health

### The Army Wants to Modernize Battlefield Medicine with Blood Delivery by Drone

In the desert south of Death Valley, mock patients waited for drones to deliver simulated blood. California's Fort Irwin is an Army base that hosted an event called Project Convergence 2022 from late September into November, an annual exercise led by the United States where militaries of multiple nations work together to explore new technologies in service of war. By testing drone delivery of medical

supplies, in conjunction with other tech, the military is looking at ways to ensure the survival of soldiers after battle injuries, even in circumstances where it's unsafe to send people on foot for help.

*Read more:* https://www.popsci.com/technology/project-crimson-army-emergency-medicine/

## *Nanotechnology*

### Magnetic Material Mops up Microplastics in Water

Researchers at RMIT University have found an innovative way to rapidly remove hazardous microplastics from water using magnets.

Lead researcher Professor Nicky Eshtiaghi said existing methods could take days to remove microplastics from water, while their cheap and sustainable invention achieves better results in just one hour.

The team says they have developed adsorbents, in the form of a powder, that remove microplastics 1,000 times smaller than those currently detectable by existing wastewater treatment plants.

The researchers have successfully tested the adsorbents in the lab, and they plan to

engage with industry to further develop the innovation to remove microplastics from waterways.

*Read more:* https://phys.org/news/2022-11-magnetic-material-mops-microplastics.html

## *Regulatory Research & Industrial Hygiene Professional News*

***State Standards***

### AIHA Urges Maryland to Withdraw Heat Stress Draft

The American Industrial Hygiene Association (AIHA), along with 37 other organizations, 35 individuals, and the Maryland Heat Illness Prevention Coalition (MHIPC), urged Maryland Occupational Safety and Health (MOSH) in a letter to withdraw its draft heat stress standard. MOSH published its proposed standard October 7. The proposed state rule "is completely inadequate and will not protect Maryland workers from heat-related illnesses and death," the AIHA and the other MHIPC members claimed in their letter. "Nor, as written, will MOSH be able to effectively enforce the standard."

*Read more:*
https://ehsdailyadvisor.blr.com/2022/11/aiha-urges-maryland-to-withdraw-heat-stress-draft/

***FDA***

### FDA Advances the New Era of Smarter Food Safety, Finalizing Foundational Rule to Improve Traceability of Contaminated Foods


The U.S. Food and Drug Administration announced an unprecedented advancement in foodborne illness prevention through the finalization of a rule to more effectively trace contaminated food through the food supply, whether sourced in the U.S. or abroad.

The final rule establishes additional traceability recordkeeping requirements for those that manufacture, process, pack or hold certain foods, including fresh leafy

greens, nut butters, fresh-cut fruits and vegetables and ready-to-eat deli salads.

*Read more:* https://www.fda.gov/news-events/press-announcements/fda-advances-new-era-smarter-food-safety-finalizing-foundational-rule-improve-traceability

## *OSHA*

# Monkeypox Virus: New Fact Sheet from OSHA

In an effort to prevent work-related transmission of the monkeypox virus, OSHA is urging employers and workers whose jobs may involve skin-to-skin contact with infected people or animals to take precautions.

According to a new fact sheet from OSHA, at-risk workers include health care workers and first responders; workers in congregate settings such as hotels, correctional facilities, and recreational facilities or social venues; massage, spa, fitness and salon workers; housekeepers, janitors, cleaning service workers, dry cleaning and laundry workers; and animal care workers, including veterinary staff.


OSHA Fact Sheet

Monkeypox Virus

Monkeypox is a disease caused by the monkeypox virus that has regularly been reported in some parts of the world. In May 2022, an international outbreak of monkeypox was identified in Western Europe, Canada, and the United States, where monkeypox does not typically occur. The monkeypox virus is closely related to the variola virus (the cause of smallpox) but is much less deadly. Initial symptoms of monkeypox disease include fever, headache and body aches, fatigue, and swollen lymph nodes, followed by a rash of lesions on the skin. Like smallpox and other pox viruses, monkeypox is classified as a high-risk pathogen because it can easily be transmitted from person-to-person, posing a danger to public health. Cases may be severe, especially in children, pregnant women, or people with suppressed immune systems. As a result, on August 4, 2022, the U.S. Department of Health and Human Services (HHS) declared a public health emergency (PHE) in response to the current outbreak.

Monkeypox virus can infect both animals and people. Employers and workers whose job duties might put them in close, personal, often skin-to-skin contact with people that have a monkeypox infection or in contact with contaminated materials should take precautions to prevent work-related monkeypox transmission.

According to the Centers for Disease Control and Prevention (CDC), monkeypox can spread through direct contact with an infected person or animal including close contact with a monkeypox rash, scabs, or body fluids including respiratory droplets, and contaminated materials such as clothing, bedding, and towels. However, during the current 2022 outbreak, monkeypox virus has been primarily transmitted through close personal or intimate/sexual contact with a person with monkeypox infection.

Signs and Symptoms

Early symptoms of monkeypox that can occur before the characteristic rash may include headache, fatigue, back and body aches, fever, chills, swollen lymph nodes, and rarely respiratory symptoms (nasal congestion, cough, sore throat). Nearly all people with monkeypox develop a rash, which may be painful or itchy. The rash may develop before or without other symptoms and can appear on the face, extremities, palms of hands, soles of feet, conjunctiva (eye), anus, genitalia, and inside of the mouth. It may first appear as flat discolored spots or raised firm pimples, which turn into blister-like lesions filled with clear or yellow fluid. The blisters form scabs that later fall off. Symptoms usually develop within 3 weeks (21 days) of becoming infected with monkeypox. An individual with a monkeypox infection is contagious from the time when symptoms begin until all scabs have fallen off and new skin has formed. Symptoms usually last between 2 - 4 weeks and go away on their own without treatment. Some people may develop complications (e.g., pneumonia, skin infections, eye infections).

Monkeypox skin rash images

*Read more:* https://www.safetyandhealthmagazine.com/articles/23313-monkeypox-virus-new-fact-sheet-from-osha

## *NIOSH*

### New NIOSH Study Questions Non-Healthcare Workers on COVID-19 Exposure at Work


A new study shows that nearly one in five employees who worked in settings other than healthcare or their home were exposed to COVID-19.

The study, from the National Institute for Occupational Safety and Health (NIOSH), surveyed 1,111 people aged 18-64 in California, Georgia, New Hampshire, North Carolina, Pennsylvania, and Wisconsin. The respondents all tested positive for COVID-19 from September 2020 to June 2021.

A total of 19.4 percent of respondents said they had been exposed to the virus while at work, according to a news release about the study.

*Read more:*
https://ohsonline.com/articles/2022/11/25/new-niosh-study-questions.aspx?admgarea=ht.PPE

## *EPA*

### EPA Proposes Tougher Rules on Methane Leaks

Methane emissions are the second-largest cause of climate change after carbon dioxide, and the oil and gas industry contributes roughly a third of those methane emissions globally. As a result, the U.S. Environmental Protection Agency (EPA) is now seeking to strengthen its regulations on the industry's leaks of methane from their wells, pipes, and equipment.

Under an updated proposal announced on November 11, EPA would require all oil and gas sites in the country—old and new, big and small—to monitor their emissions, identify causes of major leaks, and take corrective action.

*Read more:*
https://www.theregreview.org/2022/11/30/bruning-epa-proposes-tougher-rules-on-methane-leaks/.

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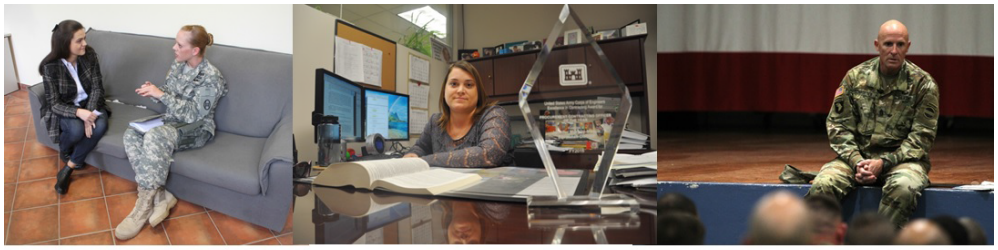
https://phc.amedd.army.mil/news/Pages/PublicationDetails.aspx?type=Army%20Industrial%20Hygiene%20News%20and%20Regulatory%20Summary



## 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.