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# Army Industrial Hygiene News and Regulatory Summary

## Hazardous Substances

### Special Interest Articles:

- [Multidrug Resistance](#)
- [RF Radiation](#)
- [Glove-Gown Barrier](#)
- [DoD Water Cleanup](#)
- [Glaucoma](#)

## It's Time to Recognise Air Pollution as an Occupational Health Hazard

The British Safety Council has launched a report 'Impact of air pollution on the health of outdoor workers' which provides compelling evidence to recognize ambient air pollution as an occupational health hazard in Britain. In the report, the charity presents the demands that spearhead its campaign to limit the dangers of air pollution to the health of outdoor workers. Air pollution, linked with up to 36,000 early deaths a year in the UK, is considered the biggest environmental risk to public health. Research from King's College London suggests that more than 9,400 people die prematurely due to poor air quality in London alone. Ambient air pollution is linked to cancer, lung and heart disease, type-2 diabetes, infertility and early dementia.



Several pilot schemes are beginning to monitor and measure the levels of air pollution experienced by people working and living in London. Their findings will be instrumental in developing recommendations for reducing people's exposure to air pollution in the capital.

*Read more:*

<https://specifierreview.com/2019/05/21/british-safety-council-air-pollution>

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## Occupational Survey of Airborne Metal Exposures to Welders, Metalworkers, and Bystanders in Small Fabrication Shops



The objective of this study was to characterize worker exposure to airborne metal and particulate matter in shops where multiple types of metalworking tasks were performed. The sampling strategy included full-shift and task-based personal samples on workers who performed flux-cored arc welding, personal samples on workers performing non-welding metalworking tasks, and area samples near welders, representing bystanders to welding. Size-fractionated particulate matter adjacent to welding activities was measured using real-time monitoring devices. Samples were analyzed for 21 individual metals, of which 8 were frequently detected. Exceedance fractions were calculated based on the

distribution of results for each frequently detected metal. Exceedance fractions were <5% for all metals, except manganese (6% of the REL, 55% of the inhalable TLV-TWA and 91% of the respirable TLV-TWA) and iron oxide (10% of the REL and TLV-TWA) for Shop 1 bystander samples, manganese (68% for the inhalable TLV-TWA and 98% of the respirable TLV-TWA) for welder samples, and manganese (35% for the inhalable TLV-TWA and 80% of the respirable TLV-TWA) and iron oxide (12% for the PEL and 23% for the REL and TLV-TWA) for metalworker samples. Particulate matter concentrations measured at distances of 0.9–1.5 m and 2.1–2.7 m from the welder were within the same order of magnitude. The results of this study allow for comparison to health-based exposure limits for select individual components of welding fume with a low to medium degree of censorship.

*Read more: Journal of Occupational and*

*Environmental Hygiene, Published online:  
14 May 2019 (Available with AIHA  
membership)*

## Going Far beyond OSHA

Appendix A to federal OSHA's 1978 lead standard (current today) provides that blood lead level (BLL) of workers, both male and female, who intend to have children should be maintained below 30 micrograms per deciliter (ug/dL) "to minimize adverse reproductive health effects to the parents and to the developing fetus." Many OHS pros believed back in the day that a BLL < 30 ug/dL was unrealistic with hierarchy of controls available at the time.

Appendix A to MIOSHA's (Michigan OSHA) December 12, 2018, lead standard states "The blood lead levels of female workers who are pregnant should be maintained



below 5 ug/dL at all times to prevent adverse health effects to the developing fetus."

*Read more:*

<https://www.ishn.com/articles/110540-going-far-beyond-osha>

## Assessment of Environmental and Occupational Exposure While Working With Multidrug Resistant (MDR) Fungus *Candida Auris* in an Animal Facility



In less than a decade since its identification in 2009, the emerging fungal pathogen *Candida auris* has become a major public health threat due to its multidrug resistant (MDR) phenotype, high transmissibility, and high mortality. Unlike other *Candida* species, *C. auris* has acquired high levels of resistance to an already limited arsenal of antifungals. As an emerging pathogen, there are currently a limited number of documented murine models of *C. auris*

infection. These animal models use inoculums as high as 107–108 cells per mouse, and the environmental and occupational exposure of working with these models has not been clearly defined. Using real-time quantitative polymerase chain reaction (PCR) and culture, we monitored the animal holding room as well as the procedure room for up to 6 months while working with an intravenous model of *C. auris* infection. This study determined that shedding of the organism is dose-dependent, as detectable levels of *C. auris* were detected in the cage bedding when mice were infected with 107 and 108 cells, but not with doses of 105 and 106 cells. Autoclaving bedding in closed micro-isolator cages was found to be an effective

way to minimize exposure for animal caretakers. We found that tissue necropsies of infected mice were also an important source of potential source exposure to *C. auris*. To mitigate these potential exposures, we implemented a rigorous “buddy system” workflow and a disinfection protocol that uses 10% bleach followed by 70% ethanol and can be used in any animal facility when using small animal models of *C. auris* infection.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 22 May 2019 (Available with AIHA membership)*

### Assessment of Spray Polyurethane Foam Worker Exposure to Organophosphate Flame Retardants through Measures in Air, Hand Wipes, and Urine

Tris(1-chloro-2-propyl) phosphate (TCPP, also referenced as TCIPP), a flame retardant used in spray polyurethane foam insulation, increases cell toxicity and affects fetal development. Spray polyurethane foam workers have the potential to be exposed to TCPP during application. In this study, we determined exposure to TCPP and concentrations of the urinary biomarker bis(1-chloro-2-propyl) phosphate (BCPP) among 29 spray polyurethane foam workers over 2 work days. Work was conducted at residential or commercial facilities using both open-cell (low density) and closed-cell (high density) foam. Study participants provided two personal air samples (Day 1 and Day 2), two hand wipe



samples (Pre-shift Day 2 and Post-shift Day 2), and two spot urine samples (Pre-shift Day 1 and Post-shift Day 2). Bulk samples of cured spray foam were also analyzed. Sprayers were found to have significantly higher TCPP geometric mean (GM) concentration in personal air samples

(87.1  $\mu\text{g}/\text{m}^3$ ), compared to helpers (30.2  $\mu\text{g}/\text{m}^3$ ;  $p = 0.025$ ). A statistically significant difference was observed between TCPP pre- and post-shift hand wipe GM concentrations ( $p = 0.004$ ). Specifically, TCPP GM concentration in post-shift hand wipe samples of helpers (106,000 ng/sample) was significantly greater than pre-shift (27,300 ng/sample;  $p < 0.001$ ). The GM concentration of the urinary biomarker BCPP (23.8  $\mu\text{g}/\text{g}$  creatinine) was notably higher than the adult male general population (0.159  $\mu\text{g}/\text{g}$  creatinine,  $p < 0.001$ ). Urinary BCPP GM concentration increased significantly from Pre-shift Day 1 to Post-shift Day 2 for sprayers ( $p = 0.013$ ) and helpers ( $p = 0.009$ ).

Among bulk samples, cured open-cell foam had a TCPP GM concentration of 9.23% by weight while closed-cell foam was 1.68%. Overall, post-shift BCPP urine concentrations were observed to be associated with TCPP air and hand wipe concentrations, as well as job position (sprayer vs. helper). Spray polyurethane foam workers should wear personal protective equipment including air-supplied respirators, coveralls, and gloves during application.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 21 May 2019 (Available with AIHA membership)*

### Costs of Isocyanate-Related Occupational Diseases: A Systematic Review



Although isocyanates are increasingly used in manufacturing and workplace exposure to isocyanates is widely recognized as one of the most frequent causes for occupational lung and skin diseases, little is known about the economic burden on the affected individual and the society. This study provides an overview on costs of

occupational diseases related to isocyanates. We performed a systematic literature search of studies in the electronic databases of the German Institute of Medical Documentation and Information, and the Canadian Centre for Occupational Health and Safety. We extracted the key characteristics of the studies and performed a study quality assessment. We identified eight studies on the costs of illness, of which five focused on occupational lung diseases and three on occupational skin diseases. Further, eight studies calculated loss of income/compensation payments. Out of the 16 identified articles, only two reported costs directly attributable to isocyanate-induced diseases (asthma). Studies were hardly comparable because they differed substantially in their

methodological approaches. Moreover, the quality assessment of the studies revealed substantial limitations. While a wide range of isocyanate-related costs was identified, consequences of isocyanate-related occupational diseases were considerable in terms of societal costs and loss of income. In most studies, indirect costs were the main cost driver. There is a need for high-quality cost of illness studies on isocyanate-induced diseases stratified by degree of

severity and sex. Such studies provide valuable information to develop preventive strategies and set priorities for measures to lower the burden of professional health risks.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 17 May 2019 (Available with AIHA membership)*

### Particle and Vapor Emissions from Vat Polymerization Desktop-Scale 3-Dimensional Printers

Little is known about emissions and exposure potential from vat polymerization additive manufacturing, a process that uses light-activated polymerization of a resin to build an object. Five vat polymerization printers (three stereolithography (SLA) and two digital light processing (DLP) were evaluated individually in a 12.85 m<sup>3</sup> chamber. Aerosols (number, size) and total volatile organic compounds (TVOC) were measured using real-time monitors. Carbonyl vapors and particulate matter were collected for offline analysis using impingers and filters, respectively. During printing, particle emission yields (#/g printed) ranged from  $1.3 \pm 0.3$  to  $2.8 \pm 2.6 \times 10^8$  (SLA printers) and from  $3.3 \pm 1.5$  to  $9.2 \pm 3.0 \times 10^8$  (DLP printers). Yields for number of particles with sizes 5.6 to 560 nm (#/g printed) were  $0.8 \pm 0.1$  to  $2.1 \pm 0.9 \times 10^{10}$  and from  $1.1 \pm 0.3$  to  $4.0 \pm 1.2 \times 10^{10}$  for SLA and DLP printers, respectively. TVOC yield values ( $\mu\text{g/g}$  printed) ranged from  $161 \pm 47$  to  $322 \pm 229$  (SLA printers) and from  $1281 \pm 313$  to  $1931 \pm 234$  (DLP



printers). Geometric mean mobility particle sizes were 41.1–45.1 nm for SLA printers and 15.3–28.8 nm for DLP printers. Mean particle and TVOC yields were statistically significantly higher and mean particle sizes were significantly smaller for DLP printers compared with SLA printers ( $p < 0.05$ ). Energy dispersive X-ray analysis of individual particles qualitatively identified potential occupational carcinogens (chromium, nickel) as well as reactive metals implicated in generation of reactive oxygen species (iron, zinc). Lung deposition modeling indicates that about 15–37% of emitted particles would deposit in the pulmonary region (alveoli). Benzaldehyde (1.0–2.3 ppb) and acetone (0.7–18.0 ppb)

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were quantified in emissions from four of the printers and 4-oxopentanal (0.07 ppb) was detectable in the emissions from one printer. Vat polymerization printers emitted nanoscale particles that contained potential carcinogens, sensitizers, and reactive metals as well as carbonyl compound vapors. Differences in emissions between SLA and DLP printers indicate that the underlying

technology is an important factor when considering exposure reduction strategies such as engineering controls.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 16 May 2019 (Available with AIHA membership)*

## Radiation

### Understanding RF Radiation



For most workers, radiofrequency radiation – an invisible type of non-ionizing radiation used to transmit wireless information – isn't something to be overly concerned about. Low levels of RF radiation aren't considered

hazardous, according to the Center for Construction Research and Training (also known as CPWR).

However, RF radiation levels produced by telecommunications equipment, including radio, TV and cellular antennas, “can pose a considerable health risk for workers,” CPWR cautions, adding that many antennas placed on rooftops and the sides of buildings are disguised to hide their presence.

*Read more:*  
<https://www.safetyandhealthmagazine.com/articles/18168-understanding-rf-radiation>

## Ventilation

### Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments

#### Background:

The indoor built environment plays a critical role in our overall well-being because of both the amount of time we spend indoors (~90%) and the ability of buildings to positively or negatively influence our health. The advent of sustainable design or green building strategies reinvigorated questions regarding the specific factors in buildings that lead to optimized conditions for health and productivity.

#### Objective:

We simulated indoor environmental quality (IEQ) conditions in “Green” and “Conventional” buildings and evaluated the impacts on an objective measure of human performance: higher-order cognitive function.

#### Methods:

Twenty-four participants spent 6 full work days (0900–1700 hours) in an environmentally controlled office space, blinded to test conditions. On different days, they were exposed to IEQ conditions



representative of Conventional [high concentrations of volatile organic compounds (VOCs)] and Green (low concentrations of VOCs) office buildings in the United States. Additional conditions simulated a Green building with a high outdoor air ventilation rate (labeled Green+) and artificially elevated carbon dioxide (CO<sub>2</sub>) levels independent of ventilation.

#### Read more:

<https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.1510037>



**PPE**

## A Pilot Study of Minimum Operational Flow for Loose-Fitting Powered Air-Purifying Respirators Used in Healthcare Cleaning Services



The objective of this pilot study was to determine the minimum operational flow for loose-fitting powered air-purifying respirators (PAPR) used in healthcare cleaning services. An innovative respiratory flow recording device was worn by nine healthcare workers to obtain the minute volume (MV, L/min), mean inhalation flow (MIF, L/min), and peak inhalation flow (PIF,

L/min) while performing “isolation unit work” (cleaning and disinfecting) of a patient room within 30 min. The MV and PIF were compared with the theoretical values obtained from an empirical formula. The correlations of MV, MIF, and PIF with subjects’ age, weight, height, body surface area (ADu), and body mass index (BMI) were analyzed. The average MV, MIF, and PIF were 33, 74, and 107 L/min, with maximal airflow rates of 41, 97, and 145 L/min, respectively, which are all below the current 170 L/min minimum operational flow for NIOSH certified loose-fitting PAPRs.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 13 May 2019 (Available with AIHA membership)*

## Critical Investigation of Glove–Gown Interface Barrier Performance in Simulated Surgical Settings

The barrier properties of personal protective equipment are vital to healthcare personnel to protect themselves from possible infectious body fluids. Intraoperative exposure of healthcare personnel to body fluids can be substantial in both inpatient and outpatient settings. The glove–gown interface is known as one

of the weakest points of the whole personal protective equipment system. However, there is a lack of scientific research designed to investigate the problem. This paper reports the results of experiments using a new testing methodology developed to quantify fluid leakage through the glove–gown interface while simulating surgical

settings in terms of operating room personnel activities, exposure types, exposure durations, and physical stresses applied on the interface.

This study represents one of the first efforts investigating the amount of fluid leakage through the glove–gown interface for a number of surgical gown and glove models while considering glove material differences and single vs. double gloving. The test results showed that there is a significant difference in fluid leakage amounts between three gown models and four glove models studied. The results also demonstrated that double gloving significantly reduced the fluid leakage compared to single glove use. The mean fluid leakage was lower in the double synthetic glove configurations (M = 2.76g) compared with all other configurations (3GLV, M = 8.3g; 4GLV, M = 9.49g; 5GLV, M = 3.08g; 6GLV, M = 20.03g; double latex, M = 5.22g). Findings highlighted a significant interaction between glove and gown designs, which suggests that gown and



gloves should be designed together as a system to minimize or eliminate the fluid leakage.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 25 Apr 2019 (Available with AIHA membership)*

### Noise

#### Impacts of Subchronic, High-Level Noise Exposure on Sleep and Metabolic Parameters: A Juvenile Rodent Model



Background:

Noise is an environmental factor that has been associated with metabolic and sleep disorders. Sleep is a vital function, since it underpins physiologic processes and cognitive recovery and development. However, the effects of chronic noise

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exposure on the developing organism are still subject to debate.

noise exposure on sleep, apnea, and homeostasis in juvenile rats.

Objective:

The objective of the present study was to assess the effects of subchronic, high-level

Read more:

<https://ehp.niehs.nih.gov/doi/10.1289/EHP4045>

## Preventive Medicine

### Clinical Guideline Developed For Flu Testing In Emergency Departments

US scientists have developed and validated a clinical decision guideline (CDG) for flu testing in emergency departments, according to a study yesterday in Clinical Infectious Diseases.

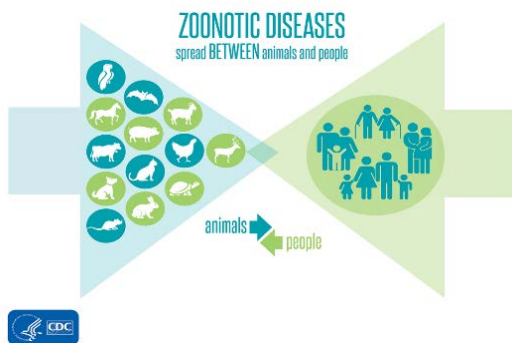
To develop the CDG, researchers conducted a cohort study involving 1,941 patients with fever or respiratory symptoms seen at four US emergency departments in 2013 and 2014. Of those patients, 118 (9.4%) tested positive for influenza virus.



Read more:

<http://www.cidrap.umn.edu/news-perspective/2019/05/flu-scan-may-22-2019t>

### 6 in 10 Infectious Diseases Come from Animals. The CDC Is Most Worried About These 8



More than half of the infectious diseases that affect people come from animals. Now, for the first time, the government is releasing a list of the top eight illnesses spread from animals — called zoonotic diseases — in the United States.

The list includes some strains of the flu, Salmonella infection, West Nile virus, the

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plague, emerging coronaviruses such as Middle East respiratory syndrome, rabies, brucellosis (a bacterial infection) and Lyme disease, according to the list, released May 6 by the Centers for Disease Control and Prevention (CDC).

Read more:

<https://www.livescience.com/65417-top-concerning-zoonotic-diseases.html>

## Stressed Out: Survey Shows Almost Half of Workers Have Cried at Work

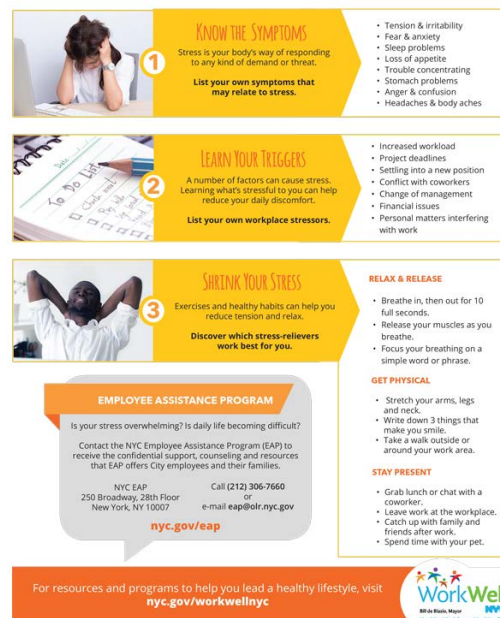
Work-related stress has driven nearly half of full-time employees in the United States to tears, results of a recent survey show.

Surveying more than 1,200 full-time adult workers from various industries, researchers from Ginger – an on-demand behavioral health services provider – assessed participants’ experiences with behavioral health and their employer-provided benefits.

Read more:

<https://www.safetyandhealthmagazine.com/articles/18497-stressed-out-survey-shows-almost-half-of-workers-have-cried-at-work>

### HOW TO STOP STRESS IN ITS TRACKS



**1 KNOW THE SYMPTOMS**  
Stress is your body's way of responding to any kind of demand or threat.  
List your own symptoms that may relate to stress.

- Tension & irritability
- Fear & anxiety
- Sleep problems
- Loss of appetite
- Trouble concentrating
- Stomach problems
- Anger & confusion
- Headaches & body aches

**2 LEARN YOUR TRIGGERS**  
A number of factors can cause stress. Learning what's stressful to you can help reduce your daily discomfort.  
List your own workplace stressors.

- Increased workload
- Project deadlines
- Settling into a new position
- Conflict with coworkers
- Change of management
- Financial issues
- Personal matters interfering with work

**3 SHRINK YOUR STRESS**  
Exercises and healthy habits can help you reduce tension and relax.  
Discover which stress-relievers work best for you.

**RELAX & RELEASE**

- Breathe in, then out for 10 full seconds.
- Release your muscles as you breathe.
- Focus your breathing on a simple word or phrase.

**GET PHYSICAL**

- Stretch your arms, legs and neck.
- Write down 3 things that make you smile.
- Take a walk outside or around your work area.

**STAY PRESENT**


- Grab lunch or chat with a coworker.
- Leave work at the workplace.
- Catch up with family and friends after work.
- Spend time with your pet.

**EMPLOYEE ASSISTANCE PROGRAM**  
Is your stress overwhelming? Is daily life becoming difficult?  
Contact the NYC Employee Assistance Program (EAP) to receive the confidential support, counseling and resources that EAP offers City employees and their families.

NYC EAP  
250 Broadway, 28th Floor  
New York, NY 10007

Call (212) 306-7660  
or  
e-mail [eap@nyc.gov](mailto:eap@nyc.gov)  
[nyc.gov/eap](http://nyc.gov/eap)

For resources and programs to help you lead a healthy lifestyle, visit [nyc.gov/workwellnyc](http://nyc.gov/workwellnyc)



## Heroin, Opioids Contributed to ‘Significant Increase’ of Workplace Overdose Deaths: NIOSH



The rate of overdose deaths among workers rose 24% annually over a recent six-year period, with heroin and opioids the most common contributors, results of a new NIOSH study show.

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Researchers reviewed 2011-2016 data from the Census of Fatal Occupational Injuries database. They identified 760 workplace drug overdose deaths over the six-year period for a rate of 0.9 per 1 million full-time equivalent workers. Although that rate is comparatively low relative to other common causes of fatal workplace injuries, the researchers saw a “significant increase”

in the number and rate of overdose deaths over the course of the study period.

*Read more:*

<https://www.safetyandhealthmagazine.com/articles/18493-heroin-opioids-contributed-to-significant-increase-of-workplace-overdose-deaths-in-recent-years-niosh>

### Physician Burnout Costs the US Health Care System Approximately \$4.6 Billion A Year

Physician burnout is a substantial economic burden, costing the U.S. health care system approximately \$4.6 billion a year. Investing in strategies to reduce burnout may have economic benefits. Findings are published in *Annals of Internal Medicine*.

Physician burnout is a significant issue that has the potential to dramatically increase the cost of care to both patients and the health care delivery system. It is associated with poorer overall quality of patient care, lower patient satisfaction, and malpractice lawsuits, all of which have an economic impact. Despite the recent public interest the subject, only a few studies have attempted to quantify the economic magnitude of burnout in the form of easily understandable metrics. Without data,



policymakers cannot holistically assess or address the issue.

*Read more:*

[https://eurekalert.org/pub\\_releases/2019-05/acop-enf052119.php](https://eurekalert.org/pub_releases/2019-05/acop-enf052119.php)

## Environmental Health

### Brain Fog: Does Air Pollution Make Us Less Productive?



The regulation of air pollution has reduced its toll on heart and lung diseases. For example, the Clean Air Act Amendments of 1990 helped avert an estimated 160,000 deaths and 86,000 hospitalizations in 2010 alone.<sup>1</sup> However, a growing body of

research suggests that polluted air also puts our brain in harm's way.

Chronic exposure to traffic-related pollutants may increase the risk of neurological disorders.<sup>2</sup> Both short- and long-term exposures have been associated with reduced human capital, including the academic performance of schoolchildren<sup>3</sup> and the productivity of workers across the adult lifespan.<sup>4</sup>

*Read more:*

<https://ehp.niehs.nih.gov/doi/10.1289/EHP4869>

### Will This Proposal Help DoD's Water Cleanup Efforts?

The Pentagon is on board with a new proposal from the Environmental Protection Agency aimed at clarifying state and federal cleanup standards to address groundwater and drinking water contaminated by decades of seepage of chemicals — including those used in the military's firefighting foams.

For decades, the military used firefighting foams that contained PFAS chemicals. These per- and polyfluoroalkyl substances are also found in everyday household



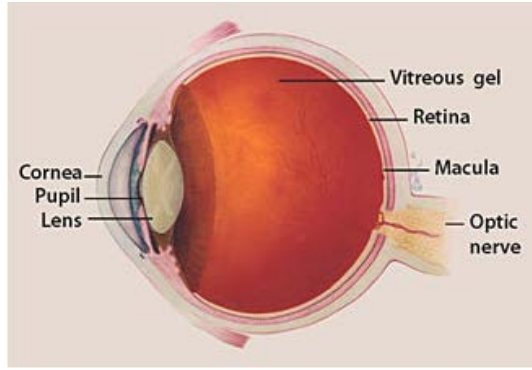
products. PFAS chemicals have been linked to cancers and other health problems.

Read more:

<https://www.militarytimes.com/pay->

[benefits/2019/05/06/will-this-proposal-help-dods-water-cleanup-efforts/](https://www.militarytimes.com/pay-benefits/2019/05/06/will-this-proposal-help-dods-water-cleanup-efforts/)

## Looking Backward: Long-Term Lead Exposure and Risk of Glaucoma



Despite its status as the leading cause of irreversible blindness, the etiology of glaucoma remains shrouded in mystery. Researchers have identified several genetic risk factors for glaucoma, but environmental contributors remain almost completely unknown. A study in

Environmental Health Perspectives suggests that long-term lead exposure may be a risk factor for primary open-angle glaucoma (POAG), the most common form of this disease.<sup>1</sup>

This is one of the first times scientists have been able to identify an environmental risk factor for glaucoma, says lead author Sung Kyun Park, an environmental health scientist at the University of Michigan. “There is no cure for glaucoma, which is why prevention is so important,” Park says.

Read more:

<https://ehp.niehs.nih.gov/doi/10.1289/EHP5059>

## Water Safety Risks May Grow as Cities Shrink

Cities that experience long-term, persistent population decline are called shrinking cities. Although shrinking cities exist across the United States, they are concentrated in the American Rust Belt and Northeast. Urban shrinkage can be bad for drinking water in two ways: through aging infrastructure and reduced water demand.

Major federal and state investments in U.S. drinking water occurred after the World Wars and through the Drinking Water State Revolving Fund created by the 1996



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amendments to the Safe Drinking Water Act.

Read more:

<https://undark.org/2019/05/28/shrinking-cities-drinking-water/>

## Ergonomics

### Bad Vibrations

Operating power tools, vehicles and heavy equipment can take both an immediate and eventual toll on the body. For millions of workers in the construction, maintenance, mining, forestry, transportation, agriculture and automotive industries, the effects of sustained on-the-job exposure to vibration – whether hand-arm or whole-body – may lead to various health problems.

So what can be done to help prevent this?

Read more:

<https://www.safetyandhealthmagazine.co>



[m/articles/18405-bad-vibrations-whole-body-hand-arm-risk](https://www.safetyandhealthmagazine.com/articles/18405-bad-vibrations-whole-body-hand-arm-risk)

## Safety

### Nurses Get Uninterrupted Breaks, Under New Washington State Law



A Washington state law slated to go into effect Jan. 1 requires nurses and other health care professionals at larger hospitals to receive uninterrupted meal and rest breaks.

S.B. 1155, signed into law by Gov. Jay Inslee (D) on May 8, drew national attention when Sen. Maureen Walsh (R-Walla Walla), in her opposition of the bill, said nurses in small



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health care facilities – those with fewer than 25 acute-care beds, known as critical access hospitals – “probably play cards for a considerable amount of the day.”

*Read more:*

<https://www.nature.com/articles/s41370-019-0138-1>

## Majority of Sunscreens Could Flunk Proposed FDA Standards for Safety and Efficacy, Report to Say

Nearly two-thirds of all sunscreens evaluated by the Environmental Working Group would probably not be considered safe and effective under standards proposed by the US Food and Drug Administration, the consumer advocacy group will announce this week.



The group will release its analysis as part of its 2019 Guide to Sunscreens, a yearly report on sunscreen safety that the nonprofit began in 2006.

*Read more:*

<https://www.cnn.com/2019/05/15/health/s>

[unscreen-fda-safety-standards-study/index.html](https://www.environmentalworkinggroup.org/2019/05/unscreen-fda-safety-standards-study/index.html)

## 'New Indiana Law Increases Maximum Fine for Worker Deaths



An Indiana law scheduled to go into effect July 1 raises the maximum monetary penalty for on-the-job fatalities.

H.B. 1341, signed into law by Gov. Eric Holcomb (R) on April 24, increases the maximum penalty to \$132,598 from \$70,000 for each worker death resulting from an employer knowingly violating safety regulations.



Read more:

<https://www.safetyandhealthmagazine.co>

[m/articles/18368-new-indiana-law-](https://www.safetyandhealthmagazine.com/articles/18368-new-indiana-law-increases-maximum-fine-for-worker-deaths)

[increases-maximum-fine-for-worker-deaths](https://www.safetyandhealthmagazine.com/articles/18368-new-indiana-law-increases-maximum-fine-for-worker-deaths)

## Heat Stress Assessment during Intermittent Work under Different Environmental Conditions and Clothing Combinations of Effective Wet Bulb Globe Temperature (WBGT)

This study examined whether different combinations of ambient temperature and relative humidity for the effective wet bulb globe temperature, in conjunction with two different levels of clothing adjustment factors, elicit a similar level of heat strain consistent with the current threshold limit value guidelines. Twelve healthy, physically active men performed four 15-min sessions of cycling at a fixed rate of metabolic heat production of 350 watts. Each trial was separated by a 15-min recovery period under four conditions: (1) Cotton coveralls + dry condition (WD: 45.5 °C dry-bulb, 15% relative humidity); (2) Cotton coveralls + humid condition (WH: 31 °C dry-bulb, 84% relative humidity); (3) Protective clothing + dry condition (PD: 30 °C dry-bulb, 15% relative humidity); and (4) Protective clothing + humid condition (PH: 20 °C dry-bulb, 80% relative humidity). Gloves (mining or chemical) and headgear (helmet or powered air-purifying respirator) were removed during recovery with hydration ad libitum. Rectal temperature ( $T_{re}$ ), skin temperature ( $T_{sk}$ ), physiological heat strain (PSI), perceptual heat strain (PeSI), and body heat content were calculated. At the end of the 2-hr trials,  $T_{re}$  remained below 38 °C and the magnitude of  $T_{re}$  elevation was not greater than 1 °C in all conditions (WD: 0.9, WH: 0.8, PH: 0.7, and PD: 0.6 °C).



However,  $T_{sk}$  was significantly increased by approximately  $2.1 \pm 0.8$  °C across all conditions (all  $p \leq 0.001$ ). The increase in  $T_{sk}$  was the highest in WD followed by PD, WH, and PH conditions (all  $p \leq 0.001$ ). Although PSI and PeSI did not indicate severe heat strain during the 2-hr intermittent work period, PSI and PeSI were significantly increased over time ( $p \leq 0.001$ ). This study showed that core temperature and heat strain indices (PSI and PeSI) increased similarly across the four conditions. However, given that core temperature increased continuously during the work session, it is likely that the American Conference of Governmental Industrial Hygienist's TLV® upper limit core temperature of 38.0 °C may be surpassed

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during extended work periods under all conditions.

22 Apr 2019 (Available with AIHA membership)

Read more: *Journal of Occupational and Environmental Hygiene*, Published online:

## Safety Committee Training: Oregon OSHA Launches Online Clearinghouse



Oregon OSHA has created a webpage that offers access to the agency's free online training courses intended for safety committee members.

The agency also translated the courses – Safety Meetings and Committees, Accident Investigation and Hazard Identification – into Spanish.

Read more:

<https://www.safetyandhealthmagazine.com/articles/18366-safety-committee-training-oregon-osha-launches-online-clearinghouse>

## Emergency Preparedness

### More States Confront Environmental Threats to Public Health

From California's wildfires to emerging measles outbreaks in New York and New Jersey, the United States saw economic damages exceeding \$91 billion for health security events in 2018.

And though more states are prepared to face such events, progress may soon be outpaced by environmental disasters and more emerging infectious disease threats, according to the 2019 National Health Security Preparedness Index published by



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the Robert Wood Johnson Foundation (RWJF).

*Read more:*

<http://www.cidrap.umn.edu/news-perspective/2019/05/more-states-confront-environmental-threats-public-health>

## Deployment Health

### Wearable Sensors Could Leverage Biotechnology to Monitor Personal, Environmental Data



biorecognition receptors capable of consistent performance in multi-domain environments with the ability to collect real-time assessments of Soldier health and performance.

*Read more:*

<https://www.army.mil/article/221184/wearable-sensors-could-leverage-biotechnology-to-monitor-personal-environmental-data>

In an effort to enhance Soldier lethality, Army researchers are developing

## Nanotechnology

### Nanomaterial Safety on a Nano Budget

With a little practice, it doesn't take much more than 10 minutes, a couple of bags and a big bucket to keep nanomaterials in their place.

The Rice University lab of chemist Andrew Barron works with bulk carbon nanotubes on a variety of projects. Years ago, members of the lab became concerned that nanotubes could escape into the air, and



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developed a cheap and clean method to keep them contained as they were transferred from large containers into jars for experimental use. More recently Barron himself became concerned that too few labs around the world were employing best practices to handle nanomaterials. He

decided to share what his Rice team had learned.

*Read more:*

<https://www.nanowerk.com/nanotechnology-news2/newsid=52913.php>

### Regulatory Research & Industrial Hygiene Professional News

#### Congress

### Cabin Air Safety Act: Lawmakers Introduce Legislation In House, Senate



Legislation introduced in both chambers of Congress is aimed at enhancing the safety of the air supply on commercial aircraft to protect crew and passengers. On April 10, Sen. Richard Blumenthal (D-CT) introduced the Cabin Air Safety Act of 2019

(S. 1112) in the Senate. Rep. John Garamendi (D-CA) introduced an identical bill (H.R. 2208) in the House.

*Read more:*

<https://www.safetyandhealthmagazine.com/articles/18367-cabin-air-safety-act-lawmakers-introduce-legislation-in-house-senate>

#### OSHA

### Final Rule to Revise Existing Provisions in OSHA Standards

OSHA issued a final rule to make 14 revisions to existing provisions in its recordkeeping, general industry, maritime, and construction standards. These revisions are part of OSHA's Standards Improvement

Project, which is intended to remove or revise outdated, duplicative, unnecessary, and inconsistent requirements in OSHA standards. According to the Federal Register notice, the agency is revising two

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standards to align with current medical practice: a reduction to the number of necessary employee X-rays and updates to requirements for pulmonary function testing.

*Read more:*

<https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/Final-Rule-to-Revise-Existing-Provisions-in-OSHA-Standards.aspx>

## NIOSH

### NIOSH Details New Tools for Chemical Risk Assessment, Management



Transitioning to Safer Chemicals:  
A Toolkit for Employers and  
Workers

AIHce EXP 2019 attendees filled a meeting room May 20 to learn about current NIOSH work projects on chemical risk assessments and management of those risks. The

several new documents and soon-to-be-released tools in areas of concern, areas such as Recommended Exposure Limits, IDLH values, nanotechnology, and occupational exposure banding.

*Read more:*

<https://ohsonline.com/articles/2019/05/20/niosh-details-new-tools-for-chemical-risk-assessment-management.aspx?admgarea=ht.PPE>

session did not disappoint -- presenter Paul A. Schulte, Ph.D., who heads the NIOSH division working on these projects, detailed

## EPA

### EPA Moves to Set Limit for Rocket Fuel Chemical in Water at Rate Scientists Say Is Unsafe

The Environmental Protection Agency on Thursday for the first time proposed an enforceable drinking water standard for a chemical found in rocket fuel, but the suggested limit is significantly higher than what the agency previously determined to be safe.



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It suggested a maximum contaminant level of 56 parts-per-billion for perchlorate, which would be the first legally-binding drinking water standard set by the EPA since 1996.

*Read more:*

<https://www.usnews.com/news/politics/articles/2019-05-24/trumps-epa-moves-to-set-limit-for-rocket-fuel-chemical-in-drinking-water-at-rate-scientists-say-is-unsafe>

**ATSDR**

## New Draft Toxicological Profile for Lead Published



A new draft toxicological profile for lead is now available for review and public comment from the Agency for Toxic Substances and

Disease Registry. According to ATSDR, the general population is primarily exposed to lead via the oral route, with some contribution from the inhalation route. The agency notes that inhalation exposures can be more important in occupational settings, depending on the particle size.

Occupational exposure to organic lead compounds may also involve dermal absorption as an exposure route. ATSDR's profile for lead does not attempt to separate health effects by route of exposure because "the primary systemic toxic effects of [lead] are the same regardless of the route of entry into the body."

*Read more:*

<https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/New-Draft-Toxicological-Profile-for-Lead-Published.aspx>

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**APHC**

## *Training*

### 2020 Training Schedule (traditional classroom events)

August 12-16, 2019 Army DOEHRS-IH Initial Course (4th Quarter)

December 9-13, 2019 Army DOEHRS-IH Initial Course (1st Quarter)

February 20-24, 2020 Army DOEHRS-IH Initial Course (2nd Quarter)

April 20-24, 2020 Blueprint Reading & Design Review

April 27-May 1, 2020 Industrial Ventilation Course

May 4-8, 2020 Healthcare & Laboratory Ventilation Course

May 18-22, 2020 Army DOEHRS-IH Initial Course (3rd Quarter)

August 17-21, 2020 Army DOEHRS-IH Initial Course (4th Quarter)

**RESERVE SEATING QUOTAS NOW**

Registration/Sign-up Rosters at  
<https://aiph-dohs.elic.learn.army.mil>



# Army Industrial Hygiene News and Regulatory Summary

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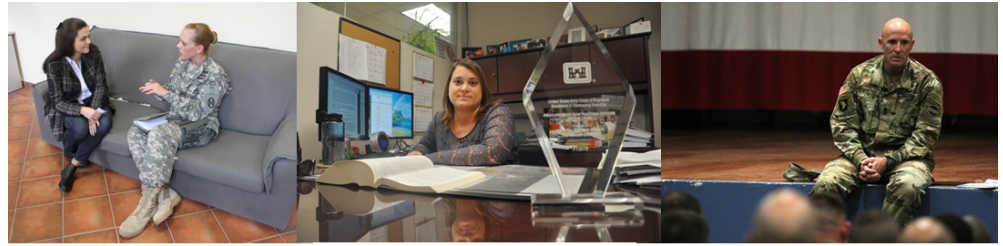
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## Professional Development and Career Programs

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.

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