April 2019,
Issue 91

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

Welding Fume Is A Group 1 Carcinogen With No OEL and No Method—Suggestions for a Path Forward

Special Interest Articles:

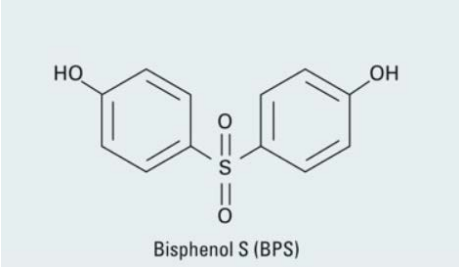
The International Association for Research on Cancer (IARC) has classified "welding fume" as Group 1 carcinogen[1] International Association for Research on Cancer, World Health Organization: Welding, Molybdenum Trioxide, and Indium Tin Oxide, Volume 118: 33. Lyon France (2018).[Google Scholar][1] with the lung as the target organ. While there are Occupational Exposure Limits (OELs) for some of the components of welding fume, there is no OEL for undifferentiated welding fume (aggregate welding fume without regard to individual constituents). It should be emphasized that this classification does not address the possible differences in carcinogenicity that may be exhibited by differing combinations of the metals and welding or thermal cutting processes involved. The situation is further complicated by new information that illuminates the role of iron in development of neuroplastic disease. In short, we do not yet know enough about the health effects of welding fume in its various component combinations or the health effects of iron to establish a single OEL or, alternatively, a

set of OELs for welding fumes. This commentary is meant to initiate professional discussions focusing on concerns regarding welding fume exposures. These include the role of iron in promoting neoplastic disease, potential synergistic, and/or additive health effects of the various components of common welding fumes and the development of welding fume OELs.

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

Contents:

Linking Bisphenol S to Adverse Outcome Pathways Using a Combined Text Mining and Systems Biology Approach



Bisphenol S (BPS)

Background:
Available toxicity data can be optimally interpreted if they are integrated using computational approaches such as systems biology modeling. Such approaches are particularly warranted in cases where regulatory decisions have to be made rapidly.

Objectives:
The study aims at developing and applying a new integrative computational strategy to identify associations between bisphenol S (BPS), a substitute for bisphenol A (BPA), and components of adverse outcome pathways (AOPs).

Methods:
The proposed approach combines a text mining (TM) procedure and integrative systems biology to comprehensively analyze the scientific literature to enrich AOPs related to environmental stressors. First, to identify relevant associations between BPS and different AOP components, a list of abstracts was screened using the developed text-mining tool AOP-helpFinder, which calculates scores based on the graph theory to prioritize the findings. Then, to fill gaps between BPS, biological events, and adverse outcomes (AOs), a systems biology approach was used to integrate information from the AOP-Wiki and ToxCast databases, followed by manual curation of the relevant publications.

Read more:
https://ehp.niehs.nih.gov/doi/full/10.1289/EHP4200

The Composition of Emissions from Sawing Corian®, a Solid Surface Composite Material

We conducted detailed analyses of the composition of emissions from sawing Corian®, a solid surface composite material, in a laboratory testing system. The analyses included the aluminum content of size-selective dust samples, semivolatile organic compounds (SVOCs) in respirable dust samples, and volatile organic compounds (VOCs). The normalized respirable dust generation rate found using a Micro-Orifice Uniform Deposit Impactor was 5.9 milligrams per gram (mg g^{-1}) suggesting that 0.59% of the mass removed from sawing Corian® becomes respirable dust. The alumina trihydrate content of the dust was consistently above 85% in most parts of the respirable size range, verifying an earlier finding that it is the dominant composition of the airborne particles of all sizes, including ultrafine particles. VOC analyses revealed that methyl methacrylate

(MMA) was the most abundant compound, with a generation rate of 6.9 mg g^{-1} (0.69% of the mass removed from sawing Corian® became MMA vapor). The SVOC analysis only found a small amount of MMA (0.55%) in the bulk dust.

Read more:
https://academic.oup.com/annweh/article/63/4/480/5372987

Workplace Exposure to Particulate Matter, Bio-Accessible, and Non-Soluble Metal Compounds During Hot Work Processes

While exposure to air contaminants from metal arc welding at workplaces has been intensively investigated over the last five decades, other hot work processes, such as flame and plasma cutting, air carbon arc gouging, and surface grinding have not received as much attention. Exposures to particulate matter (PM) during selected hot work processes, such as metal active gas (MAG) and manual metal arc (MMA) welding, flame and plasma cutting, air carbon arc gouging, and surface grinding were measured. Respirable, inhalable, and "total" fractions of the PM were collected with different air samplers in the workers' breathing zone. Concentrations of PM, chromium (Cr), iron (Fe), manganese (Mn), molybdenum (Mo),

nickel (Ni), copper (Cu), and lead (Pb) were determined in the samples by using gravimetric analysis and plasma-based analytical atomic spectrometry techniques. Bio-accessibility of the elements was investigated by using a synthetic lung lining fluid (Hatch´s solution) for the leaching of soluble metal compounds in the collected samples. Short term (15–75 min) workplace air concentrations of PM, Cr, Fe, Mn, Ni and Cu in the workers´ breathing zone during hot work processes were found to be high compared to the current 8-hr time-weighted average (TWA) exposure limit values (ELVs) in use in many countries. The short-term median concentrations of PM during the different hot work processes varied between 6.0 and 88.7 mg m−3 and between 15.1 and 193 mg m−3 in the respirable and inhalable fractions, respectively. The highest median concentration of Fe (107 mg m−3) and Mn (28.7 mg m−3) was found in the inhalable fraction during plasma cutting and air carbon arc gouging, respectively. More than 40% of the inhalable PM generated during flame and plasma cutting, air carbon arc gouging and surface grinding was present in the respirable fraction. There was large variation in the bio-accessibility of the elements in PM collected during the different hot work processes.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 15 Apr 2019 (Available with AIHA membership)

Safety Data Sheets For Bulk Liquid Flavorings May Be Incomplete, Study Shows

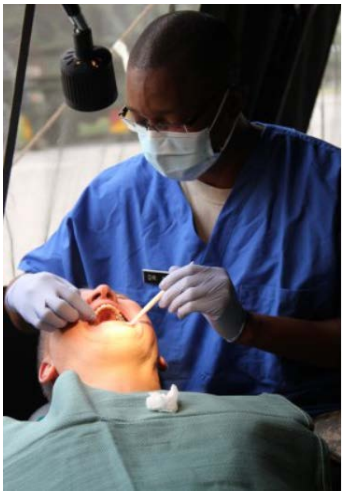
Two potentially hazardous chemicals are missing from the Safety Data Sheets for bulk liquid flavorings, findings from a recent NIOSH Respiratory Health Division study show.

Researchers analyzed samples of 26 liquid flavorings from a pair of U.S. coffee roasting and packing facilities, looking for any of 20 volatile organic chemicals. Those found in the flavorings then were compared with the ingredient list on the SDSs.None of the SDSs listed diacetyl despite its presence in 21 of the 26 samples. Another chemical, 2,3-pentanedione, was present in 15 of the samples but not listed on their SDSs.

The chemicals are considered safe for ingestion but can cause respiratory problems in workers. Previous research has linked diacetyl to obliterative bronchiolitis, a “debilitating lung disease.”

Read more:
https://www.safetyandhealthmagazine.com/articles/18252-safety-data-sheets-for-bulk-liquid-flavorings-may-be-incomplete-study-shows

Nitrous Oxide Exposure among Dental Personnel and Comparison of Active and Passive Sampling Techniques



This study measured dental personnel's exposure to nitrous oxide during dental procedures to compare exposures to occupational exposure limits, exposures between similar exposure groups, and results between passive and active sampling methods. Forty-one paired samples were collected using the Thermo Scientific™ Miran SapphIRe portable analyzer and the Advanced Chemical Sensor™ N-10 Passive Badge. Results were compared to the American Conference of Governmental Industrial Hygienists nitrous oxide 250 parts per million by volume (p.p.m.v) excursion limit and 50 p.p.m.v 8-h threshold limit values. Similar exposure groups were determined by job title for dentists and dental assistants across six dental clinics.

Read more:
https://academic.oup.com/annweh/article/63/3/337/5373585

Targeted GC-MS Analysis of Firefighters' Exhaled Breath: Exploring Biomarker Response at the Individual Level

Biomarker measurements can provide unambiguous evidence of environmental exposures as well as the resultant biological responses. Firefighters have a high rate of occupational cancer incidence, which has been proposed to be linked in part to their increased environmental exposure to byproducts of combustion and contaminants produced during fire responses. In this article, the uptake and elimination of targeted volatile organic

compounds were investigated by collecting the exhaled breath of firefighters on sorbent tubes before and after controlled structure burns and analyzing samples using automated thermal desorption-gas chromatography (ATD-GC/MS). Volatile organic compounds exposure was assessed by grouping the data according to firefighting job positions as well as visualizing the data at the level of the individual firefighter to determine which individuals had expected exposure responses. When data were assessed at the group level, benzene concentrations were found to be elevated post-exposure in both fire attack, victim search, and outside ventilation firefighting positions. However, the results of the data analysis at the individual level indicate that certain firefighters may be more susceptible to post-exposure volatile organic compounds increases than others, and this should be considered when assessing the effectiveness of firefighting protective gear. Although this work focuses on firefighting activity, the results can be translated to potential human health and ecological effects from building and forest fires.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 03 Apr 2019 (Available with AIHA membership)

Radiation

OSHA Launches Webpage on Radiation Emergency Preparedness and Response

OSHA has created a webpage intended to educate workers about how to protect themselves in radiation-related situations ranging from a small, isolated spill in a laboratory to a potentially catastrophic release at a nuclear facility.

The Radiation Emergency Preparedness and Response webpage provides resources on health and safety planning, medical monitoring and dosimetry, and other relevant topics for workers "who may be impacted by radiation emergencies" or "who may be involved in emergency response operations or related activities."

Read more: https://www.safetyandhealthmagazine.com/articles/18271-osha-launches-webpage-on-radiation-emergency-preparedness-and-response

Ventilation

Control of Dust Dispersion from an Enclosed Renovation Site into Adjacent Areas by Using Local Exhaust Ventilation

In real-world applications, implementation of an enclosure and negative pressurization is not always adequate to prevent the dispersion of dust from renovation sites. This study aimed to quantify the effect of local exhaust ventilation (LEV) in controlling the dust concentration within an enclosed renovation site to reduce the dust dispersion into adjacent areas.

Methods
The concentrations of inhalable and respirable dust were measured in 16 cases during renovation projects. Filter samples and time-resolved dust concentration data were collected simultaneously from the renovation site and adjacent areas to assess

the efficacy of LEV in limiting the dust dispersion.

Read more:
https://academic.oup.com/annweh/article-abstract/63/4/468/5382076?redirectedFrom=fulltext

Effect of Hollow Bit Local Exhaust Ventilation on Respirable Quartz Dust Concentrations during Concrete Drilling

Drilling large holes (e.g., 10–20 mm diameter) into concrete for structural upgrades to buildings, highways, bridges, and airport runways can produce concentrations of respirable silica dust well above the ACGIH® Threshold Limit Value (TLV® = 0.025 mg/m3). The aim of this study was to evaluate a new method of local exhaust ventilation, hollow bit dust extraction, and compare it to a standard

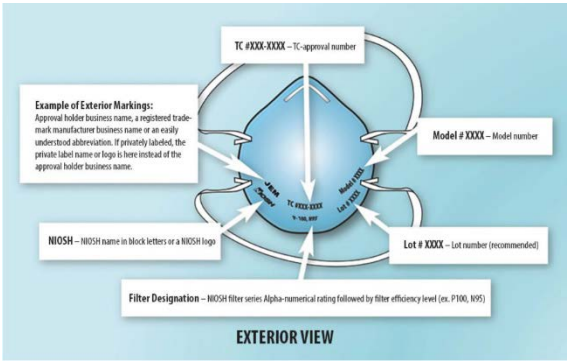
shroud local exhaust ventilation and to no local exhaust ventilation. A test bench system was used to drill 19 mm diameter x 100 mm depth holes every minute for one hour under three test conditions: no local exhaust ventilation, shroud local exhaust ventilation, and hollow bit local exhaust ventilation. There were two trials for each condition. Respirable dust sampling equipment was placed on a "sampling" mannequin fixed behind the drill and analysis followed ISO and NIOSH methods. Without local exhaust ventilation, mean respirable dust concentration was 3.32 (± 0.65) mg/m3 with a quartz concentration of 16.8% by weight and respirable quartz dust concentration was 0.55 (± 0.05) mg/m3; 22 times the ACGIH TLV. For both LEV conditions, respirable dust concentrations were below the limits of detection. Applying the 16.8% quartz value, respirable quartz concentrations for both local exhaust ventilation conditions were below 0.007 mg/m3. There was no difference in respirable quartz dust concentrations between the hollow bit and the shroud local exhaust ventilation systems; both were below the limits of detection and well below the ACGIH TLV. Contractors should consider using either local exhaust ventilation method for controlling respirable silica dust while drilling into concrete.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 23 Apr 2019 (Available with AIHA membership)

PPE

Breakthrough Analysis for Filtering Facepiece Respirators Impregnated with Activated Carbon

Several manufacturers are producing disposable dual-use dust masks that are primarily designed to protect against airborne particulate exposures but that also contain a layer of activated carbon to provide protection against organic vapors (OVs) at levels below permissible exposure levels, referred to as "nuisance level" by the FFR manufacturers. Industries identified in the literature as commonly having employees exposed to nuisance-level OVs



include beautician salons, dry cleaning operations, and pesticide applications. This study investigated the adsorption capabilities of three different dual-use dust masks that contain both filter media to remove particles and activated carbon to capture OVs. The three dual-use dust masks were tested and compared relative to the 50% breakthrough time for two OVs (acetone and perchloroethylene) and one non-carbon-based contaminant gas (ammonia) often found in agricultural settings at nuisance-level amounts. The dual-use dust masks were exposed to 15 ppm and 50 ppm for all 3 compounds, which represented the range of nuisance-level exposure documented in literature. Most tests were conducted at 21 °C and 50% relative humidity. A relative humidity level of 95% was also created to compare results under that condition. The non-approved dual-use dust masks were ineffective for all vapors and offered less than 10 min of protection before 50% breakthrough occurred. All dual-use dust masks performed poorly when exposed to ammonia, with breakthrough time less than 7 min at 50 ppm and 10 min at 15 ppm. The approved dual-use dust mask had 50% breakthrough times, for example, of 121 min and 233 min for acetone at 15 ppm and 50 ppm, respectively. The less volatile perchloroethylene took over 400 min to achieve 50% breakthrough at 50 ppm. High relative humidity reduced breakthrough times by up to 70%. These results indicate high variability in performance among dual-use dust masks. Performance is also dependent on gas/vapor volatility and levels of water vapor. However, one model tested, the 3M model 8514, did show promise as an acceptable method for greatly reducing nuisance-level OV exposures.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 23 Apr 2019 (Available with AIHA membership)

ISEA Cautions Firefighters against Use of MAE-Requalified SCBA Cylinders

Firefighters should not use self-contained breathing apparatus cylinders requalified for service through the modal acoustic emissions process because the process may cause the apparatus to leak air and voids the equipment's manufacturer warranties, the International Safety Equipment Association warns.

In an April 8 press release, ISEA explains that the MAE process assesses the carbon fiber wrap of a cylinder but not its aluminum liner, which – if used past the cylinder's designed 15-year service life –

could fail "by fatigue or corrosion pitting," leaking air.

Read more:
https://www.safetyandhealthmagazine.com/articles/18353-isea-cautions-firefighters-against-use-of-mae-requalified-scbas

Noise

Noise Characterization of "Effective Quiet" Areas on a U.S. Navy Aircraft Carrier

The purpose of this investigation was to characterize noise levels in spaces designated as "effective quiet" areas on a U.S. Navy aircraft carrier. Noise dosimetry samples were collected in 15 designated spaces, representing 15 noise measurements, while at-sea during airwing carrier qualifications. Equivalent sound level (L_{eq}) measurements were collected during flight operations ($L_{eq\ (flt\ ops)}$), non-flight operations ($L_{eq\ (non\text{-}flt\ ops)}$), and over 24-hr periods ($L_{eq\ (24\text{-}hr)}$). These data were compared to the 70 dBA American Conference of Governmental Industrial Hygienists (ACGIH®) Threshold Limit Value (TLV®) for "effective quiet" areas intended for temporary threshold shift recovery when personnel live and work in a potentially noise hazardous environment for periods greater than 24 hr. The monitored areas were selected based on personnel occupancy/use during off-duty time periods. Areas were classified by either (1) leisure areas that included mess (eating areas), gyms, lounges, an internet cafe, and the fantail social area or (2) berthing (sleeping) areas. The L_{eq} measurements in decibels "A" weighted (dBA) were

compared to determine significant differences between $L_{eq\ (flt\ ops)}$, $L_{eq\ (non\text{-}flt\ ops)}$, and $L_{eq\ (24\text{-}hr)}$ and were compared between leisure area and berthing area. Measured noise levels according to time period ranged as follows: (1) $L_{eq\ (24\text{-}hr)}$: 70.8–105.4 dBA; (2) $L_{eq\ (flt\ ops)}$: 70–101.2 dBA; and (3) $L_{eq\ (non\text{-}flt\ ops)}$: 39.4–104.6 dBA. All area measurements over the 24-hr period and during flight operations and 46.7% of the areas during the non-flight operation time period exceeded the "effective quiet" 70 dBA ACGIH TLV. Mean L_{eqs} were 15 dBA higher during flight operations compared to non-flight operations in "effective quiet" areas ($p = 0.001$). The L_{eqs} in leisure areas were significantly higher than berthing areas by approximately 21 dBA during non-flight

operation periods (p = 0.001). Results suggest noise levels in “effective quiet” areas frequented by aircraft carrier personnel during off-duty hours when at-sea may inhibit auditory recovery from occupational noise exposures that occur on-duty.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 03 Apr 2019 (Available with AIHA membership)

Gen Z Says They Are Most Productive When Working Around Noise; Baby Boomers Say "SHHHH!" They Need Quiet to Get Work Done

More than half of Gen Z (55 percent) and Millennials (56 percent) say they want open offices, despite the associated distractions, according to a new study from Future Workplace commissioned by unified communications company Plantronics, Inc. ("Poly" – formerly Plantronics and Polycom) (NYSE: PLT). The findings highlight how the four generations at work today think about their workplace environments, including what drives productivity, how they function in the office and how they handle distraction.

Read more:
https://www.prnewswire.com/news-releases/gen-z-says-they-are-most-productive-when-working-around-noise-baby-boomers-say-shhhh-they-need-quiet-to-get-work-done-300848446.html

Preventive Medicine

Reduction of Contamination with Antibiotics on Surfaces and in Environmental Air in Three European Hospitals Following Implementation of a Closed-System Drug Transfer Device

Purpose
Occupational exposure of nurses to antibiotics may result in adverse health effects such as hypersensitivity, allergic reactions, resistance, and anaphylactic shock. The purpose of this study was to measure surface and air contamination with antibiotics in three hospitals during the preparation of the drugs using conventional techniques or using the Tevadaptor® closed-system drug transfer device (CSTD).

CSTD bag or infusion adapter attached to an IV bag.

Methods
Surface contamination was measured by taking wipe samples. Stationary air samples were collected in preparation areas and personal air samples were collected in the working environment of the nurses. Contamination was reassessed after several weeks following implementation of the CSTD. Surface contamination was compared before and after CSTD introduction. Vancomycin, meronem, augmentin, ceftriaxone, cefotaxime, piperacillin, and benzylpenicillin were monitored. Wipe and air samples were analyzed using liquid chromatographytandem mass spectrometry (LC-MS/MS).

Read more:
https://academic.oup.com/annweh/article-abstract/63/4/459/5372977?redirectedFrom=fulltext

Resistant Microbes Commonly Found On Hospital Privacy Curtains

A new study by researchers from the University of Michigan Medical Center has found that contamination of patient privacy curtains by multidrug-resistant organisms (MDROs) is common, and that the high-

touch surfaces could be a source of MDRO transmission to patients.

The study will be presented at the upcoming meeting of the European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) in Amsterdam.

The study's lead author said the findings, which revealed that more than one in five cultures taken from patient privacy curtains at skilled nursing facilities (SNFs) was contaminated with MDROs, are a concern because of how often these surfaces are touched by patients and healthcare workers, how ubiquitous they are in healthcare facilities, and how infrequently they are cleaned.

Read more:
http://www.cidrap.umn.edu/news-perspective/2019/04/resistant-microbes-commonly-found-hospital-privacy-curtains

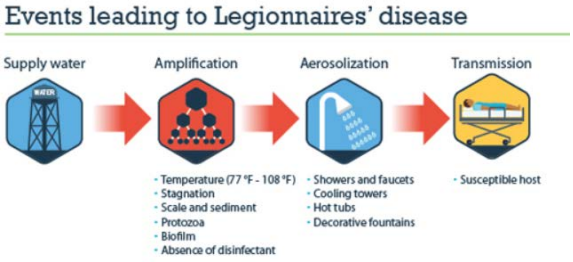
Microbial Contaminants Found In Popular E-Cigarettes

Popular electronic cigarette (e-cigarette) products sold in the U.S. were contaminated with bacterial and fungal toxins, according to new research from Harvard T.H. Chan School of Public Health. The study, which examined 75 popular e-cigarette products--cartridges (single use) and e-liquids (refillable material)--found that 27% contained traces of endotoxin, a microbial agent found on Gram-negative bacteria, and that 81% contained traces of glucan, which is found in the cell walls of most fungi. Exposure to these microbial toxins has been associated with myriad health problems in humans, including

asthma, reduced lung function, and inflammation.

Read more:
https://www.eurekalert.org/pub_releases/2019-04/htcs-mcf042219.php

Groundbreaking Legionella Prevention Model Reported



A groundbreaking hazard analysis formula showcased in the April 2019 issue of The Synergist, the magazine of the American Industrial Hygiene Association, is expected to significantly aid users in preventing Legionella growth in buildings' water systems. Designed by J. David Krause, Ph.D., MSPH, CIH, vice chair of AIHA's Indoor Air Quality Committee and a nationally known expert in toxicology, public health and risk assessment, the tool evaluates the combined effectiveness of control measures used to prevent Legionella and other waterborne pathogens.

Recommendations to prevent Legionella growth in buildings' water systems involve periodically measuring water temperatures, disinfectant or chlorine levels and other parameters. But the amount of data that water management programs generate can be overwhelming, and few tools are available to analyze the numerous variables used to assess these water systems.

Read more: https://www.aiha.org//about-aiha/Press/2019PressRelease/Pages/Groundbreaking-Legionella-Prevention-Model-Reported.aspx

CDC Offers New Resource for Tick Season

Tick season is here and that means it's time once again for people to protect themselves and their loved ones (including pets) from tick bites. CDC has an updated digital press kit available for journalists with the latest information about the increasing number of reported tickborne illnesses, newly discovered disease-causing germs, expanding ranges of ticks, and a novel tick species recently found in the US.

Last year, nearly 60,000 cases of tickborne disease were reported to CDC by state health departments and the District of

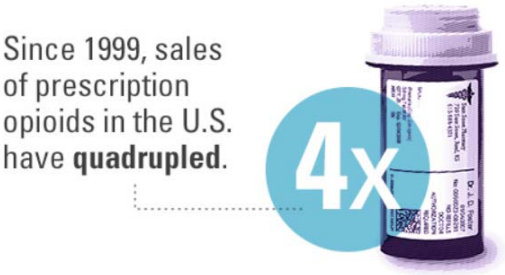
Columbia. Though we can't predict how bad any particular season will be, we know that reducing exposure to ticks is the best defense against Lyme disease, Rocky

Mountain spotted fever, and other tickborne infections.

Read more: https://www.cdc.gov/media/releases/2019/s0422-new-tick-resource.html

Environmental Health

As More Opioids Go Down the Drain, Scientists Are Tracking Them in the Environment



Those hardest hit by the opioid epidemic are the people who become addicted—and the family members and friends who deal with the fallout. In 2017, opioids contributed to about 47,600 deaths by overdose in the US, according to the Centers for Disease Control and Prevention (CDC). And that year, 23 states saw significant increases in opioid-related deaths over the previous year.

But some researchers worry that another, lesser casualty of this epidemic could be the environment. As opioid use continues to proliferate, the drugs enter more people's bodies, where they break down into metabolites—often other opioids—that end up in wastewater. Scientists have detected opioids downstream of wastewater treatment plants and are concerned about the potent drugs' possible effects on organisms who live in those waters.

Read more: https://cen.acs.org/environment/water/opioids-down-drain-scientists-tracking/97/i16

Long-Term Ozone Exposures and Cause-Specific Mortality in a US Medicare Cohort

We examined the association of long-term, daily 1-h maximum O_3 (ozone) exposures on cause-specific mortality for 22.2 million US Medicare beneficiaries between 2000–2008. We modeled the association between O_3 and mortality using age-gender-race

stratified log-linear regression models, adjusted for state of residence. We examined confounding by (1) adjusting for $PM_{2.5}$ (particles with aerodynamic diameters <2.5 µm) and NO_2 (nitrogen dioxide) exposures, temperature, and neighborhood-level characteristics and behaviors, and (2) decomposing O_3 into its temporal and spatio-temporal components and comparing estimated risk ratios. We also examined sensitivity of our results to alternate exposure measures based on warm-season 8-h daily maximum and 24-h average exposures. We found increased risks from long-term O_3 exposures to be strongest and most consistent for mortality from respiratory disease (1.030, 95% CI: 1.027, 1.034) (including COPD (chronic obstructive pulmonary disease)), CHF (congestive heart failure), and lung cancer (1.015, 95% CI: 1.010, 1.020), with no evidence of confounding by $PM_{2.5}$, NO_2, and temperature and with results similar across O_3 exposure measures. While significant, associations between long-term O_3 exposures and CVD (cardiovascular)-related mortality (1.005, 95% CI: 1.003, 1.007) were confounded by $PM_{2.5}$ and varied with the exposure measure, with associations no longer significantly positive when warm-season 8-h maximum or 24-h average O_3 was used to assess exposures. In this large study, we provide strong evidence that O_3 exposure is associated with mortality from respiratory-related causes and for the first-time, lung cancer, but raise questions regarding O_3-related impacts on CVD mortality. Our findings demonstrate the need to further identify potential confounders.

Read more:
https://www.nature.com/articles/s41370-019-0135-4

Persistence of Indoor Permethrin and Estimation of Dermal and Non-Dietary Exposure

The cocktail of man-made chemicals that we are exposed to daily is a health risk which current regulations and risk assessment overlook. This is the conclusion of the EU Horizon 2020 EDC-MixRisk project that is now being presented.

We are exposed to a large number of man-made chemicals in our everyday life. This creates combinations of chemical mixtures, to which we are subjected during our whole lifespan. Current risk assessment and management practices, however, focus mainly on exposure to single substances. Exposure to hazardous substances, especially endocrine disrupting chemicals

(EDCs), during the foetal period is of particular concern, as it can lead to irreversible changes in the development of organs and tissues and increased susceptibility to diseases later in life.

Read more:
https://www.nature.com/articles/s41370-019-0132-7

Majority of Us States Have Contaminated Drinking Water

At least 610 drinking water sources in 43 states contain possibly unsafe levels of potentially harmful chemicals linked to birth defects, cancers, infertility, and reduced immune responses in children, according to a collaborative analysis conducted by the Environmental Working Group and Northeastern University.

Altogether, more than 19 million Americans may be exposed to man-made chemicals dangerous to human health.

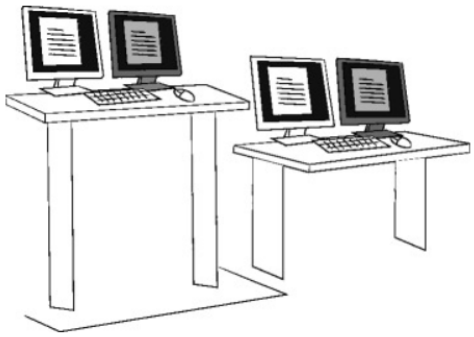
The interactive map uses data released last year by the Pentagon and, in combination with public water utility reports, evaluates drinking water sources around the nation to document toxic fluorinated compounds called per-and polyfluoroalkyl substances, or PFAS, at known pollution sites across the US. These include public water systems, military bases, and airports.

Read more:
https://www.iflscience.com/environment/majority-of-us-states-have-contaminated-drinking-water/

Ergonomics

Consistency of Sedentary Behavior Patterns among Office Workers with Long-Term Access to Sit-Stand Workstations

Sit-stand workstations are a popular intervention to reduce sedentary behavior (SB) in office settings. However, the extent and distribution of SB in office workers long-term accustomed to using sit-stand workstations as a natural part of their work environment are largely unknown. In the present study, we aimed to describe patterns of SB in office workers with long-term access to sit-stand workstations and to



determine the extent to which these patterns vary between days and workers.

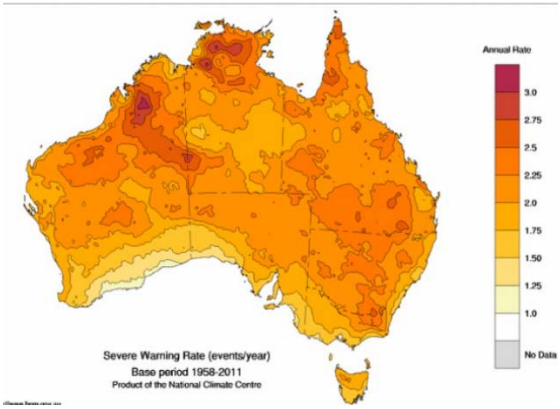
Read more:
https://academic.oup.com/annweh/advance-article-abstract/doi/10.1093/annweh/wxz022/5476055?redirectedFrom=fulltext

Safety

Characterizing the Impact of Heatwaves on Work-Related Injuries and Illnesses in Three Australian Cities Using a Standard Heatwave Definition- Excess Heat Factor (EHF)

Background and Aims:
Heatwaves have potential health and safety implications for many workers, and heatwaves are predicted to increase in frequency and intensity with climate change. There is currently a lack of comparative evidence for the effects of heatwaves on workers' health and safety in different climates (sub-tropical and temperate). This study examined the relationship between heatwave severity (as defined by the Excess Heat Factor) and workers' compensation claims, to define impacts and identify workers at higher risk.

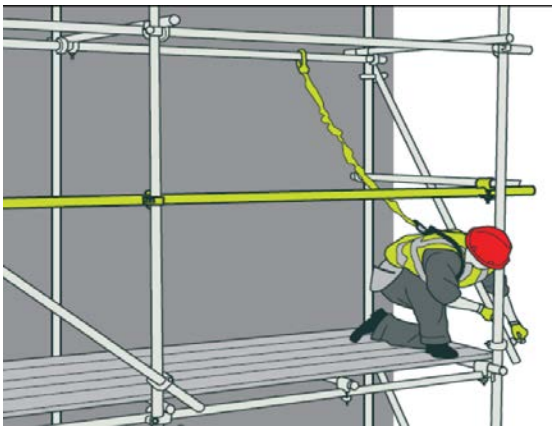
Methods:
Workers' compensation claims data from Australian cities with temperate (Melbourne and Perth) and subtropical (Brisbane) climates for the years 2006–2016



were analysed in relation to heatwave severity categories (low and moderate/high severity) using time-stratified case-crossover models.

Read more:
https://www.nature.com/articles/s41370-019-0138-1

Guidelines for Scaffolding Safety



You see it everywhere. From small, three-story buildings to massive high-rises, scaffolding is used for a wide variety of construction, inspection, maintenance and repair projects. According to OSHA, 65 percent of the construction industry, an estimated 2.3 million construction workers, work on scaffolding frequently.
Incidents involving scaffolding account for 4,500 workplace injuries and 50 deaths per year. In addition, scaffolding is consistently among the top 10 most frequently cited OSHA standards violations.

Read more: https://www.assp.org/news-and-articles/2019/04/18/guidelines-for-scaffolding-safety

Growth of Most Safety Inspection Jobs Likely to Exceed National Average, BLS Reports

Most safety inspection jobs are expected to outpace projected overall national employment growth over the next several years, a Bureau of Labor Statistics report indicates.

The report states that, between 2016 and 2026, the U.S. workforce is likely to grow by 7.4%, to nearly 167.6 million workers from around 156.1 million. Occupational health and safety technicians (10.1%), construction and building inspectors (10%), health and safety engineers (8.6%), and occupational safety and health specialists (8.1%) are predicted to experience higher-than-average growth.

Read more: https://www.safetyandhealthmagazine.com/articles/18292-growth-of-most-safety-inspection-jobs-likely-to-exceed-national-average-bls-reports

Trenching Safety: OSHA Publishes Video on Soil Classification

OSHA recently released a video highlighting the importance of soil classification when planning trenching and excavation work.

The free, 11-minute video examines how visual inspection of soil is performed by a competent person before work begins, as required by OSHA. Testing the soil helps employers determine its stability, which dictates the proper protective system to use on a jobsite.

The OSHA standard for trenching and excavation (29 CFR 1926.650, Subpart P) requires protective systems for trenches that are 5 feet or deeper, unless the excavation occurs in stable rock.

Soil may be classified as Type A, B or C, listed in descending order of stability. Trenches can be cut through multiple types of soil, the agency points out.

Read more: https://www.safetyandhealthmagazine.com/articles/18240-trenching-safety-osha-publishes-video-on-soil-classification

Preventing Falls in Construction: NIOSH Issues Fact Sheet

NIOSH has published a new fact sheet intended to help construction employers and workers prevent falls from roofs, ladders and scaffolds.

According to data from the Bureau of Labor Statistics, falls are the leading cause of death among construction workers, who average more than 310 fatal falls and 10,350 serious fall-related injuries a year. Additionally, the majority of fatal falls from

scaffolds (86%), roofs (81%) and ladders (57%) occur in construction.
The fact sheet, which stresses the importance of training and regular ladder and scaffold maintenance, offers several recommendations for avoiding falls:

Read more:
https://www.safetyandhealthmagazine.com/articles/18329-preventing-falls-in-construction-niosh-issues-fact-sheet

Emergency Preparedness

NFPA to Consolidate Emergency Responder Standards

The National Fire Protection Association Standards Council has approved a plan to consolidate and merge the information currently available in 114 NFPA Emergency Response and Responder Safety standards, guides, and recommended practices into 38 overarching standards

Read more:
https://ohsonline.com/articles/2019/04/24/nfpa-to-consolidate-emergency-responder-standards.aspx

Deployment Health

DARPA Is Turning Soldiers' Skin into a Mosquito Repellent

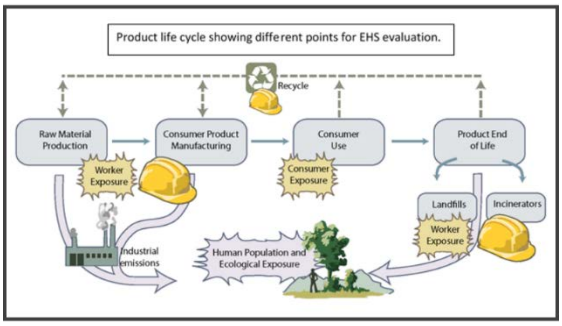
On Friday the Defense Advanced Research Projects Agency (DARPA) announced its ReVector program, which aims to diminish the olfactory attraction mosquitoes have to human skin — or even actively repel mosquitoes — "by engineering the skin microbiome to temporarily alter chemical production," according to a statement.

Read more:
https://sociable.co/technology/darpa-turning-soldier-skin-mosquito-repellent/

Nanotechnology

ISO Technical Report Helps Assess Nanomaterials' Environmental Impacts

The American National Standards Institute, administrator of the U.S. Technical Advisory Group for International Standards Organization Technical Committee 229, has announced the publication of a new ISO Technical Report that can help in assessing the environmental impact of nanomaterials. The 26-page document, **ISO TR 21386, Nanotechnologies—Considerations for the measurement of nano-objects and their aggregates and agglomerates (NOAA) in environmental matrices**, can be used by industry and academic institutions and by regulators focused on environmental stewardship.



Read more:
https://ohsonline.com/articles/2019/03/27/iso-technical-report-helps-assess-nanomaterials.aspx?admgarea=ht.IndustrialHygiene

Regulatory Research & Industrial Hygiene Professional News

FDA

US FDA Finalizes Hand Sanitizer Rule

Manufacturers can no longer use 28 active ingredients, including triclosan and benzethonium chloride, in over-the-counter hand sanitizers sold in the US, under a rule finalized by the US Food and Drug Administration on April 11. Millions of

consumers rely on hand sanitizers to reduce bacteria on their hands when soap and water are not available.

The FDA stopped short, however, of banning the use of three active ingredients—benzalkonium chloride, ethyl alcohol, and isopropyl alcohol—in hand sanitizer products. Instead, the agency will continue to seek additional safety and effectiveness data for those three chemicals to determine whether they are generally recognized as safe and effective for use in consumer hand sanitizers.

Read more:
https://cen.acs.org/safety/consumer-safety/US-FDA-finalizes-hand-sanitizer/97/i16

OSHA

CAL/OSHA Proposes Emergency Regulation on Smoke-Protection after Destructive Wildfire Season

In the wake of the most destructive wildfire season in California history, California's Department of Industrial Relations, Division of Occupational Safety and Health ("DOSH"), has issued a proposed emergency regulation intended to protect workers from wildfire smoke. On April 15th, 2019, DOSH released the proposed regulation and scheduled a hearing to discuss the regulation for May 8th, 2019 in Oakland.

Read more:
https://www.natlawreview.com/article/calosha-proposes-emergency-regulation-smoke-protection-after-destructive-wildfire

NIOSH

Boom Lift Scenario Now Part of NIOSH Simulation Tool

NIOSH has added a boom lift scenario to its Aerial Lift Hazard Recognition Simulator, the agency announced April 8 via Twitter.

The training tool, which also includes a scissor lift operation simulation, provides realistic workplace scenarios "to help potential aerial lift operators acclimate to aerial lift operation and to identify the common occupational hazards during use."

Read more:
https://www.safetyandhealthmagazine.com/articles/18283-boom-lift-scenario-now-part-of-niosh-simulation-tool

EPA

US EPA Restricts Some Asbestos Products

The use of asbestos-containing products that are discontinued in the US, such as building materials reinforced with the mineral, will be more difficult under a new Environmental Protection Agency rule.

The action, announced April 17, does not affect ongoing uses of the carcinogenic material, including asbestos diaphragms installed and periodically replaced in some US chlor-alkali manufacturing plants. The rule also falls far short of health and

environmental activists' call for the EPA to ban all asbestos products.

Read more:
https://cen.acs.org/policy/regulation/US-EPA-restricts-asbestos-products/97/i16

DOT

Opioids Vs. Opiates: DOT Final Rule Makes Technical Corrections To Drug Testing Regs

The Department of Transportation has issued a final rule, effective immediately, that makes minor technical corrections to regulations governing drug tests for workers in safety-sensitive jobs.

The final rule, published in the April 23 Federal Register, is intended to ensure consistency with recent amendments made

to DOT's "Procedures for Transportation Workplace Drug and Alcohol Testing Programs" regulation. The changes added requirements to test for oxycodone, oxymorphone, hydrocodone and hydromorphone. These substances, along with the previously covered drugs morphine, 6-acetylmorphine and codeine, will now be referred to as "opioids" rather than "opiates."

Read more:
https://www.safetyandhealthmagazine.com/articles/18365-opioid-vs-opiate-dot-final-rule-makes-technical-corrections-to-drug-testing-regs

APHC

Training

2019 Update Brief Mold-Related Issues in Army Housing (1.5hrs)

AVAILABLE ONILINE at https://aiph-dohs.ellc.learn.army.mil

This course is designed for interested parties and stakeholders.

The course is self enrollment and self paced. The course provides a certificate of completion solely based upon participation. There are no quiz questions or exams.

Subject matter experts from OTSG and Army Public Health Center present this 2019 Update Brief Mold-Related Issues in Army Housing. Discussion includes the Army policy on mold assessment, prevention, and remediation; and sampling protocols. Current policy remains firm that mold sampling is not recommended, except with a specific medical requirement.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Army Public Health Center
Steven Mansell
2016 PHC 8 Hour Hazwoper Refresher Course
APHC

Army Field Operations Manual Webinar (DOERHS-IH Army Business Practice)

Episode #1 Introduction

AVAILABLE ONILINE at https://aiph-dohs.ellc.learn.army.mil

The Army FOM is being developed to provide IH staff with guidelines for DOERHS-IH data entry using the Army business practices.

- The FOM follows the DoD Exposure Assessment Model
- Ensures Army IH Program offices are credited for work they do Documents Army Business Practices Creates Standardization across
- Enterprise Improves data integrity Improves IH metrics and performance Supports APHC Strategic Planning Guidance
- FOM is a Level V mission service Collaboration with RHC IH consultants Creates culture of quality to solve Army Public Health problems Provides continued process improvement
- Capitalizes on untapped talent across the Enterprise

Each webinar provides an FOM update, FOM drafts, and recorded webinars.

All information is located in the “Army IH Webinar” course shell in Blackboard. https://AIPH-DOHS.ellc.lelarn.army.mil

FOM Drafts are also available at https://www.milsuite.mil/book/groups/ih-fom-milsuite-page

Industrial Work Environments: Welding Processes (2hrs)

NOW AVAILABLE ONILINE at https://aiph-dohs.ellc.learn.army.mil

This course is self enrollment and self paced. The lecture has embedded multiple attempt knowledge checks. Passing score is 70%.

The purpose of this course is to provide a basic awareness of the different welding processes Occupational Health and Safety Professionals might encounter when inspecting/surveying worksites. Lessons provide explanations of basic welding terms, descriptions of different welding and cutting processes, a summary of hazards, illustrations of control measures, lists of applicable OSHA and other standards, and descriptions of sampling methods.

Terminal Learning Objectives:
TLO1. Demonstrate knowledge of how to use the DoD 8-Step Exposure Assessment Model to evaluate work-place environments for potential occupational health hazards. Stressors include but are not limited to confined space entry, spray painting, firing ranges, medical treatment facilities, welding, metal-working, foundries and general indoor environmental issues.
TLO2. Demonstrate knowledge of stressors to include but are not limited to confined space entry, spray painting, firing ranges, medical treatment facilities, welding, metal-working, foundries and general indoor environmental issues.

After completing this training, the student will be able to:
1. Demonstrate knowledge of stressors by recognizing common types of welding processes and equipment.

2. Demonstrate knowledge of stressors by recognizing hazards associated with welding processes.

3. Demonstrate knowledge of how to use the DoD 8-Step Exposure Assessment Model Basic Characterization Step by recognizing commonly found controls.

4. Demonstrate knowledge of how to use the DoD 8-Step Exposure Assessment Model Basic Characterization Step by stating the applicable OSHA and other standards.

5. Demonstrate knowledge of how to use the DoD 8-Step Exposure Assessment Model Characterize Exposures Step by describing typical evaluation techniques (sampling and workplace monitoring plans).

6. Demonstrate knowledge of how to use the DoD 8-Step Exposure Assessment Model Reporting/Recording Step by describing typical findings and recommendations (controls and medical surveillance).

7. Demonstrate knowledge of how to use the DoD 8-Step Exposure Assessment Model Reporting/Recording Step by describing how this data is entered/tracked using DOEHRS-IH.

This monthly summary is published by the Industrial Hygiene Program Management Division for the Army Public Health Center.

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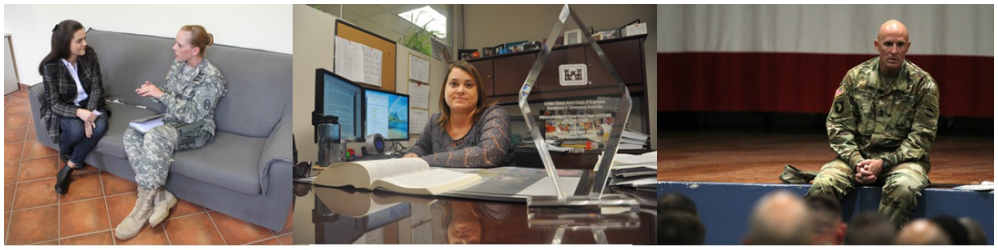

Professional Development and Career Programs

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.