February 2019,
Issue 89

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

OSHA Reminds Employers to Prevent Workplace Carbon Monoxide Exposure

Special Interest Articles:

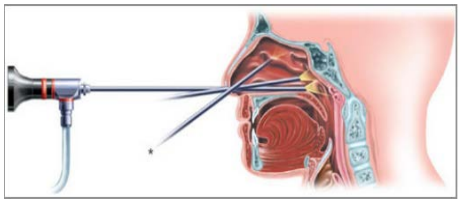
OSHA issued a reminder Feb. 12 to employers to take necessary steps to protect workers from the serious and potentially deadly effects of carbon monoxide exposure. The reminder follows recent incidents highlighting the need to educate employers and workers about the dangers of carbon monoxide exposure from portable generators and other equipment within enclosed spaces.

Carbon monoxide is a colorless, odorless, and toxic gas, so it is important that employers and workers are familiar with the symptoms of overexposure. Carbon monoxide overexposure symptoms can include headaches, dizziness, drowsiness, nausea, vomiting, or tightness across the chest. Severe overexposure can lead to neurological damage, coma, and death.

Read more:
https://ohsonline.com/articles/2019/02/14/osha-reminds-employers-to-prevent-workplace-carbon-monoxide-exposure.aspx?admgarea=ht.HazardCommunication

Contents:

Assessment of Occupational Exposure to Airborne Chlorine Dioxide of Healthcare Workers Using Impregnated Wipes During High-Level Disinfection of Non-Lumened Flexible Nasoendoscopes



Routine flexible nasoendoscopy in otolaryngology clinics is well established, the rate-limiting step of which being the speed of the nasoendoscopes reprocessing method used. Non-lumened flexible nasoendoscopes are expensive, heat-sensitive, delicate instruments that cannot be sterilized in an autoclave but must be disinfected by means of high level disinfection (HLD). In one of the public hospitals in Singapore, the method of disinfection was recently changed to the use of commercial impregnated wipes which generates less than 1% chlorine dioxide upon activation. An exposure assessment was performed to assess the potential exposure of healthcare workers (HCWs) to airborne chlorine dioxide during nasoendoscope disinfection. A total of 14 long-term personal samples, four short-term personal samples and 16 long-term area samples were collected over 8 days in midget impingers containing 0.02% potassium iodide in sodium carbonate/sodium bicarbonate buffer during the nasoendoscope disinfection. The samples were then analyzed by ion-chromatograph. The chlorine dioxide concentrations and upper confidence limit at 95% confidence level (UCL95%) for personal and area samples collected were all below the occupational exposure limits (OEL) for chlorine dioxide (Singapore Workplace Safety and Health PELs, ACGIH TLVs, U.S. OSHA PELs). The study presented evidence that the exposure of HCWs to chlorine dioxide during high-level disinfection of flexible nasoendoscopes were deemed insignificant.

Read more: Journal of Occupational and Environmental Hygiene,

Published online: 12 Feb 2019
(Available with AIHA membership)

Understanding Skin Absorption of Common Aldehyde Vapours from Exposure during Hazardous Material Incidents

The toxic release of aldehyde vapours during a hazardous material (HAZMAT) incident primarily results in respiratory concerns for the unprotected public. However, skin absorption may be an important concurrent exposure route that is poorly understood for this scenario. This study provides experimental data on the skin absorption properties of common aldehydes used in industry, including acetaldehyde, acrolein, benzaldehyde and formaldehyde, in gaseous or vapour form using an adapted in vitro technique. Two of the four tested aldehydes were found to penetrate the skin in appreciable amounts following 30-min exposure at HAZMAT relevant atmospheric concentrations: acetaldehyde (5.29 ± 3.24 µg/cm2) and formaldehyde (3.45 ± 2.58 µg/cm2).

Read more:
https://www.nature.com/articles/s41370-019-0127-4

Development of a New Method for Biomonitoring of Multiple Metals in Occupational Exposure

The assessment of co-exposure to several types of metal contamination poses a hurdle for occupational monitoring. Determination of elements in biological samples is an important way to evaluate occupational exposure. However, optimized methods for the extraction of multiple metals from biological samples have not been reported in recent studies. Therefore, solid-phase extraction (SPE) based on the functionalized nano-zeolite Y was suggested for the biomonitoring of metal co-exposure. SPE was conducted with ammonium pyrrolidine dithiocarbamate (APDC)

surrounded by Triton X-100 micelles, which were loaded into the pores of nano-zeolite Y. In this study, SPE was optimized for pre-concentration of trace amounts of chromium (Cr), cadmium (Cd), and lead (Pb) in urine samples with respect to the pH, APDC concentration, elution condition, amount of functionalized nano-zeolite Y, and sample volume. This method has been successfully optimized for the extraction of the mentioned multiple metals with >97% efficiency and an acceptable reproducibility with a coefficient variation of <10%. This method could be used in the extraction of multiple metals in environmental and occupational exposure conditions. In this study, urine samples of welding workers were evaluated following this optimized method.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 12 Feb 2019 (Available with AIHA membership)

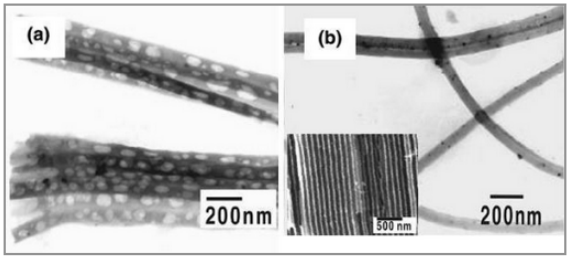
The Evaluation of Short-Term Water Misting of Room Air in Reducing Airborne Dust after Renovation Work

Objective
To shorten the time for airborne dust concentration to be reduced to a lower level after a renovation task has been completed, a short-term water misting method was assessed. A short-term water misting method is based on low water consumption to avoid harmful wetting of materials. The method is considered similar to a general ventilation method that dilutes work-generated airborne dust concentrations. Thus, short-term misting is not intended to replace the source control measures.

Methods
Airborne dust removal by the short-term water misting performed after dust generation was evaluated in a controlled laboratory settings by comparing PM10 decay and inhalable dust concentrations between a control and misting tests (average water flow = 0.22 l min−1) of 2 and 4 min. A portable handheld misting device was used. The practicability and effectiveness of the misting technique as a s

Read more:
https://academic.oup.com/annweh/article-abstract/63/2/242/5236614?redirectedFrom=fulltext

Predicting Occupational Exposures to Carbon Nanotubes and Nanofibers Based on Workplace Determinants Modeling



Background

Recent cross-sectional epidemiologic studies have examined the association between human health effects and carbon nanotube and nanofiber (CNT/F) workplace exposures. However, due to the latency of many health effects of interest, cohort studies with sufficient follow-up will likely be needed. The objective of this study was to identify workplace determinants that contribute to exposure and develop predictive models to estimate CNT/F exposures for future use in epidemiologic studies.

Methods

Exposure measurements were compiled from 15 unique facilities for the metrics of elemental carbon (EC) mass at both the respirable and inhalable aerosol size fractions as well as a quantitative analysis performed by transmission electron microscopy (TEM). These metrics served as the dependent variables in model development. Repeated personal samples were collected from most of the 127 CNT/F worker participants for 252 total observations. Determinants were categorized as company-level or worker-level and used to describe the exposure relationship within the dependent variables. The influence of determinants on variance components was explored using mixed linear models that utilized a backwards stepwise selection process with a lowering of the AIC for model determinant selection. Additional ridge regression models were created that examined predictive performance with and without all two-way interactions. Cross-validation was performed on each model to evaluate the generalizability of its predictive capabilities while predictive performance was evaluated according to the corresponding R^2 value and root mean square error (RMSE).

Read more:
https://academic.oup.com/annweh/article/63/2/158/5306210

Pilot Studies of VOC Exposure Profiles during Surgical Operations

Volatile organic chemical exposure resulting from surgical operations is common in operating room personnel. The potential risk of long-term exposure to these low-level chemicals is always a concern. This study was conducted in an area hospital located in northern Taiwan to investigate the internal exposure scenario for operating room personnel. Breath samples were collected before and after surgery, whereas area samples were collected during the surgeries in process. There were 18 volatile organic compounds identified in the samples with gas chromatography-mass spectrometry. The average concentrations of sevoflurane ($P = 0.0082$), dimethyl sulfide ($P = 0.0550$), and methyl methacrylate ($P = 0.0606$) in breath samples collected after surgical operations were significantly higher compared to those obtained before surgical operations, whereas only slight elevations were present for benzene and hexamethyldisiloxane ($P < 0.100$). In addition, electrosurgical smoke-related chemicals, such as benzene, toluene, ethylbenzene, and m/p-xylene, also presented higher levels in operating room

samples compared to the control area. Specifically, the findings in this preliminary study suggested the associations of elevated exposure to sevoflurane across various surgeries to methyl methacrylate with orthopedic surgery and to hexamethyldisiloxane with conventional electrosurgical units. Future study is warranted to explore the short-term high-level chemical exposure in operating rooms and to propose effective preventive measures accordingly to keep any exposure to chemicals at the lowest practical level.

Read more:
https://academic.oup.com/annweh/article-abstract/63/2/173/5248302?redirectedFrom=fulltex

Radiation

Cancer Patient's Treatment Leaves Radiation Contamination in Crematory

Radioactivity was detected on the oven, vacuum filter and bone crusher of an Arizona crematory where a deceased man who'd received radiation therapy was incinerated, according to a new case report. Worse still, a radioactive compound unrelated to the dead man was detected in the urine of an employee there.

"It is plausible that the crematory operator was exposed while cremating other human remains," Dr. Nathan Yu of the Department of Radiation Oncology at the Mayo Clinic in Phoenix and his co-authors wrote in the case report, published Tuesday in JAMA.

Read more: https://www.wral.com/cancer-patient-s-treatment-leaves-radiation-contamination-in-crematory/18219842/

Ventilation

Innovative Bio-Based Air Filter Could Transform Air Filtration, Possibly Reduce Airborne Allergens Indoors

The World Health Organization estimates that 90 percent of people breathe polluted air, which causes 7 million premature deaths each year. That's why Ongenia LLC, a Purdue-affiliated startup, is developing a bio-material alternative to standard heating, ventilation and air conditioning (HVAC) units' air filters.

Typical HVAC units control heat and air supply as well as ventilation in indoor spaces to achieve the desired room temperature and humidity. The units also include filters of polyester or fiberglass that remove large particles out of the air. Common air pollutants include dust, smoke and dirt, which can affect both indoor and outdoor air quality.

Read more: https://phys.org/news/2019-02-bio-based-air-filter-filtration-possibly.html#jCp

PPE

Are Quantitative Fit Factors Predictive of Respirator Fit During Simulated Healthcare Activities?

An annual OSHA fit test is required for all U.S. employees required to wear a respirator during work, but there are limited data demonstrating a link between fit test results and respirator fit during work. The goal of this research is to determine if the fit factor (FF) achieved during an abbreviated ambient aerosol condensation particle counter (CPC) quantitative fit test is predictive of fit achieved during a simulated workplace protection factor (SWPF) scenario that includes realistic healthcare activities. Fifteen subjects (7 male; 8 female) were recruited for a range of facial sizes. Each subject donned an N95 filtering facepiece respirator and performed a single 29-min routine consisting of initial and final 2.5 min fast fit tests (five 30-sec exercises: normal breathing, head side to side, head up and down, talking, and bending over) and three repetitions of three 6-min simulated healthcare activities (CPR, ultrasound, and making a hospital bed). Two CPC instruments simultaneously collected second-by-second measures of particle concentration inside and outside of the respirator facepiece. FFs or SWPFs were calculated by dividing outside by inside facepiece concentrations. Overall FFs and SWPFs were highly correlated. Each exercise FF was highly correlated with the overall SWPF. Normal breathing, head up and down, and talking were most predictive of overall SWPF. Normal breathing and talking together were predictive of each of the three simulated healthcare activities. For CPR and bed making activities, head movement exercises were also found to be predictive. A quantitative fit test using a small set of exercises is highly predictive of an individual's fit during simulated work activities. Some exercises (e.g., talking and

head movements) are predictive of fit during simulated workplace activities. Limitations include only one respirator model, a small subject pool not representative of the full range of face sizes. This article uses an innovative second-by-second assessment method that collects information about in- and outside-facepiece concentrations throughout the test period.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 12 Feb 2019 (Available with AIHA membership)

Noise

Identifying Determinants of Noise in a Medical Intensive Care Unit

Continuous and intermittent exposure to noise elevates stress, increases blood pressure, and disrupts sleep among patients in hospital intensive care units. The purpose of this study was to determine the effectiveness of a behavior-based intervention to reduce noise and to identify determinants of noise in a medical intensive care unit. Staff were trained for 6 weeks to reduce noise during their activities in an effort to keep noise levels below 55 dBA during the day and below 50 dBA at night. One-min noise levels were logged continuously in patient rooms 8 weeks before and after the intervention. Noise levels were compared by room position, occupancy status, and time of day. Noise levels from flagged days (>60 dBA for >10 hr) were correlated with activity logs. The intervention was ineffective, with noise frequently exceeding project goals during the day and night. Noise levels were higher in rooms with the oldest heating, ventilation, and air-conditioning system, even when patient rooms were unoccupied. Of the flagged days, the odds of noise over 60 dBA occurring was 5.3 dBA higher when

high-flow respiratory support devices were in use compared to times with low-flow devices in use (OR = 5.3, 95% CI = 5.0–5.5). General sources, like the heating, ventilation, and air-conditioning system, contribute to high baseline noise and high-volume (>10 L/min) respiratory-support devices generate additional high noise (>60 dBA) in Intensive Care Unit patient rooms. This work suggests that engineering controls (e.g., ventilation changes or equipment shielding) may be more effective in reducing noise in hospital intensive care units than behavior modification alone.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 12 Feb 2019 (Available with AIHA membership)

New Standard Aims to Protect Young People's Hearing

A new international standard developed by the World Health Organization and the International Telecommunication Union aims to prevent hearing loss among 1.1 billion young people. They announced it Feb. 12 and made available online a "Toolkit for safe listening devices and systems." The goal of the toolkit is to make it easy for partners to adopt, implement, and monitor the standard and to ensure that all users of personal audio systems are empowered with information on safe listening and have the option to make safe listening choices in order to protect their hearing.

Read more:
https://ohsonline.com/articles/2019/02/18/new-standard-aims-to-protect-hearing.aspx?admgarea=ht.PPE

Preventive Medicine

Librarians Pore Over Books to Keep Out the Bedbugs

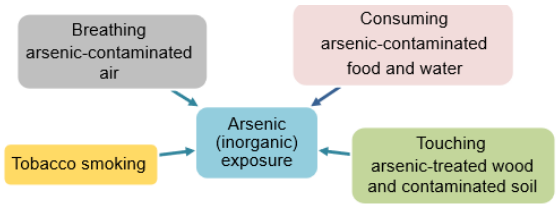
Lincoln library officials say librarians have been inspecting each item checked back into the eight branches, committed to keeping out any bedbugs.

The library system discovered bedbugs in some books in 2014, amid a national rash of bedbug reports from a variety of places, including theaters and thrift stores, college dorms and apartment buildings, hotel rooms and surgical centers.

The bedbug committee worked with state experts to come up with detection procedures and a training program for all library employees who perform the checks when items are returned.

Read more:
https://www.usnews.com/news/best-states/nebraska/articles/2019-02-23/librarians-pore-over-books-to-keep-out-the-bedbugs

Evaluation of Plasma Arsenicals as Potential Biomarkers of Exposure to Inorganic Arsenic



Exposure to inorganic arsenic (iAs) remains a global public health problem. Urinary arsenicals are the current gold-standard for estimating both iAs exposure and iAs metabolism. However, the distribution of these arsenicals may differ between the urine and target organs. Instead, plasma arsenicals may better represent internal dose and capture target organ exposure to arsenicals. Drinking water iAs, plasma and urinary arsenicals were quantified in individuals living in the Zimapan and Lagunera regions of Mexico. The relationship between drinking water iAs and plasma arsenicals was examined using both Spearman correlations and multivariable linear regression models. In addition, the distribution of arsenicals in plasma and urine was examined and the association between plasma and urinary arsenicals was assessed using both Spearman correlations and multivariable linear regression models.

Read more:
https://www.nature.com/articles/s41370-019-0121-x

Study: Triclosan Lowers Antibiotic Efficacy in Culture, Mouse Tests

A new study by researchers with Washington University in St. Louis has found that clinically relevant concentrations of triclosan, an antimicrobial used in a wide range of consumer products, significantly increased bacterial tolerance to antibiotics in vitro and reduced antibiotic efficacy in a mouse urinary tract infection model. The findings appeared yesterday in Antimicrobial Agents and Chemotherapy.

To assess whether physiologically relevant levels of triclosan are sufficient to promote tolerance to bactericidal antibiotics, the researchers cultured Escherichia coli and methicillin-resistant Staphylococcus aureus (MRSA) in amounts of triclosan similar to the concentration found in the urine of individuals who use triclosan-containing products, then exposed the bacteria to high concentrations of antibiotics. The results showed that triclosan had a dramatic protective effect for the microbes, increasing E coli and MRSA tolerance to the antibiotics as much as 10,000-fold.

Read more:
http://www.cidrap.umn.edu/news-perspective/2019/02/stewardship-resistance-scan-feb-20-2019 (scroll down)

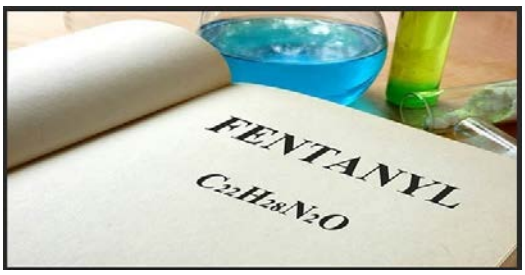
FDA, CDC, and CMS Launch Task Force to Help Facilitate Rapid Availability of Diagnostic Tests during Public Health Emergencies

The U.S. Food and Drug Administration, Centers for Disease Control and Prevention (CDC) and the Centers for Medicare and Medicaid Services (CMS) announced the launch of the Tri-Agency Task Force for Emergency Diagnostics. This task force has been created to help leverage the expertise of each agency to advance rapid development and deployment of diagnostic tests in clinical and public health laboratories during public health emergencies.

Read more:
https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm632056.htm

Trends in the Medical Supply of Fentanyl and Fentanyl Analogues: United States, 2006 To 2017

Fentanyl is an important opioid for pain management, but also has exceptional potential for misuse. Seven states have implemented opioid prescribing laws. The objectives of this study were to: 1) characterize the temporal pattern of fentanyl, fentanyl analogue, and other



opioid use over the past decade, and 2) determine whether opioid prescribing laws impacted fentanyl use in the US. Drug weights were obtained from the US Automated Reports of Consolidated Orders System (June 2018), a comprehensive publically available resource, from 2006 to 2017 for fentanyl, sufentanil, remifentanil, alfentanil, other prescription opioids, and analyzed by presence of a state opioid prescribing law.

Read more: https://www.sciencedirect.com/science/article/pii/S0091743519300568

Environmental Health

Age-Related Changes to Environmental Exposure: Variation in the Frequency that Young Children Place Hands and Objects in Their Mouths

Children are exposed to environmental contaminants through direct ingestion of water, food, soil, and feces, and through indirect ingestion due to mouthing hands and objects. We quantified ingestion among 30 rural Bangladeshi children <4 years old, recording every item touched or mouthed during 6-h video observations that occurred annually for 3 years. We calculated the frequency and duration of mouthing and the prevalence of mouth contacts with soil and feces. We compared the mouthing frequency distributions to those from US children to evaluate the appropriateness of applying the US data to the Bangladeshi context. Median hand mouthing frequency was 97–160 times/h and object mouthing 23–50 times/h among the five age groups assessed. For more than half of the children, >75% of all hand mouthing was associated with eating.

Read more: https://www.nature.com/articles/s41370-019-0115-8

Emerging Technologies Give Environmental, Health and Safety and Sustainability Leaders New Insights into Business Risk

Emerging technologies are rapidly changing how companies prevent pollution, keep employees safe and set sustainability goals, according to a report published today by the National Association for Environment, Health and Safety, and Sustainability (EHS&S) Management (NAEM).

"The EHS&S Tech Transformation" report profiles the internet of things (IOT) technologies that are taking hold among leadership companies, explains what they mean for EHS&S management and showcases how companies are putting them to use. The report also includes new analysis of NAEM survey data from 79

companies on emerging practices and technologies.

Read more:
https://www.naem.org/connect/latest-news/read/2019/02/05/emerging-technologies-give-environmental-health-and-safety-and-sustainability-leaders-new-insights-into-business-risk

How Environmental Health Workers Can Help Climate Change Mitigation

All the evidence tells us that the world's changing climate will affect more than the environment. It will have serious consequences for people's health too.

Southern Africa is in the eye of the climate change storm. In the next 80 years it's likely to experience an increase in temperature that exceeds the global average. But little is known about whether vulnerable groups in the region are equipped to deal with these changes and the resulting health problems.

One of the ways they can be assisted, in South Africa at least, is through the work of environmental health practitioners. There are 3 833 practitioners registered with the Health Professions Council of South Africa across the country. They operate at the

interface between government and communities, dealing with environmental safety and community health in local government districts.

Read more:
https://theconversation.com/how-environmental-health-workers-can-help-climate-change-mitigation-111389

These 8 Military Bases Will Test Residents for Cancer-Causing Chemicals

The Centers for Disease Control and Prevention, along with the federal agency responsible for investigating environmental threats, will begin assessing residents near eight active and former military bases for exposure to chemicals found in firefighting foam and other products.

The CDC, along with the Agency for Toxic Substances and Disease Registry (ATSDR), will check for exposure to per- and polyfluoroalkyl substances, referred to as PFAS compounds, which have been linked to infertility, immune disorders,

developmental delays in children and some cancers.

Read more:
https://www.wearethemighty.com/news/military-bases-cancer-causing-chemicals

Ergonomics

Physical Activity and Common Tasks of California Farm Workers: California Heat Illness Prevention Study (CHIPS)

Farm workers are at risk of heat related illness (HRI), but their work rates that contribute to HRI have not been objectively assessed. The CHIPS study collected accelerometer data and characterized the physical activity of major farm tasks. Demographic information, work characteristics, and accelerometer data

were collected from 575 farm workers in California. Each participating worker contributed measurements over one work shift. An Actical accelerometer was attached securely to a belt worn at the hip. Data were collected at one-minute intervals throughout the work shift. A total of 13 major work-task categories were defined. The mean physical activity counts per minute (cpm) and percentage of the shift spent at moderate and/or vigorous levels of activity were described for each task. Multiple linear regression models were constructed to determine the worker and environmental characteristics contributing to the physical activity level. Mean levels of physical activity ranged from 700 cpm (workers who carry produce) to a low of 150 cpm "ground pruners" who tend low-level plants, with an overall mean of 345 cpm or "light" activity (2 to ≤3 metabolic equivalents). The environmental temperature was the major factor associated with physical activity. A 10°C increase in the median temperature reduced the mean cpm by 135 (95% CI = 87, 193). Age and the tasks of sorting, ground pruning, and harvesting low-level crops were also negatively and independently associated with mean cpm. Incentivized (piece rate) pay, multi-task work, and irrigator work were positively associated with cpm. An interaction was found between piece rate and sex. Men's activity significantly increased ($p < 0.001$) by a mean of 95 cpm, (95% CI = 38.3, 150.7) if they were paid by the piece, but there was a non-significant association with women's activity level. Workers conducting multiple tasks, irrigators, men, and those earning incentivized (piece rate) pay had higher adjusted mean physical activity levels and are likely at increased risk of heat-related illness on hot days.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 12 Feb 2019 (Available with AIHA membership)

Safety

The Acute Effect of Training Fire Exercises on Fire Service Instructors

Fire service instructors (FSI) regularly experience different types of fire exercises, however the strain experienced from these scenarios is not well understood. This study aims to identify the physiological and perceptual strain of Fire Service Instructors (FSI) to three training exercises: DEMO, ATTACK, COMPARTMENT, and the different roles performed: SETTER, INSTRUCTOR. The study also aims to assess the effect that different exercise patterns over a day (BOX, MULTI, COMBINATION) have on immunological responses. Sixteen FSI (age: 41 ± 8 years, body mass: 83.7 ± 6.7 kg, height: 177.0 ± 6.7 cm) were recruited, with 10 FSI completing the three exercises.

Physiological and perceptual measures were collected prior to and immediately post each exercise. Venous blood samples were collected at the beginning and end of each day. One-way analysis of variance (ANOVA) were conducted to assess differences in physiological variables between exercise types, independent samples t-tests were conducted between roles. Day changes in hematological variables were assessed by paired sample t-tests and analyzed by one-way ANOVAs to identify differences between exercise patterns. The COMPARTMENT exercise resulted in a greater change in rectal temperature (ΔTre) (0.49 ± 0.28 °C) than both the DEMO (0.23 ± 0.19 °C, p = 0.045) and ATTACK (0.27 ± 0.22 °C, p = 0.016). Within the COMPARTMENT exercise, the SETTER resulted in a greater ΔTre and rating of perceived exertion than the INSTRUCTOR (0.67 ± 0.29 °C vs. 0.43 ± 0.18 °C, p = 0.027 and 14 ± 2 vs. 11 ± 2, p = 0.001, respectively). Following a day of fire exercises white blood cells (WBC), neutrophils, lymphocytes (LYMPH), monocytes (MONO), platelets (PLT), mean platelet volume (MPV), Interleukin (IL)-6, and cardiac troponin T (cTnT) all increased ($p < 0.05$). Exercise patterns containing a COMPARTMENT exercise resulted in greater PLT, MPV, and IL-6. Total daily variation in ΔTre was correlated with post-exercise

WBC, MONO, and LYMPH. COMPARTMENT exercises produce the greatest physiological strain, with the SETTER role within this exercise causing the greatest ΔTre. Although predominately physiological responses remain within safe limits. Exercise patterns that include a COMPARTMENT exercise also generate a greater inflammatory response.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 04 Feb 2019 (Available with AIHA membership)

Preventing Fire and/or Explosion Injury from Small and Wearable Lithium Battery Powered Devices

Small and wearable electronic devices used in workplaces (e.g., body cameras) rely on a power source that stores a high amount of energy in a small space (i.e., high energy density). Lithium cells provide sustained power and often have the capability to recharge. When designed, manufactured, and used properly, lithium batteries are a safe, high energy density power source for devices in the workplace.

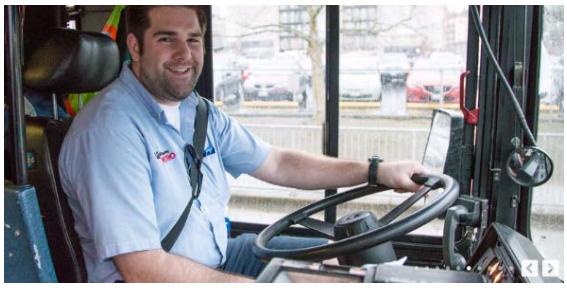
While lithium batteries are normally safe, they may cause injury if they have design defects, are made of low quality materials, are assembled incorrectly, are used or recharged improperly, or are damaged. In February 2018, the U.S. Consumer Product Safety Commission's Status Report on High Energy Density Batteries Project reported over 25,000 overheating or fire incidents involving more than 400 types of lithium battery-powered consumer products that occurred over a five-year period.

Read more: https://www.osha.gov/dts/shib/shib011819.html

Legislators Introduce Transit Worker and Pedestrian Protection Act

The bill would require U.S. transit-rail agencies to develop a rail operations worker assault risk reduction program within the next two years. Agencies would be required to conduct a risk analysis of assaults on rail employees, cooperate with labor representatives to develop their plans, and implement a plan to mitigate rail worker assaults.

Read more:
https://ohsonline.com/articles/2019/02/13



/legislators-introduce-transit-worker-and-pedestrian-protection-act.aspx

Three Powerful Technologies Are Joining Forces to Revolutionize Workplace Safety

Ask people in 2019 what a "virtual worker" is, and most might suggest an employee who works remotely in the gig economy. Or, perhaps, they might say some form of artificial intelligence automating a manual job. But soon "virtual worker" may mean something entirely different.

In the coming years, sensor-laden wearable technology (wearables), virtual reality (VR) and augmented reality (AR) are set to converge, revolutionizing workplace risk management. These technologies are slated to allow employers to use virtual workers as a way to review the physiological limits of a task before sending a live human to do it.

Read more:
https://riskandinsurance.com/virtual-workers/

Power Alarms, Dark Tunnels, Metro Worker Safety Issues Raised In New Federal Inspections

A newly available batch of federal inspection reports highlight concerns about Metro's power systems, rail yards, worker safety, reviews of the locations where trains switch from one track to another and continuing problems with water leaks and dark tunnels.

The reports generally carry less hefty issues than some of those released in the past, but still identify some potentially significant concerns.

In addition to the Federal Transit Administration inspection documents for August, September and October, the agency updated totals to show there are 1,033 fixes the FTA has identified but not yet

confirmed to be resolved — mainly for track and power issues.

Read more: https://wtop.com/tracking-metro-24-7/2019/02/power-alarms-dark-tunnels-metro-worker-safety-issues-raised-in-new-federal-inspections/

Emergency Preparedness

Eighteen Volcanoes Ranked Highest in New USGS Threat Assessment

The U.S. Geological Survey recently updated its 2005 Volcanic Threat Assessment. The new assessment indicates 161 U.S. volcanoes pose potential threats to American lives and property, which is eight fewer than in 2005. The eighteen very highest threat volcanoes are in Alaska, California, Hawaii, Oregon, and Washington, while 39 other volcanoes are high threat, 49 are moderate, 34 are low, and 21 are very low threat.

USGS published its first national volcanic threat assessment in 2005 in support of establishing a National Volcano Early Warning System. The assessment helps to prioritize U.S. volcanoes for research, monitoring, and mitigation efforts based on

objective measures of volcano hazards and exposure of people and infrastructure to those hazards.

Read more:
https://ohsonline.com/articles/2019/02/05/usgs-updates-volcano-threat-assessment.aspx?admgarea=ht.DisasterPreparedness

Deployment Health

Permethrin Exposure from Wearing Fabric-Treated Military Uniforms in High Heat Conditions under Varying Wear-Time Scenarios

This study examined the effect of high-temperature conditions and uniform wear time durations (expeditionary, 33 h continuous wear; garrison, 3 days, 8 h/day wear) on permethrin exposure, assessed by urinary permethrin biomarkers, from wearing post-tailored, factory-treated military uniforms. Four group study sessions took place over separate 11-day periods, involving 33 male Soldiers. Group 1 (n = 10) and Group 2 (n = 8) participants wore a study-issued permethrin-treated Army uniform under high heat environment (35 °C, 40% relative humidity (rh)) and expeditionary and garrison wear-time conditions, respectively. For comparison, Group 3 (n = 7) and Group 4 (n = 8) participants wore study-issued permethrin-

treated uniforms in cooler ambient conditions under operational and garrison wear-time conditions, respectively.

Read more:
https://www.nature.com/articles/s41370-019-0120-y

Nanotechnology

Nanotechnology Enables Engineers to Weld Previously Unweldable Aluminum Alloy

An aluminum alloy developed in the 1940s has long held promise for use in automobile manufacturing, except for one key obstacle. Although it's nearly as strong as steel and just one-third the weight, it is almost impossible to weld together using the technique commonly used to assemble body panels or engine parts.

That's because when the alloy is heated during welding, its molecular structure creates an uneven flow of its constituent elements -- aluminum, zinc, magnesium and copper -- which results in cracks along the weld.

Read more: https://www.ecnmag.com/news/2019/02/nanotechnology-enables-engineers-weld-previously-unweldable-aluminum-alloy

Regulatory Research & Industrial Hygiene Professional News

OSHA

The Waiting Is the Hardest Part: Staff Decreases, Whistleblower Claim Increases Strain OSHA

A February 20, 2019 article from Bloomberg Law provides statistics to explain the significant delays experienced by litigators and attorneys alike in Occupational Safety and Health Administration's investigation of whistleblower claims. A substantial increase in the number of whistleblower

complaints filed with OSHA over the past five years and a contemporaneous decrease in the number of investigators available to investigate these claims has led to longer waits for OSHA decisions and delays in the adjudication of claims.

Read more:
https://www.natlawreview.com/article/waiting-hardest-part-staff-decreases-whistleblower-claim-increases-strain-osha

House Hearing Highlights Bill to Protect Health Care Workers from Violence

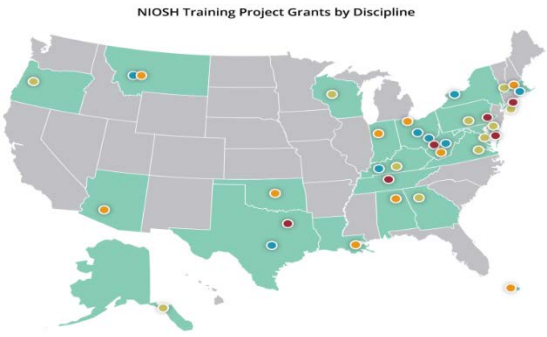
The House Education and Labor Committee's Subcommittee on Workforce Protections yesterday held a hearing on protecting health care and social service workers from violence in the workplace. The focus of the hearing was a bill (H.R. 1309) introduced by Rep. Joe Courtney, D-Conn., that would require the Occupational Safety and Health Administration to issue a workplace violence prevention standard within a year and health care and social service employers to comply with the standard to participate in Medicare.

Read more:
https://www.aha.org/news/headline/2019-02-28-house-hearing-highlights-bill-protect-health-care-workers-violence

NIOSH

NIOSH ERC Ergonomics Webinars

NIOSH supported Education and Research Centers throughout the country are pleased to present the Ergonomics Webinar Series, offering free monthly webinars on various topics on Human Factors and Ergonomics. A collaborative effort on behalf of each ERC's Continuing Education program, our goal is to provide access to current research supported through NIOSH ERC Programs.



Read more:
https://www.coeh.berkeley.edu/ercwebinars

EPA

EPA Will Study Ethanol's Impact on Air Quality after Long Delays

The U.S. Environmental Protection Agency said on Friday it has agreed to conduct a long-delayed study to assess the impact that burning ethanol as a motor vehicle fuel has on air quality.

The Sierra Club had filed a lawsuit against the EPA late last year in an effort to compel the agency to conduct the study, which the group said was supposed to be done roughly eight years ago. The two parties reached a partial agreement and the EPA said it will conduct the so-called anti-backsliding study by March of 2020.

Read more:
https://www.reuters.com/article/us-usa-ethanol-epa/epa-will-study-ethanols-impact-on-air-quality-after-long-delay-idUSKCN1QB2GV

CDC

206 Measles Cases In 11 States Already In 2019, CDC Reports

Troubling new figures on the rising number of measles cases in the United States this year. The Centers for Disease Control and Prevention reports 206 individual cases of measles were confirmed in 11 states between January 1 and the end of February.

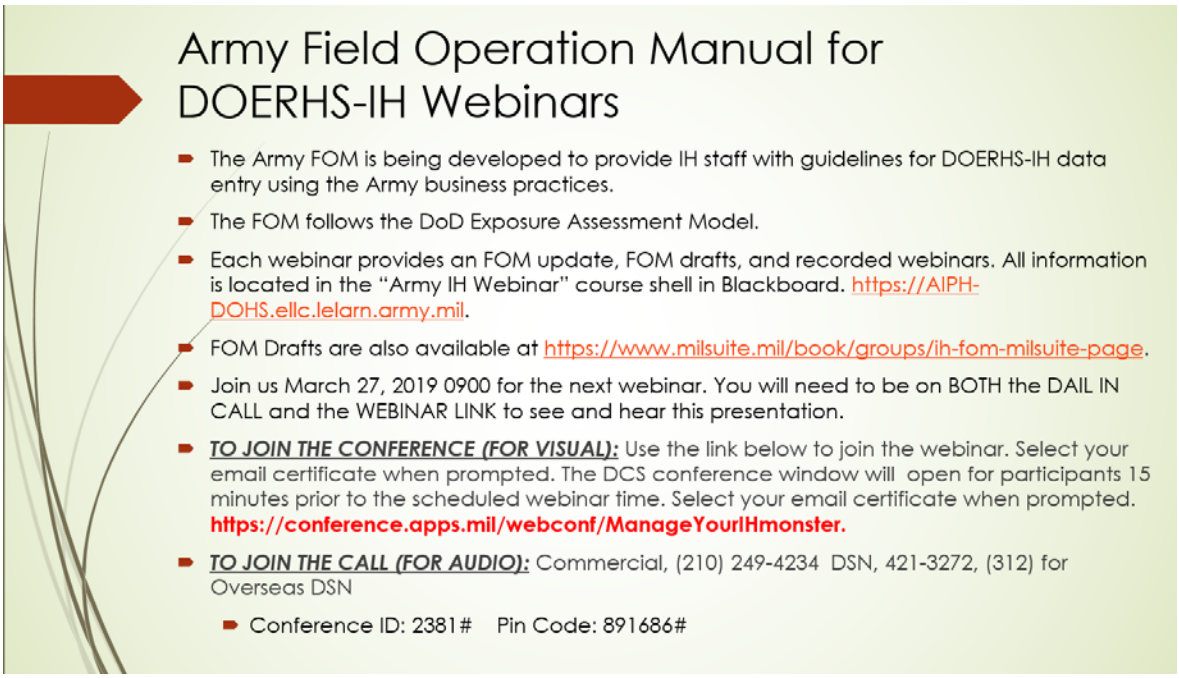
The nation saw 372 cases in all of 2018. The states reporting cases to the CDC this year are California, Colorado, Connecticut,

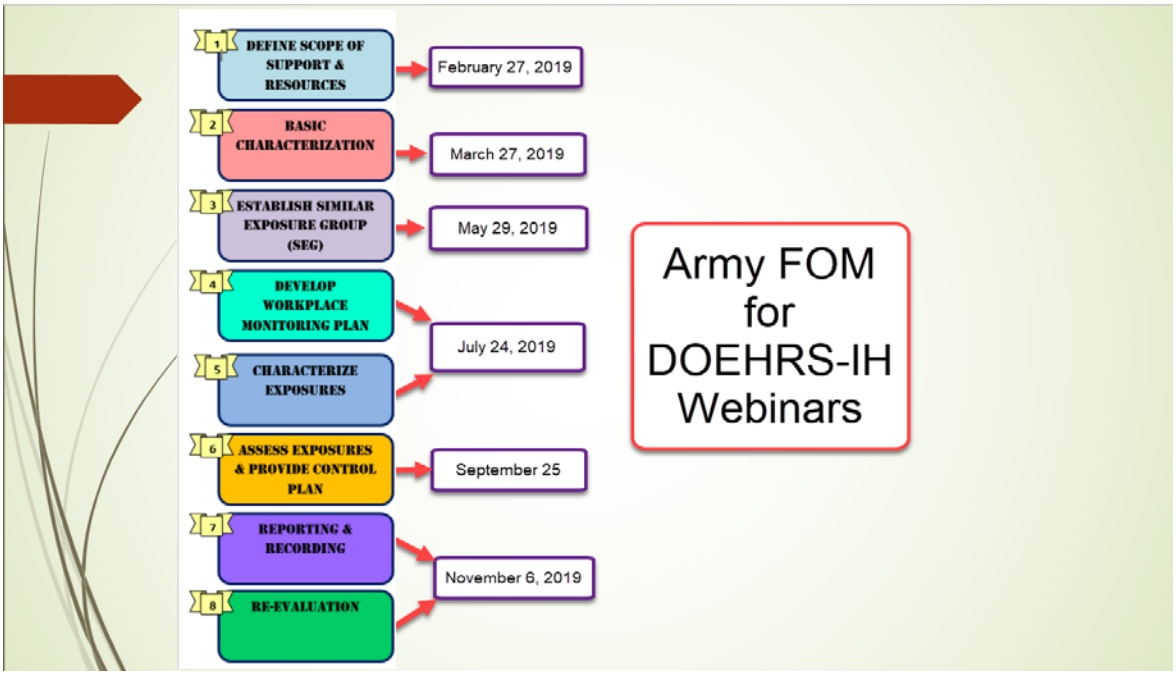
Georgia, Illinois, Kentucky, New Jersey, New York, Oregon, Texas, and Washington.

Read more: https://abc11.com/health/206-measles-cases-in-11-states-already-in-2019-cdc-reports/5168751/

APHC

Training


Army Field Operation Manual for DOERHS-IH Webinars
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.
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.
Join us March 27, 2019 0900 for the next webinar. You will need to be on BOTH the DAIL IN CALL and the WEBINAR LINK to see and hear this presentation.
TO JOIN THE CONFERENCE (FOR VISUAL): Use the link below to join the webinar. Select your email certificate when prompted. The DCS conference window will open for participants 15 minutes prior to the scheduled webinar time. Select your email certificate when prompted. https://conference.apps.mil/webconf/ManageYourIHmonster.
TO JOIN THE CALL (FOR AUDIO): Commercial, (210) 249-4234 DSN, 421-3272, (312) for Overseas DSN
Conference ID: 2381# Pin Code: 891686#


1 DEFINE SCOPE OF SUPPORT & RESOURCES
February 27, 2019
2 BASIC CHARACTERIZATION
March 27, 2019
3 ESTABLISH SIMILAR EXPOSURE GROUP (SEG)
May 29, 2019
4 DEVELOP WORKPLACE MONITORING PLAN
5 CHARACTERIZE EXPOSURES
July 24, 2019
6 ASSESS EXPOSURES & PROVIDE CONTROL PLAN
September 25
7 REPORTING & RECORDING
8 RE-EVALUATION
November 6, 2019
Army FOM for DOEHRS-IH Webinars


Webinar/Online Meeting Etiquette
Tips for the Webinar Attendees
Test the link well before the web meeting starts. Most webinars provide an email with the URL to join. You won't be able to join the conference, but you should get an idea of whether you are missing software or need IT assistance.
Please arrive at least 5 minutes early. This will allow you the proper time mute your phone properly. Not only is this a professional thing to do, it helps us run on time and does not interrupt the flow of conversation.
Identify yourself when you first enter the webinar and when you speak. We try to keep a hand written record of attendance in case you forget to claim your certificate.
Mute your phone (use *6) when you are not speaking. It's amazing how much background noise comes through and ruins someone's experience.
Never put the call on "hold". The participants will hear your on-hold music or the leader will not know that you have stepped away and may continue to address you while you're gone.
Save questions/comments until the end. Feel free to use the chat box so that you can remember your question. It is a great place to also put additional resources you may have on the topic.
Mute your speakerphone. If you are using a speakerphone, until you need to answer/ask a question or participate. Speakerphones pick up background noise and conversation.
Don't put your phone on "hold" during the webinar. The other attendees don't like hearing your "hold" recording or music during the presentation and it dominates the audio so that participants cannot hear the speaker.
Be respectful of others. You're seldom the only one on the call. We always record our webinars.


ARMY IH WEBINAR DAY
ONE CALL ATTENDS THEM ALL!
JUNE 4, 2019
0900-1000ET Manage Your IH Monster
(SEG Merging the Rock Island Arsenal Way)
1000-1100ET IH LEADERS (Fort Eustis Tugboat Case Study)
1100-1200ET Ask The SME (Ventilation Protocols)
You will need to be on BOTH the DAIL IN CALL and the WEBINAR LINK to see and hear this presentation.
TO JOIN THE CONFERENCE (FOR VISUAL): Use the link below to join the webinar. Select your email certificate when prompted. The DCS conference window will open for participants 15 minutes prior to the scheduled webinar time. Select your email certificate when prompted.
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TO JOIN THE CALL (FOR AUDIO): Commercial, (210) 249-4234 DSN, 421-3272, (312) for Overseas DSN


ARMY IH WEBINAR DAY
ONE CALL ATTENDS THEM ALL!
AUGUST 6, 2019
0900-1000ET Manage Your IH Monster
1000-1100ET IH LEADERS (Corpus Christi Case Study)
1100-1200ET Ask The SME (Pharmacy Hazardous Drug Samples)
You will need to be on BOTH the DAIL IN CALL and the WEBINAR LINK to see and hear this presentation.
TO JOIN THE CONFERENCE (FOR VISUAL): Use the link below to join the webinar. Select your email certificate when prompted. The DCS conference window will open for participants 15 minutes prior to the scheduled webinar time. Select your email certificate when prompted.
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This monthly summary is published by the Industrial Hygiene Program Management Division for the Army Public Health Center.

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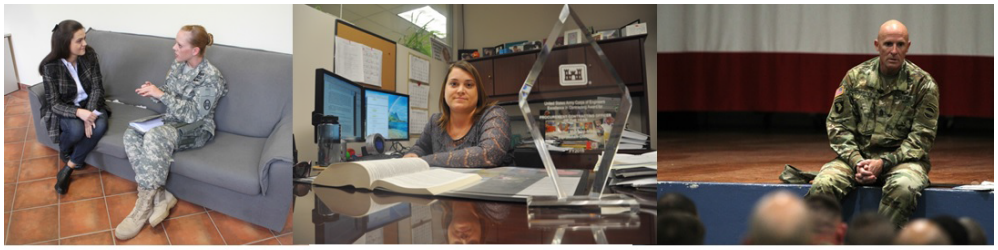

Professional Development and Career Programs

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.