July 2019,
Issue 94

Army Industrial Hygiene News and Regulatory Summary

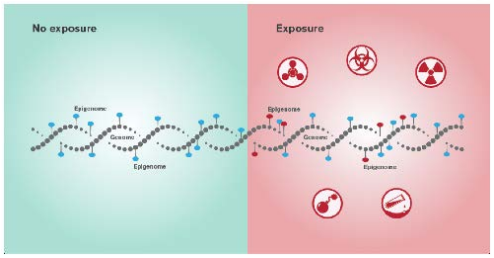
Hazardous Substances

Researchers Developing WMD-Exposure Detector For DARPA

Special Interest Articles:

- dART
- Sound Level Meter
- Bioavailability
- Recall
- Mustard Gas

Arizona State University (ASU) researchers are developing a deployable device that determines if someone has been exposed to weapons of mass destruction (WMDs) or their precursors, according to a report from ASU.



The Defense Advanced Research Projects Agency (DARPA) has awarded ASU $9.1 million to begin work on the device, which will identify WMD-related chemicals within 30 minutes or less through a single drop of the subject's blood to reveal an epigenetic "fingerprint." That fingerprint will indicate if the subject has been exposed to materials and chemicals associated with the manufacture of WMDs. The device will ideally detect a wide swath of substances, such as biological agents, chemicals, explosives and radiation.

Read more:
https://insights.globalspec.com/article/12307/researchers-developing-wmd-exposure-detector-for-darpa

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Characterization of Airborne Particles From Cleaning Sprays and Their Corresponding Respiratory Deposition Fractions

Cleaning workers are exposed to many risk factors, including handling of cleaning products. Epidemiological studies show that they have a high incidence of asthma and other respiratory symptoms. Some studies have indicated an even higher incidence of asthma in individuals using cleaning sprays regularly. It is known that sprays produce an aerosol that can expose the respiratory system to chemicals. Knowledge of the physical characteristics of the airborne particles, as well as the characteristics of the gas phase, is needed to determine how they affect the respiratory tract and why they cause airway symptoms. The aim of this study was to characterize the aerosols from seven different ready-to-use trigger cleaning sprays in terms of total airborne mass fraction, particle size distribution, and new particle formation from ozone reactions. An additional aim was to calculate the respiratory deposition fraction of the measured particles. The total airborne mass fraction was determined by comparing the mass deposited on the chamber wall with the mass emitted from the bottle during spraying. Particle number concentration and size distribution of the airborne particles were measured using an aerodynamic particle sizer and a fast aerosol mobility size spectrometer. The total airborne mass fraction was between 2.7% and 32.2% of the mass emitted from the bottle, depending on the product. Between 0.0001% and 0.01% of the total airborne mass fraction consisted of residual particles.

However, these particles had a mass median aerodynamic diameter between 1.9 µm and 3.7 µm, constituting a total respiratory deposition of up to 77%. New particle formation in the presence of ozone was also shown to vary between 5,000 cm−3 and 35,000 cm−3 depending on the product, in the studied settings. These findings confirm that a substantial part (up to 1/3) of the mass sprayed from the bottle does not reach the intended surface. Thus, the use of cleaning sprays can result in chemical airway exposure, with particles in the relevant size range for both nasal and alveolar deposition..

Read more: Journal of Occupational and Environmental Hygiene, Published online: 30 Jul 2019 (Available with AIHA membership)

Evaluation of a 25-mm Disposable Sampler Relative to the Inhalable Aerosol Convention

An ideal inhalable aerosol sampler for occupational exposure monitoring would have a sampling efficiency that perfectly matches the inhalable particulate matter (IPM) criterion. Two common aerosol samplers in use worldwide are the closed-face cassette (CFC) and the Institute of Occupational Medicine (IOM) sampler. However, the CFC is known to under-sample, with near zero sampling efficiency for particles >30 µm, whereas the IOM, considered by many to be the “gold standard” in inhalable samplers, has been shown to over-sample particles >60 µm. A new sampler in development incorporates characteristics of both the CFC and the IOM. Like the CFC, it would be disposable, have a simple design, and is intended to be oriented at a 45° downward angle. Like the IOM, the new sampler has a 15-mm inlet diameter and incorporates a 25-mm filter cassette with a protruding lip. The IOM is oriented at 0° to the horizontal, so it is hypothesized that orienting the new sampler at ∼45° downward angle will reduce oversampling of larger particles. In

comparison, the CFC’s inlet diameter is 4 mm; increasing the size of the inlet should allow the new sampler to have an increased efficiency relative to the CFC for all particles. A unique characteristic of the

new sampler is the incorporation of a one-piece capsule-style filter that mimics the IOM's cassette but is made of disposable material. Seven different sizes of alumina particles (mean aerodynamic diameters from 4.9–62.4 µm) were tested (total = 124 samples collected). For each test, six samplers were placed on a manikin located inside a wind tunnel operated at 0.2 m/sec. Results indicated that the new sampler improved on the CFC for smaller particles, providing a larger range for which it matches the IPM criterion, up to 44.3 µm. However, the efficiency was significantly lower in comparison to the IPM criterion for particle sizes above 60 µm. Overall, the new sampler showed promise, but additional modifications may help improve sampling efficiency for larger particles.

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

Chlorine Exposure during a Biological Decontamination Study In a Mock Subway Tunnel

The Underground Transport Restoration (UTR) Operational Technology Demonstration (OTD) was a full-scale field study focused on remediation of a subway system after contamination with a Bacillus anthracis (Ba) surrogate (Bacillus atrophaeus, subspecies globigii [Bg]). The study involved all aspects of subway system remediation following contamination with a biological surrogate, including characterization, clearance sampling, and waste management.[1 U.S. Environmental Protection Agency: Underground Transport Restoration (UTR) Operational Technology Demonstration (OTD), by S. Serre and L. Oudejans. Washington, DC, EPA/600/R-17/272, 2017. Personal exposure to chlorine gas was also monitored throughout the decontamination portion of the study. Process-based personal monitoring for chlorine was conducted using portable single gas monitors with chlorine sensors during Level A entry into the biologically-contaminated area (exclusion zone) during spraying operations. Additional monitoring was conducted during the mixing of pH-adjusted bleach solutions and waste item decontamination (immersion dunking). An analysis of variance was performed to compare process-based time-averaged chlorine exposure among the similar exposure groups. Chlorine exposure was

highest for the Decon Sprayers, which was expected based on their proximity to the spray streams. Peak exposure levels (5-sec readings) ranged from 11 to at least 50 parts per million (ppm). It is likely that exposure exceeded 50 ppm, but this was the upper limit of measurement. Oversight personnel were farther away from the spray operation but still had significant peak chlorine exposures of 13–26 ppm. The rail cart operators had peak exposures of 13–19 ppm. Statistically significant differences were observed between time-weighted average exposure levels of Decon Sprayers and the other workers. Spraying of pH-adjusted bleach solution on subway tunnel surfaces for biological decontamination produced up to 50 ppm chlorine vapor in the air that far exceeded the occupational exposure limits of 0.5–1 ppm for chlorine, as well as the Immediately Dangerous to Life or Health limit of 10 ppm. Health and safety plans and operational activities must provide appropriate worker protection during such events where potential for chlorine overexposure has been demonstrated.

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

Dermal Advanced REACH Tool (dART)—Development of a Dermal Exposure Model for Low-Volatile Liquids

This article describes the development of a mechanistic model for underpinning the dermal Advanced REACH Tool (dART), an extension of the existing ART model and its software platform. It was developed for hand exposure to low volatile liquids (vapour pressure ≤ 10 Pa at 20°C) including solids-in-liquid products. The model is based on an existing conceptual dermal source-receptor model that has been integrated into the ART framework. A structured taxonomy of workplace activities referred to as activity classes are adopted from ART. Three key processes involved in mass transport associated with dermal exposure are applied, i.e. deposition, direct emission and contact, and transfer. For deposition, the model adopts all the relevant modifying factors (MFs) applied in ART. In terms of direct emission and contact (e.g. splashes) and transfer (e.g. hand-surface contacts), the model defines independent principal MFs, i.e. substance-related factors, activity-related factors, localized- and dispersion control and exposed surface area of the hands

Read more:
https://academic.oup.com/annweh/article-abstract/63/6/624/5372723?redirectedFrom=fulltext

Light Exposure during Days with Night, Outdoor, and Indoor Work

Objective
To assess light exposure during days with indoor, outdoor, and night work and days off work.

Methods
Light intensity was continuously recorded for 7 days across the year among indoor (n = 170), outdoor (n = 151), and night workers (n = 188) in Denmark (55–56°N) equipped with a personal light recorder. White light intensity, duration above 80, 1000, and 2500 lux, and proportion of red, green, and blue light was depicted by time of the day and season for work days and days off work.

Results
Indoor workers' average light exposure only intermittently exceeded 1000 lux during daytime working hours in summer and never in winter. During daytime working hours, most outdoor workers exceeded 2500 lux in summer and 1000 lux in winter.

Night workers spent on average 10–50 min >80 lux when working night shifts. During days off work, indoor and night workers

Read more:
https://academic.oup.com/annweh/article-abstract/63/6/651/5378794?redirectedFrom=fulltext

NIOSH Evaluates Exposure to Secondhand Cannabis Smoke in Open-Air Setting

A recent health hazard evaluation report published by NIOSH may be the first to examine occupational exposure to secondhand cannabis smoke in a real-world, open-air setting. NIOSH staff evaluated secondhand cannabis smoke exposure among police officers providing security for campus concert events at a university football stadium. The university that requested the health hazard evaluation was concerned about how these exposures might affect the officers' health. Police officers' duties included patrolling the

venue on foot, bicycles, and in small vehicles. Others were assigned to locations around the stadium.

Read more:
https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/NIOSH-Evaluates-Exposure-to-Secondhand-Cannabis-Smoke-in-Open-Air-Setting.aspx

Radiation

Lawsuit Claims Industrial Hygiene Techs at Nuclear Site Weren't Qualified

A lawsuit working its way through the federal court system claims that a contractor allowed inexperienced and unqualified industrial hygiene technicians (IHTs) to work at a hazardous nuclear materials site.

News sources say lawsuit was filed by Kevin Newcomb, an IHT who worked at "tank farms" at the now-decommissioned Hanford nuclear production complex in Washington State for more than two decades. Newcomb alleges that his employer, contractor Washington River Protection Solutions (WRPS), systematically defrauded the United States by:

(1) failing to train and certify industrial hygiene technicians as required;

(2) signing and directing employees to sign qualification and requalification

cards falsely indicating that the candidate met the qualification requirements;

Read more:
https://www.ishn.com/articles/111168-lawsuit-claims-industrial-hygiene-techs-at-nuclear-site-werent-qualified

Ventilation

ASHRAE Releases New HVAC Applications Handbook

ASHRAE announced the release of its 2019 ASHRAE Handbook—HVAC Applications.

The newly published HVAC Applications volume comprised of 65 chapters covering a broad range of facilities and topics was written to help engineers design and use equipment and systems described in other handbook volumes. Main sections cover comfort, industrial, energy-related and general applications, as well as building operations and management.

The 2019 edition includes three new chapters:

- Indoor Swimming Pools (Chapter 6)
- Indoor Airflow Modeling (Chapter 59)
- Occupant-Centric Sensing and Controls (Chapter 65)

Some other updates include:

- Educational Facilities (Chapter 8) provides updated design criteria, and a new section on central plant optimization for higher

Read more:
https://www.achrnews.com/articles/141673-ashrae-releases-new-hvac-applications-handbook

PPE

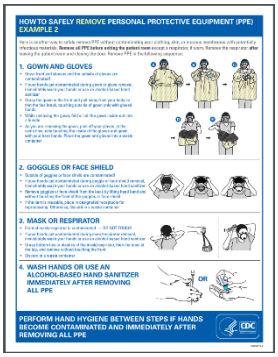
Filtering Performances of 20 Protective Fabrics against Solid Aerosols

Workers can be exposed to solid airborne particles in some occupational environments, and they might be required to wear chemical protective clothing to prevent skin exposure. Dedicated standards exist to certify the protective value of such clothing, but they are not informative enough to identify the main pathways of entry for solid particles nor to compare performances between different chemical

protective clothing. In this work, 20 non-woven fabrics used to make chemical protective clothing for solid particle protection were selected to be examined for both filtration and comfort performances. Nine were microporous fabrics (MP), 10 were multilayered nonwoven fibrous media (SMS) and one was a flash spun material (FS). To assess their filtration performances, fabrics were challenged in a benchtop wind tunnel with a 20–3,000 nm diameter sodium chloride aerosol at three low fabric face velocities (0.05, 0.15, 0.3 cm/sec). Airflow resistance and water vapor transmission rate were also measured to provide indications of comfort for the wearer. The penetration results led to the classification of the 20 fabrics into distinct groups of filtration efficiency. The data were analysed based on the porous media characteristics (thickness, fiber diameter, porosity, etc.). MPs were the most efficient fabrics, and SMSs showed a wide range of performances, mostly due to variations in the thickness of the filtering layer as well as to the fabric treatment. Measurements of airflow resistance and water vapor transmission rates revealed major differences between MPs and FSs and SMSs. This highlights the potential of some SMS fabrics to meet a compromise between protection and comfort.

Read more: Journal of Occupational and Environmental Hygiene, Published online 08 July 2019 (Available with AIHA membership)

Personal Protective Equipment Doffing Practices of Healthcare Workers



During the doffing of personal protective equipment (PPE), pathogens can be transferred from the PPE to the bodies of healthcare workers (HCWs), putting HCWs and patients at risk of exposure and infection. PPE doffing practices of HCWs who cared for patients with viral respiratory infections were observed at an acute care hospital from March 2017 to April 2018. A trained observer recorded doffing performance of HCWs inside the patient rooms using a pre-defined checklist based on the Centers for Disease Control and Prevention (CDC) guideline. Doffing practices were observed 162 times during care of 52 patients infected with respiratory viral pathogens. Out of the 52 patients, 30 were in droplet and contact isolation, 21 were in droplet isolation, and 1 was in contact isolation. Overall, 90% of observed doffing was incorrect, with respect to the doffing sequence, doffing technique, or use of appropriate PPE. Common errors were doffing gown from the front, removing face shield of the mask, and touching potentially contaminated surfaces and PPE during doffing. Deviations from the recommended PPE doffing protocol are common and can increase potential for contamination of the HCW's clothing or skin after providing care. There is a clear need to change the approach used to training HCWs in PPE doffing practices.

Read more: Journal of Occupational and Environmental Hygiene, Published online 10 Jul 2019 (Available with AIHA membership)

Noise

Evaluation of Smartphone Sound Level Meter Applications as a Reliable Tool for Noise Monitoring

Noise is a constant and ongoing health hazard across many workplaces and industries worldwide. The effective management of noise-related health effects is primarily dependent on accurate measurements of sound levels. The accuracy and feasibility of smartphone sound level meter applications (apps) for noise monitoring in occupational and environmental scenarios was tested. Ten iOS and Android smartphones were used to conduct sound level measurements with five apps for each respective platform. Five different sound signals were utilized to represent the spectra present in an occupational environment, at four different reference sound levels (60, 70, 80, and 90 dBA) for a total of 1,000 tests. A calibrated Larson Davis LxT sound level meter was used as a reference. Results suggest that across all four measured sound levels the

difference in smartphone app performance on the two platform is fairly nuanced. However, at the 90dBA sound level Android apps consistently underreport sound levels. This study concludes that some apps have the possibility to be appropriate for use only as screening tools and cannot be used for accurate determination of sound levels.

Read more: *Journal of Occupational and Environmental Hygiene, Published online 29 July 2019 (Available with AIHA membership*)

Preventive Medicine

BU Finds Workplace Injuries Contribute to Rise in Suicide, Overdose Deaths

A study co-authored by Boston University School of Public Health (BUSPH) researchers and published in the American Journal of Industrial Medicine finds that an injury

serious enough to lead to at least a week off of work almost triples the combined risk of suicide and overdose death among women, and increases the risk by 50 percent among men.

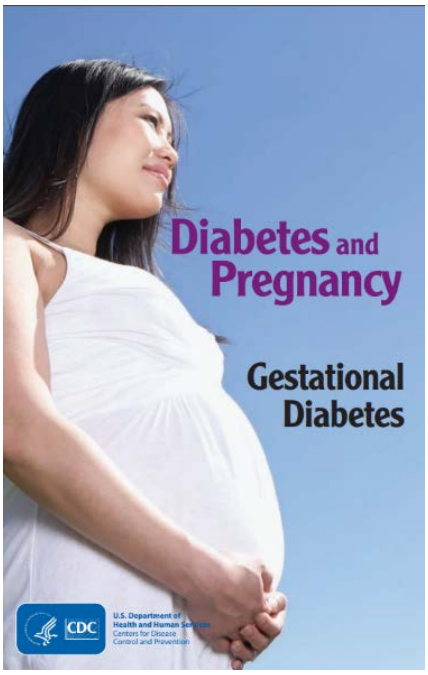
"These findings suggest that work-related injuries contribute to the rapid increase in deaths from both opioids and suicides," says study senior author Dr. Leslie Boden, professor of environmental health at BUSPH. "Improved pain treatment, better treatment of substance use disorders, and treatment of post-injury depression may substantially improve quality of life and reduce mortality from workplace injuries."

Read more:
https://www.eurekalert.org/pub_releases/2019-07/buso-bfw072219.php

Study: PFAS Move from Mom to Fetus at Higher Rate in Women with Gestational Diabetes

University of Massachusetts Amherst environmental epidemiologist studying the presence of PFAS compounds in new mothers and their babies found that women with gestational diabetes had a "significantly higher" rate of transferring the synthetic chemicals to their fetus.

The newly published study in Environment International is among the largest to date in terms of the number of per- and polyfluoroalkyl substances (PFASs) examined - 17. Those particular compounds are among the PFAS chemicals associated with growing health concerns, including cancer risk, hormone interference, immune system suppression and developmental disruptions in infants and children.



Read more:
https://www.eurekalert.org/pub_releases/2019-07/uoma-spm071719.php

Study: Colonized Candida Auris Patients Shed Fungus via Skin

New research presented last weekend at the annual conference of the American Society of Microbiology indicates patients who carry the multidrug-resistant fungus Candida auris on their skin are shedding it into the hospital environment and contributing to transmission of the deadly organism.

The research, led by scientists from Centers for Disease Control and Prevention (CDC) and the City of Chicago Public Health Department, could provide a clue to one of the mysteries about C auris—how it's spreading so easily in hospitals.

Read more:
http://www.cidrap.umn.edu/news-perspective/2019/06/study-colonized-candida-auris-patients-shed-fungus-skin

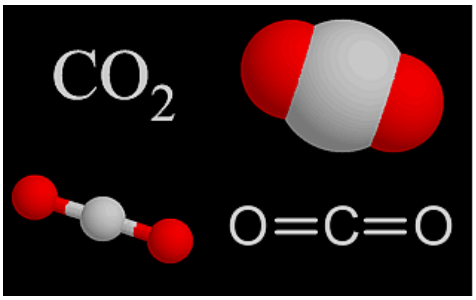
Keeping Parasites from Sticking to Mosquito Guts Could Block Disease Transmission

A group of microorganisms known as kinetoplastids includes the parasites that cause devastating diseases such as African sleeping sickness, Chagas disease, and leishmaniasis. They share an ability to adhere to the insides of their insect hosts, using a specialized protein structure. But what if scientists could prevent the parasite from adhering? Would the parasites pass right through the vectors, unable to be passed on to a human?

Read more:
https://medicalxpress.com/news/2019-07-parasites-mosquito-guts-block-disease.html

New Study Reveals How TB Bacteria May Survive In Human Tissues

Carbon monoxide is an infamous and silent killer that can cause death in minutes. But while it is deadly for us, some microorganisms actually thrive on it, by using this gas as an energy source.



Associate Professor Chris Greening and his team of microbiologists from the School of Biological Sciences, Monash University, have discovered that some pathogens depend on carbon monoxide to survive when other nutrients are not available.

The research focused on mycobacteria, a bacterial group that causes killer diseases such as tuberculosis (TB), leprosy, and Buruli ulcer. During infection, these microbes are in a hostile environment with very few nutrients to go around, meaning that anything they can do to get extra energy can be hugely advantageous.

Read more: https://phys.org/news/2019-07-reveals-tb-bacteria-survive-human.html

Environmental Health

Restricting NO2 Emissions Linked With Reduction in Childhood Asthma Incidence

Air pollution exacerbates lung conditions, including asthma. Researchers have now added to the evidence that pollution exposure is correlated with onset of the disease in children—and that tighter regulations on one pollutant in particular, nitrogen dioxide, could reduce the incidence of childhood asthma. University of Southern California environmental health researchers led by Kiros Berhane and Erika Garcia drew on 20 years of data from the Southern California Children's Health Study. In May, the team reported that falling NO2

emissions from 1993 to 2014 were correlated with a 20% decline in the incidence of childhood asthma (JAMA, J. Am. Med. Assoc. 2019, DOI: 10.1001/jama.2019.5357).

Read more:
https://cen.acs.org/environment/pollution/Restricting-2-emissions-linked-reduction/97/i30

Long-Term Particulate Matter Exposure and Onset of Depression in Middle-Aged Men and Women

Background:
Long-term exposure to particulate matter (PM) air pollution is associated with all-cause mortality and adverse cognitive outcomes, but the association with developing depression remains inconsistent.

Objective:
Our goal was to evaluate the prospective association between PM air pollution and developing depression assessed using the Center for Epidemiological Studies Depression (CES-D) scale.

Methods:
Subjects were drawn from a prospective cohort study of 123,045 men and women free of depressive symptoms at baseline who attended regular screening exams in Seoul and Suwon, South Korea, from 2011

to 2015. Exposure to PM with an aerodynamic diameter of ≤10 and≤2.5μm (PM_{10} and $PM_{2.5}$, respectively) was estimated using a land-use regression model based on each subject's residential postal code.

Read more:
https://ehp.niehs.nih.gov/doi/full/10.1289/EHP4094

Oral Systemic Bioavailability of Bisphenol A and Bisphenol S in Pigs

Background:
Given its hormonal activity, bisphenol S (BPS) as a substitute for bisphenol A (BPA) could actually increase the risk of endocrine disruption if its toxicokinetic (TK) properties, namely its oral availability and

systemic persistency, were higher than those of BPA.

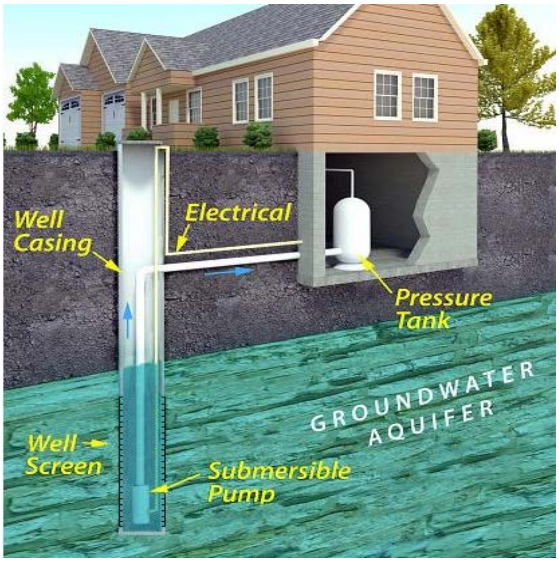
Objectives:
The TK behavior of BPA and BPS was investigated by administering the two compounds by intravenous and oral routes in piglet, a known valid model for investigating oral TK.

Methods:
Experiments were conducted in piglets to evaluate the kinetics of BPA, BPS, and their glucuronoconjugated metabolites in plasma and urine after intravenous administration of BPA, BPS, and BPS glucuronide (BPSG) and gavage administration of BPA and BPS.

Read more:
https://ehp.niehs.nih.gov/doi/10.1289/EHP4599

Active Pharmaceutical Ingredients Can Persist In the Environment

Homeowners who rely on private wells as their drinking water source can be vulnerable to bacteria, nitrates, and other contaminants that have known human health risks. Because they are not connected to a public drinking water supply, the homeowners are responsible for ensuring that their own drinking water is safe.



Similar to concerns that public drinking water treatment plants face, groundwater wells may be impacted by another group of contaminants -- and they might be part of your daily use!

Read more:
https://www.eurekalert.org/pub_releases/2019-07/asoa-api072219.php

Ergonomics

Modeling the Effect of the 2018 Revised ACGIH® Hand Activity Threshold Limit Value® (TLV) at Reducing Risk for Carpal Tunnel Syndrome

Recent studies have shown the 2001 American Conference of Governmental Industrial Hygienists (ACGIH®) Threshold Limit Value (TLV®) for Hand Activity was not sufficiently protective for workers at risk of carpal tunnel syndrome (CTS). These studies led to a revision of the TLV and Action Limit. This study compares the effect of applying the 2018 TLV vs. the 2001 TLV to predict incident CTS within a large occupational pooled cohort study (n = 4,321 workers). Time from study enrollment to first occurrence of CTS was modeled using Cox proportional hazard regression. Adjusted and unadjusted hazard ratios for incident CTS were calculated using three exposure categories: below the Action Limit, between the Action Limit and TLV, and above the TLV. Workers exposed above the 2001 Action Limit demonstrated significant excess risk of carpal tunnel syndrome, while the 2018 TLV demonstrated significant excess risk only above the TLV. Of 186 total cases of CTS, 52 cases occurred among workers exposed above the 2001 TLV vs. 100 among those exposed above the 2018 value. Eliminating exposures above the 2001 TLV might have prevented 11.2% of all cases of CTS seen in our pooled cohort, vs. 25.1% of cases potentially prevented by keeping exposures below the 2018 value. The 2018 revision of the TLV better protects workers from CTS, a recognized occupational health indicator important to public health. A significant number of workers are currently exposed to forceful repetitive hand activity above these guidelines. Public health professionals should promulgate these new guidelines and encourage employers to reduce hand intensive exposures to prevent CTS and other musculoskeletal disorders.

Read more: Journal of Occupational and Environmental Hygiene, Published online 30 July 2019 (Available with AIHA membership)

Safety

3M Issues Immediate Recall of Two Fall Protection Devices, Citing Safety Concerns

The worker safety company 3M is asking customers to immediately stop using two devices designed for fall protection after the corporation discovered major issues that "could expose the worker to serious injury or death."

3M Fall Protection announced the recall of the 3M™ DBI-SALA® Twin-Leg Nano-Lok™ edge and the Twin-Leg Nano-Lok™ Wrap Back Self-Retracting Lifeline last week. The products are part of a personal fall protection system that connects retracting lifelines to the ring of a worker's harness.

Read more:
https://ohsonline.com/articles/2019/07/30/3m-issues-immediate-recall-of-two-fall-protection-devices-citing-safety-concerns.aspx

UPS Workers Push for Air-Conditioned Trucks, More Regulations on Heat Exposure

The growing pressure to deliver packages at a rapid rate is taking its toll on the people tasked with bringing your Amazon order to your door: delivery drivers.

In a new investigation published Thursday, NBC News explores the difficult situation faced by UPS drivers, the vast majority of whom are delivering packages in record hot temperatures without air conditioning in their trucks or loading facilities. Those conditions put workers at high risk of heat-related illnesses, a fact that is not lost on workers who are pushing for more oversight from OSHA.

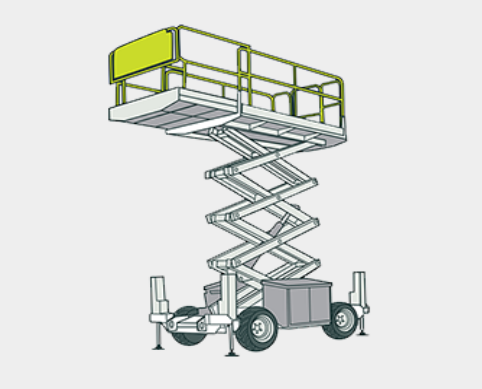
Read more:
https://ohsonline.com/articles/2019/07/22/ups-workers-push-for-air-conditioned-trucks-more-regulations-on-heat-exposure.aspx?admgarea=ht.HeatStressQuenchers

Venomous Snakes: A Neglected Hazard for Outdoor Workers

Outdoor workers can experience a number of hazards. One often unexpected hazard is a venomous snakebite. Venomous snakes may be encountered in workplaces throughout the United States. The most likely geographic locations where outdoor workers would encounter venomous snakes is in the American South, Southwest, and West. From 2008-2015, the greatest number of deaths from venomous snakebites occurred in the southern and mid-western United States [Forrester et al., 2018]. The number of venomous snakebites is gradually increasing in most states [Schulte, 2017].

Read more:
https://www.ishn.com/articles/111126-venomous-snakes-a-neglected-hazard-for-outdoor-workers

New ANSI Standard Covers MEWP Design, Training & Safe Use



Mobile elevated work platforms (MEWPs), such as boom and scissor lifts, are powerful, durable and useful machines that help workers perform a wide range of tasks at height. Training operators and other workers on the safe use of these machines is crucial to decrease the risk of injuries, property damage and liability on the worksite.

As equipment in the access industry continues to evolve, so too must the safety standards the industry relies upon. It's imperative for machine owners and operators to understand these safety standards, stay abreast of any upcoming modifications and prepare themselves accordingly. The new ANSI A92 standard for the access and lift equipment industry addresses new issues, simplifies the MEWP classification terminology and promotes safety and education.

Read more:
https://www.ishn.com/articles/111059-new-ansi-standard-covers-mewp-design-training-safe-use

Eyewash/Safety Shower Protection—Trust But Verify!

During weekly inspections, one drench hose was always noticed with the dust covers dangling and the hose in an awkward position. Upon closer observation and following conversations with staff, it was learned that this hose was often used to fill mop buckets by placing a tie band around the activation handle and dangling into the bucket. Ingenuity at its worst. . . . and, worse, your eyewash program has now been compromised!

These first-line emergency equipment items are truly the silent sentinels of exposure and are not given the value they deserve. Eyewash and emergency safety showers may seem like a straightforward safety program, but it is far from being a "one and done." As you manage your program progressively for years to come, consider the following items.

Read more: https://ohsonline.com/Articles/2019/07/15/Eyewash-Safety-Shower-Protection.aspx

Emergency Preparedness

U.S. Government Clears Commercial Medical Product for Use on Mustard Gas Injuries

The U.S. Food and Drug Administration recently cleared the first use of a commercially available product to manage blister injuries caused by sulfur mustard, otherwise known as mustard gas.

Silverlon, a silver-plated nylon dressing, is used widely to aid in the management of acute skin wounds and first- and second-degree thermal burns. The silver plating

helps kill bacteria within the dressing, and one dressing can be used for up to seven days. This allows for fewer dressing changes, which reduces the burden on caregivers and minimizes the pain and damage that would occur if the wound was disturbed, according to a press release issued last week by the U.S. Department of Health and Human Services.

Read more:
https://homelandprepnews.com/policy/35048-u-s-government-clears-commercial-medical-product-for-use-on-mustard-gas-injuries/

Deployment Health

Dive Medicine and Rescue Course Enhances Military Medical Readiness

Readiness is the cornerstone of military effectiveness. It is seen as the main line of effort for the Department of Defense. For 24 students in the Uniformed Services University (USU) Dive Medicine and Rescue course, readiness means the ability to perform complex medical tasks, while overcoming emotional fears and stress, in an aquatic setting.

Read more:
https://health.mil/News/Articles/2019/07/12/Dive-Medicine-and-Rescue-course-enhances-military-medical-readiness

Nanotechnology

Particle Size and Metal Composition of Gouging and Lancing Fumes

Metal gouging and lancing liberate particles of an unknown size and composition. Fumes are formed when vaporized materials condense in air, creating fine and ultrafine particles which can agglomerate. Particle sizes may be <1 µm in diameter. Inhalation of this mixture of metal fumes can lead to adverse health effects. This study characterized fumes by particle size fractions and metal composition. As

particles may be in the submicron range, the nano-size fraction was included. Randomized, side-by-side area samples of fumes liberated during gouging and lancing were collected. Samplers included the conductive plastic Institute of Occupational Medicine (IOM) samplers (inhalable fraction), GK2.69 stainless steel thoracic cyclones (thoracic fraction), aluminum respirable cyclones (respirable fraction), Nanoparticle Respiratory Deposition (NRD) samplers (nano-size fraction), and open-face filter cassettes (particle size distribution—PSD). Samplers were mounted at a height of between 1.3 m and 1.7 m, in the worst-case scenario area (down-wind). Forty-six samples were collected during gouging and 26 during lancing. Mass concentrations per fraction ranges (excluding nano-size) were found to be 1.27–17.27 mg/m3 (inhalable), 1.83–13.96 mg/m3 (thoracic) and 0.88–15.82 mg/m3 (respirable) for gouging; and 2.34–5.60 mg/m3 (inhalable), 2.82–4.01 mg/m3 (thoracic), and 1.89–3.24 mg/m3 (respirable) for lancing. PSD analysis confirmed the presence of nano-size particles with a mean size of 171.76 (±56.27) nm during gouging and 32.33 (±7.17) nm during lancing. Inductively Coupled Plasma Mass Spectrometry (ICP-MS) analysis of samples indicated the presence of chromium (Cr), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), nickel (Ni), and tin (Sn) in the respective particle size fractions (including nano-size) of both processes. Negative health effects associated with metal inhalation are well known, while nanoparticles' unique properties enable them to cause further detrimental health effects. The nano-size fraction should be included in personal exposure assessments and control measures.

Read more: Journal of Occupational and Environmental Hygiene, Published online 30 July 2019 (Available with AIHA membership)

Regulatory Research & Industrial Hygiene Professional News

ACGIH

ACGIH Adds Welding Fume, Other Chemical Substances to "Under Study" List

UNDER STUDY

On Tuesday, ACGIH announced the release of its 2019 two-tier "Under Study" list, which includes chemical substances and physical agents to be considered for Threshold Limit Values and Biological Exposure Indices. Welding fume, cyclohexane, sodium silicate, and styrene oxide are among the chemicals recently

added as tier 1 entries, which indicate chemical substances and physical agents for which ACGIH may issue a Notice of Intended Change or Notice of Intent to establish in the upcoming year.

Read more:
https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/ACGIH-Adds-Welding-Fume,-Other-Chemical-Substances-to-Under-Study-List.aspx

Congress

Debate over Heat Stress Bill Goes Before House Subcommittee

Questions over how to protect workers from heat-related illnesses took center stage during a July 11 hearing convened by the House Workforce Protections Subcommittee.

Much of the discussion focused on H.R. 3668, introduced July 10 by Rep. Judy Chu (D-CA). The bill would direct OSHA to create, within 42 months, a final standard that mandates workers in high-heat environments – indoors or outdoors – have paid breaks in cool spaces, access to water and limited exposure to heat.

Read more:
https://www.safetyandhealthmagazine.com/articles/18649-debate-over-heat-stress-bill-goes-before-house-subcommittee

OSHA

OSHA Says Fatality Investigations Up, Overall Investigations down in FY 2018

OSHA conducted its highest number of fatality/catastrophe investigations in more than a decade in fiscal year 2018, while overall inspections decreased 1.2% from FY 2017, the agency's latest enforcement summary shows.

OSHA recorded 941 fatality/catastrophe investigations in FY 2018, spanning Oct. 1, 2017, to Sept. 30, 2018. That's a 12.4% increase from its 837 total in FY 2017 and the agency's highest number since 1,043 in FY 2007.

Read more:
https://www.safetyandhealthmagazine.co

m/articles/18666-osha-says-fatality-investigations-up-overall-investigations-down-in-fy-2018

NIOSH

NIOSH Establishes Chemical Management Strategy

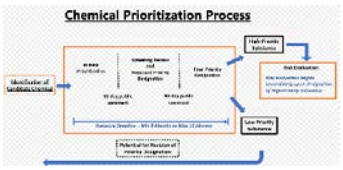
At any given workplace, a number of chemicals may be present. The key is understanding the hazards that each of those chemicals present and taking the proper precautions to protect workers.

A new technical report, The NIOSH Occupational Exposure Banding Process for Chemical Management, offers employers a way to categorize those chemicals that do not have occupational exposure limits (OELs). OELs establish a guideline for the levels at which chemicals can cause harm to human health.

Read more: https://www.assp.org/news-and-articles/2019/07/18/niosh-establishes-chemical-management-strategy

EPA

EPA Requests Input on Draft Risk Evaluations for Two TSCA Chemicals



The Environmental Protection Agency is seeking public comment on draft risk evaluations for two chemical substances that are among the first 10 slated for evaluation for potential health and environmental risks under the Frank R. Lautenberg Chemical Safety for the 21st Century Act, according to a notice published in the July 1 Federal Register.

The draft for the Cyclic Aliphatic Bromide Cluster – which includes a sub-cluster that is used as a flame retardant in extruded polystyrene foam, textiles, and electrical and electronic appliances – states that the chemical presents "no unreasonable risks" to the general population, workers or the environment.

Read more: https://www.safetyandhealthmagazine.com/articles/18639-epa-requests-input-on-

draft-risk-evaluations-for-two-tsca-chemicals

APHC

Training

2020 Training Schedule (traditional classroom events)

December 9-13, 2019 Army DOEHRS-IH Initial Course (1st Quarter)
February 20-24, 2020 Army DOEHRS-IH Initial Course (2nd Quarter)
April 20-24, 2020 Blueprint Reading & Design Review
April 27-May 1, 2020 Industrial Ventilation Course
May 4-8, 2020 Healthcare & Laboratory Ventilation Course
May 11-15, 2020 Army IH Professional Practice Course
May 18-22, 2020 Army DOEHRS-IH Initial Course (3rd Quarter)
August 17-21, 2020 Army DOEHRS-IH Initial Course (4th Quarter)

RESERVE SEATING QUOTAS NOW

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

CIH NOISE MATH (3hr)

Certificate with 3 easy steps:
1-Completely view 22 minute lecture.
2-Watch the Practice Problem Videos as homework calculations are worked out step by step by the instructor.
3-Complete exam 70% minimum score.

There's not really 3 hours of work in this course, but we are awarding a very generous 3 hour certificate! This gives you credit for the lesson, the videos, and the homework.

SELF-ENROLL NOW ON BLACKBOARD

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

Ventilation Hoods (4hr)

No Exam. Certificate with 3 easy steps:
1-Completely view lecture with embedded knowledge check questions.
2-Watch the Practice Problem Video as calculations are worked out step by step by the instructor.
3-Complete multiple attempt homework assignment.

There's not really 4 hours of work in this course, but we are awarding a 4 hour certificate! This gives you credit for the lesson, the video, and the homework.

SELF-ENROLL NOW ON BLACKBOARD

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

COMPETENCY VERIFICATION SELF ASSESSMENTS

- Curious about how you stand professionally?
- Not sure what specifics to target with self development?
- Looking for free exam prep questions?

No lessons, lectures, certificates, just sets of short quizzes to help bridge the gaps.

SELF-ENROLL NOW ON BLACKBOARD

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

Analytical Chemistry
Basic Science & Math
Biohazards
Health Hazards
Indoor/Outdoor Air
Noise
Sampling
Survey Equipment
Thermal Stressors
Toxicology
Industrial Work Environments

New Online material (self-enroll/self-development)

Industrial Hygiene Health Hazard Assessment Program (0.5hr)

THERE IS 1 LECTURE IN THIS COURSE (23min) THE LECURE HAS EMBEDDED KNOWLEDGE CHECKS. VIEWING ALL SLIDES AND COMPLETING THESE EMBEDDED KNOWLEDGE CHECKS IS MANDATORY. PARTICIPANTS HAVE TWO ATTEMPTS AT EACH QUESTION AND MUST COMPLETE THE LESSON ONCE STARTED.

SELF-ENROLL NOW ON BLACKBOARD

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

New Online material (self-enroll/self-development)

IH Assessment Statistics is a series of 3 lectures. The course is divided into 3 Lessons (Sampling, Describing Data, and Inferring the SEG). The lessons total 4hrs; homework is worth 1hr; total of 5hrs for the course. *There's not an exam*, however there is homework. You'll be able to leave lessons or homework and return to the same place you left if you need to exit. You'll be able attempt the homework as many times as you need to pass. Once you've *watched ALL lessons* and have at least *70% on the homework*, you'll automatically get a system generated certificate.

Not Quite ready for the full course? GREAT! 3 AWARENESS LEVEL offerings have also been added (Sampling, Describing Data, and Inferring the SEG) with *no homework, quizzes, or exam*. Once the all slides have been viewed, the system will generate a certificate.

SELF-ENROLL NOW ON BLACKBOARD

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

New Online material (self-enroll/self-development)

IH Professionalism (0.5hr) is short lecture (23min) with *no homework, quizzes, or exam*. Participants receive a certificate from viewing ALL slides and using a code word to initiate a certificate of completion.

SELF-ENROLL NOW ON BLACKBOARD

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

New Online material (self-enroll/self-development)

Introduction to Radiation (1.25hr)

This is a short lecture (66min) with *no homework, quizzes, or exam*. Participants receive a certificate from viewing ALL slides. This is both a great awareness level, refresher, or certification exam prep lecture.

SELF-ENROLL NOW ON BLACKBOARD

Registration/Sign-up Rosters at https://aiph-dohs.ellc.learn.army.mil

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

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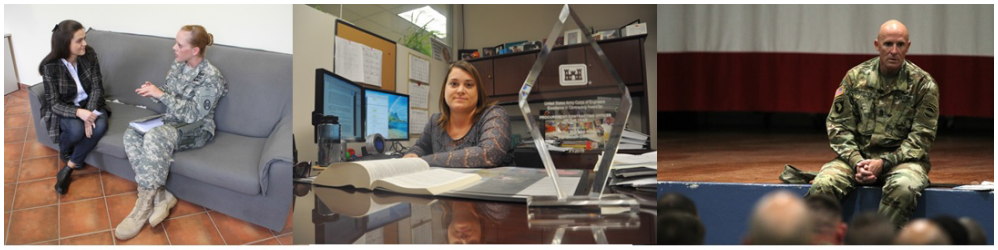

Professional Development and Career Programs

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.