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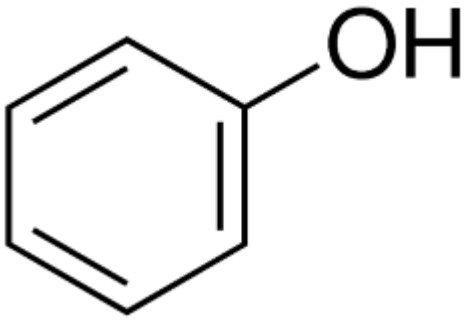
Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

A Smart Chemoenzymatic Method Detects And Removes Hazardous Phenols

Many industrial and agriculture processes use chemicals that can be harmful for workers and the ecosystems where they accumulate. Researchers from Thailand have now developed a bioinspired method to detect and detoxify these chemicals in only one step. As they report in the journal Angewandte Chemie, a combination of two natural enzymatic reactions convert harmful chloro- and nitrophenols into the substance that causes the characteristic glowing of fireflies: luciferin.

Oxygenated benzene or phenol molecules are part of the chemical structure of many organic substances, from lignin and tar, to pharmaceuticals, dyes, and herbicides. Phenol-derived compounds are added to plastics as plasticizers. Although many of these chemicals are not harmful as such,



pesticides, herbicides, or flame retardants may degrade to cancerous and stable nitrophenols and halogenated phenols that accumulate in the workplace or in fields.

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

Special Interest Articles:

Contents:

Benzene Exposure and Biomarkers in Alveolar Air and Urine Among Deck Crews on Tankers Transporting Gasoline

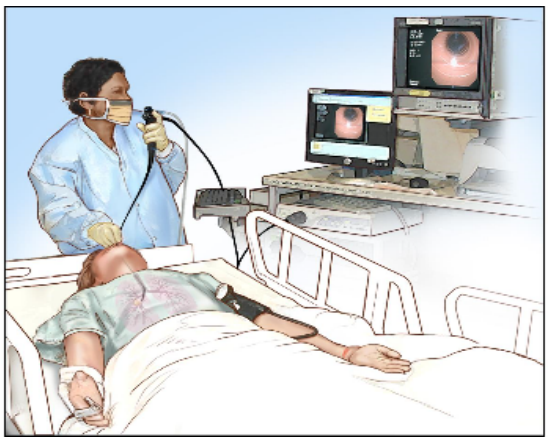
Introduction
Increased rates of leukaemia have been found among tanker crews. Occupational exposures to the leukomogen benzene during loading, unloading, and tank cleaning are possible causes. Studies on older types of tankers carrying gasoline with most handling being done manually have revealed important exposures to benzene. Our study explores benzene exposures on tankers with both automatic and manual systems. Correlations between benzene exposure and benzene in alveolar air (AlvBe), benzene in urine (UBe), and trans,trans-muconic acid (ttMA) in urine were investigated.

Methods
Forty-three male seafarers (22 deck crewmembers and 21 not on deck) on five Swedish different product and chemical tankers transporting 95- or 98-octane gasoline were investigated between 1995 and 1998. The tankers used closed systems for the loading and unloading of gasoline but stripping and tank cleaning were done manually. Benzene in respiratory air was measured using personal passive dosimeters during a 4-h work shift. Samples for biomarker analyses were collected pre- and post-shift. Smoking did occur and crewmembers did not use any respiratory protection during work.

Read more:
https://academic.oup.com/annweh/advance-article-abstract/doi/10.1093/annweh/wxz055/5543981?redirectedFrom=fulltext

Potential for Occupational Exposures to Pathogens during Bronchoscopy Procedures

Bronchoscopy is classified as an aerosol-generating procedure, but it is unclear what drives the elevated infection risk observed among healthcare personnel performing the procedure. The objective of this study was to characterize pathways through which bronchoscopists may be exposed to infectious agents during bronchoscopy procedures. Aerosol number concentrations (0.2–1 µm aerodynamic diameter) were measured using a P-Trak Ultrafine Particle Counter 8525 and mass concentrations (<10 µm) were measured using a SidePak Personal Aerosol Monitor AM510 near the head of patients during bronchoscopy procedures. Procedure pathway, number of patient coughs, number of suctioning events, number of contacts with different surfaces by the pulmonologist, and the use and doffing of personal protective equipment were recorded by the investigator on a specially designed form. Any pulmonologist performing a bronchoscopy procedure was eligible to participate. A total of 18 procedures were observed. Mean particle number and mass concentrations were not elevated during procedures relative to those measured before or after the procedure, on average, but the concentrations were highly variable, exhibiting high levels periodically. Patients frequently coughed during procedures (median 65 coughs, range: 0–565 coughs), and suctioning was commonly performed (median 6.5 suctioning events, range: 0–



42). In all procedures, pulmonologists contacted the patient (mean 22.3 contacts, range: 1–48), bronchoscope (mean 19.4 contacts, range: 1–46), and at least one environmental surface (mean 31.2 contacts, range: 3–62). In the majority of procedures, the participant contacted his or her body or personal protective equipment (PPE), with a mean of 17.3 contacts (range: 4–48). More often than not, the observed PPE doffing practices differed from those recommended. Bronchoscopy procedures were associated with short-term increased ultrafine or respirable aerosol concentrations, and there were opportunities for contact transmission.

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

Semiconductor Work and Adverse Pregnancy Outcomes Associated with Male Workers: A Retrospective Cohort Study

Objectives
A hazardous work environment in semiconductor factories is a threat to the workers' health. Semiconductor manufacturing characteristically requires young workers, and reproductive toxicity is an important issue. Studies investigating reproductive toxicity among individuals working in the semiconductor manufacturing industry have primarily focused on outcomes in women. Information on the reproductive health of male semiconductor factory workers is limited. This study aimed to evaluate the association between workplace exposures among male workers in a Korean semiconductor company and adverse pregnancy outcomes.

Methods
Based on the data from the 2015 Semiconductor Health Survey (SHS), which evaluated the workplace exposures, pregnancy outcomes, and general health of 21 969 employees of the semiconductor industry in South Korea, we included 3868 male workers with 7504 pregnancy outcomes identified by self-reports for this retrospective cohort study.

Read more:
https://academic.oup.com/annweh/advance-article-abstract/doi/10.1093/annweh/wxz061/5550990?redirectedFrom=fulltext

High Levels of Toxic Chemicals Found in Water at Air Force Academy: Officials

Groundwater at the Air Force Academy is contaminated with the same toxic chemicals polluting a southern El Paso County aquifer, expanding a problem that has already cost tens of millions of dollars to address in the Pikes Peak region. Plans are underway to begin testing drinking water wells south of the academy

in the Woodmen Valley area after unsafe levels of the chemicals were found at four locations on base, the academy said Thursday.

It was unclear Thursday evening how many people and wells could be impacted.

Read more:
https://www.military.com/daily-news/2019/08/23/high-levels-toxic-chemicals-found-water-air-force-academy-officials.html

Pregnant Women at Risk of MRI Contrast Agent Exposure in First Trimester, Study Finds

Pregnant women are likely to get exposed to a harmful chemical while they undergo magnetic resonance imaging (MRI) scans in the first few weeks of the first trimester, according to a study. The study stated that this chemical can have an adverse effect on the fetus.

The research, published in the medical journal Radiology on Tuesday, looked into the first-trimester exposure to the chemical, which is a dye called gadolinium contrast media. This chemical is used in nearly 30 to 40 percent MRI scans in the United States to get clear difference between the internal organs, blood vessels, soft tissues and bones.

The study stated that many pregnant women undergo MRI scans without realizing that they are expecting. These women could get exposed to the gadolinium-based contrast agents (GBCA), which may not be good for the fetus.

Read more:
https://www.ibtimes.com/pregnant-women-risk-mri-contrast-agent-exposure-first-trimester-study-finds-2816278

Cleaning Workers' Exposure to Volatile Organic Compounds and Particulate Matter during Floor Polish Removal and Reapplication

The floor polish removal (FPR) and reapplication (FPA) are important cleaning tasks in public buildings that have hard floor surfaces. Usually, the FPR and FPA are conducted once or twice a year, during the periodic cleaning of these buildings. The

FPR can be performed either chemically (CFPR) or by using dry scrubber (DFPR), when the polish is ground from the floor. In this study, cleaning workers' exposure to volatile organic compounds (VOCs) and particulate matter (PM) during the FPR and FPA, and the differences in the exposures between the two FPR methods were investigated. In total, three buildings located in Central Finland were included, and total of six cleaning workers (two per building) participated in the study. In Buildings 1 and 2, the CFPR and FPA were performed and in Building 3, the DFPR was conducted. TVOC (total volatile organic compounds) concentrations in the breathing zone of the workers during the CFPR were 8,740 and 390 µg/m3 (SD 3,290 and 180 µg/m3) for Buildings 1 and 2, respectively. During the DFPR in Building 3, the average TVOC concentration was 400 µg/m3 (SD 180 µg/m3, stationary sampling). The TVOC concentrations during the FPA were high, 1,640 and 2,170 µg/m3 on average (SD 1,570 and 930 µg/m3) for Buildings 1 and 2, respectively. Glycol ethers were the most prominent VOCs during the CFPR and FPA, whereas carboxylic acids were the most common during the DFPR. The inhalable dust concentrations in the workers' breathing zone were noticeably higher during the

DFPR (1.55 mg/m3 on average, SD 0.01 mg/m3) than the CFPR (0.24 mg/m3 on average, SD 0.05 mg/m3). Finnish occupational exposure limit value for organic inhalable dust is 5 mg/m3. As the products used during the CFPR and FPA contain glycol ethers and ethanolamines that are absorbed via the skin as well, the use of skin protection is recommended. Whereas the use of FFP3 respirators and skin protection are recommended during the DFPR to prevent the PM exposure.

Read more: Journal of Occupational and Environmental Hygiene, Published online 07 Aug 2019 (Available with AIHA membership)

Radiation

Smartphones May Be Leaking More Radiation Than We Think

Apple and Samsung phones released over the last three years may be producing radio frequency radiation at levels higher than current Federal Communications Commission (FCC) limits allow, according to a report by the Chicago Tribune. Scientists and consumers have shown increasing concern radio frequency radiation from our devices may have adverse effects on human health, especially with 5G rolling out across the globe. The new report demonstrates older phone models, operating in the 3G and 4G bands, have the potential to exceed the FCC's safe limits by up to as much as five times.

Read more: https://www.cnet.com/news/smartphones-may-be-leaking-out-more-radiation-than-we-think/

Ventilation

Air Curtains Allowed As Vestibule Substitutes in New ASHRAE Standard

Doorway air curtains are now approved as alternatives to vestibules on most commercial building entries in the upcoming American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2019, Energy Standard for Buildings Except Low Rise Residential Buildings.

The professional association's approved addition requires the air curtain performance to be tested in accordance

with ANSI/AMCA Standard 220, Laboratory Methods of Testing Air Curtain Units for Aerodynamic Performance Rating, to ensure it provides a minimum of 122-m (400-ft) per minute airstream velocity at the floor.

Read more: https://www.constructionspecifier.com/air-curtains-allowed-as-vestibule-substitutes-in-new-ashrae-standard/

PPE

Four Steps of Designing an Effective Fall Protection System

Protecting workers at height is a great challenge for occupational safety and health professionals. Given the nature of the work and the risks it presents, these environments create some of the most hazardous working conditions. Falls accounted for 17 percent of all worker fatalities in 2017, their highest level on record.

One way to address this challenge is to develop an effective fall protection program. These four steps can help you make sure your employees have the right equipment, know how to operate it properly and keep it in good working order for use in the field.

Read more: https://www.assp.org/news-and-articles/2019/08/22/four-steps-of-designing-an-effective-fall-protection-system

Noise

Hearing Loss in Agricultural Workers Exposed to Pesticides and Noise

Agricultural workers who have concurrent exposure to pesticides and noise are at increased risk of hearing loss. We recruited 163 Thai conventional and 172 organic farmers to answer our questionnaires about personal demographics, agricultural activities, and pesticide and agricultural machinery use. This information was used

to calculate the years of conventional (pesticide use) farming and the years of agricultural noise exposure, and to estimate semiquantitative metrics for pesticide exposure (cumulative intensity score-years) and cumulative noise exposure (dB(A)-years) for each conventional farmer. All participants underwent pure tone audiometric testing. The mean hearing threshold in the low-frequency band (0.5–2 kHz) and high-frequency band (3–6 kHz) were used for analysis

Read more: https://academic.oup.com/annweh/article/63/7/707/5510591

Understanding the Hazards of Workplace Noise

We encounter many different types of workplace noise and need to think about how that noise impacts our hearing. Many working environments not only make it more difficult for workers to hear but also can have detrimental effects on their hearing.

An estimated 12 percent of the U.S. working population has hearing difficulty and approximately 24 percent of hearing difficulty is caused by occupational exposure. The U.S. Centers for Disease Control estimates that 22 million workers are exposed to hazardous noise.

A new video from the Council for Accreditation in Occupational Hearing Conservation (CAOHC) provides safety professionals with a training tool to teach workers about the hazards of workplace noise and the effects of overexposure. The video, Workplace Noise: Measurement and Controls, explains different types of workplace noise, reviews the purpose of noise measurement and control strategies and discusses the difference between administrative and engineering controls.

Read more: https://www.assp.org/news-and-articles/2019/08/16/understanding-the-hazards-of-workplace-noise

Preventive Medicine

Two Hospital Infection Rates Tumbled after Move to Single-Patient Rooms

The move to single-patient rooms at the McGill University Health Centre's (MUHC) Glen site in 2015 resulted in significantly reduced rates of hospital-acquired infections, suggests a study published today in the highly respected journal JAMA: Internal Medicine published by the American Medical Association. A team at the Research Institute of the McGill University Health Centre (RI-MUHC) found that rates of both colonization and blood infections due to vancomycin-resistant Enterococcus(VRE), a common multi-drug resistant organism, fell immediately and dramatically after the relocation, suggesting an association between single-patient rooms and reduced risk of hospital-acquired

infections. Their findings have important implications for infection control strategies in the context of the construction or renovation of hospitals.

Read more:
https://medicalxpress.com/news/2019-08-hospital-infection-single-patient-rooms.html

CDC Reports More Than 150 Cases of Possible Vaping-Linked Lung Disease

Federal authorities are investigating more than 150 cases of severe lung infection possibly linked to people using e-cigarettes.

The Centers for Disease Control and Prevention (CDC) on Wednesday said the cases are spread across 16 different states.

The number jumped from 94 cases in just five days, and is likely to keep growing. The CDC said many states have alerted the agency to possible, but not confirmed, cases and investigations are ongoing.
Read more:
https://thehill.com/policy/healthcare/4584

60-cdc-reports-more-than-150-cases-of-possible-vaping-linked-lung-disease

Differences in Exposure to Toxic and/or Carcinogenic Volatile Organic Compounds between Black And White Cigarette Smokers

Objective
It is unclear why Black smokers in the United States have elevated risk of some tobacco-related diseases compared to White smokers. One possible causal mechanism is differential intake of tobacco toxicants, but results across studies are inconsistent. Thus, we examined racial differences in biomarkers of toxic volatile organic compounds (VOCs) present in tobacco smoke.

Method
We analyzed baseline data collected from 182 Black and 184 White adult smokers who participated in a randomized clinical trial in 2013–2014 at 10 sites across the United States. We examined differences in urinary levels of ten VOC metabolites, total nicotine equivalents (TNE), and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL), controlling for covariates such as cigarettes per day (CPD), as well as differences in VOCs per TNE to assess the extent to which tobacco exposure, and not metabolic factors, accounted for racial differences.

Read more:
https://www.nature.com/articles/s41370-019-0159-9

Graphene Shield Shows Promise In Blocking Mosquito Bites

An innovative graphene-based film helps shield people from disease-carrying mosquitos, according to a new study funded by the National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health. The research, conducted by the Brown University Superfund Research Center, Providence, Rhode Island, is published in

the Proceedings of the National Academy of Sciences.

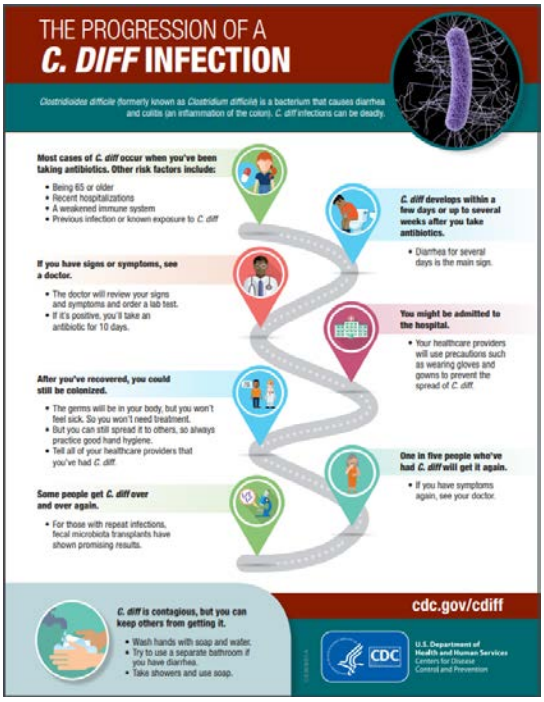
Read more: https://www.nih.gov/news-events/news-releases/graphene-shield-shows-promise-blocking-mosquito-bites

Study: Genetic Adaptations Primed C Diff for Hospital Transmission

A large genomic study of the gut bacterium Clostridioides difficile suggests the strains that have become endemic in healthcare systems around the world belong to an emerging species that's genetically adapted to spread among hospital patients.

The research, published in a letter yesterday in Nature Genetics, found that the emerging species of C difficile arose around 76,000 years ago and began to expand around the end of the 16th century, prior to the emergence of the modern healthcare system. Genomic analysis revealed that the ability of the strains in this species to spread in the healthcare system has been aided by genes that help them colonize the gut and produce hardier spores.

Read more: http://www.cidrap.umn.edu/news-perspective/2019/08/study-genetic-adaptations-primed-c-diff-hospital-transmission



Environmental Health

Climate Migrants within the U.S. Will Need a Strong Health System

Rachel Carson, speaking to the class of 1962 at Scripps College, said, "Your generation must come to terms with the environment. Your generation must face realities instead of taking refuge in ignorance and evasion of truth. Yours is a grave and a sobering

responsibility, but it is also a shining opportunity. You go out into a world where mankind is challenged, as it has never been challenged before, to prove its maturity and its mastery—not of nature but of itself."

Fifty-seven years later, as we stand at the last inflection point of the climate crisis, Carson's words have a brutal ring. Every region of the U.S. stands to suffer—from unprecedented storm surges in the Northeast to widespread crop failure in the Midwest to dramatic heat extremes throughout the South..

Read more: https://blogs.scientificamerican.com/observations/climate-migrants-within-the-u-s-will-need-a-strong-health-system/

Asthma Actors: Estimating How Much Specific Air Pollutants Contribute to ER Visits

In recent decades, epidemiological and experimental research has yielded plenty of evidence that air pollution exposure is a key risk factor for asthma flare-ups and, potentially, new cases.[1,2] A study in Environmental Health Perspectives offers the first estimates of the global asthma burden that may be attributable to specific air pollutants.3

Although preliminary, the authors' conclusions are sobering. They estimated that in 2015, some 9–23 million asthma-induced emergency room visits worldwide resulted from ozone exposure, 5–10 million resulted from fine particulate matter (PM2.5) exposure, and 400,000–500,000 resulted from nitrogen dioxide (NO2) exposure.

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

Scientists Use Honey and Wild Salmon to Trace Industrial Metals in the Environment

Scientists have combined analyses from honey and salmon to show how lead from natural and industrial sources gets distributed throughout the environment. By analysing the relative presence of differing lead isotopes in honey and Pacific salmon, Vancouver-based scientists have been able

to trace the sources of lead (and other metals) throughout the region.

Scientists in France, Belgium and Italy are now looking to apply the same approach to measure pollutants in honey in major European cities. The research* is being presented at the Goldschmidt conference in Barcelona.

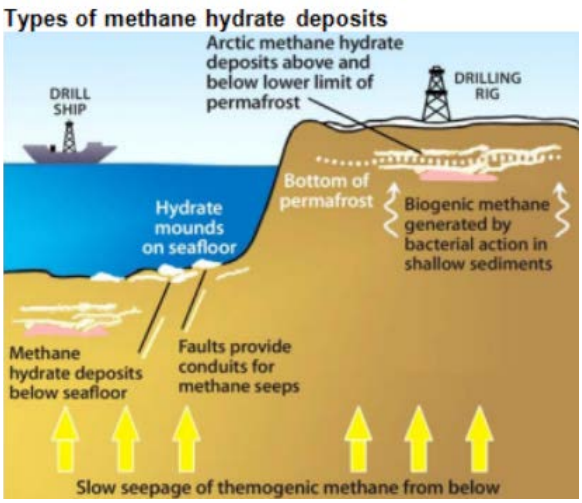
Scientists have long known that honey bees pick up small amounts of metal elements (i.e., iron, zinc, and pollutants such as lead, and cadmium) when they alight on flowers and leaves. They carry these metals back to the hive where tiny amounts are incorporated into the honey. However, this is the first time researchers have been able to establish clearly the sources of the metals carried by the bees and their products, making them reliable biomarkers for environmental pollution.

Read more:
https://www.eurekalert.org/pub_releases/2019-08/gc-suh082019.php

Climate Solution: Use Carbon Dioxide to Generate Electricity

The world is quickly realizing it may need to actively pull carbon dioxide out of the atmosphere to stave off the ill effects of climate change. Scientists and engineers have proposed various techniques, but most would be extremely expensive—without generating any revenue. No one wants to foot the bill.

One method explored in the past decade might now be a step closer to becoming practical, as a result of a new computer simulation study. The process would involve pumping airborne CO_2 down into methane hydrates—large deposits of icy water and methane right under the seafloor, beneath water 500 to 1,000 meters deep—where the gas would be permanently stored, or



sequestered. The incoming CO_2 would push out the methane, which would be piped to the surface and burned to generate electricity, to power the sequestration

operation or to bring in revenue to pay for it.

Read more:
https://www.scientificamerican.com/article/climate-solution-use-carbon-dioxide-to-generate-electricity/

Ergonomics

Five Strategies to Improve Workplace Ergonomics

Through these best practices, manufacturing organizations can significantly change the reduction and mitigation of MSDs, improve health outcomes, reduce costs and increase productivity.

Musculoskeletal disorders (MSDs) are common among all Americans; however, employees in manufacturing settings are especially vulnerable to developing these injuries due to a number of factors specific to their occupation. Heavy lifting, bending, awkward postures, reaching overhead, pushing or pulling heavy loads, and repetitive tasks are all risk factors, which increases the chance of injury on the job.
Read more:
https://www.ehstoday.com/health/five-strategies-improve-workplace-ergonomics

Safety

The QR Code's New Role in Gathering Safety Information

What once took safety personnel hours and sometimes longer to complete, what was once forgotten, placed aside until later or simply avoided because of time, can now be done with the swipe of a cell phone, ensuring not only machines and work environments remain hazard free, but the employees working there are also safe.

Unfortunately, the safety professional on most sites is wearing a variety of hats, forced to complete a slew of other responsibilities including everything from front desk reception and HR services, to payroll and maintenance requests.

Read more: https://www.ehstoday.com/safety-technology/qr-code-s-new-role-gathering-safety-information

Chemists Continue to Forget Safety Concerns about Sodium Hydride

SODIUM HYDRIDE NaH

CASRN: 7646-69-7

A recent report is bringing chemists' attention to a longstanding but frequently forgotten hazard in chemistry. Sodium hydride (NaH), when used with certain solvents, can unexpectedly generate heat and gas, leading to a runaway reaction or even an explosion (Org. Process Res. Dev. 2019, DOI: 10.1021/acs.oprd.9b00276).

Synthetic chemists often use NaH to pluck protons from molecules. But to get this ionic base into solution with greasy organic molecules, chemists usually have to use a so-called polar aprotic solvent, such as dimethylsulfoxide (DMSO), dimethylformamide (DMF), or dimethylacetamide (DMAc).

Read more: https://cen.acs.org/safety/lab-safety/Chemists-continue-forget-safety-concerns-about-sodium-hydride/97/web/2019/08

Why Every Loading Dock Should Have a Vehicle Restraint

The time to put on your seat belt is not after you've been in a car accident.
In 2017, there were 270,000 injuries reported in the transportation and warehousing industry. The same industry also saw 819 deaths, a number only surpassed by the construction industry. The number of preventable fatal work injuries in transportation and warehousing grew 5.3% from 2016 to 2017.1

What do these statistics have to do with loading docks? More than 25% of all industrial accidents happen at the loading dock, and for every accident, there are about 600 near misses.2 If your job has anything to do with loading docks, these figures are meant to help you understand how important loading dock safety really is.

Read more:
https://www.ehstoday.com/safety/why-every-loading-dock-should-have-vehicle-restraint

Algorithm Would Warn Warehouse Workers about Risky Motions

A new system uses machine learning to monitor factory and warehouse workers and tell them how risky their behaviors are in real time, researchers report.

In 2017 there were nearly 350,000 incidents of workers taking sick leave due to injuries affecting muscles, nerves, ligaments, or tendons—like carpal tunnel syndrome—according to the U.S. Bureau of Labor Statistics. Among the workers with the highest number of incidents were people who work in factories and warehouses.

Musculoskeletal disorders happen at work when people use awkward postures or perform repeated tasks. These behaviors generate strain on the body over time. So it's important to point out and minimize

risky behaviors to keep workers healthy on the job.

Read more:
https://www.nextgov.com/emerging-tech/2019/08/algorithm-would-warn-warehouse-workers-about-risky-motions/159413/

Protecting Factory Electrical Enclosures from Summer Heat

The threats that make enclosure thermal management necessary to begin with reach the height of their destructive energies all at once, once a year, in the summertime. While some logistics of manufacturing become vastly less complicated in the summer sun, several interrelated changes in

the weather threaten the critical electronics that allow production lines to operate.

These factors—heat, debris, and moisture—must be planned for and neutralized. Fortunately, with the right equipment, staying ahead of summer conditions to ensure maximum uptime requires relatively few and simple interventions. Best practices for getting the most out of electrical cooling equipment in the summer months center on two basic steps: set up equipment right and perform preventive maintenance.

Read more: https://www.ehstoday.com/safety/protecting-factory-electrical-enclosures-summer-heat

Emergency Preparedness

Proactive Preparation – National Preparedness Month

September is National Preparedness Month, so right now is a great time to think about how you can be prepared, and then act on those thoughts and get ready for an emergency! This article will help get you thinking, give you some great starting points, and provide resources to turn to.

Emergencies Have a Wide Horizon
While hurricanes are likely the first thing panhandle residents think of when it comes to emergencies, are you prepared for others? Fires? Floods? Hail? Lightning? Tsunamis? Drought? Heat waves? Tornadoes? Possible winter storms? Marine oil spills? Major sewage problems? Other

life-threatening medical disasters? Being prepared for a hurricane like Michael is vital to panhandle life, but it's certainly wise to consider other possible disasters and to be prepared for anything.

Read more: http://nwdistrict.ifas.ufl.edu/fcs/2019/08/24/proactive-preparation-national-preparedness-month/

Deployment Health

Program Offers Proactive Measures to Assess Health of Soldiers, Army Civilians

Few things are more difficult or traumatic for Soldiers than an operational deployment overseas. Even Civilians who work for the Department of the Army are sometimes called to deploy to these operations. Problems that can emerge days or even months after a Soldier or Civilian returns home include traumatic brain injury, post-traumatic stress, depression, suicide, substance abuse, chemical exposure, and long-term injuries.
The U.S. Army's Deployment Health Assessment Program (DHAP) identifies deployment-related health problems and connects Soldiers and Army Civilians with the right care when needed and ensures that Soldiers are assessed pre and post combat.

Read more:
https://www.army.mil/article/224998/program_offers_proactive_measures_to_assess_health_of_soldiers_army_civilians

Nanotechnology

A Quantitative Validation of the Control Banding Nanotool

	Extremely Unlikely (0-25)	Less Likely (26-50)	Likely (51-75)	Probable (76-100)
Very High (76-100)	RL 3	RL 3	RL 4	RL 4
High (51-75)	RL 2	RL 2	RL 3	RL 4
Medium (26-50)	RL 1	RL 1	RL 2	RL 3
Low (0-25)	RL 1	RL 1	RL 1	RL 2

Eleven years (by publication) years after the development and application of the control banding (CB) Nanotool for the qualitative assessment and control of engineered nanoparticles (ENP), there remains no quantitative gold standard to serve as an alternative to the qualitative assessment. Many CB models have been developed during the years subsequent to the initial development of the CB Nanotool and the literature continues to blossom with

comparisons and applications of these various tools; however, these developments have hitherto been made in the absence of validating and verifying their effectiveness using existing, albeit limited, quantitative methods. This paper reviews the existing literature on the CB Nanotool to evaluate its effectiveness in a variety of settings and presents a summary of qualitative and quantitative information from its application in a broad range of ENP handling activities performed in two different research institutions.

Read more:
https://academic.oup.com/annweh/advance-article-abstract/doi/10.1093/annweh/wxz057/5552738?redirectedFrom=fulltext

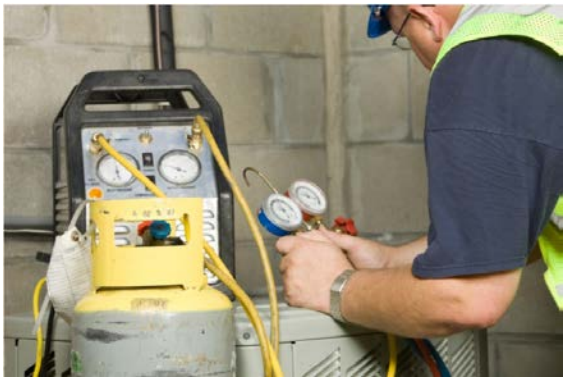
Regulatory Research & Industrial Hygiene Professional News

ASHRAE

UNEP/ASHRAE Updates Refrigerant Information

The UN Environment Programme (UNEP) and ASHRAE have produced a new publication to update the market on the current list of available refrigerants, their ASHRAE numbers and safety classifications.

As well as including the latest list of approved refrigerants, the new fact sheet explains ASHRAE's numbering system and how this relates to the refrigerants. ASHRAE's Standard 34 establishes a simple means of referring to common refrigerants rather than by their chemical name, and adds a safety classification based on the refrigerants toxicity and flammability.



Update on New Refrigerants Designations and Safety Classifications can be downloaded here.

Read more:
https://www.coolingpost.com/world-news/unep-ashrae-updates-refrigerant-information/

ABIH

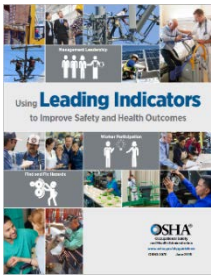
ABIH Is Now Under a New Name

We are very pleased to announce that the American Board of Industrial Hygiene® (ABIH®) has created a new, high-level organizational umbrella called the Board for Global EHS Credentialing® (BGC®) to more accurately reflect our enhanced credential offerings, which include the Certified Industrial Hygienist® (CIH®), Qualified Environmental Professional® (QEP®), Environmental Professional In-Training® (EPI®), and a Product Stewardship credential, which is currently in development.

Read more: https://ehscredentialing.org/

OSHA

OSHA's Guide to Leading Indicators



Managing workplace safety can be frustrating if you have to play catch-up with accidents, injuries, and illnesses that have already happened. The number and rate of injuries and illnesses in your facility are lagging indicators.

The Occupational Safety and Health Administration (OSHA) recently issued guidance for employers that want to get ahead of safety and health in their facilities. Using Leading Indicators to Improve Safety and Health Outcomes is a 17-page guide for those who want to prevent workplace injuries and illnesses and reduce the cost associated with safety and health incidents.

Read more:
https://ehsdailyadvisor.blr.com/2019/08/osha s-guide-to-leading-indicators/

NIOSH

NIOSH Conducts EMS Injury Risk Management Study

NIOSH researchers conducted a federal risk management study that showed EMTs and paramedics are at a higher risk of injury than all other professions in the U.S.

According to NECN, NIOSH study revealed that roughly nine out of 100 EMTs and paramedics sustain an occupational injury compared to two out of 100 workers in other professions

Read more:
https://www.ems1.com/safety/articles/394577048-NIOSH-conducts-EMS-injury-risk-management-study/

EPA

EPA Ordered to Set Stronger Smog Standards

A federal appeals court has ruled in a case battling Obama-era pollution regulations that the Environmental Protection Agency (EPA) must set stronger regulations on smog in order to protect the environment.

The U.S. Court of Appeals for the District of Columbia Circuit found that while the EPA's current air quality standards for ozone are too weak to protect the environment, the standards do meet federal requirements when it comes to protecting human health.

Read more:
https://thehill.com/policy/energy-environment/458608-epa-ordered-to-set-stronger-smog-standards

APHC

August DOEHRS-IH Super Stars

The DOEHRS-IH Superstar is back by audience request. This month's DOEHRS-IH Super Stars are listed in the image below. The personnel in the Korea and Tobyhanna Army Depot Program Offices have been diligent in executing the DoD Exposure Assessment Model. . A hardy congratulation goes out to the IH personnel in all of these Program Offices.

Training

COMING SOON!

2020 ARMY DOEHRS-IH INITIAL COURSE (PHASE 1 ONLINE)

This course will add four new interactive lessons and allow for more space/time in the classroom Phase 2 environment for hands on activities.

COMING SOON TO APHC BLACKBOARD

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

COMING SOON!

2020 INTRODUCTORY IH 40HR ONLINE COURSE

This course will have a new look, shorter lessons, only 25 actual hours of lecture, and will include an interactive project that enforces enhanced stakeholder integration.

COMING SOON TO APHC BLACKBOARD

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

COMING SOON!

2020 HAZWOPER REFRESHER 8HR

This course will be A-La-Carte. Users will select 8hrs of lecture from over a hundred hours of available related content. Users must upload a valid certificate to participate. This course will be available January 1, 2020 and must be completed before December 31, 2020.

COMING SOON TO APHC BLACKBOARD

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

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

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 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)

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

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

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

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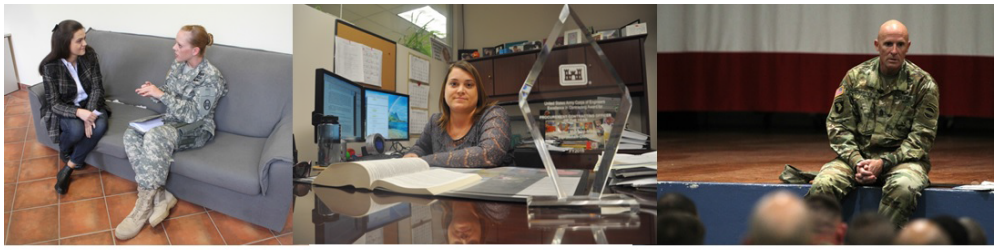

Professional Development and Career Programs

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.