April 2015,

Issue 44

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

Special Interest Articles:

- HazCom
- MUC
- Dog Flu
- Birth Weight
- Worst Jobs

DOEHRS Super Star

Workers' Memorial Day

Every year, nearly four million workers are injured or made sick at work, and more than four thousand die from preventable work-related injuries or illnesses. In a series of Workers' Memorial Day events on and around April 28, OSHA's national and regional offices will remember those who have been lost, disabled, injured, or sickened on the job. On this day we also, in their honor, renew our commitment to protecting the health and safety of every worker

Read more:
https://www.osha.gov/as/opa/quicktakes/qt041515.html

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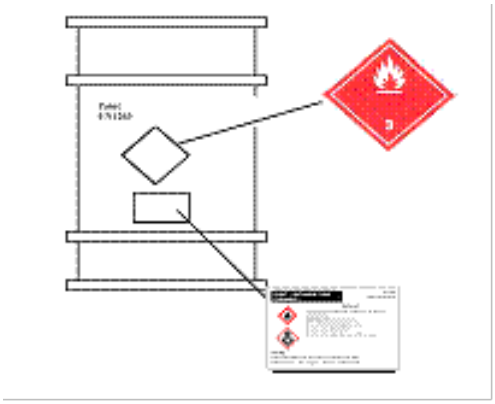
Short-Term Variation in Occupational Exposure to Air Contaminants

Many industrial workers are exposed to air contaminants. A significant proportion of this exposure is found to occur as short peaks, a fact that has received limited attention in the literature. The present study focuses on short-term variation in air contaminant exposure measured at the level of seconds, linking exposure peaks to typical work situations in selected Swedish industries. The video exposure monitoring method was used to characterize this variation. Ten different videos were analyzed, from recordings varying in length between 15 and 34 minutes. Cumulative exposure for sampling intervals ranked from high to low, relative to the total exposure was calculated as a function of time. Measures of exposure variation included geometric standard deviation and maximum exposure divided by arithmetic mean. The results show that the characteristics of the variation differ between industrial situations. Samples from the stone, wood, and pharmaceutical industries

generated the highest variation, implying that exposure peaks of short duration explain a large proportion of the total exposure. It can be concluded that video monitoring of exposure, combined with calculation of exposure variation as percentage of time accounting for given percentages of exposure, can help to reduce exposure to air contaminants in industrial situations by introducing more targeted control measures

Read more: Journal of Occupational and Environmental Hygiene Volume 12, Issue 5, 2015 (Available with AIHA membership)

The Challenges of Labeling for OSHA's Revised Hazard Communication Standard



As a response to the multiple definitions of "hazard" and multiple ways of communicating hazards, the United Nations adopted the Globally Harmonized System for Classification and Labeling of Chemicals (GHS) in 2003.

OSHA's revised Hazard Communication Standard has presented manufacturers, formulators and distributors with the challenge of revising their safety data sheets (SDSs) and the product labels by June 1. These changes are based upon the third revision of the GHS.

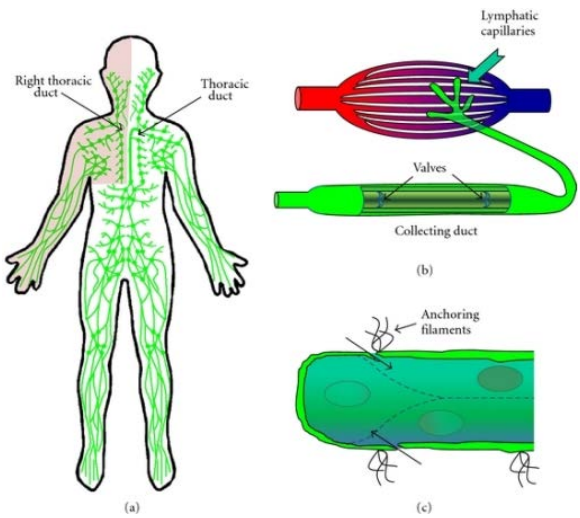
Read more:
http://ehstoday.com/ghs/challenges-labeling-oshas-revised-hazard-communication-standard

Evaluation of a Multiple Sclerosis Cluster among Nurses in an Inpatient Oncology Ward

In January 2011 NIOSH received a request from three employees in the inpatient oncology unit of a university hospital in Wisconsin concerning a potential multiple sclerosis (MS) cluster. Three of the 41 nurses in the unit were diagnosed with MS between 2007 and 2010, and employees were concerned about their exposures to chemotherapy drugs and helicopter exhaust. The employees were also concerned that exposure to acrolein, a metabolite from exposure to some chemotherapy drugs that is also present in helicopter engine exhaust, may be associated with MS.

Read more: Journal of Occupational and Environmental Hygiene Volume 12, Issue 5, 2015 (Available with AIHA membership)

Occupational Exposure to Chemicals May up Risk for Men



Men who work with hormone-mimicking chemicals for at least 30 years have a higher risk of cancers of the lymph tissue than others, according to a long-term observational study in several European countries.

For the new study, the authors used interviews of 2,178 people diagnosed with a lymphoma and of 2,457 similar people without the cancer between 1998 and 2004 in Spain, France, Germany, Italy, Ireland and the Czech Republic. Participants listed all of their full-time jobs that had lasted for at least one year.

Read more: http://in.reuters.com/article/2015/03/26/us-endocrine-disrupters-lymphoma-men-idINKBN0MM2QR20150326

Urinary Biomarkers as Exposure Surrogates: Controlling for Possible Bias

Biomonitoring, or measuring levels of contaminants and their metabolites in human biological samples, can tell researchers a good deal about the environmental agents to which populations are exposed.1 This information can help identify human health risks associated with environmental exposures, but the accuracy of conclusions hinges on the correct interpretation of the data.2,3,4 A new study

in EHP highlights a potential source of bias

in estimating exposures on the basis of urine samples and suggests a possible means to control for it.2

Read more: http://ehp.niehs.nih.gov/123-a97/

EPA Evaluates Potential Exposures to Paint-Removal Chemical NMP

EPA's final risk assessment for N-Methylpyrrolidone (NMP), a chemical commonly used for paint and coating removal, evaluated several exposure scenarios covering both worker and consumer uses. The risk assessment indicates that duration of use and a product's concentration of NMP both drive risk associated with NMP use. According to EPA, short-term exposures (1–2 hours) to products containing 25 percent or less of NMP result in no risk. However, the agency identifies risks from acute and chronic exposures for those who use products containing higher concentrations of the chemical.

NMP is a common alternative to methylene chloride, or dichloromethane (DCM). EPA's final risk assessment for DCM was released in August 2014, and indicated health risks to both workers and consumers who use products containing the chemical. According to the agency's press release, EPA is considering a variety of voluntary and regulatory actions to reduce risks and address concerns regarding NMP and DCM.

This risk assessment was developed as a part of EPA's Toxic Substances Control Act (TSCA) Work Plan, which identified chemicals for review and assessment of potential risks to human health and the environment.

Read more: http://portal.criticalimpact.com/vm2/eb4f471a273994f6/24360/df36df757f74b2243947229f28c3afba#23740

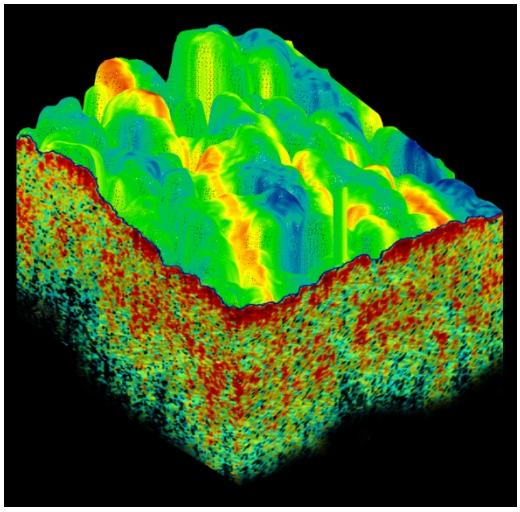
Occupational Exposure to Chromium of Assembly Workers in Aviation Industries

Respirable dust is of particular concern in Purpose: Aircraft are constructed by modules that are covered by a “primer” layer, which can often contain hexavalent chromium [Cr(VI)], known carcinogen to humans. While the occupational exposure to Cr(VI) during aircraft painting is ascertained, the exposure assessment of assembly workers (assemblers) requires investigations. Methods: Three biological monitoring campaigns (BM-I,II,III) were performed in an aviation industry, on homogeneous groups of assemblers (N=43) and controls (N=23), by measuring chromium concentrations in end-shift urine collected at the end of the working week and the chromium concentration difference between end- and before-shift urines. BM-I was conducted on full-time workers, BM-II was performed on workers after a 3–4 day absence from work, BM-III on workers using ecoprimers with lower Cr(VI) content. Samples were analyzed by atomic absorption spectroscopy and mean values were compared by T-test. Results: Even if Cr concentrations measured during BM-I were lower than Biological Exposure Indices by ACGIH, statistically significant differences were found between urinary Cr concentrations of workers and controls. Despite 3 4 days of absence from work, urinary chromium concentrations measured during BM-II were still higher than references from non-occupationally exposed populations. In the BM-III campaign, the obtained preliminary results suggested the efficacy of using ecoprimers. Conclusions: The healthcare of workers exposed to carcinogenic agents follows the principle of limiting the exposure to “the minimum technically possible”. The obtained results evidence that assemblers of aviation industries, whose task does not involve the direct use of primers containing Cr(VI), show an albeit slight occupational exposure to Cr(VI), that must be carefully taken into consideration in planning suitable prevention measures during risk assessment and management processes.

Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 20 Mar 2015 (Available with AIHA membership)

Researchers Map the Molecular Makeup of the Human Skin Surface

The skin's surface has long been terra incognita. Although scientists have charted some of its molecular makeup, they haven't had a detailed map.



But now, researchers have reported a three-dimensional plot of the microbes and molecules found on the surface of human skin (Proc. Natl. Acad. Sci. USA 2015, DOI: 10.1073/pnas.1424409112). The map blazes a trail for understanding the interplay among health, hygiene, and the human microbiome.

Read more:
http://cen.acs.org/articles/93/i14/Researchers-Map-Molecular-Makeup-Human.html

LED-Driven Infrared Sensors

Oil and gas production and work in confined spaces exposes field personnel to a variety of toxic and explosive gases in everyday drilling, processing, transport, and municipal operations. Explosive gas build-ups can endanger not only the workers nearby, but also a widespread area beyond the working area; making fast, accurate measurement of combustible gases below LEL levels is critical to maintaining safety.

Today, there are two main sensor technologies used for detecting explosive gases: catalytic bead and infrared.

Read more:
http://ohsonline.com/articles/2015/04/01/leddriven-infrared-sensors.aspx?admgarea=news

MUC – Maximum Use Concentration

Definition: The maximum use concentration (MUC) for a class of respirators determines the maximum protection level a class of respirators can provide against a single contaminant.

Maximum Use Concentration
Example

What is the MUC for an employee wearing a half-mask air purifying respirator (APF=10) in an atmosphere of sulfur dioxide gas (PEL=5 ppm)?

MUC = APF x OSHA Exposure Limit

MUC = 10 x 5 ppm = 50 ppm

Note that this calculated value does not exceed the IDLH level for sulfur dioxide (100 ppm), so that the MUC for this example would be 50 ppm.

The MUC is calculated by multiplying the Assigned Protection Factor (APF) of the facepiece or respirator unit by the occupational exposure limit (OEL).
Be aware of concentration limitations of use for chemical media cartridges or canisters.

According to DA Pam 40-503, The Army Industrial Hygiene Program, "The DA mandates the use of ACGIH® TLVs® when they are more stringent than OSHA regulations or when there is no PEL (see DA Pam 40-11)."
The NIOSH Recommended Exposure Limits or RELsTM and Workplace Environmental Exposure Levels or WEELs may be used when no other OEL exists or is mandated by other Army regulations or guidance.

For most sampling events, TLVs are used because they are lower than the comparable PELs.

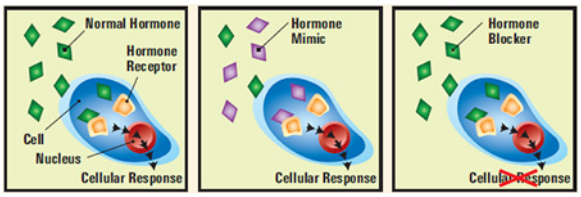
When calculating the MUC of a respirator, be sure to use the OEL of the particular standard developer that you are comparing as an employee exposure OEL.

In 2013, the development of Workplace Environmental Exposure Levels (WEELs) was transferred from AIHA to the Occupational Alliance for Risk Science (OARS) which is managed by Toxicology for Risk Assessment (TERA). AIHA will continue to post WEEL values on AIHA website as they are updated by OARS. WEEL values are also posted to the TERA OARS website.

Read more:
http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/RespiratoryProtection.aspx

New Tool for EDC Research: In Vivo Assay Screens for Estrogenic Effects

With more than 84,000 chemicals currently listed in the Toxic Substances Control Act inventory[1] and many of them lacking significant toxicologic data,[2] it's no easy task to pick out potential endocrine-disrupting compounds. In this issue of EHP, researchers describe a new in vivo screen



they believe will improve efforts to identify high-priority chemicals for further study.3

Read more: http://ehp.niehs.nih.gov/123-A95/

Radiation

Lawrencium Ionization Energy Measured

Researchers have for the first time measured the first ionization energy of lawrencium, the last of the actinides, validating predictions of the element's electronic structure (Nature 2015, DOI: 10.1038/-nature14342).

The first ionization energy is the energy required to remove one electron from a neutral atom in the gaseous state.

Compared with lighter members of the periodic table, the large nuclear charge for elements in rows six and seven causes their orbiting electrons to move faster. The speeding electrons generate relativistic effects that alter orbital energy levels.

Read more: http://cen.acs.org/articles/93/i15/Lawrencium-Ionization-Energy-Measured.html

Combating Nuclear Smuggling: DHS Research and Development on Radiation Detection Technology Could Be Strengthened

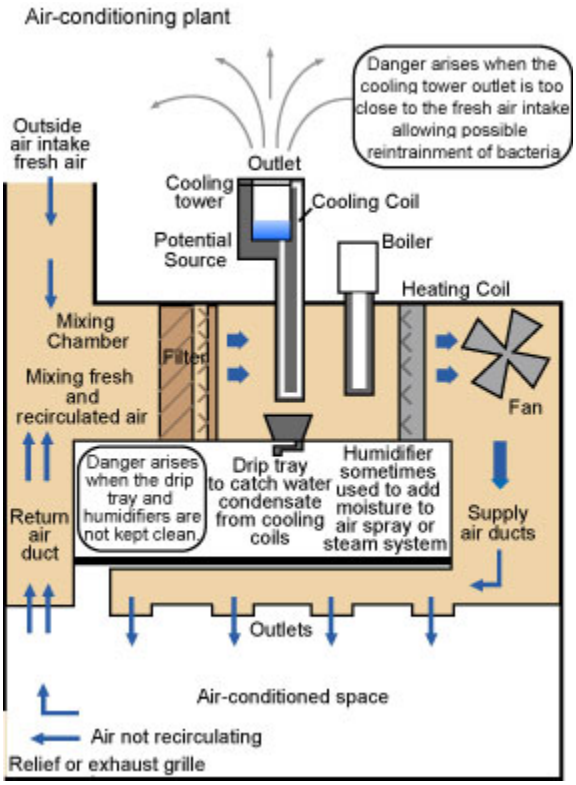
During fiscal years 2008 through 2013, the Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) started 189 research and development (R&D) projects that it grouped into various scientific or technological focus areas, known as portfolios. These projects are intended to address gaps in the Global Nuclear Detection Architecture (GNDA), a U.S. government framework to detect and

interdict nuclear smuggling. As of September 2014, DNDO had obligated approximately $350 million to these projects. For example, DNDO's shielded detection portfolio, which investigates methods for detecting shielded nuclear material, had the most projects start during this time—48 projects—and received the most obligations—approximately $103 million, or about 30 percent of obligations.

Read more:
http://www.gao.gov/products/GAO-15-263

Ventilation

Effects of Temperature, Humidity and Air Flow on Fungal Growth Rate on Loaded Ventilation Filters



This study compares the fungal growth ratio on loaded ventilation filters under various temperature, relative humidity (RH) and air flow conditions in a controlled laboratory setting. A new full size commercial building ventilation filter was loaded with malt extract nutrients and conidia of Cladosporium sphaerospermum in an ASHRAE Standard 52.2 filter test facility. Small sections cut from this filter were incubated under the following conditions: constant room temperature and a high RH of 97%; sinusoidal temperature (with an amplitude of 10 °C, an average of 23°C, and a period of 24 hours) and a mean RH of 97%; room temperature and step changes between 97% and 75% RH, 97% and 43% RH, and 97% and 11% RH every 12 hours. The biomass on the filter sections was measured using both an elution–culture method and by ergosterol assay immediately after loading and every 2 days up to 10 days after loading. Fungal growth was detected earlier using ergosterol content than with the elution–culture method. A student's t-test indicated that Cladosporium sphaerospermum grew better at the constant room temperature condition than at the sinusoidal temperature condition. By part-time exposure to dry environments, the fungal

growth was reduced (75% and 43% RH) or even inhibited (11% RH). Additional loaded filters were installed in the wind tunnel at room temperature and an RH greater than 95% under one of two air flow test conditions: continuous air flow or air flow only 9 hours/day with a flow rate of 0.7m3/s (filter media velocity 0.15m/s). Swab tests and a tease mount method were used to detect fungal growth on the filters at day 0, 5, and 10. Fungal growth was detected for both test conditions, which indicates that when temperature and relative humidity are optimum, controlling the air flow alone can not prevent fungal growth. In real applications where nutrients are less sufficient than in this laboratory study, fungal growth rate may be reduced under the same operating conditions.

Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 07 Apr 2015 (Available with AIHA membership)

PPE

Effects of Ultraviolet Germicidal Irradiation (UVGI) on N95 Respirator Filtration Performance and Structural Integrity

The ability to disinfect and reuse disposable N95 filtering facepiece respirators (FFRs) may be needed during a pandemic of an infectious respiratory disease such as influenza. Ultraviolet germicidal irradiation (UVGI) is one possible method for respirator disinfection. However, UV radiation degrades polymers, which presents the possibility that UVGI exposure could degrade the ability of a disposable respirator to protect the worker. To study this, we exposed both sides of material coupons and respirator straps from four models of N95 FFRs to UVGI doses from 120 to 950 J/cm2. We then tested the particle penetration, flow resistance and the bursting strengths of the individual respirator coupon layers, and the breaking strength of the respirator straps. We found that UVGI exposure led to a small increase

in particle penetration (up to 1.25%) and had little effect on the flow resistance. UVGI exposure had a more pronounced effect on the strengths of the respirator materials. At the higher UVGI doses, the strength of the layers of respirator material was substantially reduced (in some cases, by >90%). The changes in the strengths of the respirator materials varied considerably among the different models of respirators.

UVGI had less of an effect on the respirator straps; a dose of 2360 J/cm2 reduced the breaking strength of the straps by 20% to 51%. Our results suggest that UVGI could be used to effectively disinfect disposable respirators for reuse, but the maximum number of disinfection cycles will be limited by the respirator model and the UVGI dose required to inactivate the pathogen.

Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 25 Mar 2015 (Available with AIHA membership)

Estimating the Dead Space Volume between a Headform and N95 Filtering Facepiece Respirator using Microsoft Kinect

N95 filtering facepiece respirator (FFR) dead space is an important factor for respirator design. The dead space refers to the cavity between the internal surface of the FFR and the wearer's facial surface. This paper presents a novel method to estimate the dead space volume of FFRs and experimental validation. In this study, six FFRs and five headforms (small, medium, large, long/narrow, and short/wide) are used for various FFR and headform combinations. Microsoft Kinect Sensors (Microsoft Corporation, Redmond, WA) are used to scan the headforms without respirators and then scan the headforms with the FFRs donned. The FFR dead space is formed through geometric modeling software, and finally the volume is obtained through LS-DYNA (Livermore Software Technology Corporation, Livermore, CA). In the experimental validation, water is used to measure the dead space. The simulation and experimental dead space volumes are 107.5 mL-167.5 mL and 98.4 mL-165.7 mL, respectively. Linear regression analysis is conducted to correlate the results from Kinect and water, and R2=0.85.

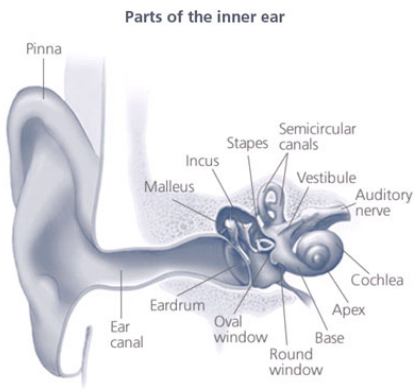
Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 24 Mar 2015 (Available with AIHA membership)

Noise

Genetic Predisposition Found for Noise-Induced Hearing Loss

In a new genome-wide association study, an international team led by Keck Medicine of the University of Southern California (USC) neuroscientists has found evidence that some people may be more genetically susceptible to noise-induced hearing loss than others.

Noise-induced hearing loss is one of the most common work-related illnesses in the United States, according to NIOSH. At especially high risk are troops in the Armed Forces. In 2013, the Department of Veterans Affairs reported hearing loss as one of the most common disabilities among veterans receiving disability compensation. Those at higher, genetic risk for hearing loss may decide to take additional precautionary measures to protect their hearing prior to hazardous noise exposure, study authors say.



Read more: http://www.sciencedaily.com/releases/2015/04/150416145536.htm

Devise Helps Reduce Hospital Noise

In school, it was a good old fashioned "shush" that reminded us to keep our voices down. Now an American hospital has taken this a step further by installing a visual reminder to promote a quieter environment for patients in the hospital. This noise-detection device resembles a traffic light positioned near a busy nurses' station. A green light means the noise volume is within a reasonable range. A

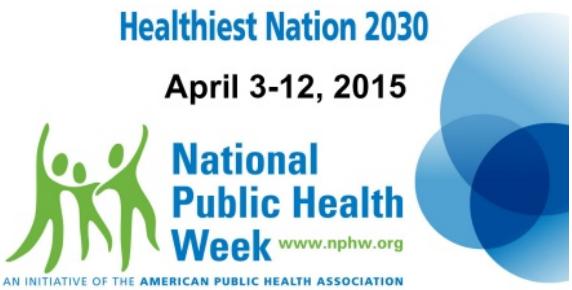
flashing yellow light warns that the noise is increasing, and a red light indicates the noise level is too loud.

Read more: http://www.sciencedaily.com/releases/2015/04/150420130553.htm

Preventive Medicine

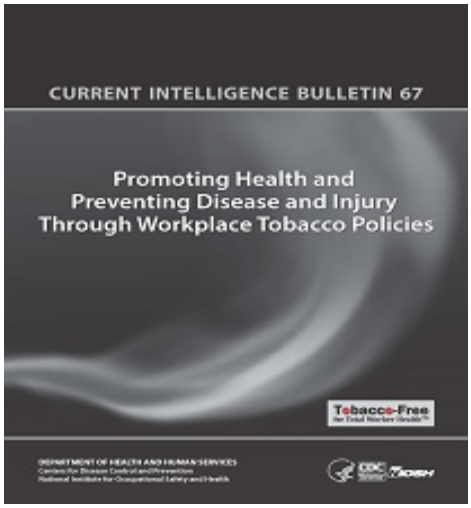
NPHW 2015 Focused on Health Improvement Nationwide

National Public Health Week is under way, with CDC and several other partner organizations supporting this this American Public Health Association effort. It is taking place April 6-12 with a theme for each weekday. The partners and the week are working toward the mission of Healthiest Nation 2030. APHA also released a new book titled "Occupational Safety and Health Policy" last week.



Read more: http://ohsonline.com/articles/2015/04/07/nphw-2015-focused-on-health-improvement-nationwide.aspx?admgarea=news

NIOSH Publication Summarizes Recent Research on Tobacco Use among Workers



More than 50 years after the first Surgeon General's report on the health effects of smoking, NIOSH has released a new Current Intelligence Bulletin (CIB) that addresses tobacco use among workers, exposure to secondhand smoke in workplaces, and occupational health and safety concerns associated with workers' tobacco use. While smoking among workers and workers' exposure to secondhand smoke have both declined in recent decades,

approximately 20% of U.S. workers still smoke and around 20% of nonsmoking workers continue to be exposed to secondhand smoke in the workplace. NIOSH also concludes that smoking prevalence in certain industries, including construction, mining, and food services, approaches or exceeds 30%.

Read more: https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/NIOSH-Publication-Summarizes-Recent-Research-on-Tobacco-Use-among-Workers.aspx

Dust Emissions from Cattle Feed Yards: A Source of Antibiotic Resistance?

The practice of using antibiotics in modern cattle-feeding operations has caused concerns about its potential contribution to the spread of antimicrobial resistance.1,2,3 In this issue of EHP, researchers examine the extent to which five commonly used antibiotics, together with antibiotic-resistance genes and ruminant-associated microbes, disperse from large-scale cattle feed yards via airborne particulate matter (PM).4

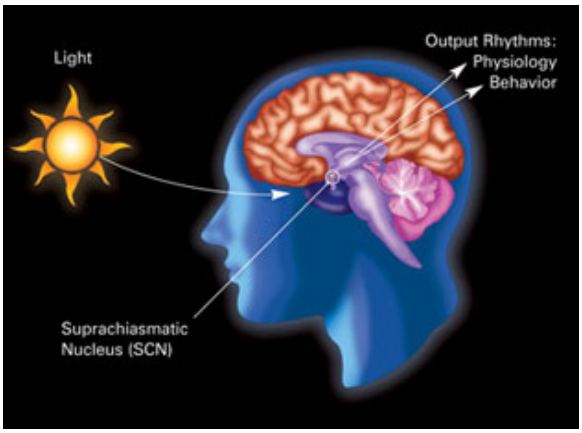
Antibiotics administered via livestock feed are not fully metabolized, and metabolites and parent compounds are excreted through feces and urine that accumulate on feed yard floors.1,5 Subsequent trampling, particularly in dry conditions, contributes to the aerosolization of this material, which can then be transported by air.6 This is especially true during the high-wind events that are common to the region where most U.S. beef cattle are raised—the semi-arid Southern High Plains encompassing parts of Texas, Oklahoma, Kansas, Nebraska, and Colorado, including the epicenter of the 1930s Dust Bowl.7

Read more: http://ehp.niehs.nih.gov/123-A96/

Circadian Surprise: How Our Body Clocks Help Shape Our Waistlines

We've long known about the master clock in our brains that helps us maintain a 24-hour sleep-wake cycle. But in recent years, scientists have made a cool discovery: We have different clocks in virtually every organ of our bodies — from our pancreas to our

stomach to our fat cells. … And it seems we need regular sleeping and eating schedules to keep all of our clocks in sync. Studies show that if we mess with the body's natural sleep-wake cycle — say, by working an overnight shift, taking a transatlantic flight or staying up all night with a new baby or puppy — we pay the price. Our blood pressure goes up, hunger hormones get thrown off and blood sugar control goes south.



Read more:
http://www.npr.org/blogs/thesalt/2015/03/10/389596946/circadian-surprise-how-our-body-clocks-help-shape-our-waistlines

CDC Launches Rx Overdose Website

Seeking to stem what it calls the U.S. prescription painkiller overdose "epidemic," the Centers for Disease Control and Prevention has created a new website devoted entirely to prescription drug overdoses. The site marshals statistics about the overdose problem and states that since 1999, the amount of prescription painkillers prescribed and sold in the United States has nearly quadrupled, yet there has not been an overall change in the amount of pain Americans report. "Overprescribing leads to more abuse and more overdose deaths," according to CDC.

Read more:
http://ohsonline.com/articles/2015/04/09/cdc-launches-rx-overdose-website.aspx?admgarea=news

Engineered Bacteria Shine Light On Air Pollution

Detecting indoor air pollutants can safeguard human health, but existing approaches are time consuming, expensive, and require trained technicians. Now,

researchers have developed a simple and inexpensive device that uses bioluminescent bacteria to monitor air quality and alert people of potentially unsafe conditions (*Anal. Chem.* 2015, DOI: 10.1021/ac5038208).

Read more: http://cen.acs.org/articles/93/web/2015/04/Engineered-Bacteria-Shine-Light-Air.html

Midwest Canine Influenza Outbreak Caused by New Strain of Virus

The canine influenza outbreak afflicting more than 1,000 dogs in Chicago and other parts of the Midwest is caused by a different strain of the virus than was earlier assumed, according to laboratory scientists at Cornell University and the University of Wisconsin. Researchers at Cornell say results from additional testing indicate that the outbreak is being caused by a virus closely related to Asian strains of influenza A H3N2 viruses, currently in wide circulation in southern Chinese and South Korean dog populations since being identified in 2006. There is no evidence that it can be transmitted to humans.

Read more: http://mediarelations.cornell.edu/2015/04/12/midwest-canine-influenza-outbreak-caused-by-new-strain-of-virus/

Environmental Health

Air Pollution and Neonatal Blood Pressure: Examining Earlier Exposures

Ambient air pollution has been associated in some studies (but not all) with increased blood pressure in adults1 and children.2,3 A study in this issue of EHP examines even earlier exposures during gestation, an important period of cardiovascular growth and development.4 The results show a small but significant increase in newborn

systolic blood pressure associated with exposure in the third trimester to black carbon (BC) and, to a lesser extent, fine particulate matter (PM2.5).

Read more: http://ehp.niehs.nih.gov/123-A94/

EPA Publishes 20th Annual U.S. Greenhouse Gas Inventory

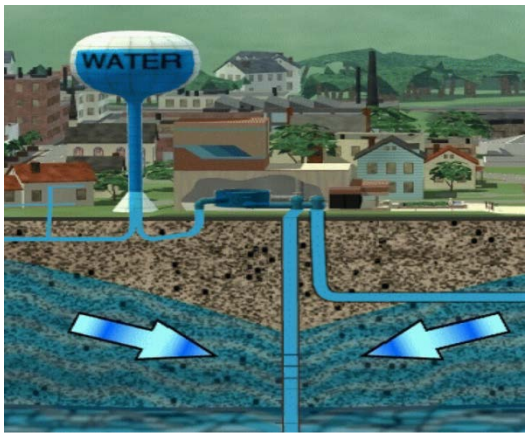
The EPA released its 20th Inventory of U.S. Greenhouse Gas Emissions and Sinks today, showing a two percent increase in greenhouse gas emissions in 2013 from 2012 levels, but a nine percent drop in emissions since 2005.

Total U.S. greenhouse emissions were 6,673 million metric tons of carbon dioxide equivalent in 2013. By sector, power plants were the largest source of emissions, accounting for 31 percent of total U.S. greenhouse gas pollution. The transportation sector was the second largest source, at 27 percent. Industry and manufacturing were the third largest source, at 21 percent. The increase in total national greenhouse gas emissions between 2012 and 2013 was due to increased energy consumption across all sectors in the U.S.

economy and greater use of coal for electricity generation.

Read more: http://yosemite.epa.gov/opa/admpress.nsf/21b8983ffa5d0e4685257dd4006b85e2/98f8b7f514d612b085257e270073a21b!OpenDocument

EPA Releases New Website Enabling the Public to Track Compliance Status of Public Water Systems



The U.S. Environmental Protection Agency released the Safe Drinking Water Act (SDWA) dashboard, a user-friendly website that presents data about violations and the compliance status of public water systems. The dashboard contains interactive charts and graphs that provide information regarding the compliance of public water

systems with federal drinking water regulations, as well as enforcement actions.

Read more:
http://yosemite.epa.gov/opa/admpress.nsf/21b8983ffa5d0e4685257dd4006b85e2/589180dc5142bce985257e20006a32a3!OpenDocument

U.S.: California Getting 'Second-Hand Smog' From Asia, Researchers Say

California is suffering from "second-hand smog" drifting in from Asia and other places, researchers said on Tuesday, even as the state's prolonged drought has made air quality worse. About 10% of ozone pollution, the main ingredient in smog, in the state's San Joaquin Valley farm region comes from other countries, mostly in Asia, said an atmospheric scientist with the University of California, Davis. The residents of the San Joaquin Valley have asthma at twice the rate of people in other parts of the state, the university said. Despite considerable improvement in California's notoriously troublesome air, the San Joaquin Valley recently missed a federal deadline for cleaning up its winter air of sooty particulates, a development blamed on warm, dry conditions and stagnant air.

Read more:
http://www.reuters.com/article/2015/03/31/us-usa-california-pollution-idUSKBN0MR2QT20150331

Ergonomics

High Prevalence of Carpal Tunnel Syndrome among Poultry Workers

Musculoskeletal disorders (MSD) of the upper extremities among poultry processing employees are well documented (Lipscomb et al. 2008; Cartwright et al. 2012). The combination of highly repetitive tasks, forceful movements and working in cold temperatures can increase risk for MSDs such as carpal tunnel syndrome, a disabling medical condition affecting the hands and wrists. In 2014, the National Institute for Occupational Safety and Health (NIOSH) was asked to perform a Health Hazard

Evaluation at a poultry processing plant in Maryland .

NIOSH evaluated all employees working in receiving, picking, and evisceration at the plant and randomly selected a sample of employees from the debone direct and thigh line departments to participate in the assessment. Researchers found that 59% of the jobs evaluated, including all jobs in evisceration, involved levels of hand repetition and force over the American Conference of Governmental Industrial Hygienists' (ACGIH) action limit. These conditions put workers at increased risk for carpal tunnel syndrome and other MSDs. Jobs involving repetition and force at or above the action limit should be redesigned

or use automation or other engineering (and/or administrative) controls to prevent MSDs.

Read more: http://blogs.cdc.gov/niosh-science-blog/2015/04/06/poultry-workers-cts/

Birth Weight May Predict Length of Work Career

A new study from Finland suggests a low birth weight increases the risk that a man will become disabled before he reaches retirement age.

The relationship between prenatal health and suboptimal intrauterine growth, as related to subsequent economic earning capacity, is a provoking thesis.

In the review, Finnish researchers found that 20 percent of the men who were born during the years 1934-1944, retired on a disability pension between 1971 and 2011. Their findings are published in the journal PLoS One.

Early exit from the workforce due to a disability pension might be related to non-optimal growth during the fetal period, said Mikaela von Bonsdorff from the University of Jyväskylä.

Read more: http://psychcentral.com/news/2015/04/14/birth-weight-may-predict-length-of-work-career/83500.html

Safety

Return-to-Work Program Offers Payments for Injured Workers

The California Department of Industrial Relations has launched the Return-to-Work Supplement Program for injured workers. The fund is considered an important component of the workers' compensation reforms in Senate Bill 863, and it will quickly get an additional $5,000 to each eligible injured worker who has a disproportionate loss of earnings.

Read more:
http://ohsonline.com/articles/2015/04/15/returntowork-program-offers-payments-for-injured-workers.aspx?admgarea=news

A Blind Spot in Hospital Safety: Surgeon Credentialing for New Procedures and Technologies

For all the attention hospitals have paid to patient safety in the last decade, a big blind spot is making them – and their patients – vulnerable to harm, according to a new Viewpoint piece in JAMA by members of the University of Michigan Institute for Healthcare Policy and Innovation.

Read more:
http://www.infectioncontroltoday.com/news/2015/04/a-blind-spot-in-hospital-safety-surgeon-credentialing-for-new-procedures-and-technologies.aspx

LED-Driven Infrared Sensors

Oil and gas production and work in confined spaces exposes field personnel to a variety of toxic and explosive gases in everyday drilling, processing, transport, and municipal operations. Explosive gas build-ups can endanger not only the workers nearby, but also a widespread area beyond the working area; making fast, accurate measurement of combustible gases below LEL levels is critical to maintaining safety.

Today, there are two main sensor technologies used for detecting explosive gases: catalytic bead and infrared.

Read more: http://ohsonline.com/articles/2015/04/01/leddriven-infrared-sensors.aspx?admgarea=news

Cleaning Efficiencies of Three Cleaning Agents on Four Different Surfaces after Contamination by Gemcitabine and 5-Fluorouracile

Occupational exposure to antineoplastic drugs has been documented for decades showing widespread contamination in preparation and administration areas. Apart from preventive measures, efficient cleaning of surfaces is indispensable to minimize the exposure risk. The aim of this study was to evaluate the efficiency of three cleaning agents after intentional contamination by gemcitabine and 5-fluorouracile on four different surface types usually installed in healthcare settings. Glass, stainless steel, polyvinylchloride and laminated wood plates were contaminated with 20 ng/µl gemcitabine and 2 ng/µl 5-fluorouracile solutions. Wipe samples were analysed for drug residues after cleaning with A) distilled water, B) aqueous solution containing sodium dodecyl sulphate (10 mM) and 2-propanol (SDS-2P) and C) Incides N (pre-soaked) alcoholic wipes. Quantification was performed by HPLC for gemcitabine and GCMS/MS for 5-

fluorouracile. Recovery was determined and cleaning efficiency was calculated for each scenario. Mean recoveries were 77–89% for gemcitabine and 24–77% for 5-fluorouracile and calculated cleaning efficiencies ranged between 95–100% and 89–100%, respectively. Residual drug amounts were detected in the range nd (not detected) - 84 ng gemcitabine/sample and nd - 6.6 ng 5-fluorouracile/sample depending on surface type and cleaning agent. Distilled water and SDS-2P had better decontamination outcomes than Incides N wipes on nearly all surface types, especially for gemcitabine. Regarding 5-fluorouracile, the overall cleaning efficiency was lower with highest residues on laminated wood surfaces. The tested cleaning procedures are shown to clean glass, stainless steel, PVC and laminated wood with an efficiency of 89–100% after contamination with gemcitabine and 5-fluorouracile. Nevertheless, drug residues could be verified by wipe samples. Pure distilled water and SDS in an alcoholic-aqueous solution expressed an efficient cleaning performance, especially with respect to gemcitabine. The study results demonstrate the need to adapt cleaning procedures to the variety of drugs and surface types in order to develop effective decontamination strategies.

Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 09 Mar 2015 (Available with AIHA membership)

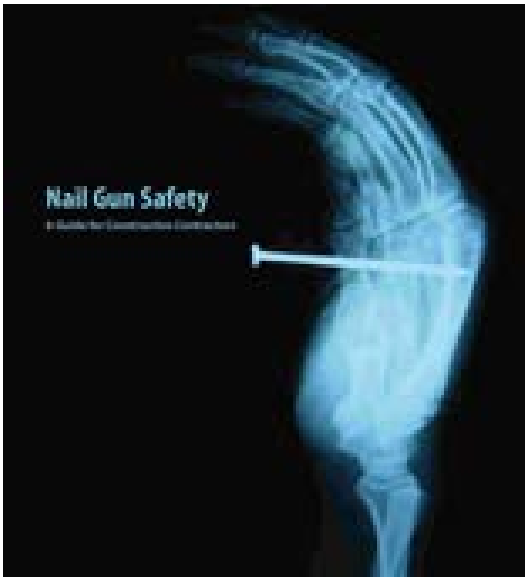
Hand Safety in Simple Steps

Do you simply give employees a good pair of cut-resistant gloves and tell 'em to be careful? Are you overlooking key steps to preventing workplace hand injuries long before your employees even walk through the door?

Here is a seven-step safety approach that EHS leaders can and should take to prevent workers from becoming just another hand injury statistic.

Step 1: Eliminate the Hazard

Chances are, the idea of eliminating a workplace hazard sounds either obvious or silly to a safety professional. But the truth



is, it's the absolute easiest and best way to reduce on-the-job injuries.

So how do you go about eliminating hazards?

Read more: http://ehstoday.com/hand-protection/hand-safety-simple-steps

Crashes Are the Leading Cause of on-the-Job Death for Truck Drivers in the US

Our nation depends on truck drivers to deliver goods and services safely and efficiently. Yet, crashes involving large trucks continue to take a toll on truck drivers, their passengers, other road users, businesses, and the community. Overall, 317,000 motor vehicle crashes involving large trucks were reported to police in 2012, according to the latest Vital Signs report by the Centers for Disease Control and Prevention. The estimated cost of truck and bus crashes to the United States economy was $99 billion that same year.

Read more: http://www.cdc.gov/media/releases/2015/p0303-truck-driver-safety.html

How an Aging Workforce Will Affect Your Productivity and Safety (And What You Can Do about It)

By next year, one-third of the total U.S. workforce will be 50 years old or older, while workers within the skilled trades are retiring at a faster rate than other segments. China's over-65 population is projected to soar to 210 million by 2030. Across Latin America, birth rates have dropped 63 percent since 1960, and in Europe, employment initiatives and pension reforms will extend older workers' time in the workforce. To compound the workforce availability pressures, more active ...

Read more: http://ehstoday.com/safety/how-aging-

workforce-will-affect-your-productivity-and-safety-and-what-you-can-do-about-it

Revised Cal/OSHA Heat Safety Regulation in Effect May 1

California's Department of Industrial Relations announced that amendments to the state's current heat illness prevention regulation have been approved by the Office of Administrative Law and become effective May 1 in order to address this year's anticipated warmer weather.

Read more:
http://ohsonline.com/articles/2015/04/09/calosha-heat-safety-regulations-in-effect-may-1.aspx?admgarea=news

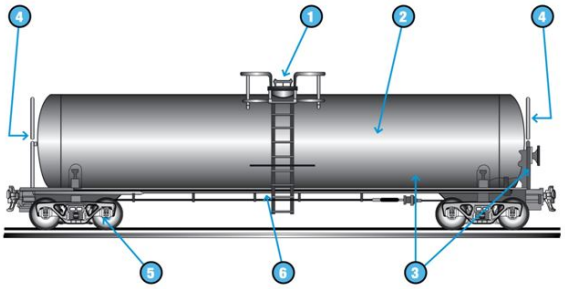
Blue Lights Could Prevent Bird Strikes

Bird strikes—the collision between birds and aircraft—are among the most common aviation hazards. They destroy planes, kill people, and, in the United States alone, cause an estimated $700 million in damage each year. One possible approach to reducing collisions lies in outfitting planes with warning lights that would help birds notice their approach and avoid a collision, but the differences between human and avian sight—which include a wider color space and higher sensitivity to ultraviolet light in birds—make developing such solutions complicated. Now, researchers have found that blue LED lights (with a wavelength of 470 nm) are the most conspicuous to brown-headed cowbirds, which often collide with aircraft.

Read more:
http://news.sciencemag.org/plants-animals/2015/04/blue-lights-could-prevent-bird-strikes

NTSB: Flammable Liquid Rail Car Improvements Urgently Needed

The National Transportation Safety Board on April 6 issued four "urgent" recommendations for tougher, more fire-resistant rail cars to be manufactured to safely carry flammable liquids, such as crude oil and ethanol. The recommendations call for an aggressive schedule of replacing or retrofitting the existing rail car fleet with better thermal protection against heat from fires, perhaps through "a ceramic thermal blanket," and increasing the capacity of pressure relief devices.



Read more: http://ohsonline.com/articles/2015/04/07/ntsb-tank-cars.aspx?admgarea=news

Emergency Preparedness & Response

Modern Issues of First Aid Training

Ever been injured on the job? You leave the clean, orderly environment where things make sense and you have what you need far behind. "What is the status of first aid readiness at your facility?"

Before you answer, consider that first aid is one of the most important hidden programs you have. Completely hidden, if you so choose, this is an interlocking system that touches every inch of your facility daily. Ignored, it may coast for a few months, even a year, losing viability as it gets weaker. However, when an injury happens and the instant treatment services are needed, the looming problems emerge because you did not follow through on critical training, updates, equipment, and supplies. What are you going to do to deal with and prevent each of them?

Read more: http://ohsonline.com/articles/2015/04/01/

modern-issues-of-first-aid-training.aspx?admgarea=news

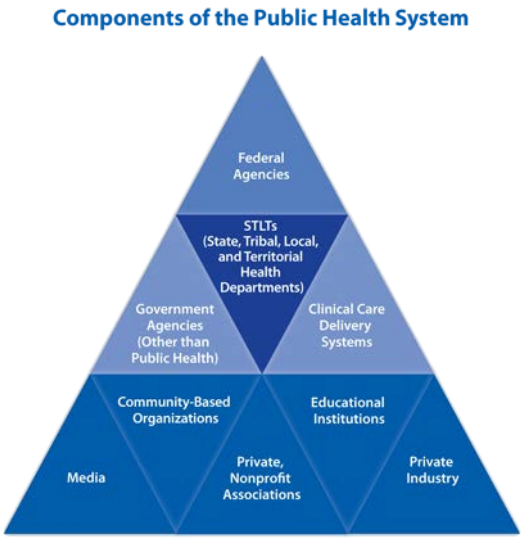
Reports Shed Light on Ebola Challenges for Hospitals

As the Ebola virus ravaged three West African countries last year, US hospitals faced unexpected challenges adapting to the risks, even the ones that had done preparedness drills, and the threat consumed 80% of infection control staff time, two research teams reported.

The groups detailed their findings yesterday in two reports in Infection Control and Hospital Epidemiology (ICHE). One described the case of two patients with confirmed or suspected Ebola infections at the National Institutes of Health (NIH) Clinical Center in Bethesda, Md., and the other involved a survey that questioned infection control specialists about the experiences they had preparing to care for Ebola patients.

Read more: http://www.cidrap.umn.edu/news-perspective/2015/04/reports-shed-light-ebola-challenges-hospitals

Cuts in Public Health Funds: Higher State Epidemiology Capacity



In its annual report on public health funding, the nonprofit Trust for America's Health (TFAH) noted that public health spending continues to decline at both the federal and state levels and recommends not only increased funding but strategically allocated funding.

In "Investing in America's Health: A State-by-State Look at Public Health Funding and Key Health Facts," TFAH noted that combined federal, state, and local public health spending dropped from $241 per

person in 2009 to $239 per person in 2013—or $218 when adjusted for inflation, a 10% drop. Total public health spending in 2013 was $75.4 billion.

Read more: http://www.cidrap.umn.edu/news-perspective/2015/04/public-health-scan-apr-16-2015

Deployment Health

Characterizing the Relationship between Tick Bites and Lyme Disease in Active Component U.S. Armed Forces in the Eastern U. S.

Lyme disease (LD) is the most commonly diagnosed vector-borne illness in the U.S. Analysis of ticks that are removed from patients (rather than collected from the environment) may inform LD surveillance. In this ecological study, LD rates among active component U.S. Armed Forces in the eastern U.S. were compared with tick data from the U.S. Army Public Health Command Human Tick Test Kit Program (HTTKP) covering the same geographic region. In the population of service members in the study sample, mean annual LD incidence was 52.2 per 100,000 person-years (95% CI ± 7.6 per 100,000) between 1 January 2006 and 31 December 2012. A 10% increase in the rate of ticks submitted to the HTTKP corresponded to an increase in LD incidence of 5.7% ($p<0.01$). Where Borrelia burgdorferi infection of Ixodes scapularis ticks was high (20% or greater tick infection prevalence), tick removal rates explained 53.7% of the annual variation in LD incidence ($p=0.01$). These data support using location-specific rates of ticks removed while feeding on active component service members to complement LD surveillance.

Read more: https://www.afhsc.mil/documents/pubs/msmrs/2015/v22_n03.pdf#Page=2

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GAO: Shortfalls in Tracking Mental Health Discharges

The Army, Navy and Marine Corps do not know how many enlisted troops they have separated for mental conditions that don't merit disability pay — a failing that prevents Pentagon officials from knowing whether troops with combat-related disorders were wrongly discharged, a new government report says. When discharging service members for nondisability mental conditions, the three services separated most under the label "condition, not a disability," instead of using one of five separation codes specifically designated for mental conditions, according to the Government Accountability Office. Defense Department policy requires the services to use specific codes, but Army and Marine Corps officials told GAO they didn't use the codes because they did not want separating troops to be stigmatized by a diagnosis when seeking future employment

Read more:
http://www.armytimes.com/story/military/benefits/health-care/2015/03/02/gao-pentagon-mental-health-discharges/24262045/

Enlisted Jobs Rank among Worst in New Career Report

If you're an enlisted service member, a new career report says you've got one of the very worst jobs on the planet.

But at least you can say you're not a lumberjack or, worst of all, a newspaper reporter.

Those are bottom three, according to CareerCast.com in its latest rankings of best and worst professions.

Jobs involving number crunching, computers and several medical specialties took top spots among the best-rated gigs.

"To quantify the many facets of the 200 jobs included in our report," say the folks at CareerCast.com announcing the results, "we determined and reviewed various critical aspects of all of the jobs, categorizing them into four 'Core Criteria;' that is, the general categories that are inherent to every job: Environment, Income, Outlook, and Stress."

The top 10 jobs earn between $71,133 and $124,149 per year on average. The national median wage is $34,750.

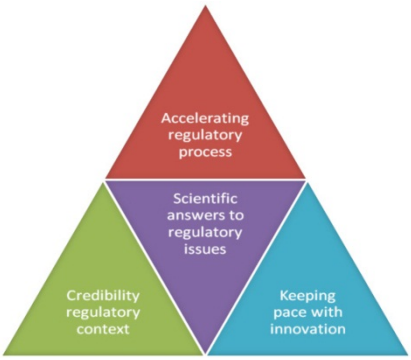
Read more: http://www.armytimes.com/story/veterans/careers/civilian/2015/04/18/career-cast-worst-jobs-report/25950233/

Nanotechnology

Removing Risk to Unleash the Full Potential of Nanomaterials

The EU NANOREG project is developing the next generation of reliable and comparable experimental data on the environmental, health and safety aspects of nanomaterials. NANOREG, which began in March 2013, has already successfully established the basic conditions for its R&D work and will now move on to deliver on its key objectives.

Read more: http://phys.org/news/2015-04-unleash-full-potential-nanomaterials.html



Nanorama Laboratory Tool Now Available in English

This free online tool was developed by the Innovation Society in collaboration with the German Social Accident Insurance Institution for the raw materials and chemical industry. It offers information on safe handling of nanomaterials.

Read more: http://ohsonline.com/articles/2015/03/27/nanorama-laboratory-tool-now-available-in-english.aspx?admgarea=ht.IndustrialHygiene

Regulatory Research & Industrial Hygiene Professional News

AIHA

AIHA Formaldehyde Resource Center

Formaldehyde is a naturally-occurring organic compound that can be in gas or liquid form. In widespread use, formaldehyde's toxicity, and volatility make exposure a significant consideration for human health.

Read more:
https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/AIHA-Formaldehyde-Resource-Center.aspx

Congress

National Asbestos Awareness Week Reminds Public of Exposure Hazards

The U.S. Senate designated the first week of April 2015 as National Asbestos Awareness Week in a resolution that also urged the surgeon general of the United States to warn and educate people about the public health issue of asbestos exposure, which may be hazardous to their health. National Asbestos Awareness Week is intended to raise awareness of asbestos and prevent asbestos-related disease, and it involves collaboration of organizations and leading experts.

Read more:
http://ohsonline.com/articles/2015/04/09/national-asbestos-awareness-week.aspx?admgarea=news

US, African Agreement Formalizes Creation of African CDC

Top officials from the United States and the African Union (AU) today formalized a collaboration between the US Centers for Disease Control and Prevention and its African counterparts to create the African Centres for Disease Control and Prevention (African CDC).

US Secretary of State John Kerry and AU Ch

Read more:
http://www.cidrap.umn.edu/news-perspective/2015/04/us-african-agreement-formalizes-creation-african-cdc

OSHA

OSHA, NIOSH Bulletin Highlights Tobacco Worker Exposures

A new bulletin issued jointly by OSHA and NIOSH addresses the health hazards facing workers who plant, cultivate, and harvest tobacco, including "green tobacco sickness," a form of nicotine poisoning. Green tobacco sickness is an illness caused by nicotine exposure from handling tobacco leaves, which causes symptoms including nausea and vomiting. Because vomiting can lead to dehydration, tobacco workers suffering from green tobacco sickness are more susceptible to heat illness.

Read more:
https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/OSHA,-NIOSH-Bulletin-Highlights-Tobacco-Worker-Exposures.aspx

NIOSH

NIOSH Publishes First Federal Anthropometric Study of U.S. Truck Drivers

NIOSH has published the results of the first-ever federal anthropometric study of U.S. truck drivers, which the agency initiated in 2006 due to a lack of up-to-date anthropometric data for these workers.

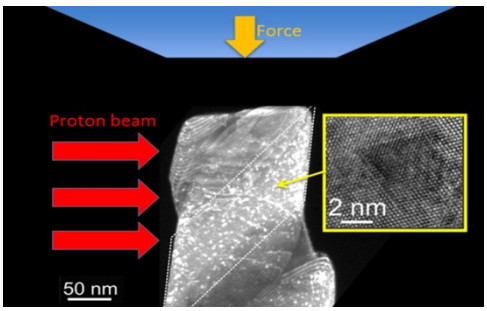
Between 2009 and 2010, NIOSH collected data on 1,779 male and 171 female truck drivers in 15 states across the continental U.S. Researchers found that, on average, truck drivers were larger and heavier than individuals in the general population by 13.5 kg for males and 15.4 kg for females.

Read more:
https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/NIOSH-Publishes-First-Federal-Anthropometric-Study-of-U.S.-Truck-Drivers.aspx

EPA

EPA Proposes Reporting, Recordkeeping Requirements for Nanoscale Materials in the Marketplace

For the first time, EPA is proposing to use the Toxic Substances Control Act (TSCA) to collect exposure and health and safety information on nanoscale chemical substances already in use in the marketplace. The agency currently reviews new chemical substances that are manufactured or processed as nanomaterials for safety prior to their introduction into the marketplace.



Read more: http://portal.criticalimpact.com/vm2/eb4f471a273994f6/24360/df36df757f74b2243947229f28c3afba#23741

AEGLs for Six More Chemicals Are Now Available

The National Academies Press (NAP) has released the 19th volume of Acute Exposure Guideline Levels for Selected Airborne Chemicals, a publication that covers the acute exposure guideline levels (AEGLs) for six of the approximately 400 extremely hazardous substances that have been identified by EPA. AEGLs are exposure levels below which adverse health effects are not likely to occur. These threshold exposure limits are for the general public and are applicable to emergency exposures ranging from 10 minutes to eight hours.

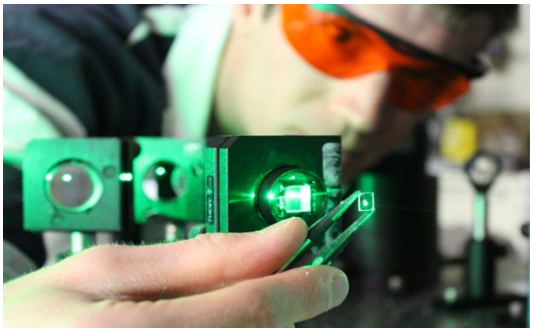
Read more: https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/AEGLs-for-Six-More-Chemicals-Are-Now-Available.aspx

DoD

Strontium Placed on the Emerging Contaminants Watch List

As of 3 March 2015, Strontium was placed on the Emerging Contaminants Watch List. The reasons for its listing are described in the attached screening report.

A Phase I Impact Assessment is scheduled for Summer 2015 to qualitatively determine the impact regulatory changes may have on DoD Operations, Readiness and Training, Acquisition, Health and Safety, or Cleanup Functional Areas. The OASD(EI&E) will solicit Subject Matter Experts (SMEs) from all Services and industry who have an understanding of how this issue may affect DoD operations.



Individuals can register to receive the EC in the News at https://www.ecportalinfo.org/distlist_new.aspx. Prior copies of EC in the News can be found on AKO, but you must be a registered user https://www.us.army.mil/suite/portal/index.jsp.

Training

This monthly summary is published by the Industrial Hygiene and Medical Safety Management Program (IHMSMP) for the U.S. Army Public Health Command.

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On the Web:
http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx

2015 Intermediate Industrial Hygiene

Congratulations to the 2015 Intermediate Industrial Hygiene Class. Thirty-seven out of 76 participates completed the Phase I Course. Thirty-two attended the Phase II face-to-face course. This was the largest class to date. Most impressive was 81.25 % had an average completion grade of 90% or higher.

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