

Hazardous Substances

Army Safety and Occupational Health Objectives

Special Interest Articles:

- [Dermal Exposure](#)
- [Bio-monitoring](#)
- [Survivor Bias](#)
- [Chemical Warfare](#)
- [Biolabs](#)

DOEHRS Super Star

What is it?

The Army Safety and Occupational Health Objectives, released annually by the Army chief of staff and secretary of the Army, provide senior leaders and subordinate commanders specific safety goals to meet in the upcoming fiscal year. The objectives fall under the Army Safety and Occupational Health Strategic Plan, which communicates leadership commitment to the safety and health of Soldiers, family members and civilian employees through accident prevention.

What has the Army done?

The Fiscal Year 2015 Safety and Occupational Health Objectives, signed Oct. 14, 2014, outline four specific mandates:

-- The first objective is a 10 percent reduction in PMV-4 (sedan, truck, van, SUV) fatalities and a 15 percent reduction in PMV-2 (motorcycle) fatalities from fiscal 2013's year-end totals

-- The second objective calls for a 10 percent reduction in personnel injury-other (sports, recreation, physical training, etc.) accidents from fiscal 2013

-- The third objective requires commanders to maintain aviation Class A accident rates at less than 1.0 per 100K flight hours

-- The final objective mandates a 10 percent reduction in Army civilian injury accidents caused by manual equipment and material handling and slips, trips and falls from fiscal 2013



Read more:

<http://www.army.mil/standto/archive/2014-12-24/>

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A Risk-Based Approach to Reducing Exposure of Staff to Laboratory Animal Allergens



Within the biomedical research industry, people who work with laboratory animals may be at risk of developing laboratory animal allergy, which can lead to occupational asthma. Under UK

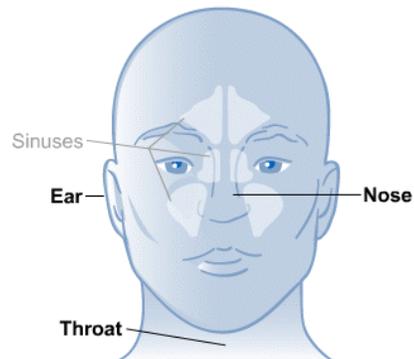
and EU laws, employers must prevent or adequately control exposure to any hazardous substance, which includes animal allergens, so far as reasonably practicable, for the protection of all people on the premises. This can be achieved in part by reviewing the risk of allergen exposure in specific areas of a facility and implementing appropriate infrastructure, environmental and performance controls to minimize that risk.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25526057>

Sinonasal Adenoid Cystic Carcinoma Following Formaldehyde Exposure in the Operating Theatre

We present a case report of an auxiliary nurse who developed an adenoid cystic carcinoma in her left maxillary sinus following occupational exposure to formaldehyde in the operating theatre. Currently, the epidemiological evidence that formaldehyde can cause cancer in



humans is considered to be limited. Previous case-control studies of formaldehyde and sinonasal cancer have mainly investigated subjects who were concomitantly exposed to wood dust, a known risk factor to the development of sinonasal adenocarcinoma of intestinal type. Our case report presents a patient who has developed an adenoid cystic carcinoma

following exposure to formaldehyde. We suggest that the occupational physician remains alert to formaldehyde as an occupational hazard among health care workers.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25550707>

Evaluation of the Toxicity Data for Peracetic Acid in Deriving Occupational Exposure Limits: a Minireview

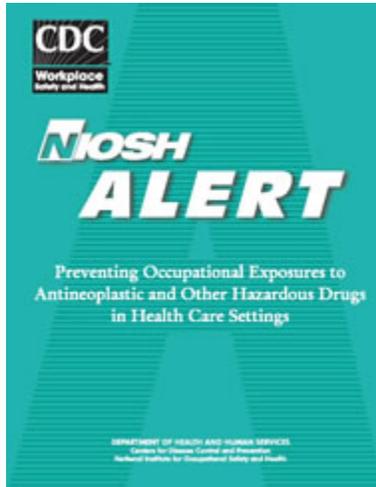
Peracetic acid (PAA) is a peroxide-based chemistry that is highly reactive and can produce strong local effects upon direct contact with the eyes, skin and respiratory tract. Given its increasing prominence in industry, attention has focused on health hazards and associated risks for PAA in the workplace. Occupational exposure limits (OEL) are one means to mitigate risks associated with chemical hazards in the workplace. A mini-review of the toxicity data for PAA was conducted in order to determine if the data were sufficient to derive health-based OELs. The available data for PAA frequently come from unpublished studies that lack sufficient study details, suffer from gaps in available information and often follow unconventional testing methodology. Despite these limitations, animal and human data suggest sensory irritation as the most sensitive endpoint associated with inhalation of PAA. Rodent RD50 data (the concentration estimated to cause a 50%

depression in respiratory rate) were selected as the critical studies in deriving OELs. Based on these data, a range of 0.36 to 0.51mg/m³ (0.1 to 0.2ppm) was calculated for a time-weighted average (TWA), and 1.2 to 1.7mg/m³ (0.4 to 0.5ppm) as a range for a short-term exposure limit (STEL). These ranges compare favorably to other published OELs for PAA. Considering the applicable health hazards for this chemistry, a joint TWA/STEL OEL approach for PAA is deemed the most appropriate in assessing workplace exposures to PAA, and the selection of specific values within these proposed ranges represents a risk management decision.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25542141>

Identification of Knowledge Gaps Regarding Healthcare Workers' Exposure to Antineoplastic Drugs: Review of Literature, North America versus Europe



We have been examining the issue of healthcare workers' exposure to antineoplastic drugs for nearly a decade and have observed that there appears to be more publications on the subject matter originating from Europe than from North America. The concern is that findings from Europe may not be generalizable to North America because of differences in handling practices, regulatory requirements, and training. Our objective was to perform a literature review to confirm our observation and, in turn, identify gaps in knowledge that

warrants addressing in North America. Using select keywords, we searched for publications in PubMed and Web of Science. All papers were initially classified according to the originating continent and then categorized into one or more subject categories (analytical methods, biological monitoring, occupational exposure, surface contamination, and probability of risk/exposure). Our review identified 16 papers originating from North America and 55 papers from Europe with surface contamination being the subject matter most often studied overall. Based on our results, we are of the opinion that North American researchers need to further conduct dermal and/or urinary drug contamination studies as well as assess the exposure risk faced by healthcare workers who handle antineoplastic drugs. Trends in exposure levels should also be explored.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25516807>

Modifying Welding Process Parameters Can Reduce the Neurotoxic Potential of Manganese-Containing Welding Fumes

Welding fumes (WF) are a complex mixture of toxic metals and gases, inhalation of which can lead to adverse health effects among welders. The presence of manganese (Mn) in welding electrodes is

cause for concern about the potential development of Parkinson's disease (PD)-like neurological disorder. Consequently, from an occupational safety perspective, there is a critical need to prevent adverse

exposures to WF. As the fume generation rate and physicochemical characteristics of welding aerosols are influenced by welding process parameters like voltage, current or shielding gas, we sought to determine if changing such parameters can alter the fume profile and consequently its neurotoxic potential.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25549921>



Biomonitoring of Airborne Platinum Group Elements in Urban Traffic Police Officers



In the present study, an attempt was made to study the levels of platinum (Pt), palladium (Pd), and rhodium (Rh) in respirable suspended particulate matter samples and respective blood samples of occupationally exposed traffic personnel in

selected sites of Hyderabad city. The maximum concentration of platinum group elements in air dust samples of Hyderabad city were as follows: Pt = 1,416 $\mu\text{g}/\text{m}^3$, Pd = 1,024 $\mu\text{g}/\text{m}^3$, and Rh = 1,352 $\mu\text{g}/\text{m}^3$. The blood samples of occupationally exposed personnel of Hyderabad city showed Pt as high as 6.65, Pd as high as 2.15, and Rh as high as 4.95 $\mu\text{g}/\text{l}$. The results showed an important aspect of bioaccumulation tendency of these metals with increase in age and years of occupational exposure.

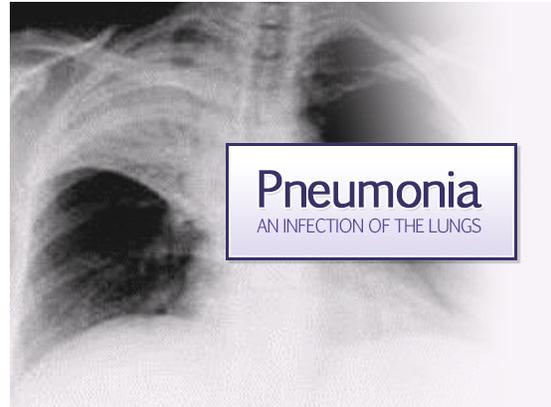
Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25542147>

Professions and Working Conditions Associated With Community-Acquired Pneumonia

INTRODUCTION: Community-acquired pneumonia (CAP) is not considered a professional disease, and the effect of different occupations and working conditions on susceptibility to CAP is unknown. The aim of this study is to determine whether different jobs and certain working conditions are risk factors for CAP.

METHODOLOGY: Over a 1-year period, all radiologically confirmed cases of CAP (n=1,336) and age- and sex-matched controls (n=1,326) were enrolled in a population-based case-control study. A questionnaire on CAP risk factors, including work-related questions, was administered to all participants during an in-person interview.



Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25544548>

Role of Dermal Exposure in Systemic Intake of Methylendiphenyl Diisocyanate (MDI) Among Construction and Boat Building Workers



The causal relationship between inhalation exposure to methylendiphenyl diisocyanate (MDI) and the risk of occupational asthma is well known, but the role of dermal exposure and dermal uptake of MDI in this process is still unclear. The aims of this study were to measure dermal exposure to and the dermal uptake of MDI among workers (n=24) who regularly handle MDI-urethanes. Dermal exposure was measured by the tape-strip technique from four sites on the dominant hand and arm. The workers with the highest exposure

(n=5) were biomonitored immediately after their work shift, in the evening and the next morning, using urinary 4,4'-methylenedianiline (MDA) as a marker.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25542146>

Hippuric Acid Levels in Paint Workers at Steel Furniture Manufacturers in Thailand

The aims of this study were to determine hippuric acid levels in urine samples, airborne toluene levels, acute and chronic neurological symptoms, and to describe any correlation between urinary hippuric acid and airborne toluene.

The hippuric acid concentration in the urine of 87 paint workers exposed to toluene at work (exposed group), and 87 nonexposed people (control group) was from similar factories in the same region. Urine samples were collected at the end of a shift and analyzed for hippuric acid by high performance liquid chromatography. Air samples for the estimation of toluene exposure were collected with diffusive personal samplers and the toluene quantified using gas-liquid chromatography.



The two groups were also interviewed and observed about their work practices and health.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25516817>

Human Biomonitoring of Chromium and Nickel from an Experimental Exposure to Manual Metal Arc Welding Fumes of Low and High Alloyed Steel



The uptake and elimination of metals from welding fumes is currently not fully understood. In the Aachen Workplace Simulation Laboratory (AWSL) it is possible to investigate the impact of welding fumes on human subjects under controlled exposure conditions. In this study, the

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uptake and elimination of chromium or chromium (VI) respectively as well as nickel was studied in subjects after exposure to the emissions of a manual metal arc welding process using low or high alloyed steel.

In this present study 12 healthy male non-smokers, who never worked as welders before, were exposed for 6h to welding fumes of a manual metal arc welding process. In a three-fold crossover study design, subjects were exposed in randomized order to either clean air, emissions from welding low alloyed steel,

and emissions from welding high alloyed steel. Particle mass concentration of the exposure aerosol was 2.5mg m⁻³. The content of chromium and nickel in the air was determined by analysing air filter samples on a high emission scenario. Urine analysis for chromium and nickel was performed before and after exposure using methods of human biomonitoring.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25512666>

Radiation

Preliminary Results of an Attempt to Predict Over Apron Occupational Exposure of Cardiologists from Cardiac Fluoroscopy Procedures Based On DAP (Dose Area Product) Values

This study is an effort to propose a mathematical relation between the occupational exposure measured by a dosimeter worn on a lead apron in the chest region of a cardiologist and the dose area product (DAP) recorded by a meter attached to the X-ray tube. We aimed to determine factors by which DAP values attributed to patient exposure could be converted to the over-apron entrance surface air kerma incurred by cardiologists during an angiographic procedure. A Rando phantom representing a patient was exposed by an X-ray tube from 77 pre-defined directions. DAP value for each exposure angle was recorded. Cardiologist exposure was measured by a Radcal



ionization chamber 10X5-180 positioned on a second phantom representing the physician. The exposure conversion factor was determined as the quotient of over apron exposure by DAP value. To verify the validity of this method, the over-apron exposure of a cardiologist was measured using the ionization chamber while performing coronary angiography

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procedures on 45 patients weighing on average 75 ± 5 kg. DAP values for the corresponding procedures were also obtained.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25544658>

Dose Reconstruction for the Million Worker Study: Status and Guidelines.



The image shows a slide titled "NRC Occupational Dose Limits" with the NRC logo in the top left corner. The slide lists various dose limits in mrem/yr for different parts of the body and for the general public. A note at the bottom states "Note: 1,000 mrem = 1 rem".

Category	Dose Limit (mrem/yr)
Whole Body (TEDE)	5,000
Any Organ (TODE)	50,000
Skin (SDE)	50,000
Extremity (SDE)	50,000
Lens of Eye (LDE)	15,000
Embryo/Fetus of DPW	500
Member of the Public	100

Note: 1,000 mrem = 1 rem

Briefing for Media

The primary aim of the epidemiologic study of one million U.S. radiation workers and veterans [the Million Worker Study (MWS)] is to provide scientifically valid information on the level of radiation risk when exposures are received gradually over time and not within seconds, as was the case for Japanese atomic bomb survivors. The primary outcome of the epidemiologic

study is cancer mortality, but other causes of death such as cardiovascular disease and cerebrovascular disease will be evaluated.

The success of the study is tied to the validity of the dose reconstruction approaches to provide realistic estimates of organ-specific radiation absorbed doses that are as accurate and precise as possible and to properly evaluate their accompanying uncertainties. The dosimetry aspects for the MWS are challenging in that they address diverse exposure scenarios for diverse occupational groups being studied over a period of up to 70 y.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25551504>

Radiation Safety of Sealed Radioactive Sources

Sealed radioactive sources are used in a wide variety of occupational settings and under differing regulatory/licensing structures. The definition of a sealed radioactive source varies between U.S. regulatory authorities and standard-setting organizations. Potential problems with

sealed sources cover a range of risks and impacts. The loss of control of high activity sealed sources can result in very high or even fatal doses to members of the public who come in contact with them. Sources that are not adequately sealed and that fail

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can cause spread of contamination and potential intake of radioactive material.

There is also the possibility that sealed sources may be (or threaten to be) used for terrorist purposes and disruptive opportunities. Until fairly recently, generally licensed sealed sources and devices received little, if any, regulatory oversight and were often forgotten, lost or unaccounted for. Nonetheless, generally licensed devices can contain fairly significant quantities of radioactive material, and there is some potential for exposure if a device is treated in a way for which it was never designed. Industrial radiographers use and handle high activity and/or high dose-rate sealed sources in the field with a high degree of independence and minimal regulatory oversight.



Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25551499>

Ventilation

Report : WIPP Ventilation System Is Unsafe, Needs Improvements



Two reports about inadequate safety conditions at the Waste Isolation Pilot Plant

criticized the facilities contractor for insufficient information in the plans it created to control the decisions that are made during an emergency.

Both reports were conducted by the U.S. Department of Energy's Office of Enterprise Assessments starting in June and focused on WIPP's recovery plan for operating diesel equipment with restricted airflows, and on the deficiencies found in the facility's safety maintenance assessments.

Read more:

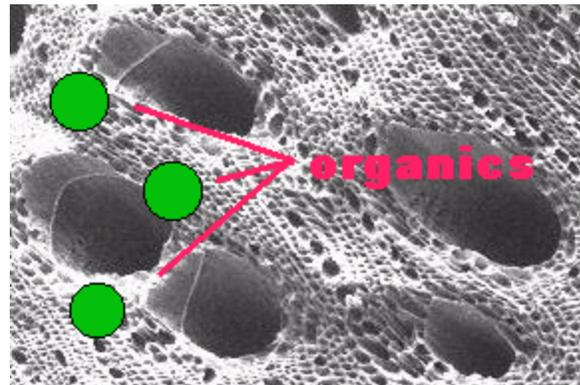
<http://www.currentargus.com/carlsbad->

[news/ci_27270012/report-wipp-ventilation-system-is-unsafe-needs-improvements](https://www.army.mil/press/press-releases/2017/07/27/27270012/report-wipp-ventilation-system-is-unsafe-needs-improvements)

PPE

Breakthrough Curves for Toluene Adsorption on Different Types of Activated Carbon Fibers: Application in Respiratory Protection

Activated carbon fibers (ACF) are considered viable alternative adsorbent materials in respirators because of their larger surface area, lighter weight, and fabric form. The purpose of this study was to characterize the breakthrough curves of toluene for different types of commercially available ACFs to understand their potential service lives in respirators. Two forms of ACF, cloth (AC) and felt (AF), with three surface areas each were tested. ACFs were challenged with six toluene concentrations (50-500 p.p.m.) at constant air temperature (23°C), relative humidity (50%), and air flow (16 l min⁻¹) at different bed depths. Breakthrough data were obtained using continuous monitoring by gas chromatography using a gas sampling valve. The ACF specific surface areas were measured by an automatic physisorption analyzer. Results showed unique shapes of breakthrough curves for each ACF form: AC demonstrated a gradual increase in breakthrough concentration, whereas AF showed abrupt increase in concentration from the breakpoint, which was attributed to the difference in fiber density between the forms. AF has steeper breakthrough curves compared with AC with similar specific surface area. AC exhibits higher



10% breakthrough times for a given bed depth due to higher mass per bed depth compared with AF, indicating more adsorption per bed depth with AC. ACF in respirators may be appropriate for use as protection in environments with toluene concentration at the Occupational Safety and Health Administration Permissible Exposure Limit, or during emergency escape for higher toluene concentrations. ACF has shown great potential for application in respiratory protection against toluene and in the development of thinner, lighter, and more efficient respirators.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25528579>

Noise

Does Tinnitus, Hearing Asymmetry, or Hearing Loss Predispose to Occupational Injury Risk?



Objective: To determine the relative contributions of tinnitus, asymmetrical hearing loss, low frequency hearing loss (pure tone average of 0.5, 1, 2, 3 kHz; PTA.5123), or high frequency hearing loss (pure tone average of 4, 6 kHz; PTA46), to acute injury risk among a cohort of

production and maintenance workers at six aluminum manufacturing plants, adjusting for ambient noise exposure and other recognized predictors of injury risk.

Design: Retrospective analysis. Study sample: The study considered 9920 workers employed during 2003 to 2008. The cohort consisted of 8818 workers (89%) whose complete records were available.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25549168>

EU Traffic Noise Causes 10,000 Premature Deaths a Year

More than 125 million Europeans could be exposed to levels of road traffic noise above legal guidelines, causing up to 10,000 premature deaths each year, finds a new assessment published today by the European Environment Agency (EEA).

“Noise in Europe 2014,” the EEA’s first noise assessment report, analyzes exposure to noise levels and the environmental and public health problems that result.



The effects of noise are particularly widespread. For the one in four Europeans

exposed to noise levels above the EU's threshold for assessment and action, 55 decibels, there are both direct and indirect health effects, the report states.

Read more: <http://ens-newswire.com/2014/12/19/eu-traffic-noise-causes-10000-premature-deaths-a-year/>

Lifelong Occupational Exposures and Hearing Loss among Elderly Latino Americans Aged 65-75 Years



elderly Latino Americans. Design: A descriptive, correlational design used for this secondary analysis with the data from the Sacramento Area Latino Study of Aging (SALSA). Study sample: A total of 547 older adults were included. Results: A majority of participants (58%) reported occupational exposures to loud noise and/or ototoxic chemicals. About 65% and over 90% showed hearing loss at low and high frequencies, respectively.

Read more: <http://www.ncbi.nlm.nih.gov/pubmed/25549170>

Objective: The purpose of this study is to determine the relationship between occupational exposures and hearing among

The Effects of Different Noise Types on Heart Rate Variability in Men

PURPOSE: To determine the impact of noise on heart rate variability (HRV) in men, with a focus on the noise type rather than on noise intensity.

MATERIALS AND METHODS: Forty college-going male volunteers were enrolled in this study and were randomly divided into four groups according to the type of noise they were exposed to: background, traffic,



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speech, or mixed (traffic and speech) noise. All groups except the background group (35 dB) were exposed to 45 dB sound pressure levels. We collected data on age, smoking status, alcohol consumption, and disease status from responses to self-reported questionnaires and medical examinations. We also measured HRV parameters and blood pressure levels before and after exposure to noise. The HRV parameters

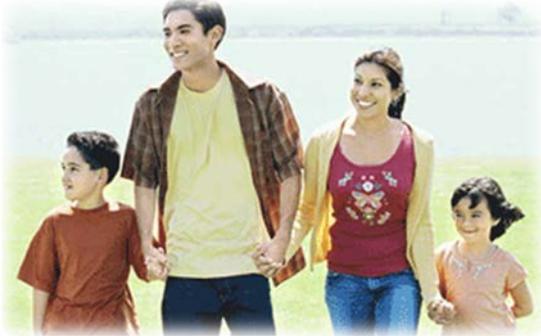
were evaluated while patients remained seated for 5 minutes, and frequency and time domain analyses were then performed.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25510770>

Preventive Medicine

Sticking to Lifestyle Guidelines May Reduce Risk for Certain Cancers and for Overall Mortality



Following cancer prevention guidelines from the American Cancer Society may

modestly reduce your overall risk of developing cancer and have a greater impact on reducing your overall risk of dying, a study of nearly a half-million Americans has found. Having a healthy body weight and staying active appeared to have the most positive impact.

Read more:

<http://www.sciencedaily.com/releases/2015/01/150107122424.htm>

Evolving Methods for Inference in the Presence of Healthy Worker Survivor Bias

Healthy worker survivor bias may occur in occupational studies due to the tendency for unhealthy individuals to leave work earlier, and consequently accrue less exposure, compared with their healthier counterparts. If occupational data are not



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analyzed using appropriate methods, this bias can result in attenuation or even reversal of the estimated effects of exposures on health outcomes. Recent advances in computing power, coupled with state-of-the-art statistical methods, have

greatly increased the ability of analysts to control healthy worker survivor bias.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25536456>

Ixodes Ricinus and Its Transmitted Pathogens in Urban and Peri-Urban Areas in Europe: New Hazards and Relevance for Public Health



Tick-borne diseases represent major public and animal health issues worldwide., primarily associated with deciduous and mixed forests, is the principal vector of causative agents of viral, bacterial, and protozoan zoonotic diseases in Europe.

Recently, abundant tick populations have been observed in European urban green areas, which are of public health relevance due to the exposure of humans and domesticated animals to potentially infected ticks. In urban habitats, small and medium-sized mammals, birds, companion animals (dogs and cats), and larger mammals (roe deer and wild boar) play a role in maintenance of tick populations and as reservoirs of tick-borne pathogens.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25520947>

After Weight Loss Surgery, People Could Experience Discrimination when Interviewing for Jobs

People say that they would be more likely to hire someone who has lost weight through exercise and dieting than through surgery. This is just one of the stigmas faced by obese people who undergo weight-reducing bariatric surgery, report



researchers. Over 100,000 bariatric surgeries are performed annually in the US, and in many cases ensure substantial and sustained long-term weight loss for obese people.

Read more:

<http://www.sciencedaily.com/releases/2015/01/150107091244.htm>

Rat Lung Response to PM2.5 Exposure under Different Cold Stresses



Ambient particulate matters and temperature were reported to have additive effects over the respiratory disease hospital admissions and deaths. The purpose of this study is to discuss the interactive pulmonary toxicities of cold stress and fine particulate matter (PM2.5) exposure by estimating inflammation and oxidative stress responses. 48 Wistar male rats, matched by weight and age, were randomly assigned to six groups, which

were treated with cold stress alone (0 °C, 10 °C, and 20 °C (Normal control)) and cold stresses plus PM2.5 exposures respectively. Cold stress alone groups were intratracheal instillation of 0.25 mL normal saline, while cold stress plus PM2.5 exposure groups were intratracheal instillation of 8 mg/0.25 mL PM2.5. These procedures were carried out for three times with an interval of 48 hours for each treatment. All rats were sacrificed after 48 hours of the third treatment. The bronchoalveolar lavage fluid (BALF) was collected for analyzing inflammatory cells and cytokines, and lung homogenate MDA was determined for oxidative stress estimation.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25514147>

U.S. Cancer Deaths Down 22 Percent since 1991, American Cancer Society Says

More than 1.5 million Americans avoided death from cancer since 1991 thanks to falling smoking rates and better cancer prevention, detection and treatments,

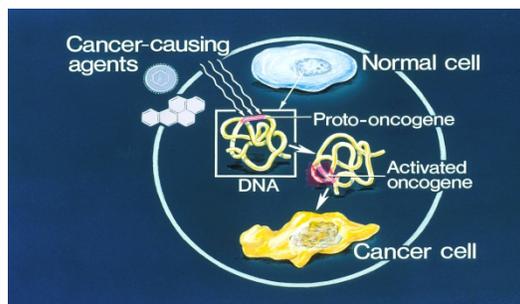
according to a study from the American Cancer Society.

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The overall rate of deaths from cancer decreased from about 215 per 100,000 people in 1991 to about 169 per 100,000 people in 2011, researchers found.

Read more:

<http://www.amny.com/news/u-s-cancer-deaths-down-22-percent-since-1991-american-cancer-society-says-1.9768162>



Environmental Health

EPA to Hold Public Hearings in California, Texas and D.C. on Proposed Smog Standards



The EPA will hold three public hearings on the proposed updates to the national air quality standards for ground-level ozone, also known as smog. EPA has proposed to strengthen the standards to a level within a range of 65 to 70 parts per billion to better protect Americans' health and the

environment, while taking comment on a level down to 60 ppb. The agency estimates that the benefits of meeting the proposed standards will significantly outweigh the costs, preventing asthma attacks, heart attacks, missed school days and premature deaths, among other health effects.

Read more:

<http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/786eea8906146eaa85257db700620cd1!OpenDocument>

Turning Deadly Chemical Warfare Agents into Harmless Soil

Background: High and low ambient Destroying chemical warfare agents in bulk is a challenge for the military and international community. Current methods of eradication, such as incineration or hydrolysis, create toxic waste which



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requires further processing. The logistics required to transport large stockpiles from storage to a disposal site can be risky and expensive.

Additionally, different types of chemicals require different methods to make them safe, so each agent requires a specific neutralization procedure – one size doesn't fit all. To address these challenges, DARPA has announced the Agnostic Compact

Demilitarization of Chemical Agents (ACDC) program and issued a Broad Agency Announcement solicitation.

Read more:

<http://www.homelandsecuritynewswire.com/dr20141218-turning-deadly-chemical-warfare-agents-into-harmless-soil>

The Department of Energy's Final Act of 2014 Could Save Office Buildings and Schools \$15 Billion



On the very last day of 2014, the Department of Energy (DOE) released new energy efficiency standards for linear fluorescent lights that will lower the electric bills of virtually every office building, school, and hospital across the country by \$15 billion through 2030. The new DOE standards are a big deal as there are billions of these tubular lights in place and they are often on for 12 or more hours a day.

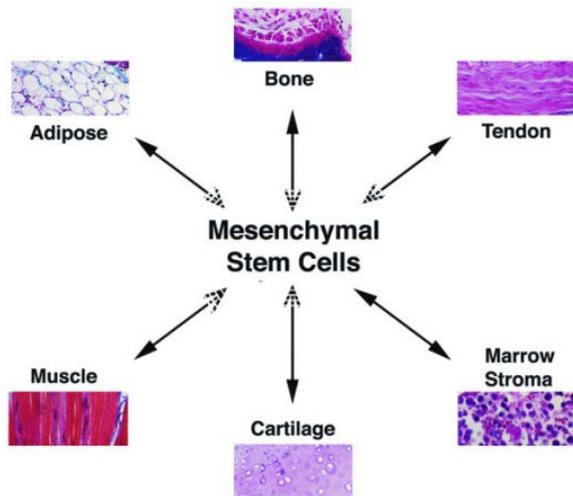
These lighting standards culminate a very successful energy-saving year by DOE, which finalized minimum energy efficiency standards for 10 product categories ranging from commercial refrigeration equipment to furnace fans to external power supplies (the ubiquitous little black box chargers needed to power our laptop computers and cell phones). According to DOE, these 10 standards will eliminate 435 million metric tons of carbon dioxide emissions from power plants, the largest source of climate change pollution in the United States and save America's businesses and families \$78 billion in electricity bills through 2030.

Read more:

<http://theenergycollective.com/nrdcswitchboard/2178301/does-final-act-2014-save-office-buildings-and-schools-15-billion>

Ergonomics

An Exploratory Study of the Effects of Occupational Exposure to Physical Demands on Biomarkers of Cartilage and Muscle Damage



Biomarkers of tissue damage, derived from tissues commonly injured as a result of occupational physical demands, may be of use for future prediction of work-related musculoskeletal disorders (WMSDs). This exploratory study assessed whether selected biomarkers are likely to be sensitive to the level of occupational physical demands. Twenty-four participants were recruited to form two groups, with relatively high and low levels of WMSD risk. Serum levels of Cartilage Oligomeric Matrix Protein (COMP), Interleukin-6 (IL6), and

Creatine Kinase (CK)—which respectively indicate cartilage damage, muscle use, and muscle damage—were obtained. Six blood samples were obtained before and after work on Monday, Wednesday, and Friday of one working week. Additionally, a self-report measure of risk factor exposure, the Hollmann Index, was used to, and did, confirm group differences in WMSD risk. COMP levels varied significantly over time, but not between groups. IL6 levels were greater in the high-risk group at all time points and varied significantly over time and between groups. CK levels did not vary significantly over time or between groups. IL6 successfully differentiated between the high and low risk groups, suggesting potential use in the occupational domain. Prospective studies are needed, though, to associate biomarker levels/changes with WMSD risk.

Read more: Journal of Occupational and Environmental Hygiene Volume 12, Issue 2, 2015 (Available with AIHA membership)

Inter-Individual Postural Variability in Seated Drivers Exposed to Whole-Body Vibration



Long-term occupational exposure to whole-body vibration (WBV) is a cause of low back pain for seated drivers. Poor and long-term seated postures are considered as a cofactor in the risk. It depends on the vehicle's ergonomics and tasks. Differences in posture may also be observed between operators doing identical tasks. An experiment has been performed in order to

simultaneously measure posture and WBV for 12 drivers in 3 vehicles (loader, dumper and excavator) during controlled tasks. The inter-individual postural variability has been evaluated. The positions and movements of the body were measured with the CUELA system (computer-assisted recording and long-term analysis of musculoskeletal loads). Significant differences were observed between the three vehicles in the WBV, positions and movements of the body. Significant postural differences were observed between drivers (EN 1005-4 2005). Individual strategies for performing a task were also identified.

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25537005>

Safety

Top 10 Workplace Injuries Cost U.S. Business \$1 Billion Per Week

The 2014 Liberty Mutual Workplace Safety Index found that the most disabling workplace injuries and illnesses in 2012 amounted to nearly \$60 billion in direct U.S. workers' compensation costs. That's right: \$60 billion in direct costs to U.S. businesses.



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U.S. businesses spend more than \$1 billion a week on the most disabling workplace injuries according to the 2014 Liberty Mutual Workplace Safety Index. Compiled annually by the Liberty Mutual Research Institute for Safety, the Index (and this gallery) ranks the top 10 causes of serious, nonfatal workplace injuries and their direct

costs of work and then rank those events by total workers compensation costs.

Read more: http://ehstoday.com/safety-leadership/top-10-workplace-injuries-cost-us-business-1-billion-week-photo-gallery#slide-9-field_images-37621

Wet-Work Exposure: A Main Risk Factor for Occupational Hand Dermatitis



Wet-work can be defined as activities where workers have to immerse their hands in liquids for >2 hours per shift, or wear waterproof (occlusive) gloves for a corresponding amount of time, or wash

their hands >20 times per shift. This review considers the recent literature on wet-work exposure, and examines wet-work as a main risk factor for developing irritant contact dermatitis of the hands. The aim of this paper is to provide a detailed description of wet-work exposure among specific occupational groups who extensively deal with water and other liquids in their occupations. Furthermore, it highlights the extent and importance of the subsequent adverse health effects caused by exposure to wet-work.

Read more: <http://www.ncbi.nlm.nih.gov/pubmed/25516808>

When Working in the Cold, Be Prepared and Be Aware

When workers do their jobs in the cold, they face many risks. Some cold-weather dangers are obvious, but others are harder to see. Sometimes you might not even think it's very cold, but a cold-weather injury can still harm you.



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When you must work in the cold, always remember to be prepared and be aware.

Read more:

<http://www.cdc.gov/Features/WorkingInCold/>

Federal Buildings are Vulnerable to Hacking and DHS Isn't Doing Enough to Protect Them

Traditional federal agency computer networks are no strangers to malicious intruders. But now, a government watchdog is warning that federal facilities themselves are at risk of being hacked.

High-tech access-control systems that regulate federal facilities' electricity use, heating, air conditioning, closed-circuit security cameras and even the operation of elevators are increasingly being hooked up to the Internet, making them vulnerable to cyberattacks, according to a new report from the Government Accountability Office.



Read more:

<http://www.nextgov.com/cybersecurity/2015/01/federal-buildings-are-vulnerable-hacking-and-dhs-isnt-enough-protect-them/102687/>

2014 Saw Potentially Serious Safety Mishaps at U.S. Biolabs



Two laboratory accidents at the US Army U.S. government laboratories working with potentially deadly biological agents have had to deal with several lab incidents in the past two years. The Homeland Security News Wire has reported on the mishaps at the Centers for Disease Control and Prevention (CDC), where vials of deadly pathogens, including anthrax, were mishandled.

Similar lab incidents occurred in 2012 and 2013, according to a report from the

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Frederick News-Post. Copies of occupational hazard reports, obtained through the Freedom of Information Act from the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), the National Institute of Allergy and Infectious Diseases' Integrated Research Facility (NIAID-IRF), and the National Biodefense Analysis and Countermeasures

Center at Fort Detrick, Maryland, reveal the details behind accidents at some of the nation's most secured labs.

Read more:

<http://www.homelandsecuritynewswire.com/dr20150106-2014-saw-potentially-serious-safety-mishaps-at-u-s-biolabs>

Emergency Preparedness & Response

NFPA Proposes Standard Amendment to Protect First Responders from Ebola Virus

The NFPA seeks comments on a Tentative Interim Amendment (TIA) to NFPA 1999, its Standard on Protective Clothing for Emergency Medical Operations, to help protect first responders from exposure to the Ebola virus. According to the association's press release, this TIA follows work conducted by the Centers for Disease Control and Prevention, the World Health Organization, and other organizations and federal agencies that recognized the need for a national standard on personal protective equipment to protect emergency first responders from exposure to liquid-borne pathogens. Other organizations working to address this issue include the Human and Health Services Office of the Assistant Secretary for Preparedness and Response and Interagency Board for Equipment Standardization and Interoperability.



Read more:

<https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/NFPA-Proposes-Standard-Amendment-to-Protect-First-Responders-from-Ebola-Virus.aspx>

Deployment Health

Army Evaluates DARPA's Futuristic Soft Exosuit



Army researchers are evaluating prototype devices developed for the Defense Advanced Research Projects Agency.

The Defense Advanced Research Projects Agency, known as DARPA, Warrior Web program's goal is to create a soft, lightweight undersuit to help reduce

injuries and fatigue, while improving mission performance. DARPA is responsible for the development of new technologies for the U.S. military.

Researchers from Harvard University's Wyss Institute for Biologically Inspired Engineering spent the past two years developing a biologically inspired smart suit that aims to boost efficiency through a new approach. A series of webbing straps contain a microprocessor and a network of strain sensors.

Read more:

<http://www.arl.army.mil/www/default.cfm?article=2551>

Mobile App to Diagnose Head Injuries Scores FDA Clearance

The new Defense Automated Neurobehavioral Assessment is a mobile phone-based application designed to help medical providers identify cases of traumatic brain injury in almost any setting, which may help clinicians diagnose a patient in as little as five minutes.

Read more:

http://www.army.mil/article/140309/Mobile_app_to_diagnose_head_injuries_scores_FDA_clearance/



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production of conductive films in a modern up-scaling factory was assessed.

Particulate matter concentrations (2.5-10 µm) and concentrations of CO and CO₂ were monitored by using real-time instruments. Workers' exposure levels to SWCNTs were qualitatively estimated by

analyzing particle samples by transmission electron microscopy (TEM).

Read more:

<http://www.ncbi.nlm.nih.gov/pubmed/25539647>

Regulatory Research & Industrial Hygiene Professional News

Federal

Regulations to Watch in 2015

With President Obama determined to leave his mark through regulations, administration officials are trying to finalize as many health and consumer safety protections as possible before his term runs out.

Agencies such as the Consumer Product Safety Commission, the Environmental Protection Agency (EPA) and the Food and Drug Administration have a host of final rules on deck for what could be a burst of rulemaking in Obama's final two years in office.

Rules that agencies are expected to finalize in the next year include safety standards for ATVs and electronic reporting of workplace injuries.

Read more:

<http://thehill.com/regulation/pending-regs/228009-atvs-e-cigarettes-and-ozone-regulations-to-watch-in-2015>



Congressional Workplace Rights Need Some Work, Compliance Office Says



Those working in the legislative branch of government are likely well aware of all the workplace protections their friends have as employees in federal agencies or the private sector.

So some have asked Congress's independent Office of Compliance what protections they have if, for instance, they were to blow the whistle on misdeeds by supervisors in their offices.

The answer? None.

Read more:

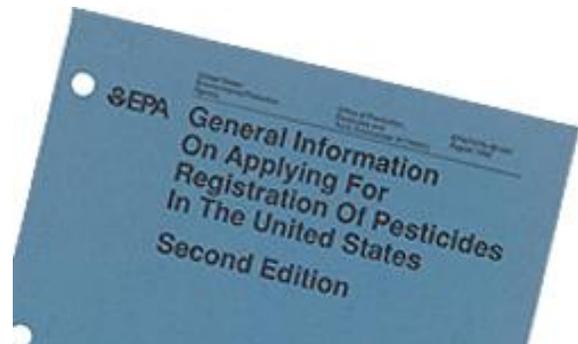
<http://www.washingtonpost.com/blogs/in-the-loop/wp/2015/01/07/congressional-workplace-rights-need-some-work-compliance-office-says/>

EPA

EPA Revised Chlorpyrifos Assessment Shows Risk to Workers

EPA is releasing an assessment for public comment on the potential for human health risk of the pesticide chlorpyrifos.

This assessment shows some risks to workers who mix, load and apply chlorpyrifos pesticide products. When used in large amounts, chlorpyrifos has the potential to pose risks in limited geographic areas when drinking water from small watersheds. There were no additional risks from pesticide exposures in food or exposures to bystanders and workers from airborne chlorpyrifos. The latest USDA



pesticide residue data show no concerns for chlorpyrifos in food, with the pesticide detected in less than 1% of samples.

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Based on the results of the risk assessment, additional restrictions may be necessary to ensure that workers who use or work around areas treated with chlorpyrifos are protected and that drinking water sources are protected. The agency will now begin work on measures to reduce these risks.

Read more:

<http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/6b1d8a363e75a61e85257dc4006b1524!OpenDocument>

NIOSH

NIOSH Requests Comments on Proposed Study of Health and Safety Management System Elements



NIOSH requests public comment on a proposed research project that seeks to understand the best practices for developing, implementing, and maintaining a robust health and safety management system (HSMS). A previous NIOSH study of health and safety executives, managers, and professionals from a variety of mining

commodities suggested that the following elements and practices were most important to support an effective risk-based HSMS: leadership development; accountability; knowledge, skills, and abilities development; system coordination; culture enhancement; behavior optimization; and risk management. The new project will examine the practical purpose, implementation, and evaluation of each of these elements.

Read more:

<https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/NIOSH-Requests-Comments-on-Proposed-Study-of-Health-and-Safety-Management-System-Elements.aspx>

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NIOSH

DOT Fines American Honda Motor Co. \$70 Million for Failing to Report Deaths and Injuries

The National Highway Traffic Safety Administration announced Jan. 8 that American Honda Motor Company, Inc. will pay two \$35 million civil penalties, for a total of \$70 million, for failing to report deaths, injuries, and certain warranty claims to the federal government as required by the early warning reporting regulation in the TREAD Act. American Honda also has agreed to increased NHTSA oversight and third-party audits to ensure that all required reporting is completed now and into the future.

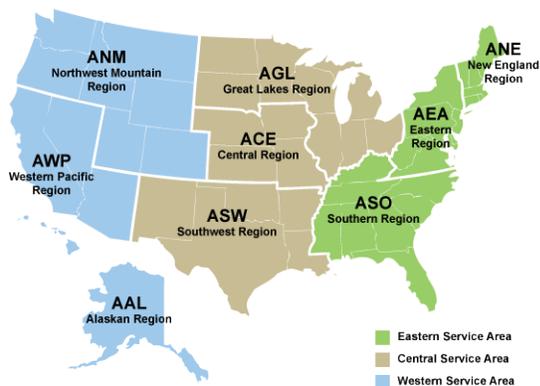


Read more:

<http://ohsonline.com/articles/2015/01/09/million-for-failing-to-report-deaths-and-injuries.aspx>

FAA

FAA Publishing Rule to Require Safety Management Systems



The Federal Aviation Administration issued a final rule Jan. 7 that will require most U.S. commercial airlines to have Safety Management Systems (SMS) in place by

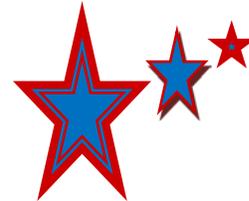
2018, with the agency's announcement saying the rule "builds on the programs many airlines already use to identify and reduce aviation risk." Airlines will be able to design a system to match the size, complexity, and business model of their operations, according to the agency.

Read more:

<http://ohsonline.com/articles/2015/01/07/aa-sms-rule.aspx>

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USAPHC



How to become a DOEHRS-IH Super Star

- ✓ Do feel like you use DOEHRS-IH more than other program offices?
- ✓ Do you feel unnoticed?
- ✓ Do you feel like you have done great IH things with DOEHRS-IH?
- ✓ Do you wear a unitard and cape under your clothes? (Don't answer this question please)

Email the [Industrial Hygiene Training Coordinator](#) a brief synopsis about a new idea, a faster way, or a milestone you just met. Your Program Office just may be nominated as the monthly DOEHRS-IH **Super Star**.

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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>



USAPHC Training

Check out the USAPHC training website regularly. Many courses will become self-enrollment courses. Registration and course activation will begin in Blackboard from September 1- November 30, 2015.

To register, visit the Blackboard Learn website <http://aiph-dohs.elc.learn.army.mil>, log-in (use the AIPH-DOHS URL), click on the **Courses** tab (top left) and then under the **Course Catalog** tab choose the **AIPH-DOHS Courses** folder (top right). Under the **Browse Course Catalog** tab, type in a keyword to search for the course of interest. Hover the mouse cursor over the course name and a grey drop down will appear. Select **Enroll** and you have completed the self-enrollment process.

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