

August 2016,  
Issue 60

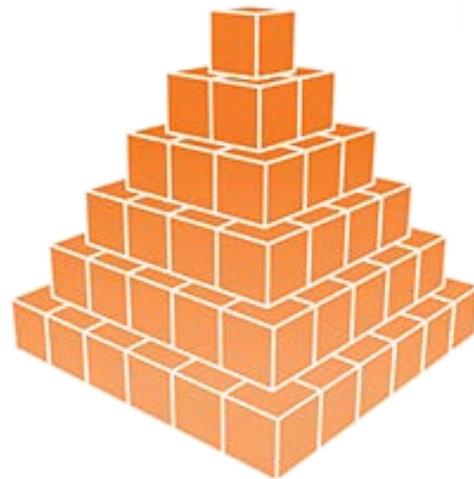
# Army Industrial Hygiene News and Regulatory Summary

## Hazardous Substances

### A Stroll through NIOSH's Engineering Controls Database

In the hierarchy of controls for preventing workplace hazards, engineering controls rank right in the middle—after elimination and substitution and before administrative controls and use of personal protective equipment. Today and tomorrow we will take a look at a database for engineering controls recently launched by the National Institute for Occupational Safety and Health (NIOSH).

Engineering controls protect workers by removing hazardous conditions or by placing a barrier between the worker and the hazard. According to NIOSH, well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions. The initial cost of engineering controls can be higher than some other control methods, but over the longer term, NIOSH claims that operating costs are frequently lower, and in some instances, can provide a cost savings in other areas of the process.



Read more:

<http://ehsdailyadvisor.blr.com/2016/08/stroll-nioshs-engineering-controls-database/>

#### Special Interest Articles:

- [Flour Dust](#)
- [Dental Clinic](#)
- [Consumer Products](#)
- [Smart Uniform](#)
- [OSHA Penalties](#)

DOEHRS Super Star

Contents:



- [Hazardous Substance.....](#) 1
- [Radiation.....](#)5
- [Ventilation.....](#)7
- [PPE.....](#)7
- [Noise.....](#)9
- [Preventive Medicine.....](#)10
- [Environmental Health.....](#)14
- [Ergonomics.....](#)16
- [Safety.....](#)16
- [Emergency Preparedness & Response.....](#)20
- [Deployment Health.....](#)20
- [Nanotech.....](#)21
- [Regulatory Research & IH News. ....](#)22
- [Training.....](#)26

## Occupational Exposures to New Dry Cleaning Solvents: High-Flashpoint Hydrocarbons and Butylal



The dry cleaning industry is moving away from using perchloroethylene. Occupational exposures to two alternative dry cleaning solvents, butylal and high-flashpoint hydrocarbons, have not been well characterized. We evaluated four dry cleaning shops that used these alternative solvents. The shops were staffed by Korean- and Cantonese-speaking owners, and Korean-, Cantonese-, and Spanish-speaking employees. Because most workers had limited English

proficiency we used language services in our evaluations. In two shops we collected personal and area air samples for butylal. We also collected air samples for formaldehyde and butanol, potential hydrolysis products of butylal. Because there are no occupational exposure limits for butylal, we assessed employee health risks using control banding tools. In the remaining two shops we collected personal and area air samples for high-flashpoint hydrocarbon solvents.

In all shops the highest personal airborne exposures occurred when workers loaded and unloaded the dry cleaning machines and pressed dry cleaned fabrics.

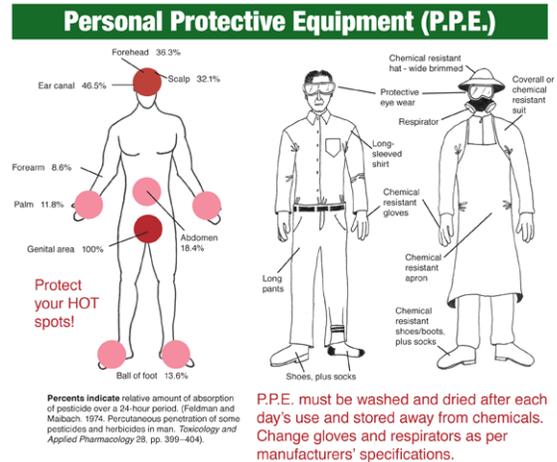
*Read more:*

<http://oeh.tandfonline.com/doi/full/10.1080/15459624.2016.1177648>



## Loss of Effectiveness of Protective Clothing after Its Use in Pesticide Sprays and Its Multiple Washes

Protective clothing is used as a barrier against pesticides when working with agricultural sprays. The aim of this study was to evaluate the pesticide penetration, retention and repellence of the material and seams of a whole-body protective garment used by applicators of pesticides. The efficiency of the material and seams of the whole-body garment were determined for its classification as proposed by ISO 27065 (ISO, 2011). The evaluation method used was the pipette test of ISO 22608. The efficiency of the material and seams of the garment (100% cotton) were tested by contamination with formulations of Roundup Original® SL; Nufos EC® and Supera SC®. The presence of the seams in the protective clothing reduced its efficiency in the control of dermal exposure, except when protecting against the Supera SC® formulation. The number of washes and uses affected the efficiency of the material and seams of the garment. The type of formulation interfered significantly



in the penetration of pesticides into the material and seams. Thus, the laboratory efficiency assessment of protective clothing is necessary to determine what types of formulations and use conditions are appropriate for workers.

Read more:

<http://oeh.tandfonline.com/doi/full/10.1080/015459624.2016.1225159>

## Bakers' Exposure to Flour Dust



**Introduction:** We aimed to characterize bakers' personal exposure to airborne flour dust in respect to the health-related aerosol fractions inhalable, extrathoracic and thoracic dust, and to examine possible production-related determinants of dust exposure.

**Methods:** Sixty-eight bakers from 7 bakeries in Bergen, Norway (2009–2012)

## Army Industrial Hygiene News and Regulatory Summary

participated in the exposure assessment, comprising full-shift personal samples of inhalable dust (n = 107) and thoracic dust (n = 61). The relation between possible determinants and exposure was estimated using mixed effects models, while associations between the various aerosol fractions across task groups and type of bakeries were described by Pearson's correlation coefficients.

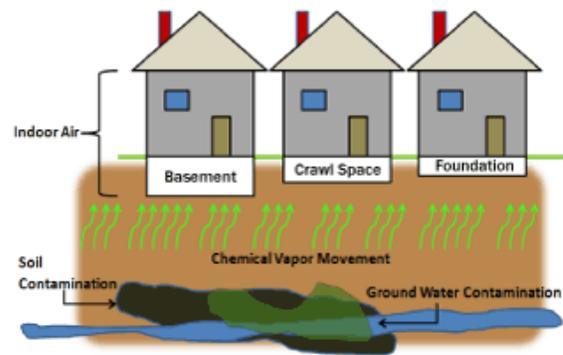
**Results:** Bakers overall geometric mean personal exposure to inhalable, extrathoracic and thoracic dust were 2.6 mg/m<sup>3</sup> (95% CI: 2.0, 3.2), 2.2 mg/m<sup>3</sup> (95% CI: 1.9, 2.7) and 0.33 mg/m<sup>3</sup> (95% CI 0.3, 0.4), respectively. A total of 29% of the measurements of inhalable dust were above the Norwegian Occupational Exposure Limit of 3 mg/m<sup>3</sup>. The exposure variability of inhalable dust could not be explained by any of the examined production-related determinants, while the daily production volume explained 18% of the variance in thoracic dust. Overall, the thoracic dust represented 15% of the inhalable dust, being rather stable across the production-related determinants. The

overall correlation between inhalable and thoracic dust was nevertheless moderate (r = 0.52, p<0.001), with the highest correlation for craft bakers (r = 0.62) and no correlation during dough forming (r = 0.01). **Conclusion:** Bakers are exposed to flour dust at a level that most likely represents an excess risk of developing chronic diseases of the respiratory system, and a decrease of present exposure level is imperative. Extrathoracic dust – likely the most relevant sub-fraction in respect to flour-induced sensitization and occupational rhinitis – represented the main proportion of the measured inhalable dust. The variation in correlation coefficients between the dust fractions across bakery types and task groups underlines the need of more knowledge about how these aerosol fractions are distributed across the production process and bakery types.

*Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 19 Aug 2016 (Available with AIHA membership)*

### It Came From Beneath: Detecting and Mitigating Vapor Intrusion

Indoor exposure to naturally occurring radon gas has rocketed into public awareness since the 1980s, but now a similar, albeit lesser-known form of indoor pollution is gaining attention of its own. That form is vapor intrusion, the migration of volatile chemicals from groundwater and soil into buildings above them. There are four main sources of vapor intrusion: industrial sites, military sites, dry



cleaners, and gas stations—all locations that produced or heavily used solvents, degreasers, and other volatile chemicals, or that still do. Few experts feel comfortable estimating the scale of vapor intrusion in the United States.

*Read more:*

<http://ehp.niehs.nih.gov/august-2016/>

### Comparison between Active (Pumped) and Passive (Diffusive) Sampling Methods for Formaldehyde in Pathology and Histology Laboratories



This study was to determine occupational exposures to formaldehyde and to compare concentrations of formaldehyde obtained by active and passive sampling methods. In one pathology and one histology laboratories, exposure measurements were collected with sets of active air samplers (Supelco LpDNPH tubes) and passive badges (ChemDisk Aldehyde Monitor 571). Sixty-six sample pairs (49 personal and 17 area) were collected and analyzed by NIOSH NMAM 2016 for active samples and OSHA Method 1007 (using the manufacturer's updated uptake rate) for passive samples. All active and passive 8-hour time-weighted average (TWA) measurements showed compliance with the OSHA permissible exposure limit (PEL-0.75 ppm) except for one passive measurement, whereas 78% for the active and 88% for the passive samples exceeded the NIOSH recommended

exposure limit (REL-0.016 ppm). Overall, 73% of the passive samples showed higher concentrations than the active samples and a statistical test indicated disagreement between two methods for all data and for data without outliers. The OSHA Method cautions that passive samplers should not be used for sampling situations involving formalin solutions because of low concentration estimates in the presence of reaction products of formaldehyde and methanol (a formalin additive). However, this situation was not observed, perhaps because the formalin solutions used in these laboratories included much less methanol (3%) than those tested in the OSHA Method (up to 15%). The passive samplers in general overestimated concentrations compared to the active method, which is prudent for demonstrating compliance with an occupational exposure limit, but occasional large differences may be a result of collecting aerosolized droplets or splashes on the face of the samplers. In the situations examined in this study the passive sampler generally produces higher results than the active sampler so that a body of results from passive samplers

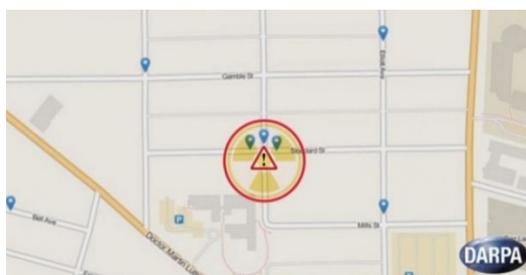
## Army Industrial Hygiene News and Regulatory Summary

demonstrating compliance with the OSHA PEL would be a valid conclusion. However, individual passive samples can show lower results than a paired active sampler so that a single result should be treated with caution.

*Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 11 Aug 2016, (Available with AIHA membership)*

### Radiation

#### DARPA Develops Handy Radiation Detection Devices the Size of Smartphones to Find Dirty Bombs



US Defense Advanced Research Projects Agency (DARPA) has developed and demonstrated a network of smartphone-sized mobile devices that can detect the tiniest traces of radioactive materials. The DARPA's SIGMA program aimed at preventing attacks involving radiological "dirty bombs" and other nuclear threats conducted the demonstration earlier this year.

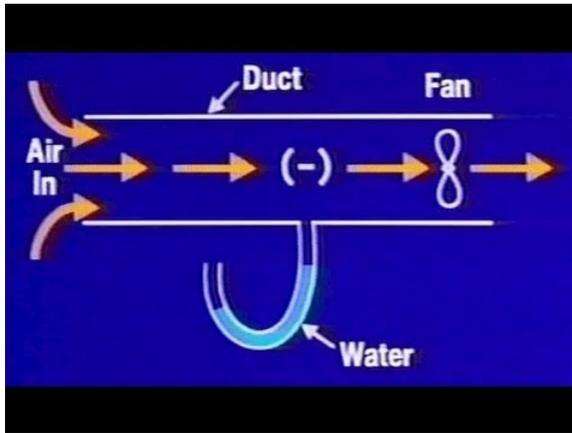
Developed under DARPA's SIGMA program, the detectors are aimed at preventing attacks on the United States by "dirty bombs" that might be used by terrorists, and by other nuclear threats. Combined with larger detectors along major roadways, bridges, other fixed infrastructure and in vehicles, the new networked devices promise significantly enhanced awareness of radiation sources and greater advance warning of possible threats.

*Read more:*

<http://en.yibada.com/articles/154532/20160826/darpa-develops-handy-radiation-detection-devices-size-smartphones-find-dirty.htm#ixzz4lpZcv2YU>

## Ventilation

### Recommended Velocities in Ventilation Ducts



generation and pressure drop in the duct work. The limits of velocities depends on the actual application. The background noise in an industrial building is significant higher than the noise in a public building and more duct generated noise can be accepted.

Read more:

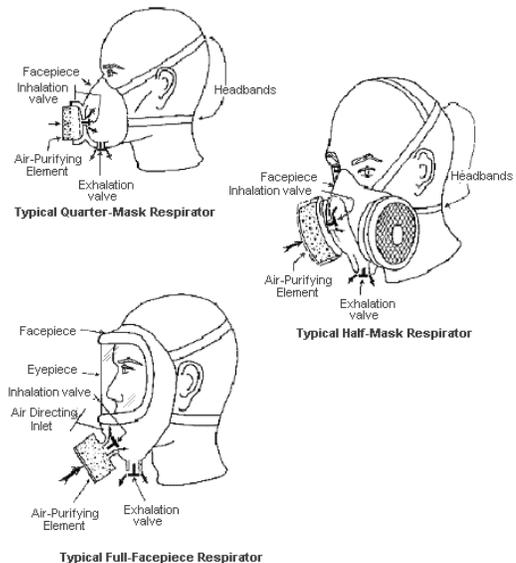
[http://www.engineeringtoolbox.com/velocities-ventilation-ducts-d\\_211.html](http://www.engineeringtoolbox.com/velocities-ventilation-ducts-d_211.html)

The duct velocity in air condition and ventilation systems should not exceed certain limits to avoid unnecessary noise

## PPE

### A Comparison of Facemask and Respirator Filtration Test Methods

NIOSH published a Federal Register Notice to explore the possibility of incorporating FDA required filtration tests for surgical masks (SMs) in the 42 CFR Part 84 respirator certification process. There have been no published studies comparing the filtration efficiency test methods used for NIOSH certification of N95 filtering facepiece respirators (N95 FFRs) with those used by the FDA for clearance of SMs. To address this issue, filtration efficiencies of "N95 FFRs" including six N95 FFR models and three surgical N95 FFR models, and three SM models were measured using the



# Army Industrial Hygiene News and Regulatory Summary

NIOSH NaCl aerosol test method, and FDA required particulate filtration efficiency (PFE) and bacterial filtration efficiency (BFE) methods, and viral filtration efficiency (VFE) method. Five samples of each model were tested using each method. Both PFE and BFE tests were done using unneutralized particles as per FDA guidance document. PFE was measured using 0.1µm size polystyrene latex particles and BFE with ~3.0µm size particles containing *Staphylococcus aureus* bacteria. VFE was obtained using ~3.0µm size particles containing phiX 174 as the challenge virus and *Escherichia coli* as the host. Results showed that the efficiencies measured by the NIOSH NaCl method for “N95 FFRs” were from 98.15 to 99.68% compared to 99.74 to 99.99% for PFE, 99.62 to 99.9% for BFE and 99.8 to 99.9% for VFE methods.

Efficiencies by the NIOSH NaCl method were significantly ( $p = <0.05$ ) lower than the other methods. SMs showed lower efficiencies (54.72 to 88.40%) than “N95 FFRs” measured by the NIOSH NaCl method, while PFE, BFE and VFE methods produced no significant difference. The above results show that the NIOSH NaCl method is relatively conservative and is able to identify poorly performing filtration devices. The higher efficiencies obtained using PFE, BFE and VFE methods show that adding these supplemental particle penetration methods will not improve respirator certification.

Read more:

<http://oeh.tandfonline.com/doi/full/10.1080/15459624.2016.1225157>

## IRSST Adds 16 New Models to Interactive Protective Glove Selection Tool

Polyvinyl chloride (PVC)	Specific use	Good for acids, bases, oils, fats, peroxides, and amines. Good resistance to abrasions. Poor for most organic solvents.	
Polyvinyl alcohol (PVA)	Specific use	Good for aromatic and chlorinated solvents. Poor for water-based solutions.	
Stainless steel Kevlar Leather	Specific use	Cut-resistant gloves. Sleeves are also available to provide protection to wrists and forearms.  (If potential for biological or chemical contamination: wear appropriate disposable gloves on top of your cut-resistant gloves and discard after use).	

IRSST, a nonprofit scientific research organization in Quebec, Canada, recently added 16 new models to its *Protective Gloves Selection Guide*, an interactive tool intended to help individuals and occupational health and safety managers identify protective gloves that correspond to their needs. Using IRSST’s selection tool, users can search for information on specific glove models or perform a criteria-based search. The interactive tool is accompanied by a document (PDF) that provides general information on hands, laws and regulations that deal with hand protection, and types of gloves. The document also lists proposed steps for risk assessment and the glove

selection process. Users will also find details on the standard methods used to measure glove resistance to mechanical hazards and the glove performance levels used in the interactive selection tool.

*Read more:*

<https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/IRSST-Adds-16-New-Models-to-Interactive-Protective-Glove-Selection-Tool.aspx>

### Noise

## An Exploratory Study of Noise Exposures in Educational and Private Dental Clinics

Exposures to noise and resulting noise-induced hearing loss (NIHL) are not well understood in the dental profession. Previous studies have focused primarily on practicing dental professionals, and have often evaluated hearing loss in the absence of adequate noise exposure assessment. This study was conducted to evaluate exposures among students and staff working in four clinics within a major U.S. university dental school, and to compare these exposures to those among dental professionals in a private general-practice clinic. We measured equivalent continuous average ( $L_{EQ}$ ) noise exposure levels at 3.75-min intervals across a variety of procedures in the evaluated clinics, and also had participants complete a brief survey with questions on their experience and perceptions of noise exposure. We collected 79 partial- or full-shift Time-Weighted Average (TWA) dosimetry measurements on 46 individuals. The mean 3.75-min interval  $L_{EQ}$  level was  $63.6 \pm 13.3$  dBA, while the highest 3.75-min interval  $L_{EQ}$  was 103.5 dBA. Students from the dental



school clinics had the highest variability in average exposure levels, while the pediatric clinic evaluated had the highest average and maximum exposures. Nearly 4% of standardized 8-hr TWA measurements exceeded the 85 dBA Recommended Exposure Limit established by the National Institute for Occupational Safety and Health. Concerns about the potential effects of dental noise on participants' hearing were significantly correlated with metrics of TWA noise exposure, as well as variability of exposure (as assessed by the SD of the 3.75-min  $L_{EQ}$  levels). Our results suggest that dental students and staff may

have some risk of developing noise-induced hearing loss, particularly in pediatric clinical settings.

*Read more: Journal of Occupational and Environmental Hygiene Volume 13, 2016 - Issue 10 (Available with AIHA membership)*

### Sleepiness Linked to Traffic Noise and Pollution



The study shows exposure to traffic pollution is a trigger for daytime sleepiness - and may also trigger SNORING. More than 12,000 adults were included in the Respiratory Health in Northern Europe (RHINE) study.

The findings show that people exposed to high levels of pollution had a 65 per cent greater chance of suffering from daytime sleepiness, compared to those who had no exposure.

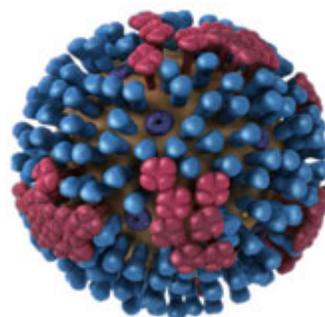
Traffic noise in the bedroom was also a trigger - with people 46 per cent more likely to feel sleepy in the day if exposed. And the research also suggests that people are also 29 per cent more likely to be a habitual snorer if they are exposed to traffic noise while they sleep.

*Read more:*  
<http://www.meltontimes.co.uk/news/local/sleepiness-linked-to-traffic-noise-and-pollution-1-7548626>

## Preventive Medicine

### Viruses 'More Dangerous in the Morning'

The findings, published in PNAS, showed viruses were 10 times more successful if the infection started in the morning. And the animal studies found that a disrupted body clock - caused by shift-work or jet lag - was always vulnerable to infection. The researchers say the findings could lead to new ways of stopping pandemics.



## Army Industrial Hygiene News and Regulatory Summary

Viruses - unlike bacteria or parasites - are completely dependent on hijacking the machinery inside cells in order to replicate. But those cells change dramatically as part of a 24-hour pattern known as the body clock.

*Read more:*

<http://www.bbc.com/news/health-36782326>

### Lead Levels below EPA Limits Can Still Impact Your Health



The residents of Flint, Mich., received some welcome news this week: Researchers released the results of a new round of water tests, showing lead levels in that city's water system falling just below the Environmental Protection Agency action level.

Too many water samples above that level is a red flag for utilities, a sign that they may have a broader lead problem.

Virginia Tech researcher Marc Edwards, who leads the team documenting Flint's water problems, called the new results the "beginning of the end," a turning point in the city's saga with corrosive water.

*Read more:*

<http://www.npr.org/sections/thetwo-way/2016/08/13/489825051/lead-levels-below-epa-limits-can-still-impact-your-health>

### Health Official Warns Zika Could Spread Across U.S. Gulf

One of the top U.S. public health officials on Sunday warned that the mosquito-borne Zika virus could extend its reach across the U.S. Gulf Coast after officials last week confirmed it as active in the popular tourist destination of Miami Beach.

The possibility of transmission in Gulf States such as Louisiana and Texas will likely fuel concerns that the virus, which has been



shown to cause the severe birth defect

## Army Industrial Hygiene News and Regulatory Summary

known as microcephaly, could spread across the continental United States, even though officials have played down such an outcome.

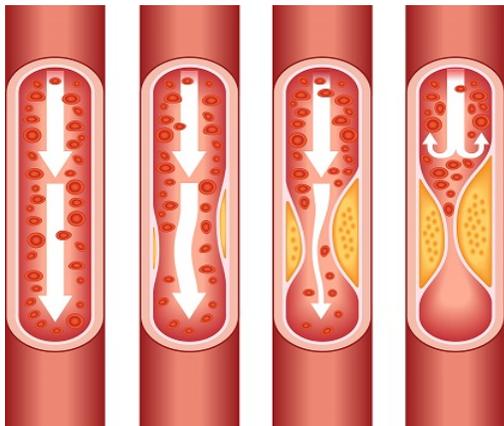
Concern has mounted since confirmation that Zika has expanded into a second region of the tourist hub of Miami-Dade County in Florida. Miami's Wynwood arts neighborhood last month became the site

of the first locally transmitted cases of Zika in the continental United States.

*Read more:*

<http://www.fastcompany.com/3062642/5-ways-employers-can-help-employees-fight-the-fat-at-work>

### Cardiovascular Health Status by Occupational Group



Cardiovascular disease (CVD) is responsible for 1 out of every 3 deaths in the United States, making it the leading cause of death.

CVD illness and death accounts for an estimated \$120 billion dollars of lost productivity in the workplace. With approximately 55% of Americans employed, the workplace is an important factor to consider in cardiovascular health research and a viable setting for carrying out health promotion programs.

*Read more:*

<http://www.ishn.com/articles/104623-cardiovascular-health-status-by-occupational-group>

### Chemicals Banned Decades Ago Linked To Increased Autism Risk Today

Chemicals used in certain pesticides and as insulating material banned in the 1970s may still be haunting us, according to new research that suggests links between higher levels of exposure during pregnancy and significantly increased odds of autism spectrum disorder in children.



According to the research, children born after being exposed to the highest levels of certain compounds of the chemicals, called

## Army Industrial Hygiene News and Regulatory Summary

organochlorine chemicals, during their mother's pregnancy were roughly 80 percent more likely to be diagnosed with autism when compared to individuals with the very lowest levels of these chemicals. That also includes those who were completely unexposed. Although production of organochlorine chemicals was banned in the United States in 1977, these compounds can remain in

the environment and become absorbed in the fat of animals that humans eat, leading to exposure.

*Read more:*

<http://medicalxpress.com/news/2016-08-chemicals-decades-linked-autism-today.html>

### Bacteria in Smokeless Tobacco Products May be a Health Concern



Several species of bacteria found in smokeless tobacco products have been associated with opportunistic infections, according to a paper published August 26 in *Applied and Environmental Microbiology*, a

journal of the American Society for Microbiology.

*Bacillus licheniformis* and *Bacillus pumilus* could potentially cause inflammation of the lungs, as well as opportunistic infections, said coauthor Steven Foley, PhD, research microbiologist, the National Center for Toxicological Research, US Food and Drug Administration.

*Read more:*

<http://medicalxpress.com/news/2016-08-bacteria-smokeless-tobacco-products-health.html>

**Environmental Health**

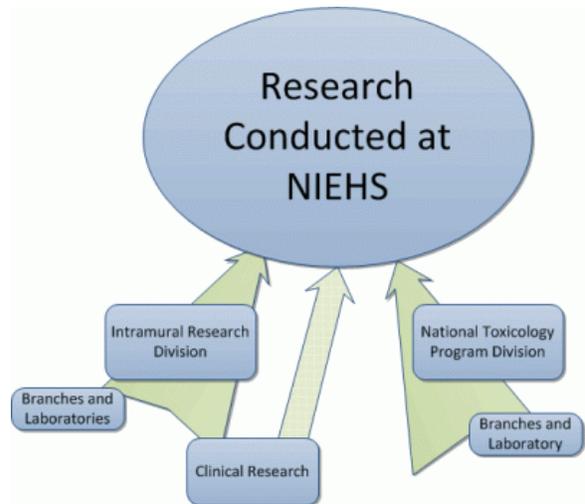
**New Tool for Economic Analyses in Environmental Health Research**

NIEHS has developed a new tool to help environmental health researchers who want to include economic analyses in their studies. The Environmental Health Economic Analysis Annotated Bibliography is a list of more than 70 scientific papers, reports, and reviews on environmental health topics, all of which include some form of economic analysis.

The list is searchable by terms for economic models and variables, environmental exposures, and health outcomes. More studies will be added periodically.

Read more:

<http://www.niehs.nih.gov/news/newsletter>



[/2016/8/science-highlights/economic/index.htm](http://www.niehs.nih.gov/news/newsletter/2016/8/science-highlights/economic/index.htm)

**New Waste Tracking Feature Helps Building Managers Save Money and Support a Healthy Environment**



EPA unveiled a waste and materials tracking feature in its Energy Star Portfolio Manager, which is a free benchmarking and tracking tool for commercial building owners and managers. Reducing waste and reusing materials more productively through sustainable materials management over their entire lifecycles conserves resources, helps communities remain economically competitive and supports a healthy environment.

EPA’s Energy Star Portfolio Manager is already used to measure energy, water and greenhouse gas metrics in more than



## Army Industrial Hygiene News and Regulatory Summary

450,000 U.S. buildings, representing over 40 percent of U.S. commercial space, as well as in more than 10,000 buildings in Canada. Now owners and managers using Portfolio Manager will be able to benchmark 29 types of waste across four different management metrics alongside their existing sustainability management

indicators. Types of waste include building materials, glass, paper, plastics, and trash.

*Read more:*

<https://www.epa.gov/newsreleases/new-waste-tracking-feature-helps-building-managers-save-money-and-support-healthy>

### **An Informatics Approach to Evaluating Combined Chemical Exposures from Consumer Products: A Case Study of Asthma-Associated Chemicals and Potential Endocrine Disruptors**

Much of the work in assessing risks associated with chemical exposure focuses on individual chemicals. However, communities face exposure from a variety of sources and the chemical load (also called body burden) is significantly higher than a century ago (Glegg and Richards 2007; Sanderson et al. 2013). More importantly, the dose response for chemical mixtures may be independent (additive), synergistic, or antagonistic (Sexton and Hattis 2007), and health outcomes can be influenced by both chemical and non-chemical stressors. With respect to chemicals, far-field exposure, such as persistent, high production volume industrial chemicals (Muir and Howard 2006), has been well explored, but near-field exposure from everyday consumer



products such as shampoo, toothpaste, and makeup, account for a significant portion of our overall chemical load (Dodson et al. 2012; Egeghy et al. 2011; Koniecki et al. 2011).

*Read more:*

<http://ehp.niehs.nih.gov/15-10529/>

## Ergonomics

### The Relationship between Sustained Gripping and the Development of Carpal Tunnel Syndrome



The dominant limb is the limb preferred for performing an activity that requires one hand or for performing the more demanding part of an activity that requires both hands. For example, most playing card dealers use their dominant limb to distribute cards (the more demanding part of the activity) and their nondominant limb

to hold the rest of the pack (the less demanding activity). Although a relationship between nocturnal hand paresthesias and daily hand activities has been known for more than a century, it was not until more recently that it was recognized that unilateral carpal tunnel syndrome (CTS) more commonly involves the dominant limb.<sup>1,2</sup>

*Read more:*

<http://www.fedprac.com/specialty-focus/pain/article/the-relationship-between-sustained-gripping-and-the-development-of-carpal-tunnel-syndrome/7d67d2decf1e87d766dc2f399f8b5132.html>

## Safety

### Synchronizing Safety and Occupational Health Headlines Summit

Speaking at the 2016 Senior Safety and Occupational Health Summit in late May in Alexandria, Va., the head of Army safety presented an overview and update of plans to streamline the Army safety and occupational health programs.

"Our working groups are developing the new Army Safety and Occupational Health Enterprise Information Management



## Army Industrial Hygiene News and Regulatory Summary

System, an information technology system which will replace current products such as the Risk Management Information System and the Army Safety Management Information System, that will become obsolete under the new system," said Brig. Gen. Jeffrey A. Farnsworth, HQDA, Director

of Army Safety and commanding general, U.S. Army Combat Readiness Center.

*Read more:*

[https://www.army.mil/article/171863/synchronizing\\_safety\\_and\\_occupational\\_health\\_headlines\\_summit](https://www.army.mil/article/171863/synchronizing_safety_and_occupational_health_headlines_summit)

### CDC Foundation Launches Motor Vehicle Safety Resource



On-the-job vehicle crashes in 2013 alone cost U.S. employers \$25 billion—\$671,000 per death and \$65,000 per nonfatal injury, according to the foundation, which adds that such crashes affect businesses through lost productivity, medical and workers' compensation costs, liability, and reputational damage.

With motor vehicle crashes being the leading cause of work-related injury deaths in the United States, the CDC Foundation has launched Business Pulse: Motor Vehicle Safety at Work.

The foundation was established by Congress as an independent, nonprofit organization to connect the Centers for Disease Control and Prevention with private-sector organizations and individuals to build public health programs. Since 1995, the foundation has provided more than \$620 million to support CDC's work, launched 800 programs around the world, and built a network of individuals and organizations committed to supporting CDC and public health.

*Read more:*

<https://ohsonline.com/articles/2016/08/25/cdc-foundation-launches-motor-vehicle-resource.aspx?admgarea=news>

### Pentagon: Prison Inmates Produced Thousands of Defective Helmets

Contractors sold the U.S. Army and Marine Corps thousands of ballistic helmets made by prison inmates containing numerous defects including "serious ballistic failures," according to a new Defense Department Office of Inspector General report.



# Army Industrial Hygiene News and Regulatory Summary

The IG launched two joint investigations with the Defense Criminal Investigative Service, supported by elements of the U.S. Army, regarding allegations that Federal Prison Industries and ArmorSource LLC manufactured and sold Advanced Combat Helmets, or ACH, and Lightweight Marine Corps Helmets, or LMCH, to the military that failed to meet contract specifications

and were ultimately defective, according to the report released Wednesday.

Read more: <http://www.military.com/daily-news/2016/08/18/pentagon-prison-inmates-produced-thousands-of-defective-helmets.html>

## Hand Hygiene When Being Potentially Exposed to Heavy Metal Dust



It is important to recognize that hand washing cannot replace safe and hygienic work practices and the use of personal protective equipment when handling heavy metal-containing materials.

Heavy metals are natural chemical elements that can be found in rocks of the Earth's

crust. Heavy metals have a long history of industrial and personal use. Although they are of natural origin, they are not harmless to human health and can cause both acute and chronic health issues. Heavy metals tend to accumulate in the body, increasing in concentration over time and becoming more toxic. A worsening medical condition due to heavy metal dust exposure is often misdiagnosed at first because exposure happens over an extended period of time.

Read more: <https://ohsonline.com/articles/2016/08/01/hand-hygiene-when-being-potentially-exposed-to-heavy-metal-dust.aspx?admgarea=ht.PPE>

## Top 10 Workplace Safety Tips Every Employee Should Know

The 2015 Annual Report of the Federal Select Agent Program, released in June 2016, summarizes 2015 data for the Federal Select Agent Program (FSAP), which regulates the possession, use and transfer of biological select agents and toxins so that



## Army Industrial Hygiene News and Regulatory Summary

important work with potentially dangerous and deadly pathogens is conducted as safely and securely as possible. This program is a partnership between CDC and USDA.

Our activities include registering and inspecting labs where select agents are handled, conducting security checks on workers who are trusted with these

organisms, and making sure that materials are transferred safely from one lab to another.

*Read more:*

<http://www.lifehack.org/455310/top-10-workplace-safety-tips-every-employee-should-know>

### Highway Patrol Encourages Back-To-School Safety



The State Highway Patrol is urging motorists to be alert as more than a million students start school statewide today and thousands of school buses return to the state's highways.

The patrol said hundreds of school children since 2004 have been killed in traffic

incidents nationwide. According to the National Highway Traffic Safety Administration, 327 school-age children died in school-transportation-related crashes between 2004 to 2013.

Fifty four of those killed were occupants of school transportation vehicles, 147 were occupants of other vehicles, 116 were pedestrians, and nine were pedal cyclists. There were more school-age pedestrians killed between the hours of 7 and 8 a.m. and between 3 and 4 p.m. than any other hours of the day.

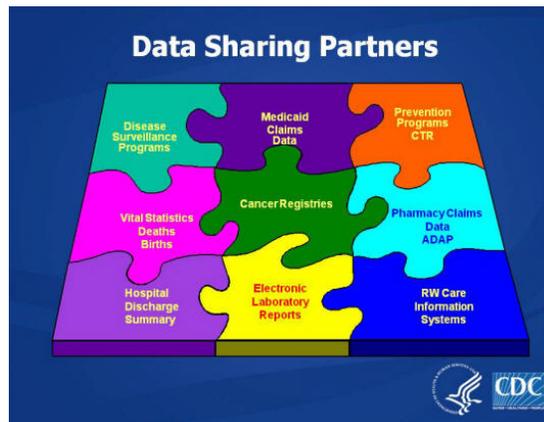
*Read more:*

<http://www.reflector.com/News/2016/08/29/Highway-patrol-encourages-back-to-school-safety.html>

## Emergency Preparedness & Response

### Make Data Sharing Routine to Prepare for Public Health Emergencies

In February 2016, Wellcome Trust organized a pledge among leading scientific organizations and health agencies encouraging researchers to release data relevant to the Zika outbreak as rapidly and widely as possible [1]. This initiative echoed a September 2015 World Health Organization (WHO) consultation that assessed data sharing during the recent West Africa Ebola outbreak and called on researchers to make data publicly available during public health emergencies [2]. These statements were necessary because the traditional way of communicating research results—publication in peer-reviewed journals, often months or years after data collection—is too slow during an emergency.



Read more:

<http://journals.plos.org/plosmedicine/article/asset?id=10.1371%2Fjournal.pmed.1002109.PDF>

## Deployment Health

### The Weight of War: Marching to Win Means Keeping Ahead of Injury



During dismounted troop foot movement, Soldiers must carry heavy equipment over varying terrains with multiple environmental hazards. Heavy loads can lead to rapid fatigue, greater food and water requirements, awkward body postures, and stress and friction to body parts.

## Army Industrial Hygiene News and Regulatory Summary

The costs are well documented by both scientists and military historians. These factors reduce a Soldier's physical and mental combat performance capabilities and increase the risk of injury. The results can be fatal for individuals and detrimental to a unit's mission success.

The ability to effectively and rapidly move troops by foot is an indisputable advantage

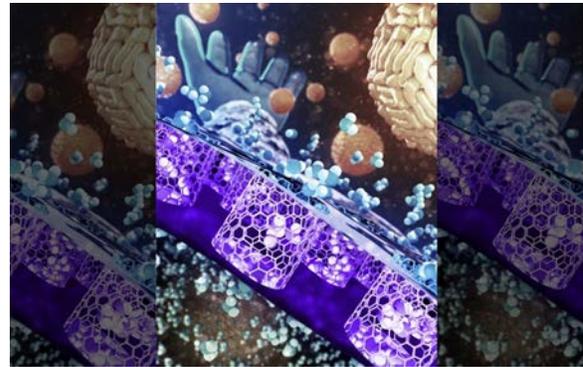
in many operational circumstances, which is why foot march training, or "rucking," remains an important component of Army readiness training.

*Read more:*

[https://www.army.mil/article/173381/the\\_weight\\_of\\_war\\_marching\\_to\\_win\\_means\\_keeping\\_ahead\\_of\\_injury](https://www.army.mil/article/173381/the_weight_of_war_marching_to_win_means_keeping_ahead_of_injury)

### US Military Aims to Combat Chemical Threats with 'Smart Uniform'

In the next decade, U.S. soldiers could get new smart uniforms that are breathable but also designed to shield them from hazards like viruses and chemical weapons, the Lawrence Livermore National Laboratory in California announced on Wednesday. The uniforms could be made of fabric that contains tiny carbon nanotubes that function as channels to let water vapor out, but at the same time block biological agents like viruses from entering. Each tube is tiny in diameter: a human hair is roughly 5,000 times wider. The lab said that that's small enough to keep out biological hazards like the dengue virus.



*Read more:*

<http://www.foxnews.com/tech/2016/08/04/us-military-aims-to-combat-chemical-threats-with-smart-uniform.html>

## Nanotechnology

### Carbon Nanotube-Based Sensor Detects Toxins with a Mobile Phone

A little over four years ago, researchers at the University of California, Riverside, developed a sensor made from carbon nanotubes for detecting toxic chemicals. So enthusiastic were the researchers with the

prospects of their technology that they launched a company, Nano Engineered Applications, that intends to add this sensor to people's mobile phones.

## Army Industrial Hygiene News and Regulatory Summary



While the commercial prospects of a smartphone toxin detector are still uncertain, another team of researchers has recently demonstrated a sensing device that

also relies on carbon nanotubes (CNTs) to detect different chemicals. Researchers from Japan's International Center for Materials Nanoarchitectonics and the

National Institute for Materials Science, working with collaborators from MIT, combined CNTs with a polymer and discovered that this resulting material offers a powerful sensing platform for toxic chemicals. Their results look to be the first viable demonstration of the power of sensors known as chemresistors.

*Read more:*

<http://spectrum.ieee.org/nanoclast/semiconductors/materials/carbon-nanotube-based-sensor-detects-toxins-with-a-mobile-phone>

### Regulatory Research & Industrial Hygiene Professional News

**CSB**

#### CSB Adds Emergency Planning and Response to Most Wanted Safety Improvement Program

The U.S. Chemical Safety Board (CSB) formally announced that "Emergency Planning and Response" is the Board's newest "Most Wanted Safety Improvement", concluding that inadequate or poor emergency planning or response is a recurring finding in the CSB's investigations.

*Read more:* <http://www.csb.gov/csb-adds-emergency-planning-and-response-to-most-wanted-safety-improvement-program/>



CDC

## CDC Foundation's New Business Pulse Focuses on On-the-Job Vehicle Crashes



*Business Pulse: Motor Vehicle Safety at Work*, launched by the Centers for Disease Control and Prevention (CDC) Foundation, focuses on how businesses can protect employees who drive for work in the United States and travel for business abroad. This issue also features an interactive infographic that provides useful facts and links to CDC programs that help employers prevent crashes and reduce injuries. Motor vehicle crashes are the leading cause of work-related injury death in the United States. Workplace crashes affect businesses

through lost productivity, medical and workers' compensation costs, liability and reputational damage. In 2013 alone, on-the-job motor vehicle crashes cost employers \$25 billion. Keeping workers safe on the road depends on employer commitment to road safety, supported by strong policies that are developed and put in place with input from workers. CDC offers resources to help businesses put a new motor vehicle safety program in place or strengthen an existing program.

*Read more:*

<https://www.cdc.gov/media/releases/2016/a0824-business-pulse.html>

OSHA

## OSHA Urges Louisiana Flood Recovery Workers, Volunteers to Be Vigilant, Aware Of Hazards during Cleanup

Louisiana residents – emergency workers, employers and the public – recovering from the impact of the recent floods should be aware of the hazards they may encounter and take necessary steps to stay safe, the U.S. Department of Labor's Occupational Safety and Health Administration urges.

"Recovery work should not put you in the hospital emergency room," said Benjamin Ross, OSHA's Acting regional administrator in Dallas. "A range of safety and health hazards exist following flooding. You may minimize these dangers with knowledge, safe work practices and personal protective equipment. OSHA wants to make certain

## Army Industrial Hygiene News and Regulatory Summary

that all working men and women, including volunteers, return home at the end of the workday.”

Cleanup work after the flooding may involve hazards related to restoring electricity, communications, and water and sewer services. Other hazards pertain to demolition activities; debris cleanup and removal; and structural, roadway and bridge repair; hazardous waste operations; and emergency response activities. OSHA maintains a comprehensive website to keep disaster site workers safe during storm cleanup and recovery operations.



*Read more:*

<https://www.dol.gov/newsroom/releases/osa/osa20160824>

## OSHA Penalties Adjusted as of August 2016

**PENALTY INCREASE!**

In November 2015, Congress enacted legislation requiring federal agencies to adjust their civil penalties to account for inflation. The Department of Labor has adjusted penalties for its agencies, including

the Occupational Safety and Health Administration (OSHA).

The new penalties took effect August 2, 2016. Any citations issued by OSHA on or after this date will be subject to the new penalties if the related violations occurred after November 2, 2015.

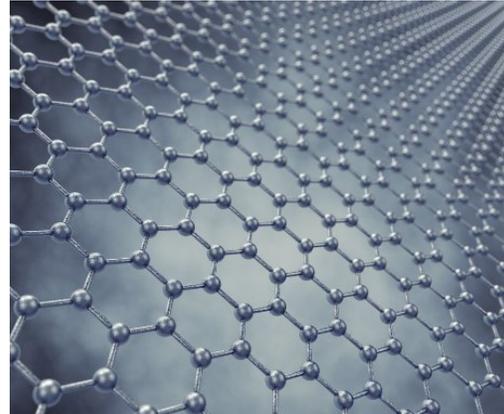
*Read more:*

<https://www.osha.gov/penalties/>

**NIOSH**

**National Institute of Environmental Health Sciences-Funded Center  
Will Assess Safety of Engineered Nanomaterials**

The National Institute of Environmental Health Sciences (NIEHS) is funding a new interdisciplinary Nanosafety Research Center at the T.H. Chan Harvard School of Public Health (HSPH). The main focus of the new HSPH-NIEHS Center is to bring together scientists from across disciplines — material science, chemistry, exposure assessment, risk assessment, nanotoxicology, and nanobiology — to assess the potential environmental health and safety implications of engineered nanomaterials.



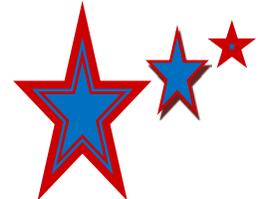
[national-institute-environmental-health-sciences-funded-center-will-assess-safety](http://www.natlawreview.com/article/national-institute-environmental-health-sciences-funded-center-will-assess-safety)

Read more:

<http://www.natlawreview.com/article/nati>

**APHC**

**August DOEHRS-IH SUPER STAR**



Congratulations to Fort Huachuca and Watervliet Arsenal for being chosen as this month's Super Stars! Both IH Program Offices are effectively using the Army's Business Practice when naming their SEGs.

Each SEG has a DOEHRS-IH common process incorporated into its name, thereby avoiding the mistake of mismatched process methods.

# Army Industrial Hygiene News and Regulatory Summary

## Training

### Upcoming Training

#### What's new with Army IH Training?



**New self-development material on blackboard:**

- Intermediate Nanotechnology (20hrs)
- CIH Noise Math Preparation (1.25hrs)
- Radiation Concepts & Math for the Industrial Hygienist (4.0hrs)
- Radiological Surveys & Emergency Response Awareness (0.75hrs)
- Ionizing and Non-Ionizing Radiation Sources in the Medical Environment (1.25hrs)
- Introduction to Nanomaterials and Occupational Health (3.0hrs)
- Self-enroll at <https://aiphdohs.elc.learn.army.mil>

**Face to Face Training Opportunities:**

- May 8-12, 2017 Blueprint Reading & Design Review (APG, MD)
- May 15-19, Intermediate Industrial Hygiene Topics Course (APG, MD)
- May 22-26 Industrial Ventilation 40hr Course (APG, MD)
- Self-enroll at <https://aiphdohs.elc.learn.army.mil>

**LIVE Manage Your IH Monster Webinars: 210-249-4234 or DSN 421-3272 (overseas DSN 312)**

- Sept 13<sup>th</sup> 1800 & 14<sup>th</sup> 0700 EST -De-Mystifying the Metrics Code: 68461#
- Nov 1<sup>st</sup> 1800 & 2<sup>nd</sup> 0700 EST -All About ANOVA Code: 14338#
- Jan (2017) 11<sup>th</sup> 1800 & 12<sup>th</sup> 0700 EST -Business Objects At It's Best
- Mar (2017) 14<sup>th</sup> 1800 & 15<sup>th</sup> 0700 EST -Magic of Medical Surveillance

**Recordings Currently Available Online:**

- Lab Interfaces
- Taming That SHOP Monster
- Cancer in the Military
- Taming The SEG Monster
- Don't Be Afraid of The Big Bad Budget

**Other FREE Training Opportunities:**

- AIHA MPDC 3-4pm email: [mruper@sevengenhse.com](mailto:mruper@sevengenhse.com) to register:
  - August 31 CIH Prep Webinar Series Episode 1: Engineering Controls & Ventilation
- AIHA HPECC 2-3pm 1-800-768-2983 Code: 9567345 <https://www.callinfo.com/prt?host=level3&an=8007682983&ac=9567345>
  - September 8 You've Got Something on Your Face (and Hands): Assessment of Dermal Lead Concentrations During Army Training Activities
  - November 10 Expedient Engineering Controls for Epidemics and Terrorism Events
  - January 12 Direct Reading Instruments for the Practicing IH
  - March 9, 2017 Computational Fluid Dynamics, Can It Truly Benefit the Industrial Hygienist or is It Just Colorful Fluid Dynamics?

# Army Industrial Hygiene News and Regulatory Summary

## DOEHRS-IH Training



**DOEHRS-IH**  
Protecting Personnel  
in support of military  
operations through  
the identification,  
evaluation,  
and control of  
occupational  
and environmental  
health stressors

### What's new with Army DOEHRs-IH?



### Face to Face Training Opportunities:

- Oct 24-28 Army DOEHRs-IH Initial (APG, MD bldg. 6008 28 seats available)
- Self-enroll at <https://aiphdohs.elc.learn.army.mil> code: 2016

### DOEHRS-IH Super Stars:

- Congratulations to Fort Huachuca and Watervliet Arsenal for being chosen as this month's Super Stars! Both IH Program Offices are effectively using the Army's Business Practice when naming their SEGs. Each SEG has a DOEHRs-IH common process incorporate into its name, thereby avoiding the mistake of mismatched process methods.



<a href="#">Roads and Grounds</a>	Grounds Keeping (82012, DPTMS, Training Center and EST) Lawn Maintenance (70562, DFMWR, Irwin Outdoor Pool) Grounds Maintenance, Multiple Operations (15475, DFMWR, Golf Course Maintenance Shop) Grounds Keeping (15423, DFMWR, Sportsman's Center) Grounds Keeping (15424, DPTMS, Range Control)	<a href="#">Roads and Grounds</a>	Grounds Keeping (82012, DPTMS, Training Center and EST) Lawn Maintenance (70562, DFMWR, Irwin Outdoor Pool) Grounds Maintenance, Multiple Operations (15475, DFMWR, Golf Course Maintenance Shop) Grounds Keeping (15423, DFMWR, Sportsman's Center) Grounds Keeping (15424, DPTMS, Range Control)
<a href="#">Supplies/Materials Handling</a>	Warehouse (45022, MEDDAC, Material Branch Warehouse) Shipping and Warehousing (82012, DPTMS, Training Center and EST)	<a href="#">Supplies/Materials Handling</a>	Warehouse (45022, MEDDAC, Material Branch Warehouse) Shipping and Warehousing (82012, DPTMS, Training Center and EST)
<a href="#">Vehicle Maintenance</a>	Vehicle Maintenance (11674, CECOM, Maintenance Shop) Vehicle Maintenance Co's A, B and C (72805.40th ESB Motor Pool) FMX Vehicle Maintenance (82502, CECOM) Brake and Transmission (72805.40th ESB) Brake and Transmission (82502, CECOM, FMX) Vehicle Maintenance SOAR (51432, 160th)	<a href="#">Vehicle Maintenance</a>	Vehicle Maintenance (11674, CECOM, Maintenance Shop) Vehicle Maintenance Co's A, B and C (72805.40th ESB Motor Pool) FMX Vehicle Maintenance (82502, CECOM, FMX) Brake and Transmission (72805.40th ESB Motor Pool) Brake and Transmission (82502, CECOM, FMX) Vehicle Maintenance SOAR (51432, 160th SOAR, Motor Pool)
<a href="#">Veterinary Services / Animal Care</a>	Minor surgery (30010, Veterinary Services, Vet Clinic) Surgery (30010, Veterinary Services, Vet Clinic) Sterilization (30010, Veterinary Services, Vet Clinic) Examination (30009, Veterinary Services, Vet Clinic) Anesthesia (30010, Veterinary Services, Vet Clinic) Radiology (30010, Veterinary Services, Vet Clinic) Laboratory (30009, Veterinary Services, Vet Clinic) Administration (30009, Veterinary Services, Vet Clinic)	<a href="#">Veterinary Services / Animal Care</a>	Minor surgery (30010, Veterinary Services, Vet Clinic) Surgery (30010, Veterinary Services, Vet Clinic) Sterilization (30010, Veterinary Services, Vet Clinic) Examination (30009, Veterinary Services, Vet Clinic) Anesthesia (30010, Veterinary Services, Vet Clinic) Radiology (30010, Veterinary Services, Vet Clinic) Laboratory (30009, Veterinary Services, Vet Clinic) Administration (30009, Veterinary Services, Vet Clinic)
<a href="#">Water/Wastewater Plant Operations</a>	Water/Wastewater Plant Operations, CTR (i) Field House (Indoor Pool))	<a href="#">Water/Wastewater Plant Operations</a>	Water/Wastewater Plant Operations, CTR (61701, DFMWR, Barnes Field House (Indoor Pool))
<a href="#">Weapons and Ordnance</a>	Ammunition Handling (13524, LRC, Ammunition Supply Point, CTR) Weapons Check-out & Turn-in (31122, 18th MP, Arms Room) Inspection and Repair (61801, LRC, Weapons Repair Shop) Weapons Maintenance (51005, 111th MI BDE, Arms Room) Inspection (13524, LRC, Ammunition Supply Point, CTR)	<a href="#">Weapons and Ordnance</a>	Ammunition Handling (13524, LRC, Ammunition Supply Point, CTR) Weapons Check-out & Turn-in (31122, 18th MP, Arms Room) Inspection and Repair (61801, LRC, Weapons Repair Shop) Weapons Maintenance (51005, 111th MI BDE, Arms Room) Inspection (13524, LRC, Ammunition Supply Point, CTR)
<a href="#">Wood working</a>	Display Preparation Painting (41411 TDS U prep) Antenna Testing (16678 EPG Antenna Test Facility(ATF) Red and White) Display Preparation Woodwork (41411 TDS USAICoE, Museum, display prep) Carpentry (82012, DPTMS, Training Center and EST)	<a href="#">Wood working</a>	Display Preparation Painting (41411 TDS USAICoE, Museum, display prep) Antenna Testing (16678 EPG Antenna Test Facility(ATF) Red and White) Display Preparation Woodwork (41411 TDS USAICoE, Museum, display prep) Carpentry (82012, DPTMS, Training Center and EST)

# Army Industrial Hygiene News and Regulatory Summary

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



## Subscription or Comments:

### By Email:

[ihnews@amedd.army.mil](mailto:ihnews@amedd.army.mil)

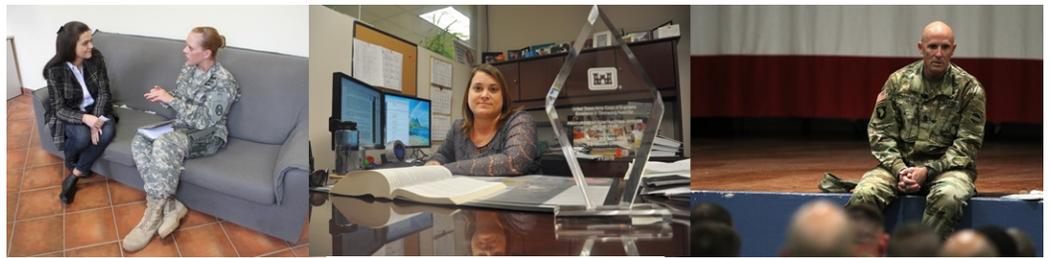
### By Phone or FAX:

Office: (410) 436-3161

FAX: (410) 436-8795

### On the Web:

<http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx>



## Professional Development and Career Programs

For Army Industrial Hygienists and Industrial Hygiene Technicians, Professional Development is through the Army Safety and Occupational Health (SOH) Career Program, known as Career Program 12 (CP-12).

Career Programs were established to ensure there is an adequate base of qualified and trained professional, technical, and administrative personnel to meet the Army's current and future needs.

Planned training and development are essential elements to building a successful career.

Articles appearing in this summary are a collection of articles taken verbatim from public sources and do not necessarily represent the opinions/views, policy, or guidance of the Department of the Army, Department of Defense, or the U. S. Government.

The appearance of external hyperlinks does not constitute endorsement by the U.S. Army for the information, products or services contained therein. The U.S. Army does not exercise any editorial control over the information you may find at these locations.

The use of trademarked names does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product.