April 2020
Issue 103

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

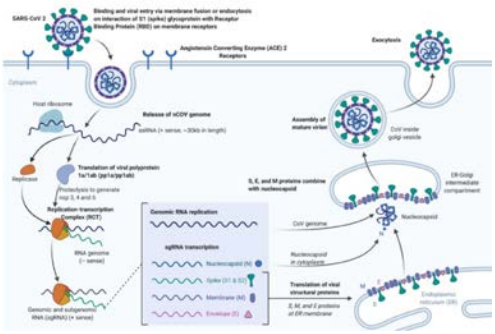
Special Interest Articles:

- Evaporation Rate
- Occlusive Effect
- Social Distancing
- Ultraviolet LEDs
- CNT Samples

New Study Reveals the Best Conditions for Spreading Coronavirus

A study of Wuhan hospitals sampled the air in different rooms to see where viral RNA was airborne.

Hospital workers treating COVID-19 patients are known to face a higher risk of acquiring the novel coronavirus that causes the disease. Yet the nature by which the virus spreads is still poorly understood, hindering experts' ability to completely limit transmission. Now, a new study published in the journal Nature provides some clues as to the rooms and environments that coronavirus spreads more readily. The study looked specifically at hospitals and the different rooms within, along with the nature of ventilation.

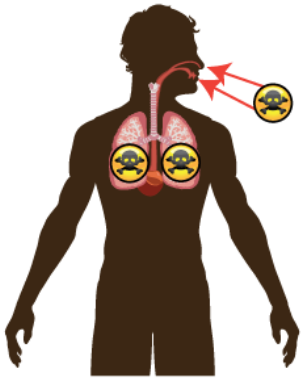


Read more:
https://www.salon.com/2020/04/29/new-study-reveals-the-best-conditions-for-spreading-coronavirus/

Distribution Statement A - Approved for public release; distribution unlimited.

Contents:

Extrapolating the Applicability of Measurement Data on Worker Inhalation Exposure to Chemical Substances



Measured data are generally preferred to modelled estimates of exposure. Grouping and read-across is already widely used and accepted approach in toxicology, but an appropriate approach and guidance on how to use existing exposure measurement data on one substance and work situation for another substance and/or work situation is currently not available. This study presents a framework for an extensive read-across of existing worker inhalable exposure measurement data. This framework enables the calculation of read-across factors based on another substance and/or work situation by first evaluating the quality of the existing measurement data and then mapping its similarity or difference with another substance and/or work situation. The system of read-across factors was largely based on the determinants in ECETOC TRA and ART exposure models. The applicability of the framework and its proof of principle were demonstrated by using five case studies. In these case studies, either the 75th percentiles of measured exposure data was observed to lie within the estimated 90% confidence intervals from the read-across approach or at least with the increase in the geometric mean of measured exposure, geometric mean of estimated exposure also increased. Testing and re-evaluation of the present framework by experts in exposure assessment and statistics is recommended to develop it further into a tool that can be widely used in exposure assessment and regulatory practices.

Read more:
https://academic.oup.com/annweh/article/64/3/250/5714354

Exposure Determinants of Wood Dust, Microbial Components, Resin Acids and Terpenes in the Saw- and Planer Mill Industry

Objectives
Sawmill workers have an increased risk of adverse respiratory outcomes, but knowledge about exposure–response relationships is incomplete. The objective of this study was to assess exposure determinants of dust, microbial components, resin acids, and terpenes in sawmills processing pine and spruce, to guide the development of department and task-based exposure prediction models.

Methods
2474 full-shift repeated personal airborne measurements of dust, resin acids, fungal spores and fragments, endotoxins, mono-, and sesquiterpenes were conducted in 10 departments of 11 saw- and planer mills in Norway in 2013–2016. Department and task-based exposure determinants were identified and geometric mean ratios (GMRs) estimated using mixed model regression. The effects of season and wood type were also studied.

Results
The exposure ratio of individual components was similar in many of the departments. Nonetheless, the highest microbial and monoterpene exposure (expressed per hour) were estimated in the green part of the sawmills: endotoxins [GMR (95% confidence interval) 1.2 (1.0–1.3)], fungal spores [1.1 (1.0–1.2)], and monoterpenes [1.3 (1.1–1.4)]. The highest resin acid GMR was estimated in the dry part of the sawmills [1.4 (1.2–1.5)]. Season and wood type had a large effect on the estimated exposure. In particular, summer and spruce were strong determinants of increased exposure to endotoxin (GMRs [4.6 (3.5–6.2)] and [2.0 (1.4–3.0)], respectively) and fungal spores (GMRs [2.2 (1.7–2.8)] and [1.5 (1.0–2.1)], respectively). Pine was a strong determinant for increased exposure to both resin acid and monoterpenes

Read more:
https://academic.oup.com/annweh/article/64/3/282/5706932

Modeling the Size of Small Spills of Pure Volatile Liquids for Use in Evaporation Rate and Air Concentration Modeling

Exposure modeling is a valuable tool for assessing chemical vapor exposures that occur during transient events such as small spills of volatile liquids. Models are available to estimate liquid evaporation rates and resulting air concentrations. However, liquid evaporation rate models require the surface area of the puddle in order to provide vapor generation rates in terms of mass per time. This study developed an approach to model the surface area of small spills of pure liquids. A theoretical equation exists relating puddle depth to a liquid's surface tension, density, and contact angle. A contact angle is a characteristic of liquid-solid interactions at the edge of a puddle. If the depth of a puddle can be calculated and the volume of the liquid spilled is known, the surface area of the puddle can be determined. Values for density and surface tension are published.

Contact angles, however, are not readily available. Five hundred and eighty experimental spills were conducted using acetone, ethanol and water. The effective contact angle for each spill was determined. Spill volumes varied from 1.0–30.0 mL. The height of the liquid release varied from 0–15 cm onto a variety of surfaces. The effective contact angle of a puddle was most strongly associated with the liquid's polarity. The height of the liquid release and type of surface had significant, but smaller effects on the puddle size. The effective contact angle of a puddle from a spill can be estimated as $\ln(\Theta_{eff}) = 3.73 - 1.17 \cdot 1\chi_{\upsilon}/f - 0.06 \cdot h + S$. In this equation, $1\chi_{\upsilon}/f$ is the polarity index of the liquid, h is the height of liquid release (cm), and S is a surface constant. Θ_{eff} can be used with the liquid density, surface tension and volume to calculate the surface area of the puddle. The surface area of the puddle can then be used in evaporation rate models to determine a vapor generation rate for input to vapor concentration models.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 29 Apr 2020 (Available with AIHA membership)

Aerodynamic Size Separation of Glass Fiber Aerosols

The objective of this study was to investigate the efficacy of an aerodynamic separation scheme for obtaining aerosols with nearly monodisperse fiber lengths as test samples for mechanistic toxicological evaluations. The approach involved the separation of aerosolized glass fibers using an Aerodynamic Aerosol Classifier (AAC) or a multi-cyclone sampling array, followed by the collection of separated samples on filter substrates, and the measurement of each sample fiber length distribution. A glass fiber aerosol with a narrow range of aerodynamic sizes was selected and sampled with the AAC or multi-cyclone sampling array in two separate setups. The fiber length and diameter were measured using a field emission scanning electron microscope. The glass fiber aerosol was separated in distinct groups of eight with the AAC and of four with the multi-cyclone sampling array. The geometric standard deviations of the fiber length distributions of the separated aerosols ranged from 1.49 to 1.69 for the AAC and from 1.6 to 1.8 for

multi-cyclone sampling array. While the separation of glass fiber aerosols with an AAC is likely to produce two different length fiber groups and the length resolution may be acceptable, the overall mass throughput of these separation schemes is limited.

Read more: *Journal of Occupational and Environmental Hygiene, Published online: 29 Apr 2020 (Available with AIHA membership)*

Design and Performance of UPAS Inlets for Respirable and Thoracic Mass Sampling

The Ultrasonic Personal Aerosol Sampler (UPAS) is a small, lightweight, and quiet sampler that collects airborne particulate matter on a filter for gravimetric or compositional analysis. The objective of this work was to develop UPAS inlets with collection efficiencies that match criteria for respirable or thoracic mass sampling. The two-stage inlet for respirable mass described here utilizes an impaction stage and a cyclone, whereas the one-stage inlet for thoracic mass sampling utilizes a circular slot impactor. Inlet designs are based on particle collection theory used in conjunction with an optimization algorithm to predict initial inlet dimensions; these

predictions were the starting points for experiments that finalized dimensions and operating conditions. Both the respirable mass inlet and the thoracic mass inlet described here are interchangeable with the UPAS, and both have efficiencies that match well with their respective standards. With either inlet, the collected sample should be within ±5% of what the standard specifies for aerosols with reasonably broad size distributions.

Read more: Journal of Occupational and Environmental Hygiene, Published online: Published online: 13 Apr 2020 (Available with AIHA membership)

Radiation

Radiation Effective for PPE, But Not Masks, Says IAEA

Radiation is an "effective and established" tool to sterilise personal protective equipment (PPE) that is in high demand during the COVID-19 pandemic, except for respiratory face masks as it weakens their filters, the International Atomic Energy Agency (IAEA) said yesterday.

The IAEA has reviewed findings from five institutions that tested the use of ionizing radiation - gamma and electron beams - to sterilise used respiratory masks, such as models N95 and FFP2 commonly worn by medical personnel.

Read more:
https://www.world-nuclear-news.org/Articles/Radiation-effective-for-PPE-but-not-masks-says-IAE

Ventilation

COVID-19 Update: 9 People Infected Because of Air-Conditioning; Don't Use AC, Experts Say

According to MSN Lifestyle's latest report, air-conditioning may increase the risk of further infection caused by the novel coronavirus.

In the United States, 5.4 million air-conditioning units were manufactured in 2019 to prepare for this year's summer season. However, experts say it isn't the best time to use ACs as two studies discovered that COVID-19 particles can spread by ventilation, heating, and air-conditioning.

According to the report, most individuals spend 90% of their lives in built environments like cars, public transportation, and buildings, breathing in

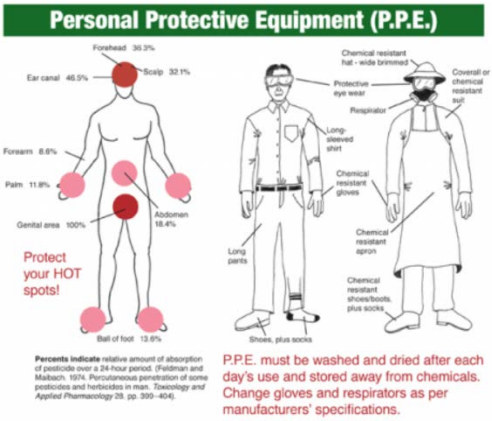
shared indoor air and touching potentially contaminated surfaces.

Read more:
https://www.techtimes.com/articles/249155/20200426/covid-19-update-9-people-infected-because-of-air-conditioning-dont-use-ac-during-the-pandemic-experts-say.htm

PPE

Performance of a Single Layer of Clothing or Gloves to Prevent Dermal Exposure to Pesticides

The suitability, availability, and use of protective clothing are critical factors determining the actual dermal exposure (ADE) of operators and workers to pesticides. A realistic assessment of occupational exposure to pesticides requires information about the performance of protective clothing during everyday use. In this study, the performance of clothing or gloves has been



investigated based on available dermal exposure data in order to provide recommendations for default protection factors that can be used in regulatory exposure assessments. Suitable dermal exposure data from available exposure databases were collated and analysed. The data that met the selection criteria for the analysis of the performance of protective clothing comprised studies in which protective clothing like cotton coveralls, cotton clothing, polyester–cotton coveralls, Sontara coveralls, Tyvek coveralls, butyl/neoprene gloves, latex/PE/vinyl/PVC gloves, or nitrile gloves were worn. Based on available potential and ADE levels, the migration of pesticides through this protective clothing was estimated. Evaluation of exposure data showed that on average only 2.3–2.6% of the pesticides present on the outside of the clothing or gloves migrated through the garments, although there was a large variation with migration up to 99%. Forearms, legs, and chest areas of the clothing tended to have the greatest migration of pesticides. Caution is needed in the selection of the appropriate protection offered protective clothing for specific situations. This study gives valuable information on the performance of protective clothing, for use in exposure assessment and for default setting in exposure modelling, taking into account the type of clothing or gloves worn. As new data become available, it may be possible to further refine the protection factors offered by different types of clothing or gloves, particularly where a common protocol has been used.

Read more:
https://academic.oup.com/annweh/article-abstract/64/3/311/5741349?redirectedFrom=fulltext

Skin Barrier Impairment due to the Occlusive Effect of Firefighter Clothing

At fire scenes, firefighters are exposed to potentially harmful substances. Besides inhalation of these products, also skin contamination and the risk of dermal absorption is getting more attention. In this perspective, skin barrier impairment due to the occlusive effect of firefighter clothes could enhance the risk of penetration of

hazardous substances. The effect of a firefighter jacket and cellophane on the skin was studied in a paired comparison involving 16 volunteers. Biophysical parameters were measured before, immediately after and 30 min after ending the occlusion. Reflectance confocal microscopy was used to study the skin morphology. Immediately after wearing a firefighter jacket, Transepidermal Water Loss values were significantly increased. This is an indication of an occlusive effect of the firefighter jacket. The skin barrier was fully restored after 30 min after occlusion with cellophane or wearing a firefighter jacket.

Read more:
https://academic.oup.com/annweh/article-abstract/64/3/331/5722090?redirectedFrom=fulltext

Noise

How to Work in a House Full of Noisy Kids

For many parents, working from home is the biggest professional challenge they've faced to date. Here are some coping strategies.

Parents, let's have a serious talk about how we're actually supposed to get work done with little kids running around the house.

Sure, it's possible to jump into each day and hope something gets done, but the fact is that having a detailed plan makes your chances of success much higher.
An article in the Harvard Business Review (HBR) offers some excellent suggestions for how to control the three main distractions in our lives right now – children, chores, and thought patterns. I'd like to focus on the former because that consumes much of my attention these days. I have three elementary-aged kids, and I've gone from working in absolute silence to being surrounded by endless noise – a challenging transition.

Read more:
https://www.treehugger.com/family/how-work-house-full-noisy-kids.html

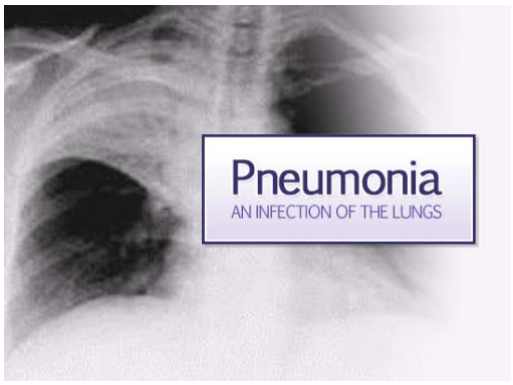
Preventive Medicine

Many US Employees Regularly Exposed to Infection at Work, Study Finds

About 10% of US workers have jobs in which they are exposed to disease or infection at least once a week, while 18% are exposed at least monthly, making workplaces an important focus for public health interventions, a study published yesterday in *PLOS One* has found.
Using national employment and survey exposure data, University of Washington researchers showed that more than 90% of healthcare workers providing patient care or support are exposed more than once a month, while 75% are exposed more than once a week.

Read more:
https://www.cidrap.umn.edu/news-perspective/2020/04/covid-19-scan-apr-29-2020 (scroll down)

Long-Lasting, Low Toxicity Antimicrobial Peptide Fights 'Superbug' Lung Infections



Through serendipity, researchers at the University of Pittsburgh Graduate School Of Public Health considerably reduced the toxicity of a potential antibiotic against the most feared drug-resistant bacteria, while also improving its stability in fighting infections.

The new antibiotic—administered via the windpipe to target lung infections—proved more effective than its experimental predecessor and traditional last-resort antibiotic therapies in fighting drug-resistant bacteria in laboratory cell cultures and mice. And it did so without notable

toxic side-effects, according to findings published today in Science Advances.

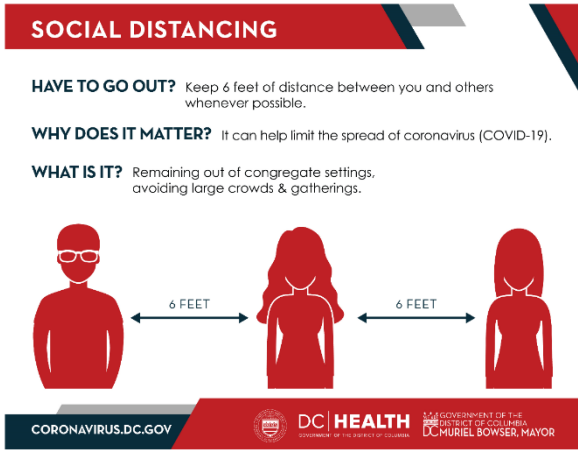
Read more: https://medicalxpress.com/news/2020-05-long-lasting-toxicity-antimicrobial-peptide-superbug.html

Number of Steps Per Day More Important than Step Intensity

Doctors often recommend walking as an easy way for inactive people to ease into better health. Taking 4,000 or fewer steps a day is considered a low level of physical activity. A goal of 10,000 steps a day is commonly cited, but recent studies have shown that health benefits accrue even if fewer than 10,000 steps are taken daily.

Read more: https://www.nih.gov/news-events/nih-research-matters/number-steps-day-more-important-step-intensity

Social Distancing May Increase Suicide Risk: Study



Stress caused by widespread social distancing to blunt the spread of the coronavirus may be creating the unintended consequence of increasing the risk of suicide in the general population, according to new research published in JAMA Psychiatry.

The study – "Suicide Mortality and Coronavirus Disease 2019 – A Perfect Storm?" – identifies a raft of reasons why social distancing may be increasing the risk of suicide even as it helps stop the spread of coronavirus. More than 95% of the U.S. population is under a state or local order to stay at home except for necessary errands, like going to the grocery store or to an urgent medical appointment.

Read more: https://health.usnews.com/conditions/articles/social-distancing-and-suicide-risk

Revised C Diff Guidance Has Quickly Changed Practice, Study Finds

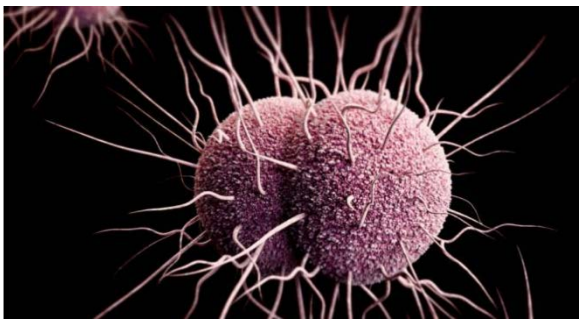
Revised clinical practice guidelines for *Clostridioides difficile* infection (CDI) have had an immediate and significant impact on treatment, researchers reported yesterday in *Clinical Infectious Diseases.*
Using US antibiotic prescription data for 2006 through August 2019, researchers from the University of Pittsburgh and the VA Pittsburgh Healthcare System performed an interrupted time-series analysis to compare linear trends for monthly treatment courses of vancomycin, fidaxomicin, and metronidazole. The aim of the analysis was to determine if use of the three drugs changed after publication of revised CDI guidelines from the Infectious Diseases Society of America (IDSA) and the Society for Healthcare Epidemiology of America (SHEA) in 2018, which recommended vancomycin or fidaxomicin as preferred treatments for initial and first recurrent non-severe CDI, rather than metronidazole as previously recommended. The analysis found that cumulative treatment courses of oral vancomycin and fidaxomicin increased by 54% and 48%, respectively, in the 18 months following the guidelines compared with the 18 months before, while those of oral metronidazole decreased by 3%. Monthly vancomycin and fidaxomicin use also significantly increased throughout the period following revised guidelines ($P < 0.0001$ and $P = 0.0002$, respectively), while monthly use of metronidazole decreased significantly ($P < 0.0001$).

Read more:
https://www.cidrap.umn.edu/news-perspective/2020/04/news-scan-apr-29-2020

CDC Studies Show Drop in MDR Bacteria, C Diff in US Hospitals

In the midst of the COVID-19 pandemic, new data published today in the New England Journal of Medicine (NEJM) provides a glimmer of good news on the infectious disease front.

A study conducted by researchers from the Centers for Disease Control and Prevention (CDC) found that the incidence of infections caused by four multidrug-resistant (MDR) organisms (MDROs) decreased in US hospitals from 2012 through 2017, with the declines ranging from 20% to 39%. While



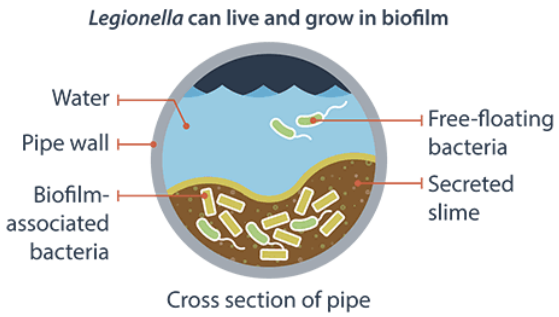
the burden of MDR infections in US hospitals remains substantial, and more work is need to sustain the progress that's been made, the authors of the study say the

findings, which formed the basis for the CDC's 2019 report on antibiotic resistance, are encouraging.

Read more:
https://www.cidrap.umn.edu/news-perspective/2020/04/cdc-studies-show-drop-mdr-bacteria-c-diff-us-hospitals

Environmental Health

Ensure the Safety of Your Building Water System and Devices after a Prolonged Shutdown



Stagnant, or standing water can cause conditions that increase the risk for growth and spread of Legionella and other biofilm-associated bacteria. When water is stagnant, hot water temperatures can decrease to the Legionella growth range (77–108°F, 25–42°C). Stagnant water can also lead to low or undetectable levels of disinfectant, such as chlorine. Ensure that your water system is safe to use after a prolonged shutdown to minimize the risk of Legionnaires' disease and other diseases associated with water.

Read more:
https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html

Carbon Dioxide Sensor Can Lower Energy Use, Reduce Utility Costs

Walk in a room, the light goes on. Most people are familiar with the motion sensors that detect activity and then turn on the lights.

Purdue University researchers are turning to similar technologies to help manage climate control and indoor air quality. They have developed a sensor to help control and cut down on energy consumption through heating and ventilation systems,

particularly those used in large office and hospitality industry buildings.

Read more:
https://www.sciencedaily.com/releases/2020/04/200422091142.htm

Ending the Daily Work Commute May Not Cut Energy Usage As Much As One Might Hope

A mass move to working-from-home accelerated by the Coronavirus pandemic might not be as beneficial to the planet as many hope, according to a new study by the Centre for Research into Energy Demand Solutions (CREDS).

The majority of studies on the subject analysed by University of Sussex academics agree that working-from-home reduced commuter travel and energy use -- by as much as 80% in some cases.

But a small number of studies found that telecommuting increased energy use or had a negligible impact, since the energy savings were offset by increased travel for recreation or other purposes, together with additional energy use in the home.

Read more:
https://www.sciencedaily.com/releases/2020/04/200430091305.htm

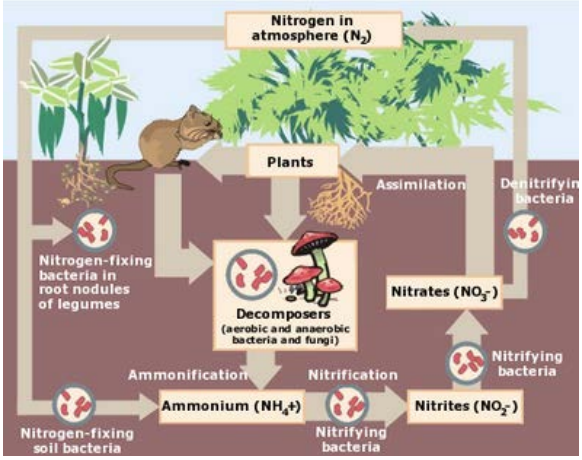
Ultraviolet LEDs Prove Effective in Eliminating Coronavirus from Surfaces and, Potentially, Air and Water

As COVID-19 continues to ravage global populations, the world is singularly focused on finding ways to battle the novel coronavirus. That includes the UC Santa Barbara's Solid State Lighting & Energy Electronics Center (SSLEEC) and member companies. Researchers there are developing ultraviolet LEDs that have the ability to decontaminate surfaces -- and potentially air and water -- that have come in contact with the SARS-CoV-2 virus.

Read more:
https://www.sciencedaily.com/releases/2020/04/200414173251.htm

A Friendlier Way to Deal with Nitrate Pollution

Learning from nature, scientists from the Center for Sustainable Resource Science in Japan and the Korean Basic Science Institute (KBSI) have found a catalyst that efficiently transforms nitrate into nitrite -- an environmentally important reaction -- without requiring high temperature or acidity, and now have identified the mechanism that makes this efficiency possible. Nitrogen is an important element for various biological processes, but it is often necessary to convert it into one form or another, in a system known as the nitrogen cycle. In nature, this is usually carried out by bacteria and other microorganisms, which can perform the feat at ambient temperature and mild pH conditions. Recently, the excessive use of nitrogen fertilizers in response to population growth has led to serious water pollution due to the presence of nitrate (NO3-) ions in fertilizers. Runoff from agriculture can lead to nitrate pollution of

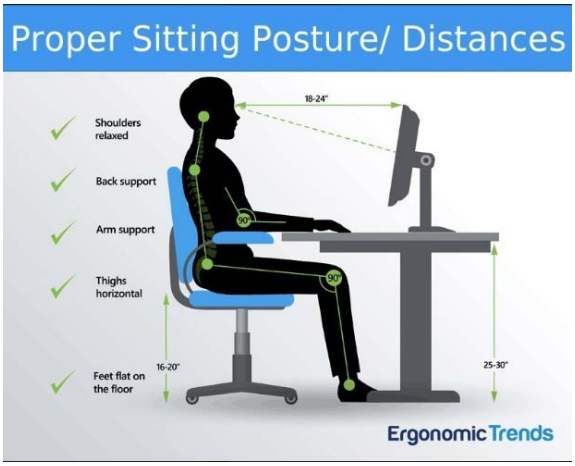


drinking water, and the eutrophication of lakes and marshes, leading to algae growth. As a result, it has become necessary to reduce the emission of nitrate ions into the environment.

Read more:
https://www.sciencedaily.com/releases/2020/04/200402100900.htm

Ergonomics

Incorporating Ergonomics While Teleworking



With COVID-19 causing the government and many businesses to operate under social distancing measures, working from home has become a new normal for many Army Materiel Command employees, who are being innovative in setting up personal workspaces.

A snapshot of teleworking employees across the AMC headquarters staff shows employees who are taking benefit of their personal environments to create inspiring and creative workstations. For instance, one employee works at her kitchen table set in front of a bay window, taking full advantage of both internal and natural lighting, and being inspired by a woodsy backyard view. Another employee has hung new light-blocking drapery over his home office window to better view his computer screens. Yet another employee has personal desk space in her bedroom that faces a window so she can enjoy the view while working and has added a side table raised slightly to accommodate the addition of her work computer.

Read more:
https://www.army.mil/article/235150/incorporating_ergonomics_while_teleworking

Safety

Avoid Insecticide-Treated Uniform Fabric for DIY Coronavirus Masks, Marine Corps and Air Force Say

The Marines and Air Force have warned do-it-yourself mask makers to avoid using military uniforms treated with insect repellent or fire retardant due to possible health risks.

Protective face coverings are mandatory in many closed settings across the U.S. military as one measure aimed at curbing the spread of coronavirus. Manufactured masks are in short supply and the military has approved versions of the homemade variety.

The use of uniform materials to make custom masks has been popular among service members after photos and instructions on how to create the masks were shared on military-oriented social media sites.

insecticide-treated-uniform-fabric-for-diy-coronavirus-masks-marine-corps-and-air-force-say-1.625977

Read more:
https://www.stripes.com/news/avoid-

Green Method Could Enable Hospitals to Produce Hydrogen Peroxide In House

A team of researchers has developed a portable, more environmentally friendly method to produce hydrogen peroxide. It could enable hospitals to make their own supply of the disinfectant on demand and at lower cost.

The work, a collaboration between the University of California San Diego, Columbia University, Brookhaven National Laboratory, the University of Calgary, and the University of California, Irvine, is detailed in a paper published in Nature Communications.

Hydrogen peroxide has recently made headlines as researchers and medical centers around the country have been testing its viability in decontaminating N95 masks to deal with shortages amid the COVID-19 pandemic.

Read more: https://phys.org/news/2020-05-green-method-enable-hospitals-hydrogen.html

Army Researchers Say this is the Best Material for a Homemade Face Mask They've Found So Far

The best easy-to-find material for a homemade face covering to protect against coronavirus transmission is four-ply microfiber cloth, according to Army researchers at the service's Combat Capabilities Development Command.

Researchers with the command's Chemical Biological Center said in a Wednesday news release that the four-ply microfiber cloth, which can be found in the cleaning section of most big box stores, filters out more than 75 percent of particles.

Read more:
https://www.armytimes.com/news/your-army/2020/04/24/army-researchers-say-this-is-the-best-material-for-a-homemade-face-mask-theyve-found-so-far/

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Read more:
https://www.cidrap.umn.edu/news-perspective/2020/04/cdc-studies-show-drop-mdr-bacteria-c-diff-us-hospitals

EPA and CDC Release Updated Guidance for Cleaning and Disinfecting Spaces

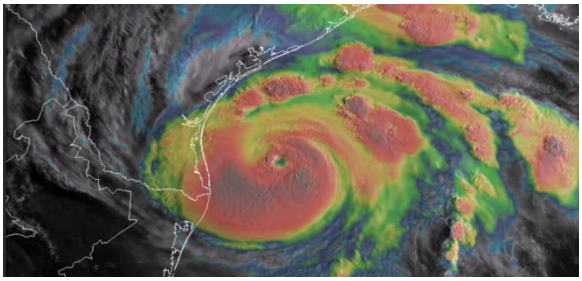
On April 29, 2020, the U.S. Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention (CDC) released updated guidance to give assistance to facility operators and families on how to clean and disinfect spaces properly. Developed in cooperation with the White House, the updated guidance provides step-by-step instructions for public spaces, workplaces, businesses, schools, and homes, and falls in line with the Opening up America Again guidelines, the three-phased approach, based on the advice of public health experts, to help state and local officials when reopening its economies, getting people back to work, and continuing to protect American lives.

Read more:
https://www.natlawreview.com/article/epa-and-cdc-release-updated-guidance-cleaning-and-disinfecting-spaces

Emergency Preparedness

How the Coronavirus Pandemic is Changing Florida's Hurricane Response Plan

We're now just one month away from the official start of the 2020 hurricane season. And yes, COVID19 is having an impact. The virus is forcing state emergency workers to change their approach to hurricane response and that will mean changes for all of us, too.
The way we prepare for, respond to, and recover from storms will all be impacted by the need for social distancing.
So, for example, rather than packing evacuees into shelters, emergency workers



are considering the idea of having people with homes built to withstand low to medium grade hurricanes shelter in place. Those who must evacuate might be directed to now-empty hotel rooms left

vacant by the virus, where keeping people separated would be far more manageable.

Read more:
https://www.wtsp.com/article/news/health/coronavirus/how-the-coronavirus-pandemic-is-changing-floridas-hurricane-response-plan/67-e6a8e643-1560-4971-bb76-e80bff46ad19

Deployment Health

Army Suspends Transition to New Combat Fitness Test amid Gym Closures

The U.S. Army has suspended its plan to have all soldiers begin taking the new Army Combat Fitness Test in October amid widespread gym closures to prevent the spread of the coronavirus.

Army leaders made the decision late last week to suspend the ACFT start date, as it is unclear when soldiers will have access to the fitness equipment needed to prepare for the more challenging fitness test, Lt. Col. Robin Ochoa told Military.com.
The Army unveiled its plan to replace the current three-event Army Physical Fitness Test with the six-event ACFT in July 2018, a move that launched a year-long field test involving 60 battalions of soldiers, as well as contract awards for special fitness equipment to administer the new test. The test was set to become a service-wide requirement Oct. 1.

Read more:
https://www.military.com/daily-news/2020/03/30/army-suspends-transition-new-combat-fitness-test-amid-gym-closures.html

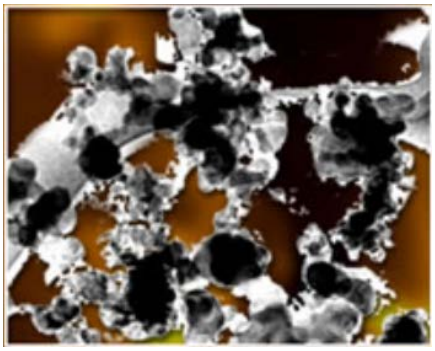
Nanotechnology

ISO Publishes Standard on Characterization of CNT Samples Using Thermogravimetric Analysis

The International Organization for Standardization (ISO) has published standard ISO/TS 11308:2020, "Nanotechnologies — Characterization of carbon nanotube samples using thermogravimetric analysis." The standard provides guidelines for the characterization of carbon nanotube (CNT)-containing samples by thermogravimetric analysis (TGA), performed in either an inert or oxidizing environment. The standard offers guidance on the purity assessment of the CNT samples through a quantitative measure of the types of carbon species present, as well as the non-carbon impurities (e.g., metal catalyst particles) within the material. ISO notes that this technique provides a qualitative assessment of the thermal stability and homogeneity of the CNT-containing sample. ISO states that additional characterization techniques are required to confirm the presence of specific types of CNT and to verify the composition of the metallic impurities present.

Read more:
https://www.natlawreview.com/article/iso-publishes-standard-characterization-cnt-samples-using-thermogravimetric-analysis

Laboratory Evaluation of a Personal Aethalometer for Assessing Airborne Carbon Nanotube Exposures



Aethalometers are direct-reading instruments primarily used for measuring black carbon (BC) concentrations in workplace and ambient atmospheres. Aethalometer BC measurements of carbon nanotubes (CNTs) were compared to measurements made by other methods when subjected to high (>30 µg/m3) and

low (1–30 µg/m3) CNT aerosol concentrations representing worst-case and typical workplace concentrations, respectively. A laboratory-based system was developed to generate carbon black, as an example of a nearly pure carbon, micron-sized aerosol, and two forms of multi-walled carbon nanotubes (CNTs): small-diameter (<8 nm) and large-diameter (50–80 nm). High-concentration trials were conducted during which a scanning mobility particle sizer (SMPS) was used to track particle count concentrations over time. Relative to the behavior of the SMPS counts over time, aethalometer readings exhibited a downward drift, which is indicative of aethalometer response subjected to high BC loading on the receiving filter of the instrument. A post-sample mathematical method was applied that adequately corrected for the drift. Low-concentration trials, during which concentration drift did not occur, were conducted to test aethalometer accuracy. The average BC concentration during a trial was compared to elemental carbon (EC) concentration sampled with a quartz-fiber filter and quantified by NIOSH Method 5040. The CB and large-diameter CNT concentrations measured with the aethalometer produced slopes when regressed on EC that were not significantly different from unity, whereas the small-diameter CNTs were under-sampled by the aethalometer relative to EC. These results indicate that aethalometer response may drift when evaluating CNT exposure scenarios, such as cleaning and powder handling, that produce concentrations >30 µg/m3. However, aethalometer accuracy remains consistent over time when sampling general work zones in which CNT concentrations are expected to be <30 µg/m3. A calibration check of aethalometer response relative to EC measured with Method 5040 is recommended to ensure that the aethalometer readings are not under sampling CNT concentrations as occurred with one of the CNTs evaluated in this study.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 14 Apr 2020 (Available with AIHA membership)

Regulatory Research & Industrial Hygiene Professional News

CDC

Cleaning and Disinfection for Non-Emergency Transport Vehicles

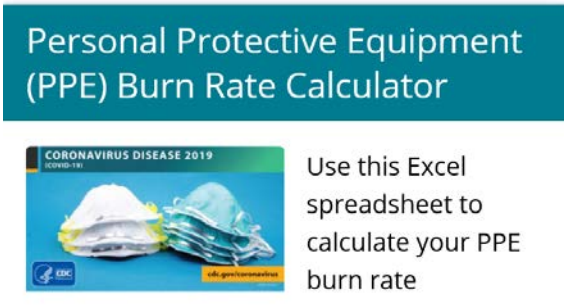
People who are known or suspected to have COVID-19 may use non-emergency vehicle services, such as passenger vans, accessible vans, and cars, for transportation to receive essential medical care. When transporting a known confirmed positive passenger, it is recommended that drivers wear an N95 respirator or facemask (if a respirator is not available) and eye protection such as a face shield or goggles (as long as they do not create a driving hazard), and the passenger should wear a facemask or cloth face covering. Occupants of these vehicles should avoid or limit close contact (within 6 feet) with others. The use of larger vehicles such as vans is recommended when feasible to allow greater social (physical) distance between vehicle occupants.

Read more:
https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/disinfecting-transport-vehicles.html

NIOSH

The Personal Protective Equipment (PPE) Burn Rate Calculator

The Personal Protective Equipment (PPE) Burn Rate Calculator is now available as an app. Facilities can use the NIOSH PPE Tracker app to calculate their average PPE consumption rate or "burn rate." The app estimates how many days a PPE supply will last given current inventory levels and PPE burn rate. The app is available for both

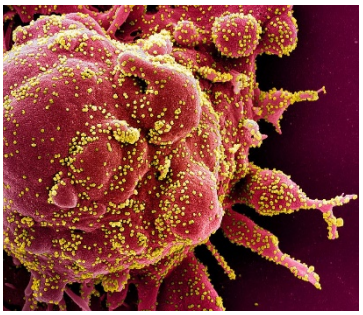


iOSexternal icon and Android external icon devices. Visit the NIOSH PPE Tracker app page to download this free tool.

Read more:
https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html

OSHA

Interim Enforcement Response Plan for Coronavirus Disease 2019 (COVID-19)



This Interim Enforcement Response Plan for Coronavirus Disease 2019 (COVID-19) provides instructions and guidance to Area Offices and compliance safety and health officers (CSHOs) for handling COVID-19-related complaints, referrals, and severe illness reports. The scope of this guidance covers all investigations and inspections specifically related to the workplace hazard of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), which is the virus causing the current COVID-19 pandemic. OSHA will continue to ensure safe and healthy conditions for America's working men and women by enforcing standards during this health crisis. In addition, heightened attention will be given to the risks posed by SARS-CoV-2. This interim response plan outlines how the agency will continue to discharge these responsibilities in the differing circumstances throughout the country.

Read more:
https://www.osha.gov/memos/2020-04-13/interim-enforcement-response-plan-coronavirus-disease-2019-covid-19

NIH

NIH Study Validates Decontamination Methods for Re-Use of N95 Respirators

N95 respirators can be decontaminated effectively and maintain functional integrity for up to three uses, according to National Institutes of Health scientists. N95 respirators are designed for single-use and are worn by healthcare providers to reduce

exposure to airborne infectious agents, including the virus that causes COVID-19. The study was conducted in a controlled laboratory setting, and the results were posted on a preprint server on today. The findings are not yet peer-reviewed but are being shared to assist the public health response to COVID-19.

Read more: https://www.nih.gov/news-events/news-releases/nih-study-validates-decontamination-methods-re-use-n95-respirators

APHC

Training

Looking for FREE online training?

May 28, 2020 OH&S Industrial Hygiene Virtual Summit
to register, visit https://ohsonline.com/virtualsummit

Center for Public Health Continuing Education
https://www.albany.edu/cphce/phl.shtml
Watch the video https://vimeo.com/408435674 tour of the Public Health Live! web page and find past PHL! webcasts of interest. If you've missed any, you can watch at your convenience, then take the evaluation and post-test for CE credit.

World Health Organization (WHO)
Online **courses** provide competency-based free online training
https://openwho.org/courses

Interstate Technology Regulatory Council
Hundreds of on demand trainings designed to help achieve healthy and sustainable air, water, land and ecology through innovative solutions
https://itrcweb.org/

American Society of Safety Professionals
330 recorded sessions from Safety 2019 free for a limited time by using code **LEARNFREE**
http://send.assp.org/link.cfm?r=9DlRe0tqHppH1MNrrcPeHQ~~&pe=AiDgYLNZPJR3scExCyw-xsQq9rpymim4Osmn_T76Tk6VxaGsXpUOHC8RAT9O50D35sCuEWdHW3LduPthTnKOXA~~&t=ZMpiu2v6w6iNL4gHWTeyww~~

OPPORTUNITY!!!

American Society of Safety Professionals, ASSP

The U.S. Army made an arrangement with the ASSP to reduce membership fees from $180 to $15.00 per year.
https://www.assp.org/

Enter the code **milmem** when applying

ASSP FREE e-Learning:

"COVID-19: The Role of the Risk Management Process and Its Impact on Pandemics. You can also download the presenters' slides and sample risk assessment spreadsheet.
http://send.assp.org/link.cfm?r=9DlRe0tqHppH1MNrrcPeHQ~~&pe=M1vy0ffB-mLRAxB74AyG3RaRpBhUwA758o6VZiSygyOhBZQK2gjGWF4JOxA5iyhqdR7jbpIIy8QwQQQeEVzPg~~&t=ZMpiu2v6w6iNL4gHWTeyww~~

Listen to a special three-part podcast to hear answers to questions posed during our March 18 Coronavirus Ask the Expert Q&A and learn about recent developments.
http://send.assp.org/link.cfm?r=9DlRe0tqHppH1MNrrcPeHQ~~&pe=8MuvXQyku7dJ5VTyOIlKGWimV3r82X3iXPJt8g9wAnVFhahAsNM16MdE6ba5JVG6hxARZg0EAkVRKwJyCx_mNg~~&t=ZMpiu2v6w6iNL4gHWTeyww~~

OPPORTUNITY!!!

The Alliance of Hazardous Materials Professionals (AHMP) FREE WEBINAR DOWNLOADS AVAILABLE:

(click on name for download of webinar) which provided details of COVID-19 that are not in the mainstream media.

https://www.ahmpcyber.org/index.php?option=com_jdownloads&view=summary&id=145:covid-19-technical-details-for-ehs-professionals-chabsa-march-10-2010-sauri&catid=6&Itemid=172

https://www.ahmpcyber.org/index.php?option=com_content&view=featured&Itemid=139

April 9, 2020 "COVID-19, Legal Updates for the EHS Professionals by Adele Abrams, Michael Chuah, and Karla Grossenbacher a facilitated discussion. "

March 10, 2020, "Dr. Michael Sauri of Occupational Health Consultants provided an excellent talk on "COVID-19 Technical Details for EHS Professionals "

As a follow-up "Bruce Donato of K&A First Aid and Safety, Inc., discussed "The Practical Aspects of Managing COVID-19 for EHS Professionals in Their Workplace".

2020 Army IH Webinar Days (210) 249-4234
https://conference.apps.mil/webconf/ManageYourIHmonster

- #4 June 17, 2020 Conference ID: 2027# Pin Code: 908662#
  - 0900-1000ET MANAGE YOUR IH MONSTER: Observations and Notes New Functionality-Mitchell
  - 1000-1100ET IH LEADERS-A Historical look at Observations and Notes-Bragg
  - 1100-1200ET IH LEADERS –Special IH Case Study– Watervliet
  - 1200-1300ET ASK THE EXPERT–APHC Technical Monitors for Army IH Contract Services-APHC
- #5 August 5, 2020
  - 0900-1000ET MANAGE YOUR IH MONSTER: Metrics Update-APHC
  - 1000-1100ET IH LEADERS –Special IH Case Study– Region Atlantic
  - 1100-1200ET IH LEADERS –Leaders Creating Leaders– CCAD
  - 1200-1300ET IH LEADERS- Army IH Data Quality-Nichelson
  - 1300-1400ET ASK THE EXPERT–Ergonomics-Pentikis

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  - 1300-1400ET ASK THE EXPERT–Ergonomics-Pentikis

HAVE YOU COMPLETED ALL THESE WEBINARS?

https://aiph-dohs.ellc.learn.army.mil

ARMY FIELD OP MANUAL:

2/27/2019 FOM: FOM1 (Introduction & Ch 1) 29min
5/29/2019 FOM: FOM2 (Basic Characterization) 19min
7/23/2019 FOM: FOM3 (Similar Exposure Groups) 18min
10/2/2019 FOM: FOM4 (Workplace Monitoring Plans) 16min
11/6/2019 FOM: FOM5 (Characterize Exposures) 25min
3/4/20 FOM: FOM6-8 (assessment, reporting, reassessment) 18min

ASK THE SME:

11/14/2018 SME: Hexavalent Chromium 48min
1/9/2019 SME: IAQ (recording failed)
2/27/2019 SME: Ergonomics 51min
8/6/2019 SME: Pharmacy Hazardous Drug Samples 28min
12/4/2019 SME: OEL Selection 30min
1/8/2020 SME: Hexavalent Chromium Update 39min
1/8/2020 SME: Inflatable Paint Booth Guidance 30min
1/8/2020 SME: Ototoxins 42min
3/4/2020 SME: APHC Analytical Lab
4/6/2016 Special Edition: Cancer in the Military and the Perception of Clusters 52min
3/27/2019 Special Edition: 2019 Update Brief Mold-Related Issues in Army Housing 1.5hr

IH LEADERS:

4/26/2017 Leader: Go Army Ed Funding For The IH 24min
6/21/2017 Leader: IH Related Taskers 34min
8/23/2017 Leader: IH Career Program 12 Town hall 48min
12/5/2017 Leader: How to Officially Document IH Events 30min
4/11/2018 Leader: IH Equipment 11min
6/5/2018 Leader: Industrial Hygiene Ethics 2hr
8/9/2018 Leader: Ft Wainwright Sampling Mystery 60min
11/14/2018 Leader: West Point Power Plant Noise Study 21min
1/9/2019 Leader: Adventures in Ventilation at Natick 21min
2/27/2019 Leader: Ft Knox Noise Enigma 24min
8/6/2019 Leader: CCAD Success Story 15min
8/6/2019 Leader: Fort Eustis Modular Warping Tug Air Quality Study 9min
12/4/2019 Leader: Rock Island SEG Sample Mystery 19min
1/8/2020 Leader: Engineering Control Advancements 32min
3/4/2020 Leader: Making DOEHRS Do the Hard Work A LIDS9 Example 15min
3/4/2020 Leader: Steps to Merge SEG Monsters 12min

MANAGE YOUR IH MONSTER:

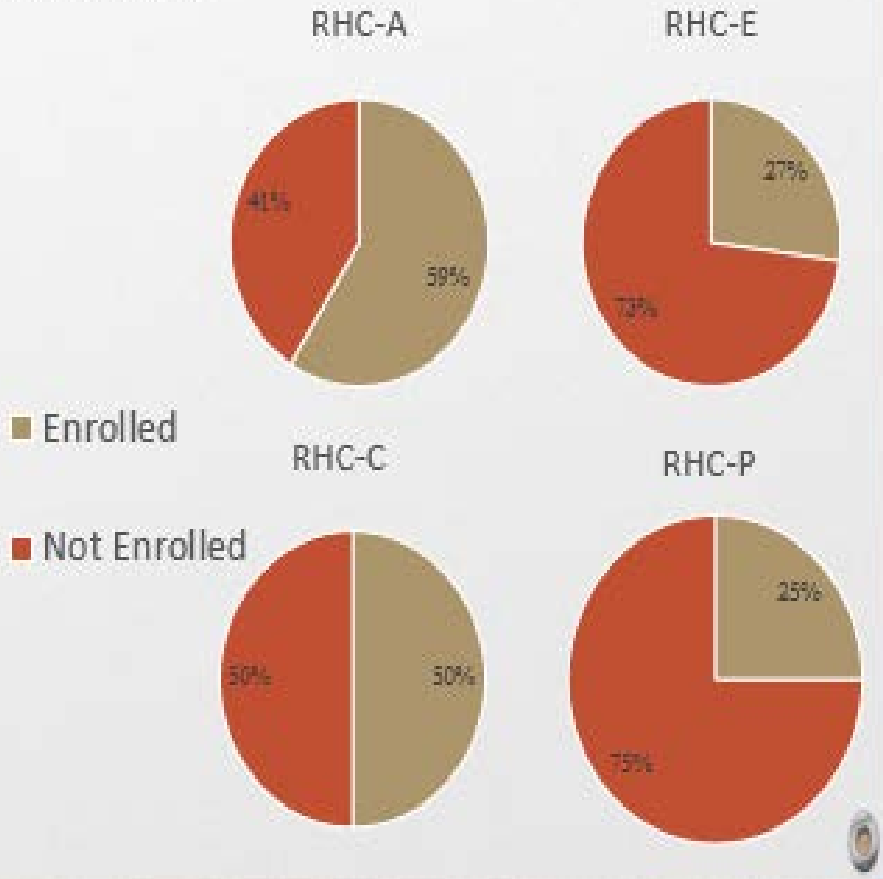
3/3/2016 Monster: Taming That SHOP Monster
3/22/2016 Monster: Submitting Samples Using DOEHRS-IH and LIDS9
7/12/2016 Monster: Taming That SEG Monster
8/9/2016 Monster: Don't Be Afraid of the Big Bad Budget 68min
9/12/2016 Monster: De-Mystifying the Metrics
11/4/2016 Monster: All About ANOVA
1/12/2017 Monster: Business Objects at it's Best 53min
3/15/2017 Monster: Magical Medical Surveillance 19min
4/11/2017 Monster: Levering Locations 61min
5/3/2017 Monster: Re-Invigorating Radiation 42min
7/12/2017 Monster: Chase Away IH Managerial Nightmares 48min
9/12/2017 Monster: Data Integrity: When IH Data Goes to Court 30min
11/8/2017 Monster: Metric Update 41min
11/8/2017 Monster: Speedy Ventilation 35min
3/15/2018 Monster: Highly Hazardous Communicable Diseases 2hr
5/9/2018 Monster: A Deep Dive into IH Contract Services 17min
7/12/2018 Monster: Assessment Adventure 47min
8/9/2018 Monster: Pathology, Grossing, Morgue, Tissue, and Death Care 1.5hr
11/14/2018 Monster: Metric Update 61min
1/9/2019 Monster: Versatile Ventilation 27min
8/6/2019 Monster: Common Data Quality Mistakes 17min
8/6/2019 Monster: How to Enter Illumination Surveys into DOEHRS-IH 6min
8/6/2019 Monster: Mystery Behind the Metrics 14min
12/4/2019 Monster: FY20 Metrics Update 28min
1/8/2020 Monster: OH..MY..SEG.. 8min
3/4/2020 Monster: A Sampling Force Awakens 35min

WEBINARS VIEWINGS CAN BE LIVE OR RECORDED

https://aiph-dohs.ellc.learn.army.mil

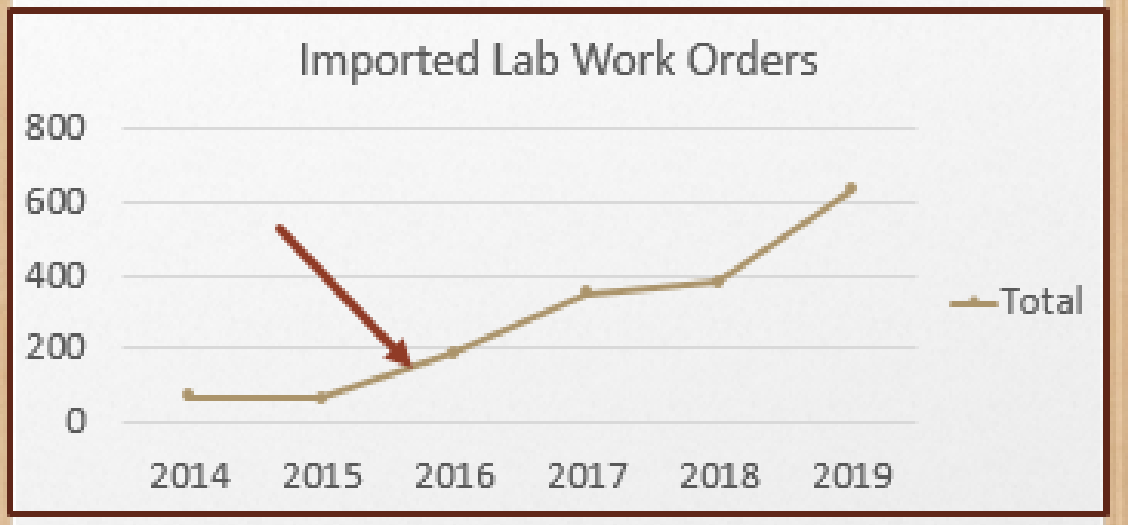
	RHC-A	RHC-C	RHC-E	RHC-P
2016	75	63	6	15
2017	220	104	11	19
2018	112	86	5	14
2019	450	351	21	47

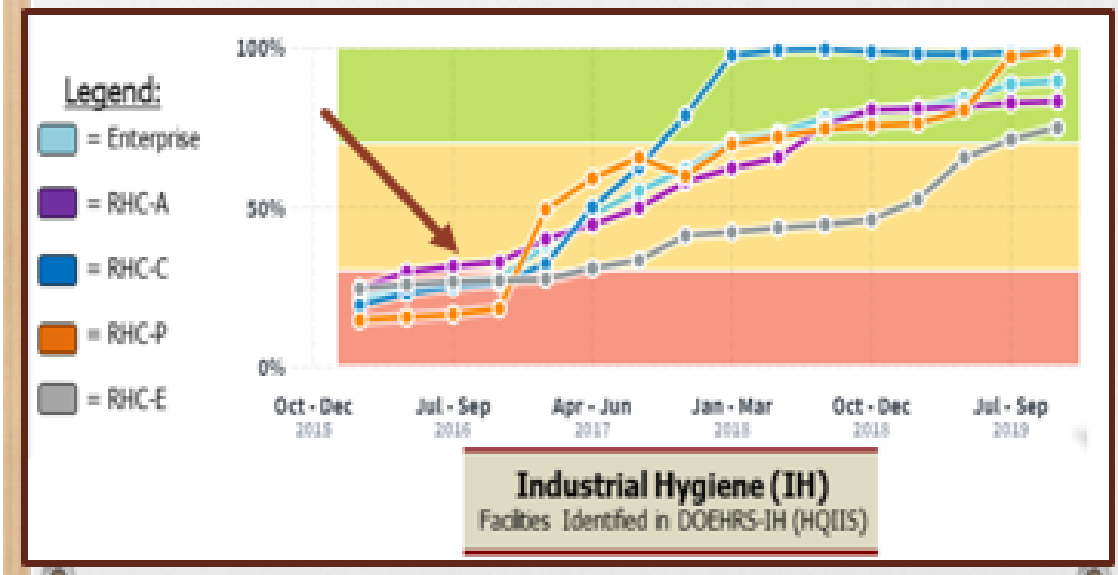
Pie charts display percentage of industrial hygiene personnel enrollment in the APHC Army IH Webinars but does not reflect active participation.



WEBINARS VIEWINGS CORRESPOND WITH IMPROVED IH METRICS
https://aiph-dohs.ellc.learn.army.mil

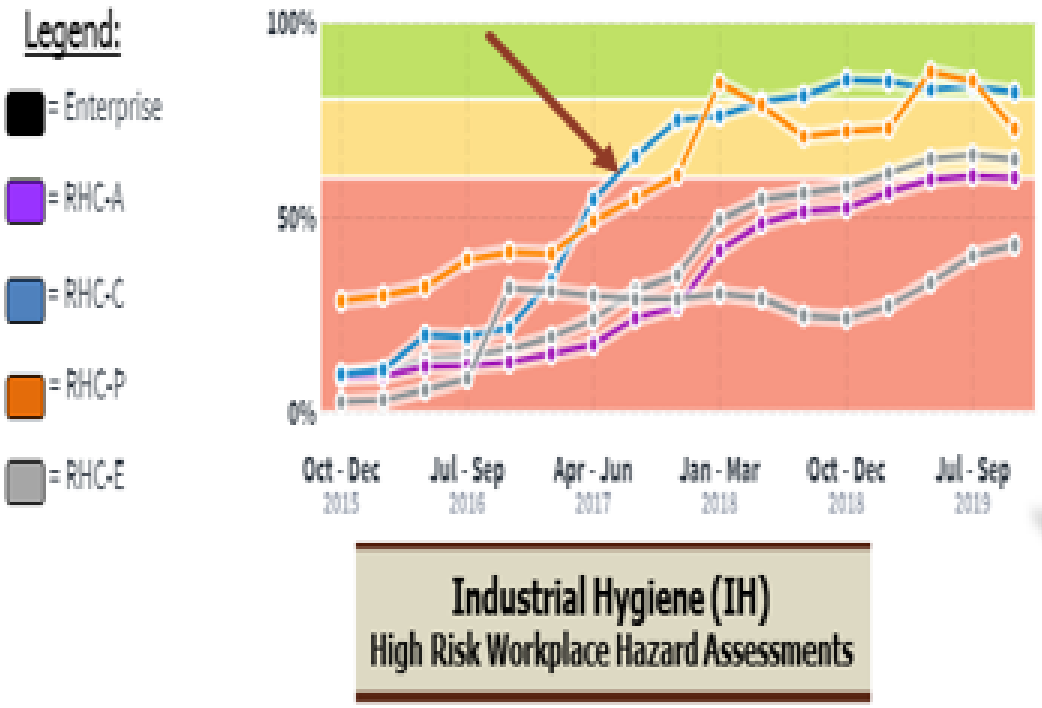
In 2016 tele/web conferences provided support for the IH Lab Import functionality and the HQIIS Metrics. The number of processed lab work orders and HQIIS Metric results has continually increased since 2016.





WEBINARS VIEWINGS CORRESPOND WITH IMPROVED IH METRICS
https://aiph-dohs.ellc.learn.army.mil

In 2018 tele/web conferences provided support for the High Risk Workplace Hazard Assessments and the number of assessments performed in DOEHRS-IH has continually increased since 2018.



The Army Blackboard web-based learning platform is currently using the Q4 2017 release.

Future releases of Army Blackboard will drop support for IE 11.

When the Army Blackboard reaches the Q4 2018 release, users will need to use Chrome, Edge, or Firefox midyear 2020.

Bb Release	Chrome	Edge	IE	Firefox	Safari (Mac OS Only)
Q4 2017 *	36+	20+	11	31+	6+
Q2 2018	49+	20+	11	48+	9+
Q4 2018	49+	20+	Unsupported	48+	9+
Q2 2019	63+	42+	Unsupported	57+	12+
Q4 2019	63+	42+	Unsupported	57+	12+

IMPORTANT: PLAN AHEAD NOW!

Start thinking about 2021 training quotas.

W H A T ? Why now?

- Courses fill to capacity quickly and it's nearly impossible to get last minute seating quotas
- Funding is limited. 2021 funding is released in October to Career Programs and normally immediately allocated. It's NEVER too early to request funds for training. Requesting early means it will be in que when funds are released.
- 2021 sign up rosters will be opened on the APHC Blackboard site June 2020. Signing up places you in que for a seating consideration.

2020-2021 Training Schedule (traditional classroom events) Aberdeen Proving Ground North Campus, MD

August 17-21, 2020 Army DOEHRS-IH Initial Course (4th Quarter)- Mallette Training Facility, APG-N Campus Room 24

April 12-16, 2021 Army DOEHRS-IH Initial Course (2nd Quarter)- Mallette Training Facility, APG-N Campus Room TBD

April 19-23, 2021 Army IH Professional Practice- Mallette Training Facility, APG-N Campus Room TBD

April 26-30, 2021 Blueprint Reading & Design Review - Mallette Training Facility, APG-N Campus room TBD

May 3-14, 2020 Ventilation Courses (40 hr Industrial and 40 hr Healthcare & Laboratory)- Mallette Training Facility, APG-N Campus room TBD

May 17-21, 2021 Army DOEHRS-IH Initial Course (3rd Quarter)- Mallette Training Facility, APG-N Campus Room TBD

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

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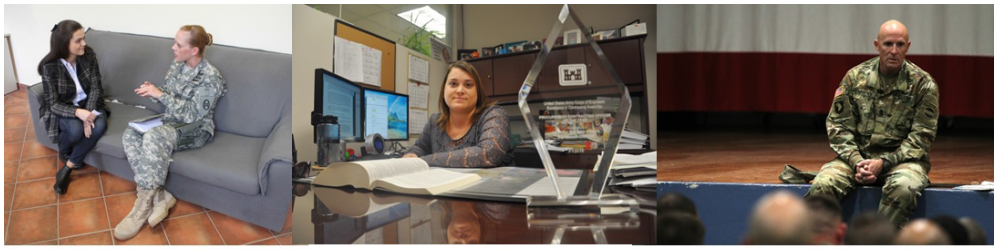
On the Web:
http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx



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.

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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.