

November 2020

Issue 110

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances



Special Interest Articles:

- [Lead-Free Ammunition](#)
- [Tinnitus](#)
- [Antibiotic Resistance](#)
- [Climate Change](#)
- [Kidney Injury](#)

Ozone Breaks Down THC Deposited on Surfaces from Thirdhand Cannabis Smoke

Second- and thirdhand tobacco smoke have received lots of attention, but much less is known about the compounds deposited on surfaces from cannabis smoke. Now, researchers reporting in *ACS' Environmental Science & Technology* have discovered that ozone — a component of outdoor and indoor air — can react with tetrahydrocannabinol (THC), the psychoactive component of cannabis, on glass or cotton surfaces to produce new compounds, which they characterized for the first time.

Smoking emits reactive chemicals that remain in the air (so-called secondhand smoke) or deposit onto surfaces, including walls, windows, clothing and upholstery (thirdhand smoke). Unlike the secondhand variety, thirdhand smoke lingers long after a person stops smoking. Nicotine is semi-volatile and reacts with other chemicals on surfaces, producing new compounds that, if volatile, can also become airborne.



Because cannabis smoke is chemically distinct from tobacco smoke, Aaron Wylie and Jonathan Abbatt wanted to characterize the compounds formed when THC, by itself or in cannabis smoke, on surfaces reacts with ozone in the air.

Read more:

<https://www.acs.org/content/acs/en/pressroom/presspac/2020/acs-presspac-december-2-2020/ozone-breaks-down-thc-deposited-on-surfaces-from-thirdhand-cannabis-smoke.html>

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Breaking It Down: Estimating Short-Chain PFAS Half-Lives in a Human Population



Many studies have examined the impact of long-chain per- and polyfluoroalkyl substances (PFAS) on human health,¹ but few have looked at short-chain PFAS.² A recent study in *Environmental Health Perspectives* estimated half-lives of both long- and short-chain PFAS in a small group of people immediately after exposure to PFAS-contaminated drinking water ended.³ lth and the environment.

The terms “long” and “short” refer to the length of the carbon (C) backbone of each molecule; long-chain is defined as perfluoroalkyl sulfonic acids with 6 or more C atoms, and perfluoroalkyl carboxylic acids with 7 or more C atoms.⁴ Most long-chain PFAS have been phased out and replaced by short-chain varieties. Thus, long-chain varieties are sometimes called legacy PFAS. It is generally believed that the shorter the chain, the shorter the half-life for PFAS.² However, this rapid excretion also makes it difficult to assess the health impacts of short-chain varieties because studies may start weeks or months after exposure has ceased.

Read more:

<https://ehp.niehs.nih.gov/doi/10.1289/EHP7853>

Aspergillus Spp. Presence on Mechanical Protection Gloves from the Waste Sorting Industry

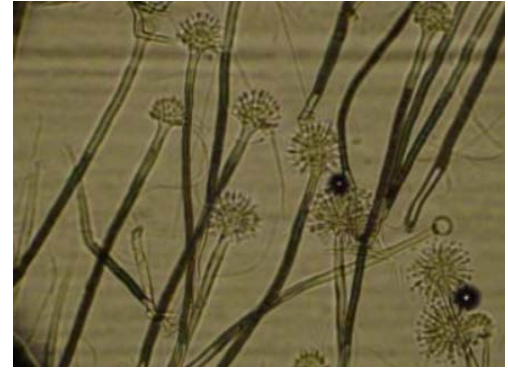
The organic material present on waste sorting units serve as

a substrate for different microorganisms, increasing



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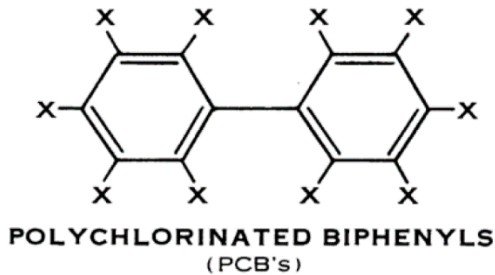
workers' exposure to *Aspergillus* spp. This study intends to assess the *Aspergillus* spp. contamination on Mechanical Protection Gloves (MPG) from different workstations and understand the role of MPG in workers' exposure to these genera. Sixty-seven used MPG were collected from different workstations and extracts were seeded on malt extract agar (MEA) supplemented with chloramphenicol (0.05%) and dichloran glycerol (DG18). The same extracts were used for the molecular detection of fungal species/strains, with reported toxigenic potential, namely *Aspergillus* sections (*Circumdati*, *Flavi*, *Fumigati*, and *Nidulantes*). Among *Aspergillus* spp., the sections with the highest prevalence on MEA were *Nigri* (88.29%) and *Fumigati* (8.63%), whereas on DG18 were *Nigri* (31.79%) and *Circumdati* (30.77%). *Aspergillus* section *Circumdati* was detected in 22 MPG samples by RT-PCR (32.84%), *Fumigati* in 59 samples



(88.06%), *Nidulantes* in 61 samples (91.05%), and *Flavi* in 6 samples (8.96%). It was showed that, even with daily replacement, MPG presented *Aspergillus* spp. contamination. Thus, a more regular replacement of MPG and the adoption of complementary hygienic procedures by workers are critical to guarantee workers' protection in this occupational environment.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 18 Nov 2020 (Available with AIHA membership)

Polychlorinated Biphenyls as a Cardiovascular Health Risk: A New Threat from an Old Enemy?



Polychlorinated biphenyls (PCBs) were produced in the United States beginning in 1929.¹ Evidence of their negative impact on human health emerged very early in their industrial-scale production,² and studies published in the 1960s confirmed that PCB contamination was widespread and persistent in both the environment and people's bodies.¹ Despite their eventual discontinuation,³ PCB legacy materials and persistent environmental contamination continue to be sources of environmental release and exposure even now.⁴ In a recent report in *Environmental Health Perspectives*, investigators proposed an integrated new approach for evaluating the

cumulative effects of PCBs on heart health using *in vitro* bioactivity in human endothelial cells and cardiomyocytes.⁵ PCB exposure has been associated with skin conditions, diabetes, liver toxicity, cancer, and deficits in immune and neurological function in a number of human health studies.⁶ How PCBs affect cardiovascular health, however, has been relatively understudied despite reports linking dietary exposure to hypertension and increased risk of heart disease.^{7,8} Recent breakthroughs in stem cell technology have had a substantial impact on our ability to better understand the potentially harmful effects of PCBs, says study leader Ivan Rusyn, a professor in the Texas A&M University Department of Veterinary Integrative Biosciences and director of the university's Superfund Research Center.

Read more:

<https://ehp.niehs.nih.gov/doi/10.1289/EHP8382>

Reduction in Lead Exposures with Lead-Free Ammunition in an Advanced Urban Assault Course

The training of soldiers for urban conflict involves marksmanship instruction on outdoor flat ranges and the teaching of

close-quarter battle techniques in indoor facilities, referred to as shoot houses, where intense firing exercises can generate

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high air lead levels from small arms ammunition, flash bang grenades, and explosive devices. Levels of lead and copper in air were evaluated during five training activities of a 45-day training course using both stationary general area and breathing zone sampling over a 2-year period. Individual blood lead values were determined prior to and at course completion. Mean breathing zone lead concentrations for the five training activities ranged from 0.014 on the outdoor flat range to 0.064 mg/m³ inside shoot houses; with a change to lead-free ammunition the values were reduced to a range of 0.006–0.022 mg/m³. Isolated flash bang grenades generated very high general area lead concentrations (2.0 mg/m³), which in training were associated with the highest measured breathing zone concentration (0.16 mg/m³). For copper, mean breathing zone concentrations increased from 0.010 to 0.037 mg/m³ with the change to lead-free frangible ammunition on the outdoor range, but remained below the permissible exposure limit for copper fume. Inside shoot houses, mean breathing zone copper concentrations exceeded the permissible exposure limit with ball and lead-free frangible ammunition, ranging from 0.077–0.13 mg/m³. With the introduction of lead-



free ammunition, when comparing the blood lead differences between start and finish of the course, there was a significant reduction in the mean blood lead difference from 13.3 µg/dL to 5.4 µg/dL. Options for mitigation of potentially high exposure areas using improved ventilation designs are discussed. These results advocate for improved designs for shoot house training facilities, stress the importance of removing lead from ammunition and explosive devices for training, and promote the continued need for implementation of controls to mitigate and manage metal exposures during training.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 17 Nov 2020 (Available with AIHA membership)

On-Site Comparison of the OSHA 47, Asset EZ4-NCO, Iso-Chek, DAN, and CIP10 Methods for Measuring Methylene Diphenyl Diisocyanate (MDI) at an Oriented-Strand Board (OSB) Factory



Diisocyanates are occupational contaminants and known sensitizers causing irritation (skin and respiratory tract) as well as occupational asthma. Because of their physicochemical properties (semi-volatile and high reactivity) and low occupational limits, diisocyanate exposure evaluation is still a challenge nowadays for industrial hygienists and laboratories. The objective of this study was to compare the methylene diphenyl diisocyanate (MDI) concentrations measured by five methods using different collection or derivatization approaches in an oriented-strand board (OSB) factory. The methods used were: OSHA 47 (filter, 1-(2-pyridyl)piperazine) (OSHA), Asset EZ4-NCO (denuder and filter, dibutylamine) (Asset), Iso-Chek (double-filter, 9-(N-methylaminomethyl) anthracene and 1,2-methoxyphenylpiperazine), DAN (filter, 1,8-diaminonaphthalene), and CIP10 (centrifugation, 1,2-methoxyphenylpiperazine). Real-time monitoring of particle concentration and

size distribution was performed to explain the potential bias between methods. The comparison study was performed over 3 consecutive days, generating at least 18 replicates for each of the 5 methods. The results of each methods were compared using linear mixed effect modeling. Compared to Asset, which yielded the highest concentrations overall, the OSHA method provided the smallest bias with -18% (95% CI $[-61;24]$) (not significant) for MDI monomer and the DAN method provided the smallest bias with -30 (95% CI $[-70;9]$) (not significant) for Total Reactive Isocyanate Group (TRIG). The CIP10 and Iso-Chek methods provided the largest biases for MDI monomer (-83% (95% CI $[-115;-51]$) and -78% (95% CI $[-110;-46]$), respectively) as well as for TRIG (-87% (95% CI $[-120;-55]$) and -75% (95% CI $[-107;-44]$), respectively). The underestimations of the CIP10 and Iso-Chek were explained by its inefficient sampling principle for fines particles and the use of a non-impregnated filter to collect aerosol MDI, respectively. This study confirms that impregnated filter, including denuding device such as the Asset EZ4-NCO sampler, collects the MDI-coated wood particles and MDI vapor with similar efficiency. It also demonstrates for the first time in this type of MDI emission a significant agreement for TRIG concentration between the DAN method in

the impregnated filter configuration and an international standard one such as Asset.

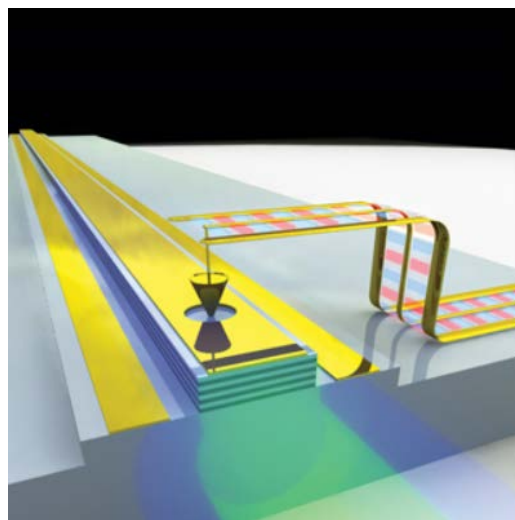
16 Nov 2020 (Available with AIHA membership)

Read more: Journal of Occupational and Environmental Hygiene, Published online:

Radiation

Researchers Develop a High-Power, Portable Terahertz Laser

Researchers at MIT and the University of Waterloo have developed a high-power, portable version of a device called a quantum cascade laser, which can generate terahertz radiation outside of a laboratory setting. The laser could potentially be used in applications such as pinpointing skin cancer and detecting hidden explosives. Until now, generation of terahertz radiation powerful enough to perform real-time imaging and fast spectral measurements required temperatures far below 200 Kelvin (-100 degrees Fahrenheit) or lower. These temperatures could only be achieved with bulky equipment that limited the technology's use to a laboratory setting. In a paper published in *Nature Photonics*, MIT Distinguished Professor of Electrical Engineering and Computer Sciences Qing Hu and his colleagues report that their terahertz quantum cascade laser can function at temperatures of up to 250 K (-



10 degrees Fahrenheit), meaning that only a compact portable cooler is required.

Read more:

https://www.eurekalert.org/pub_releases/2020-11/miot-rda102920.php

Ventilation

Safe Ultraviolet Light Could Be Used to Sterilize High-Risk COVID-19 Environments

Research at Cranfield University is paving the way for a new solution to kill aerosolised COVID-19 in enclosed environments such as hospitals and long-term care facilities.

Computational modelling has shown that low dose far-ultraviolet C (UVC) lighting can be used to disinfect in-room air, increasing disinfection rates by 50-85% compared to a room's ventilation alone.

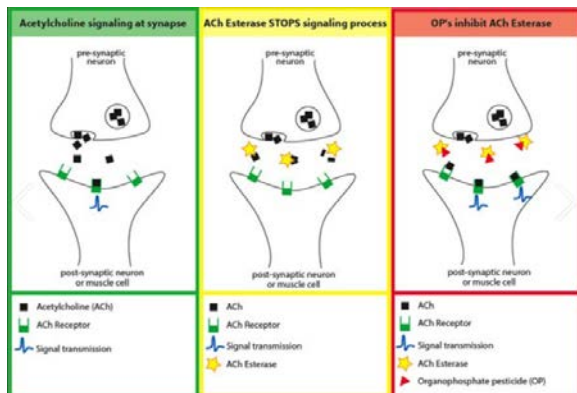
Unlike typical UVC -- which has been used to kill microorganisms for decades but is extremely harmful to humans, potentially causing cataracts or skin cancer -- evidence has shown that far-UVC is safe to use around people.

Read more:

<https://www.sciencedaily.com/releases/2020/11/201130101303.htm>

PPE

Glove Performance in a Warming Climate: The Role of Glove Material and Climate on Permeation Resistance to Organophosphate Insecticides



Hands and forearms are the principal sites of dermal exposure to organophosphate insecticides, which makes glove use one of

the most important components of an exposure control strategy. However, the selection of suitable gloves depends on issues such as task, type, and concentration of organophosphate as well as cost. In addition, chemical protection performance of gloves may be temperature dependent, which is of increasing concern in a warming climate. Two recommended reusable glove materials (polyvinylchloride and nitrile butadiene rubber) and one single-use glove (nitrile/neoprene) were tested for permeation resistance to actual

formulations of organophosphate insecticides with active ingredients dimethoate and malathion. Chemical resistance parameters were measured using American society for testing and materials permeation test cells and compared across glove, organophosphate type, and temperature. The three gloves demonstrated comparable and adequate chemical resistance (less than one $\mu\text{g cm}^{-2} \text{min}^{-1}$ for up to 8 hr exposure; 25–60 °C) for dilute forms of dimethoate and malathion, used during spraying activities. However, the single-use nitrile/neoprene glove is not designed to fully cover the elbow which limits its suitability. In permeation tests that reflect “worst case” exposure scenario to concentrated (neat) organophosphate formulations, as in mixing/loading tasks, a significant variation in chemical resistance between gloves was observed. While polyvinylchloride offered the maximum resistance, physical degradation of nitrile butadiene rubber after 3 hr of continuous exposure makes it unsuitable for handling neat dimethoate.

The single-use nitrile/neoprene glove material had considerably poorer permeation resistance (up to 155-fold greater permeation and 6-fold shorter breakthrough) against neat formulations. Overall, elevated temperature (>40 °C) was shown to result in significantly greater ($P < 0.05$) cumulative permeation of neat formulation insecticides. This work demonstrates the variation in glove performance and potential for greater exposure risk particularly when mixing concentrated pesticides at elevated temperature conditions such as an occluded human skin or hot greenhouses. Training and guidance on testing, selection, use, and storage of gloves should consider in-use exposure scenarios and temperature-induced reduction in chemical protective performance.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 25 Nov 2020 (Available with AIHA membership)

The Impact of Extreme Reuse and Extended Wear Conditions on Protection Provided by a Surgical-Style N95 Filtering Facepiece Respirator

Most respirators employed in health care settings, and often in first responder and industrial settings, are intended for single-use: the user dons the respirator, performs a work activity, and then doffs and discards the respirator. However, in the current COVID-19 pandemic, in the presence of persistent shortages of personal protective



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equipment, extended use and reuse of filtering facepiece respirators are routinely contemplated by many health care organizations. Further, there is considerable current effort to understand the effect of sterilization on the possibility of reuse, and some investigations of performance have been conducted. While the ability of such a respirator to continue to provide effective protection after repeated sanitization cycles is a critical component of implementing its reuse, of equal importance is an understanding of the impact that reusing the respirator multiple times in a day while performing work tasks, and even extending its wear over multiple days, has on the workplace protective performance. In this study, we subjected a stockpiled quantitatively fitted surgical style N95 filtering facepiece respirator device to extreme reuse and extended wear

conditions (up to 19 uses over a duration of 5 days) and measured its protective performance at regular intervals, including simulated workplace protection factor measurements using total inward leakage. With this respirator, it was shown to be possible to maintain protection corresponding to an assigned protection factor greater than 10 under extreme usage conditions provided an individual is properly trained in the use of, and expertly fitted in, the respirator. Other factors such as hygiene and strap breakage are likely to place limits on reuse.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 09 Nov 2020 (Available with AIHA membership)

Noise

COVID-19 Is Making Tinnitus Worse -- New Study



New research reveals that tinnitus, a common condition that causes the perception of noise in the ear and head, is

being exacerbated by COVID-19 - as well as the measures helping to keep us safe. The study of 3,103 people with tinnitus was led by Anglia Ruskin University (ARU), with support from the British Tinnitus Association and the American Tinnitus Association. The study involved participants from 48 countries, with the vast majority coming from the UK and the US. Published in the journal *Frontiers in Public Health*, the research found that 40% of those displaying symptoms of COVID-19

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simultaneously experience a worsening of their tinnitus. Although the study focused on people with pre-existing tinnitus, a small number of participants also reported that their condition was initially triggered by developing COVID-19 symptoms, suggesting that tinnitus could be a 'long COVID' symptom in some cases.

Tinnitus affects an estimated one in eight adults in the UK and is associated with reduced emotional wellbeing, depression, and anxiety.

Read more: https://www.eurekalert.org/pub_releases/2020-11/aru-cim110320.php

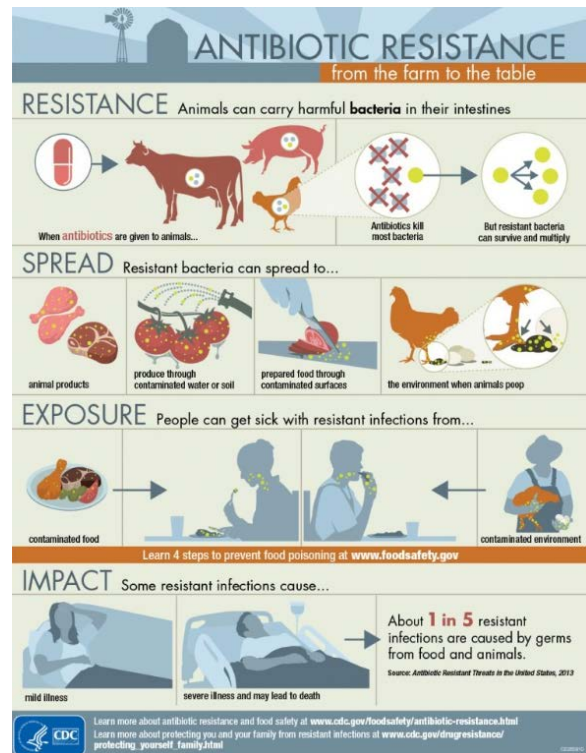
Preventive Medicine

A New Lead for Disarming Antibiotic-Resistant Bacteria

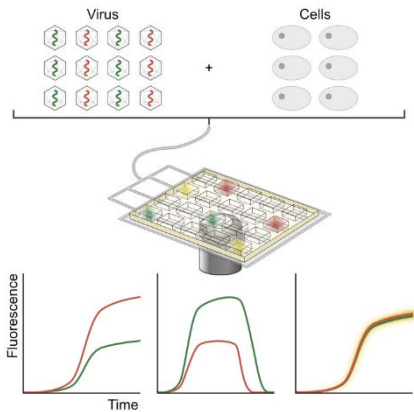
A virus can stop bacteria from sharing genes for antibiotic resistance among themselves, Texas A&M AgriLife researchers have discovered. The results hint at new ways to treat infections and describe a new feature of a highly diverse, largely unexplored part of the biosphere.

The study, published recently in *Proceedings of the National Academy of Sciences*, was led by Lanying Zeng, Ph.D., associate professor in the Texas A&M College of Agriculture and Life Sciences Department of Biochemistry and Biophysics.

Read more: https://www.eurekalert.org/pub_releases/2020-11/taac-anl110220.php



Microfluidic System with Cell-Separating Powers May Unravel How Novel Pathogens Attack



To develop effective therapeutics against pathogens, scientists need to first uncover how they attack host cells. An efficient way to conduct these investigations on an extensive scale is through high-speed screening tests called assays.

Researchers at Texas A&M University have invented a high-throughput cell separation method that can be used in conjunction with droplet microfluidics, a technique whereby tiny drops of fluid containing biological or other cargo can be moved precisely and at high speeds. Specifically, the researchers successfully isolated pathogens attached to host cells from those that were unattached within a single fluid droplet using an electric field.

Read more:

<https://www.sciencedaily.com/releases/2020/11/201130155841.htm>

Malaria Test as Simple as a Bandage

Testing for malaria could become as simple as putting on a bandage. That's the idea behind a platform developed by Rice University engineers who introduced a microneedle patch for rapid diagnostic testing that does not require extracting blood.

The device detailed in the *Nature* journal *Microsystems and Nanoengineering* draws upon protein biomarkers contained in dermal interstitial fluid, what people generally recognize as the fluid inside blisters but surrounds all of the cells in skin.



Read more:

https://www.eurekalert.org/pub_releases/2020-11/ru-mta110220.php

Lung Symptoms Common among Users of E-Cigarettes and Related Products



One-third of people using e-cigarettes or related products reported symptoms associated with lung or respiratory tract impact or injury, according to an analysis of a 2016 national survey, to be presented at the American Heart Association's Scientific Sessions 2020.

"Although many people continue to view vaping or using e-cigarettes and related products as safe—or at least safer than smoking combustible cigarettes—the use of these products can be risky," said Thanh-Huyen T. Vu, M.D., Ph.D., senior author of the study and research associate professor of epidemiology in the department of preventive medicine at the Northwestern University Feinberg School of Medicine in Chicago.

Read more:

<https://medicalxpress.com/news/2020-11-lung-symptoms-common-users-e-cigarettes.html>

Antibiotic Resistant Bacteria Are a Global Threat—Oak Surfaces Might Thwart Their Growth

Drug resistant superbugs are expected to overwhelm the healthcare system, reverse a century's worth of medical progress and claim more lives than cancer by 2050 unless efforts are accelerated to stop antibiotic resistant bacteria in their tracks.

While most studies to address the problem are focusing on the development of new drugs, a series of elegant studies in France has taken an unusual angle—analyzing the types of surfaces that can harbor drug resistant bacteria in healthcare settings. Surfaces can serve as fomites, which refers to objects or materials likely to harbor



infectious organisms, allowing them to promote the spread of pathogens when touched or used. Scientists have long known that environmental surfaces are a potential reservoir for healthcare-associated infections. So the hunt has been

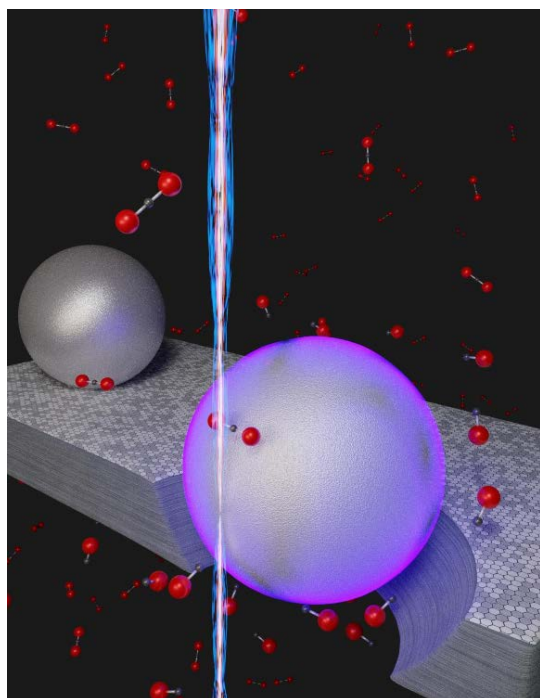
underway in France to find a material with potent antimicrobial activity.

Read more: <https://www.nih.gov/news-events/news-releases/nih-study-tests->

[comprehensive-model-intervention-reduce-opioid-overdose-deaths-hard-hit-communities](#)

Environmental Health

Room Temperature Conversion of CO₂ to CO: A New Way to Synthesize Hydrocarbons



Researchers at the National Institute of Standards and Technology (NIST) and their colleagues have demonstrated a room-temperature method that could significantly reduce carbon dioxide levels in fossil-fuel power plant exhaust, one of the main sources of carbon emissions in the atmosphere.

Although the researchers demonstrated this method in a small-scale, highly controlled environment with dimensions of just nanometers (billionths of a meter), they have already come up with concepts for scaling up the method and making it practical for real-world applications.

Read more: <https://www.eurekalert.org/multimedia/pub/247512.php>

A Paint That Kills COVID-19 with Cu⁺¹

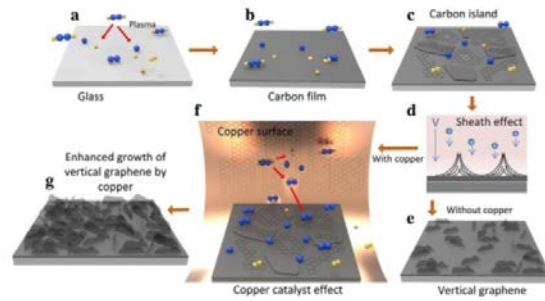
COVID-19 infection and hospitalization rates in the US shot back up in early November, closing bars, preschools, and other public amenities across the country. Public health

officials are reemphasizing the cornerstone roles that handwashing, masks, and social distancing have in combating the pandemic.

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At the same time, the home-care industry has been hard at work bringing new and existing cleaning products to the fight. The US Environmental Protection Agency's List N, which contains all the products the agency permits to claim the ability to kill SARS-CoV-2 on surfaces, has grown from 200 entries in March to 508 in mid-November.

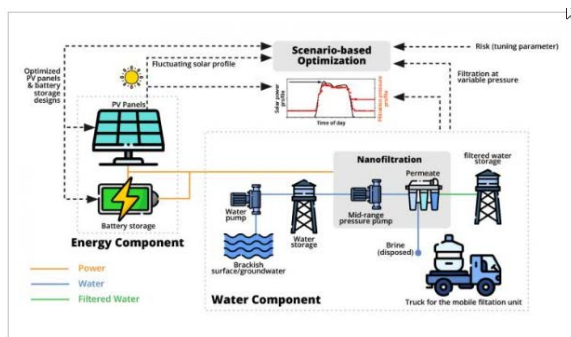
The EPA recently emphasized the need to supplement those efforts with surfaces and surface treatments that provide long-lasting activity against viruses and other microbes. In October, the agency issued guidance on how companies can prove a product's efficacy against SARS-CoV-2 before making such claims, a move EPA administrator Andrew Wheeler says in a news release



would provide “an expedited path for our nation’s manufacturers and innovators to get cutting-edge, long-lasting disinfecting products into the marketplace as safely and quickly as possible.”

Read more: <https://cen.acs.org/business/5-new-technologies-making-impact/98/i46#Case-study-1-A-paint-that-kills-COVID-19-with-Cu>

Water-Energy Nanogrid Provides Solution for Rural Communities Lacking Basic Amenities



Researchers at Texas A&M University have come up with an economical, green solution that can help underprivileged communities with their water and electricity needs.

Their standalone water-energy nanogrid consists of a purification system that uses solar energy to decontaminate water. The setup, they said, is mathematically tuned to use solar energy optimally so that the water filtration is unhindered by the fluctuations of solar energy during the course of the day.

Read more: https://www.eurekalert.org/pub_releases/2020-11/tau-wnp110420.php

Climate Change Will Give Rise to More Cancers

Climate change will bring an acute toll worldwide, with rising temperatures, wildfires and poor air quality, accompanied by higher rates of cancer, especially lung, skin and gastrointestinal cancers, according to a new report from UC San Francisco. In an analysis of nearly five dozen published scientific papers, the researchers provided a synopsis of future effects from global warming on major cancers, from environmental toxins to ultraviolet radiation, air pollution, infectious agents and disruptions in the food and water supply.

Ultimately, the most profound challenge to the global cancer picture could come from the disruption of the complex health care systems required for cancer diagnosis,



treatment, and care, the authors wrote. The review appears in The Lancet Oncology.

Read more:

https://www.eurekalert.org/pub_releases/2020-11/uoc--ccw110420.php

Ergonomics

Influence of Age, Geographical Region, and Work Unit on Heat Strain Symptoms: A Cross-Sectional Survey of Electrical Utility Workers



This study assessed self-reported heat strain symptoms in workers of a state wide electrical utility distributor to determine risk differences between age groups, geographical work regions and work

units. Out of a total 3,250 workers, 918 (~28%) outdoor staff completed an online survey, which assessed the frequency of self-reported heat strain symptoms in the work and post-work settings, factors contributing to symptoms and symptom management. Heat strain symptoms were grouped into chronic low-grade cases and isolated high-grade cases based on the severity and frequency of symptoms. The risk (likelihood) of an employee being

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classified as either a chronic low-grade or isolated high-grade case was calculated and compared to the mean risk of all categories to determine risk difference, expressed as -1.00 to 1.00. For chronic low-grade cases, the 41–50 years age group had significantly increased risk (+0.08, $p < 0.05$) while the over 60 years age group had significantly decreased risk (-0.14, $p < 0.05$). Two of the three regions ($p < 0.01$) and three of the nine work units also demonstrated risk differences ($p < 0.01$) for chronic low-grade cases. Work units were the sole grouping to demonstrate risk difference for isolated high-risk cases. Work units with greater exposure to heat and higher requirement for protective clothing, such as Underground (+0.19, $p < 0.05$), Overhead – Predominantly Live Line (+0.18, $p < 0.01$), and Overhead – Distribution and Transmission (+0.11, $p < 0.05$) were at

greater risk of reporting heat stress symptoms. This study demonstrates that the pattern of self-reported chronic low-grade heat strain cases differs to isolated high-grade cases within the electrical utility industry. Age, geographical location, and work unit independently alter the risk of chronic low-grade heat strain, while the risk of isolated high-grade heat strain was only related to work unit. These outcomes support implementation of a flexible and targeted approach to heat stress management in large and diverse organizations in which employees are routinely exposed to heat.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 16 Nov 2020 (Available with AIHA membership)

Safety

Parking Lot Safety

Parking lots can be a safety risk for workers, especially with the sun setting earlier during the winter months.

When you're returning to your vehicle, always try to walk with a co-worker or security officer, the Canadian Center for Occupational Health and Safety recommends. Then, give your escort a ride back to the building. Other tips:

- Park in a highly visible and well-lit area near your building.



- If you park in a garage, look for a spot near the parking attendant, if there is one, or near the stairs or a well-lit exit.

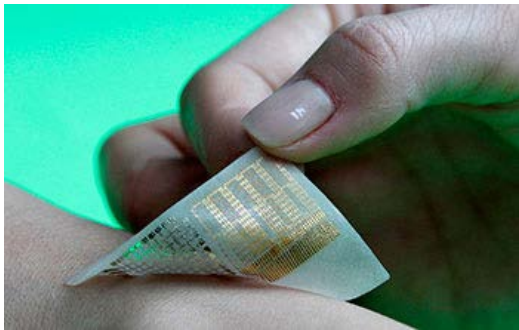
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- Use the main building entrance – avoid rear or secluded exits.
- Have your keys out and ready as you approach your vehicle.
- Don't approach anyone loitering near your vehicle. Walk to a safe place or go back inside your workplace, and then call the police.
- Lock the doors and keep the windows rolled up once you're in the vehicle.

Read more:

<https://www.safetyandhealthmagazine.com/articles/20516-parking-lot-safety>

NUS Researchers Invent Flexible and Highly Reliable Sensor



Real-time health monitoring and sensing abilities of robots require soft electronics, but a challenge of using such materials lie in their reliability. Unlike rigid devices, being elastic and pliable makes their performance

less repeatable. The variation in reliability is known as hysteresis.

Guided by the theory of contact mechanics, a team of researchers from the National University of Singapore (NUS) came up with a new sensor material that has significantly less hysteresis. This ability enables more accurate wearable health technology and robotic sensing.

Read more:

https://www.eurekalert.org/pub_releases/2020-11/nuos-nri110120.php

Flying through Wildfire Smoke Plumes Could Improve Smoke Forecasts

Wildfires burning in the West affect not only the areas burned, but the wider regions covered by smoke. Recent years have seen hazy skies and hazardous air quality become regular features of the late summer weather.

Many factors are causing Western wildfires to grow bigger and to generate larger, longer-lasting smoke plumes that can



stretch across the continent. An analysis led by the University of Washington looks at

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the most detailed observations to date from the interiors of West Coast wildfire smoke plumes.

Read more:

https://www.eurekaalert.org/pub_releases/2020-11/uow-ftw102820.php

Algorithm Spots 'Covid Cough' Inaudible to Humans



In tests, it achieved a 98.5% success rate among people who had received an official positive coronavirus test result, rising to 100% in those who had no other symptoms. The researchers would need regulatory approval to develop it into an app.

They said the crucial difference in the sound of an asymptomatic-Covid-patient cough could not be heard by human ears.

The artificial-intelligence (AI) algorithm was built at the Massachusetts Institute of Technology (MIT) lab.

MIT scientist Brian Subirana, who co-authored the paper, published in the IEEE Journal of Engineering in Medicine and Biology, said: "The way you produce sound changes when you have Covid, even if you're asymptomatic."

Read more:

<https://www.bbc.com/news/technology-54780460>

Emergency Preparedness

The Strategic Stockpile Failed; Experts Propose New Approach to Emergency Preparedness

A new analysis of the United States government's response to COVID-19 highlights myriad problems with an approach that relied, in large part, on international supply chains and the Strategic National Stockpile (SNS). A panel of academic and military experts is instead calling for a more dynamic, flexible



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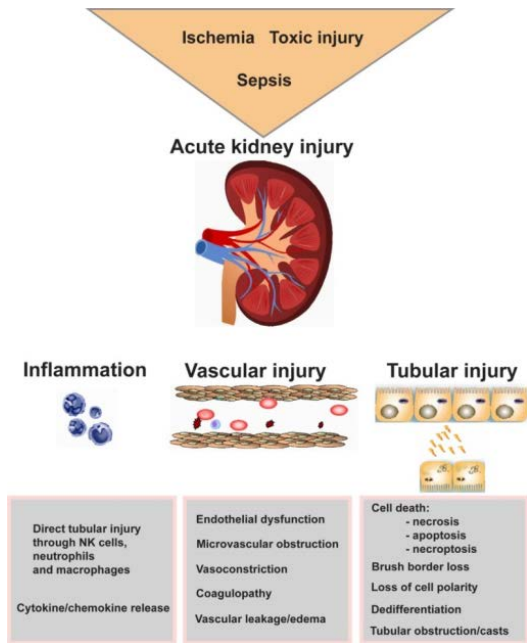
approach to emergency preparedness at the national level.

Read more:

<https://news.ncsu.edu/2020/11/new-approach-to-preparedness/>

Deployment Health

US Vets With COVID-Related Kidney Injury at 6.7 Times Risk of Death



Acute kidney injury (AKI) and its attendant almost-seven-times-higher risk of death is

common in US veterans hospitalized with COVID-19—especially black patients, an observational study published yesterday in the *Clinical Journal of the American Society of Nephrology* suggests.

A research team led by the VA Saint Louis Health Care System and Washington University analyzed data from 5,216 patients in Departments of Veterans Affairs Health Care System hospitals from March to July. While previous studies have linked COVID-19 with AKI, this was the first known nationwide study in veterans.

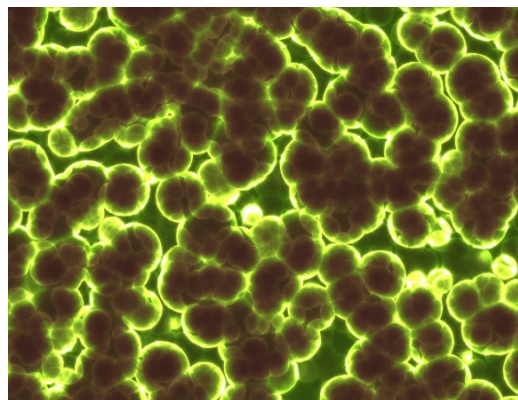
Read more:

<https://www.cidrap.umn.edu/news-perspective/2020/11/us-vets-covid-related-kidney-injury-67-times-risk-death>

Nanotechnology

Detecting Bacteria with Fluorescent Nanosensors

Researchers from Bochum, Göttingen, Duisburg and Cologne have developed a new method for detecting bacteria and infections. They use fluorescent nanosensors to track down pathogens faster and more easily than with established methods. A team headed by Professor Sebastian Kruß, formerly at Universität Göttingen, now at Ruhr-Universität Bochum (RUB), describes the results in the journal *Nature Communications*, published online on 25 November 2020.



Read more: <https://phys.org/news/2020-11-bacteria-fluorescent-nanosensors.html>

Regulatory Research & Industrial Hygiene Professional News

***State
Guidance***

California Health and Safety Board Approves COVID-19 Rule



California's Occupational Safety and Health Standards Board unanimously approved five emergency temporary standards for workplace coronavirus disease 2019 (COVID-19) exposures: COVID-19 prevention, multiple COVID-19 infections and COVID-19 outbreaks, major COVID-19 outbreaks, COVID-19 prevention in employer-provided housing, and COVID-19

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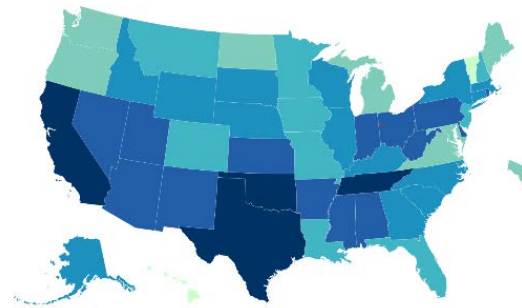
prevention in employer-provided transportation to and from work.

Read more:

<https://ehsdailyadvisor.blr.com/2020/11/california-health-and-safety-board-approves-covid-19-rule/>

COVID-19: US State Policy Report – November 25, 2020

This report captures the shifting state, territorial and local government policies and guidance in response to the COVID-19 pandemic and reopening of the economy in the US by tracking public information from official sources, such as gubernatorial comments, executive actions and guidance.



The following states have new or updated information: Connecticut, Delaware, Louisiana, Maine, Mississippi, New Mexico, and Pennsylvania.

Read more:

<https://www.natlawreview.com/article/covid-19-us-state-policy-report-november-25-2020>

Hereinafter, for ease of reference, the term “state” will refer to all US states, territories and the District of Columbia.

FDA

FDA Releases Additional Resources Related to the Food Traceability Proposed Rule



Recently the U.S. Food and Drug Administration released a proposed rule to establish additional traceability recordkeeping requirements for certain foods.

The rule, referred to as the Food Traceability proposed rule, is a key component of the FDA’s New Era of Smarter Food Safety Blueprint and would implement Section 204(d) of the FDA Food Safety Modernization Act (FSMA). To assist stakeholders in understanding this new proposal, the FDA is making a number of additional resources available.

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Read more:

<https://www.fda.gov/food/cfsan-constituent-updates/fda-releases->

[additional-resources-related-food-traceability-proposed-rule](#)

NIOSH

Laboratory Study Evaluates Toxicity of Products with Silver Nanoparticles

If you have shopped online recently, you may have seen advertisements for sprays containing tiny pieces, or nanoparticles, of silver—the same metal used in jewelry, silverware, and other goods. Although some health experts warn of potential harmful effects of these products, they are readily available for purchase in the United States.

In the workplace, exposure to silver dust and fumes can occur through breathing, ingesting, or contact with skin or eyes. Previous research linked long-term exposure to silver dust and fumes to a bluish-gray discoloration of the skin and eyes, but research is limited about the



safety of consumer sprays containing silver nanoparticles.

Read more:

<https://www.cdc.gov/niosh/enevents/enevent18n7.html#research-in>

OSHA

OSHA Issues Guidance on COVID-19 Related Inspections



COVID-19 continues to present challenges to safety professionals in protecting

workers against exposure to the virus. New OSHA guidance provides employers insight into which OSHA standards have been most frequently cited during COVID-19-related inspections. The agency encourages employers to use this information to take

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additional steps to safeguard their employees.

These inspections were initiated following referrals, complaints and fatalities in settings and industries including nursing

homes and long-term care settings and meat/poultry processing facilities.

Read more: <https://www.assp.org/news-and-articles/2020/11/11/osha-issues-guidance-on-covid-19-related-inspections>

EPA

Final Rule Issued on NPDES Electronic Reporting

On November 2, 2020, a final rule addressing the Clean Water Act National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule (eRule) was published by the EPA in the *Federal Register*.

“EPA published the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule (‘NPDES eRule’) on October 22, 2015,” according to the EPA. “The 2015 rule required EPA and states to modernize Clean Water Act (CWA) reporting for municipalities, industries and other facilities. That rule replaced most paper-based NPDES reporting requirements with electronic reporting.”



Read more: <https://ehsdailyadvisor.blr.com/2020/11/final-rule-issued-on-npdes-electronic-reporting/>

APHC

Training

DEFENSE COLLABORATION SERVICES HAS UPGRADED (HTML5)

ARMY IH WEBINAR DAY HAS A NEW LINK

- [HTTPS://CONFERENCE.APPS.MIL/WEBCONF/ARMYIHWEBINARDAY](https://conference.apps.mil/webconf/armyihwebinarday)
- CHROME OR FIREFOX REQUIRED TO JOIN
- WEB CONF PIN REMAINS THE SAME 170750506
- WEB CONF DIAL IN REMAINS THE SAME 410-874-6300 OR DSN: 312-874-6300
- AUDIO/MIC FUNCTIONALITY WITHIN MEETING (NO CALL IN REQUIRED)
- ADDED FUNCTIONALITY (BETTER SHARE SCREEN, RECORDING, MORE MODERN FEATURES, POLLING, PRESENTER TOOLS, SWIFT CHAT, WEBCAM, ETC.)

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2021 QUARTERLY ARMY IH WEBINAR DAY

[HTTPS://CONFERENCE.APPS.MIL/WEBCONF/ARMYIHWEBINARDAY](https://conference.apps.mil/webconf/armyihwebinarday)

12/2/2020	Monster	Building Downdraft Tables in DOEHS-IH	Steven
12/2/2020	Leader	Measuring Downdraft Ventilation	Belden
12/2/2020	SME	Downdraft Ventilation Q/A	Belden
12/2/2020	SME	DOEHS-IH Report Standardization	Delk
12/2/2020	Leader	Compressed Air use with Heavy Metals	Hueth
3/3/2021	Leader	Vehicle Maintenance Shop Design Reviews	Parks
3/3/2021	Monster	Building Vehicle Exhaust in DOEHS-IH	Steven
3/3/2021	Leader	Measuring Vehicle Exhaust	Parks
3/3/2021	SME	Vehicle Exhaust Q/A	Parks
3/3/2021	SME	Vehicle Exhaust Ototoxins Q/A	Merkley
6/2/2021	Monster	Building Drive-in/Drive-through Paint Booths in DOEHS-IH	Steven
6/2/2021	Leader	Measuring Drive-in/Drive-through Paint Booths	Belden
6/2/2021	SME	Drive-in/Drive-through Paint Booth Q/A	Belden
6/2/2021	SME	Letterkenny Paint booth incident/accident	Wisniewski
9/1/2021	Monster	Building Dilution Ventilation in DOEHS-IH	Steven
9/1/2021	Leader	Measuring Dilution Ventilation	Parks
9/1/2021	SME	Dilution Ventilation Q/A	Parks
9/1/2021	SME	Sampling Qualifiers	Secrest

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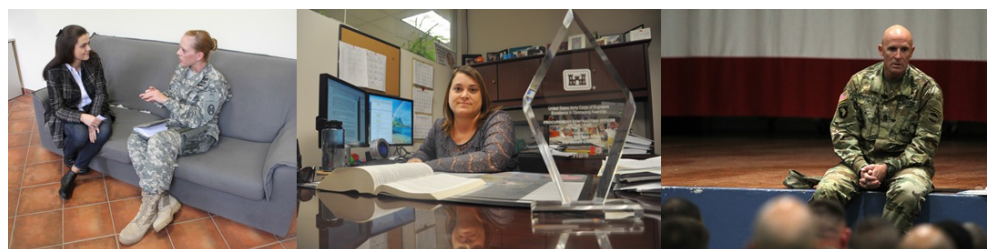
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Office: (410)436-3161

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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.

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