

**Board of Scientific Counselors
NIOSH Headquarters
Washington, D.C.
May 30, 2019**

Budget

On Wednesday, 8 May 2019, the Appropriations Committee of the House of Representatives conducted a “mark-up” of the fiscal year (FY) 2020 appropriations bill for the Departments of Labor, Health and Human Services, and Education.

The House Appropriations Committee provided a total budget for NIOSH of \$346.3 million. This amount is \$10.0 million dollars above our FY 2019 funding level of \$336.3 million and \$156.3 million above the President’s proposed budget request of \$190 million.

Included in the House bill is an additional \$2 million for Education and Research Centers as a group, \$2M for the Agriculture, Forestry and Fishing Program as a whole (which includes the 10 Agriculture Safety and Health Centers); and \$2M for the Total Worker Health Centers as a group. Additionally, there is an increase of \$600K to support the Firefighter Cancer Registry, an increase of \$400K for the National Mesothelioma Registry and Tissue Bank and \$3 million for Other Occupational Safety and Health Research.

You can find the text of the House Appropriations Committee mark-up at https://appropriations.house.gov/sites/democrats.appropriations.house.gov/files/FY2020%20LHHS_Report.pdf.

Senate has yet to do a mark-up of the Labor, Health and Human Services, and Education appropriations bill.

Organizational and Personnel Announcements

NIOSH Reshaping Initiative

NIOSH established the first phase of the NIOSH Reshaping Initiative led by Dr. Margaret Kitt. The first phase will be stood up on May 28, 2019 and includes:

- Establishing The Division of Science Integration (DSI) and the Division of Field Studies and Engineering (DFSE)
- The Cincinnati Chemical and Biological Monitoring Branch in the Health Effects Laboratory Division (HELD)
- The Office of the Deputy Director for Management (ODDM)

Staff

- **Dori B. Reissman, M.D.**, Associate Administrator for the World Trade Center (WTC) Health Program (<https://www.cdc.gov/wtc/>), has been promoted to Rear Admiral and Assistant Surgeon General in the Commissioned Corps of the U.S. Public Health Service.
- **Grady Calhoun** has been selected as the new DCAS Director.
- **Nicholas (Nick) Gipson** has been selected as the Associate Director for Facilities Management at NIOSH.

Retirements

- **Rear Admiral Margaret Kitt** retired from the Commissioned Corps on 1 December 2018 after 30 years and 5 months on Active Duty (14 years in the Air Force and 16 years in the Public Health Service). Dr Kitt has rejoined NIOSH and continues to serve as Deputy Director for Program.
- Denzil Slaughter, NIOSH's former Associate Director for Facilities Management since 2013, retired on March 29, 2019.

New Programs and Initiatives

Future of Work

NIOSH has launched a Future of Work Initiative to address issues affecting the future of workplace safety and health such as new work arrangements, differences in organizational design, technological advances, and changes in demographics. These transformations offer many opportunities, such as new job creation, sustainable practices, and clean technologies, but they also bring challenges that impact the workforce, such as skill and job loss, job displacement, emerging occupational hazards and risks, and worker exclusion. A NIOSH work group, headed by Dr. Sara Tamers and hosted by the Division of Science Integration's Risk Evaluation Branch, will address the future of work innovations, opportunities, and challenges through intramural and extramural collaborative activities aimed at improving the quality of working lives. More on this during Dr. Felknor's presentation.

Artificial Intelligence

NIOSH has launched an AI Interest Group which brings together those scientists across the Institute that are using AI methods to see new relationships in occupational safety and health data. A new webpage is being developed to showcase that work.

Faces of Work-related COPD

Faces of Work-related COPD is an impact video series that is part of a NORA Respiratory Health Cross-Sector Council initiative. The series of four short videos includes a physician explaining the disease and interviews with patients diagnosed with work-related COPD. The patients discuss work exposures, their quality of life living with the disease, and ways to minimize the risks of getting the disease.

<https://www.cdc.gov/nora/councils/resp/FacesCOPD.html>

Office of the Director (OD)

International Conferences

NIOSH, the World Health Organization, and the Vietnam National Institute of Occupational and Environmental Health co-sponsored the 5th International Scientific Conference on Occupational and Environmental Health held September 10-12, 2018 in Hanoi, Vietnam. The theme of the conference was “Occupational Health and Environment: Challenges and Opportunities in Sustainable Development.” Four NIOSH staff participated in the conference which hosted about 300 participants from 16 countries.

The XXII World Congress on Safety and Health at Work will be held October 4-7, 2020 in Toronto. Our Canadian colleagues have put together an exciting program with the theme of *Prevention in the Connected Age*. The first Program Announcement has been published and the call for abstracts will be out in September 2019. The preliminary program can be found at <https://www.safety2020canada.com/>.

Division of Applied Research and Technology (DART)

American Chemical Society Local Section Honor

Dr. Pramod Kulkarni has been selected the 2019 Chemist of the Year by the Cincinnati Local Section of the American Chemical Society (ACS). He was honored at an ACS meeting on March 28 at Miami University's Shriver Center, Oxford, OH. The award recognizes Dr. Kulkarni's work to develop portable aerosol instrumentation and other efforts to improve health and safety in the workplace. At the meeting, Dr. Kulkarni gave a presentation titled “Taking the laboratory to the field: Developing the next generation of real-time instrumentation for mobile aerosol measurement in workplace atmospheres.”

International Conference on Occupational Stress and Health

NIOSH, the American Psychological Association, and the Society for Occupational Health Psychology are currently organizing the 13th International Conference on Occupational Stress and Health, "Work, Stress and Health 2019: What Does the Future Hold?" The conference will be held on November 6-9, 2019 in Philadelphia, PA. The 2019 conference will give special attention to the workplace of the future. Just what does the future hold for employers and for workers? As the world copes with growing economic, political, environmental and social changes, what can organizations do to sustain the health and productivity of their workers? More information can be found at: <https://www.apa.org/wsh>.

NIOSH will be sponsoring a discussion forum, “Working Hours, Sleep & Fatigue: Meeting the Needs of American Workers & Employers”, on September 13-14, 2019 in Coeur D’Alene, Idaho. Taking place after the 24th International Shift Work and Working Time Symposium, the forum will present and encourage discussion of research gaps/needs and effective countermeasures related to working hours, sleep, and fatigue among U.S. workers and employers. Everyone interested in worker safety including researchers, academicians, safety professionals, labor union representatives, industry leaders, policy makers, government representatives are invited to attend, listen and share their views on this important topic. More information can be found at: <https://www.cdc.gov/niosh/topics/workschedules/fatigue2019.html>.

Division of Safety Research (DSR)

Center for Occupational Robotics Research (CORR)

NIOSH has joined Advanced Robotics for Manufacturing (ARM), the nation's leading collaborative in robotics and workforce innovation; NIOSH joins more than 170 member organizations representing industry, academia, non-profits, and government.

High-Profile Report on Suicide Rates

NIOSH and the National Center for Injury Prevention and Control co-authored a report in the November 2018 *Morbidity and Mortality Weekly Report (MMWR)* on suicide rates by major occupational group. Data from the National Violent Death Reporting System for 2012 and 2015 indicated that suicide rates by occupational group differed by gender, with the highest rates in both data years for males in 'Construction and Extraction' and the highest rates for females in 'Arts, Design, Entertainment, Sports and Media.' The report has been viewed almost 35,000 times, was mentioned in 53 news stories from 45 news outlets and in 189 tweets from 165 users; the Altmetric score is 524 which is in the top 5% of all research outputs.

Drug Overdose Deaths at Work

NIOSH authored a brief report in *Injury Prevention*, published online in April 2019, showing that drug overdose fatalities in the workplace rose significantly between 2011 and 2016. Although the overall rate was low, these data from the Census of Fatal Occupational Injuries showed a 24% annual increase, with the highest rates in the transportation and mining industries. One-third of workplace overdose fatalities occurred in workplaces with fewer than 10 employees. Heroin was the single drug most frequently documented.

Slip-Resistant Footwear

NIOSH authored an evaluation of an intervention to determine the [effectiveness of a program to provide slip-resistant footwear](#) (at no cost to workers) in preventing workers' compensation injury claims from slipping on wet or greasy floors. Participating were food service workers in 226 school districts. The study showed the probability of a slipping injury was reduced significantly in the group that received the intervention; no change was observed in the control group.

Aerial Lift Simulator

The [NIOSH Aerial Lift Hazard Recognition Simulator](#) is a free downloadable tool that provides the opportunity for workers who operate aerial lifts (various types of mobile platforms utilized to elevate workers to different heights in industries such as construction) to practice navigating these lifts in a simulated workplace environment. The simulator can be used by experienced operators to refresh their skills and by new operators to become familiar with typical hazards they may encounter on the job. In March 2019, the existing 'scissor lift' scenario was expanded to include a different type of aerial lift called a 'boom lift.'

Health Hazard Evaluation Program

The 2018 Health Hazard Evaluation (HHE) Annual Report is available at <https://www.cdc.gov/niosh/hhe/annualreports.html>. The HHE Annual Report includes summaries of interesting projects and other highlights of the HHE Program year. The Annual Report provides examples of how the HHE Program makes a difference for workers' health and safety.

An HHE was performed to evaluate possible exposure to secondhand cannabis smoke among police officers conducting enforcement activities during a campus event (<https://www.cdc.gov/niosh/hhe/reports/pdfs/2017-0174-3335.pdf>). Among the activities performed for the evaluation were collection of personal and area air samples for tetrahydrocannabinol (THC), the active substance in cannabis, and collection of pre- and post-concert urine and blood samples. There are no occupational exposure limits for THC, but urine testing is commonly used as a measure of exposure to cannabis. THC was found in personal and area air samples. Although THC-COOH (a metabolite and chemical marker of THC exposure) concentrations were observed in urine samples, they were below concentrations considered positive in a routine urine drug screening test.

The Behavioral Risk Factor Surveillance System (BRFSS) is the nation's system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. Thirty states added the occupation and industry module to the BRFSS – the largest number of states to participate in the NIOSH sponsored module. Approximately 100,000 employed adult respondents, provided data on their current occupation and industry. In 2018, publications and reports authored by NIOSH and state partners explored a wide spectrum of health related topic by industry an occupation, including health insurance coverage in adults; marijuana use; long work hours, leisure time, physical activity and obesity; adverse health outcomes and Tdap vaccination among healthcare workers.

Health Insurance Coverage

NIOSH authored papers using data from the Behavioral Risk Factor Surveillance System and the National Health Interview Survey (NHIS) to examine health insurance coverage among U.S workers. One article was published in *MMWR* (DOI: <http://dx.doi.org/10.15585/mmwr.mm6721a1External>) while the other was published in the *American Journal of Preventive Medicine* (<https://doi.org/10.1016/j.amepre.2018.12.010>). Both papers found a decline in the prevalence of being uninsured before and after 2014. The study using the BRFSS data found the decline varied by occupational group. The study using NHIS data found health insurance coverage varied by work arrangement, with workers in nonstandard work arrangements having the highest percentage without coverage.

A recent publication in the *American Journal of Health Promotion* analyzed national data from the 2015 National Health Interview Survey NHIS-OHS on the availability and participation in workplace health promotion programs (WHPPs). It was observed that 46.6% of employees had WHPP programs available to them; and of those that had them available, 57.8% participated in at least one program. Results showed that adults who worked ≤ 20 h/week, worked regular night shifts, were paid by the hour, or worked for temporary agencies were less likely to participate in WHPPs.

Workers' Compensation and Opioids

NIOSH will host a meeting, “Advancing Workers' Compensation Opioids Research” on Wednesday, July 10 in Cincinnati, OH. The purpose of this meeting is to bring together workers' compensation (WC) and public health organizations to discuss specific ways to use WC data (and other data sources such as prescription drug monitoring programs, PDMP) to address research gaps related to the prevention and reduction of opioid use/misuse and workplace exposures.

Education and Information Division (EID)

Draft Occupational Exposure Banding

The *NIOSH Occupational Exposure Banding Process for Chemical Risk Management* and associated electronic tool (e-Tool) are being finalized for publication. This document and e-Tool provide employers and the safety and health community with a documented and validated scientific process to assess the hazards of chemicals that have no established exposure limits. Employers can use the banding process to compare chemicals with similar uses to identify which chemicals are the least toxic. These tools target occupational safety and health professionals who serve small and medium-sized establishments.

Draft Risk Assessment

The draft document, *NIOSH Current Intelligence Bulletin: NIOSH Practices in Occupational Risk Assessment* was revised following input from public, stakeholder, and peer reviews. When published, the document will make accessible the methods used by NIOSH researchers conducting high quality, scientifically sound assessments of the health risks associated with workplace hazards.

NIOSH risk assessors are assisting EPA risk assessors in meeting the provisions of the Lautenberg Chemical Safety for the 21st Century Act, which updates the Toxic Substances Control Act (TSCA), through review of the scoping documents, risk assessment plans and chemical risk assessments developed for the EPA priority chemicals. In addition, NIOSH is consulting directly with EPA risk assessors to provide assistance in understanding and dealing with the unique issues that arise in occupational risk assessment.

Draft Silver Nanomaterials Document

A public meeting was held on October 30, 2018, to discuss and obtain public comments on the draft *NIOSH Current Intelligence Bulletin: Health Effects of Occupational Exposure to Silver Nanomaterials*. NIOSH is revising the document in response to public, stakeholder, and peer review comments.

Safe-Skilled-Ready Workforce Program

The NIOSH Safe-Skilled-Ready Workforce (SSRW) Program is assisting with the design, coordination, and dissemination of a 5-week, social media campaign in April/May, 2019, #MySafeSummerJob. The campaign is coordinated by the Occupational Safety and Health Administration (OSHA) Young Worker Alliance, which also includes CareerSafe, American Society of Safety Professionals, Center for Construction Research and Training, American Industrial Hygiene Association, Board of Certified Safety Professionals, and the National Safety Council. The goal is to reach partners, teachers and young workers directly, in advance of the summer jobs season, with OSH messages and content through

various social media channels. The campaign content is mainly drawn from the NIOSH *Talking Safety* curriculum.

SSRW researchers recently published (with one in press) new peer-reviewed articles in *Prevention Science* and the *Journal of School Health*. The papers present results from the small FY15 Small NORA Project conducted in the Miami-Dade Public School System and the FY17 Small NORA Project conducted in the Oklahoma City Public Schools related to the implementation of the NIOSH *Talking Safety* curriculum.

Nanotechnology and Emerging Technologies

The Nano and Emerging Technologies program funded 10 FY2019 Pilot Studies. The funding demonstrates the diversity of emerging technologies and proposed to: evaluate drones in construction; evaluate contact avoidance in robots; expand respirator performance and evaluation studies; evaluate exposures and potential respiratory effects from additive manufacturing of pharmaceuticals; demonstrate new techniques to measure nanomaterials; and conduct preliminary toxicological testing of emerging nanomaterials.

Nanotechnology Research Center scientists attended and spoke at several meetings including the 2nd Quantifying Exposure to Engineered Nanomaterials from Manufactured Products (QEEN II) Workshop; 2018 U.S.-EU: Bridging NanoEHS Research Efforts joint workshop; International Labor Organization (ILO), Global Dialogue Forum on Challenges for Decent and Productive Work arising from Digitalization in the Chemical and Pharmaceutical Industries; Society for Risk Analysis (SRA); the National Science Foundation (NSF) Nanoscale Science and Engineering Grantees Conference; 2019 Indiana Health and Safety Conference; the Materials Research Laboratory at the University of Illinois; and Fostering EU/US Cooperation in nanosafety, Bilat USA. A series of webinars on Additive Manufacturing and Potential Occupational Hazards were presented to the DoE and to America Makes.

Emergency Preparedness and Response Office (EPRO)

Disaster Related Exposure Assessment and Monitoring (DREAM) Course

NIOSH, along with the Agency for Toxic Substances and Disease Registry (ATSDR), is working to implement the Disaster Related Exposure Assessment and Monitoring (DREAM) Course at the FEMA Center for Domestic Preparedness in Aniston, Alabama. The course will provide training for public health professionals at the local, state, and federal level on NIOSH's Emergency Responder Health Monitoring and Surveillance™ (ERHMS™) framework and ERHMS Info Manager™ and ATSDR's Assessment of Chemical Exposure and Epi Case Assessment Symptom and Exposure tools. We expect FEMA to offer the first 4-day pilot course in fall 2019.

Transmission Mitigation

NIOSH is leading the Transmission Mitigation Workgroup as part of the CDC Anthrax Coordination Unit (ACU). The ACU is a dedicated group formed in the fall of 2018 to coordinate anthrax preparedness activities across the agency. The Transmission Mitigation Workgroup is working to improve coordination with EPA and other federal and state agencies that work with environmental samples across all phases of an anthrax response. In April, NIOSH hosted a meeting with CDC and EPA to identify critical activities where the agencies can focus on increasing preparedness over the next year.

Health Effects Laboratory Division (HELD)

Peracetic Acid

Peracetic acid (PAA) is a disinfectant used in hospitals, the food industry and pharmaceutical manufacturing. It is formed when acetic acid and hydrogen peroxide are mixed and exists in equilibrium with these compounds in the mixture. HELD has designed and built an exposure/plethysmograph system that allows for assessment of sensory irritation (respiratory rate) in unrestrained mice during both exposure and recovery. Studies will be conducted to add additional lower dose points to get a more accurate point of departure to better estimate threshold. The unrestrained animal system will allow for longer exposure times and longer times to monitor recovery back to base line.

National Personal Protective Technology Laboratory (NPPTL)

Reusable Elastomeric Respirators in Health Care

At the request of NPPTL and CDC's National Center for Immunization and Respiratory Diseases, the National Academies of Sciences, Engineering, and Medicine conducted a study on the use of half-facepiece reusable elastomeric respirators in health care. The study report (Reusable Elastomeric Respirators in Health Care: Considerations for Routine and Surge Use) was published on December 6, 2018 (National Academies of Sciences, Engineering, and Medicine. 2019. Reusable elastomeric respirators in health care: Considerations for routine and surge use. Washington, DC: The National Academies Press. doi: <https://doi.org/10.17226/25275>.) The report focused on economic, policy, and implementation challenges and opportunities. The report provided the following three recommendations: (1) Expand Research to Improve Respiratory Protection, (2) Ensure Robust Respiratory Protection Programs and Training, and (3) Harmonize Standards and Clarify Guidelines and Responsibilities. NPPTL is in the process of developing a strategy to implement these recommendations.

Mine Escape Respirators

Coal mine operators in the United States are required to make self-contained self-rescuer (SCSR) units available to each underground coal miner. No functional assessment of damage can be made prior to actual use since the units are sealed. NIOSH, in cooperation with the Mine Safety and Health Administration (MSHA), conducts an ongoing, long-term field evaluation (LTFE) of SCSR units deployed in underground coal mines to assess their reliability and performance with regard to both physical damage and the effects of aging. The current LTFE sampling strategy involves testing randomly selected SCSRs from all 11 MSHA mining districts to identify a statistically valid sample to improve the significance of test results. The report for sample period of February 2013 to December 2014 was published in March 2019 ("Personal Protective Equipment Conformity Assessment Studies and Evaluations Point-of-Use Assessment for Self-Contained Self-Rescuers Randomly Sampled from Mining Districts: Third Phase", <https://www.cdc.gov/niosh/npptl/ppecase/pdfs/PPE-CASE-P2019-0101-508.pdf>).

NIOSH is revising its LTFE strategy to target specific mines and smaller samples to expedite disseminating meaningful results to stakeholders. The strategy will focus on mines that have deployed models approved based on oxygen capacity. This will allow NIOSH to compare post-market these devices sampled at the point of use to NIOSH's pre-market approval requirements and the performance

characteristics of post-market capacity- and duration-approved SCSRs sampled at the point of use to explore the impact of deployment location and deployment time on protection.

CBRN Air-Purifying Canisters

NIOSH, Department of Defense (DoD), and the Department of Homeland Security (DHS) recently conducted a CBRN hazard assessment of new/emerging chemical and radiological threats. This was done to ensure NIOSH's Chemical Families and 11 Test Representative Agents (TRAs) selected during the initial 2001 CBRN hazard assessment are still representative of today's CBRN threats. DHS and DoD identified 236 priority chemical threats (190 chemicals, 46 radiologicals, and 14 classified chemicals). A selection process was developed to systematically compare these new/emerging threats to NIOSH's current TRAs used for approval of CBRN canisters. The process included (1) collecting chemical and physical properties for all identified agents, including anticipated filtration behavior in the canister carbon bed, (2) categorizing each agent into NIOSH's current Chemical Families, and (3) identifying agents where empirical testing data is needed to inform its appropriate NIOSH Chemical Family and the need for the agent to replace a current TRA. In summary, no change to NIOSH TRAs, Chemical Families, or to NIOSH's CBRN APR standard is necessary at this time. Of the chemicals/radiologicals evaluated, six were identified as requiring further study. These six chemicals are being tested but are not anticipated to replace a current TRA.

The 19th ISRP International Conference

Recognizing the benefits of a collaborative partnership to improve respiratory health and safety in the workplace, the National Institute for Occupational Safety and Health (NIOSH) and the International Society for Respiratory Protection (ISRP) completed a Memorandum of Understanding in 2017. NPPTL supported the planning and execution of the biennial 19th ISRP International Conference in Denver, CO, September 16-20, 2018. NIOSH Director, Dr. John Howard, delivered the opening Key Note Address, Perspectives on American Innovation. NPPTL and the NIOSH Personal Protective Technology Core and Specialty Program leveraged the conference to foster platform presentations and discussions on timely issues including: Respiratory Innovations for Healthcare and Emergency Response and Respiratory Protection Use by Wildland Firefighters and Impacted Community Members. In celebration of one hundred years of respiratory protection in the United States, a session explored the Historical Perspectives and Future Possibilities for Respiratory Protection. Other technical sessions focused on innovations in assessing respirator fit, discussions about translating occupational respiratory protection knowledge to public use recommendations, respiratory protection by the Public Safety Sector and international respiratory standards development. NPPTL's Dr. Ziqing Zhuang received the ISRP 2018 Edwin C. Hyatt Award for outstanding scientific contributions in the field of respiratory protection and Dr. Bingbing Wu received the ISRP Americas Section 2018 Arthur Johnson Young Researcher Award. NPPTL ISRP leaders and members are planning to host the next annual technical meeting of the ISRP Americas Section at the NIOSH Pittsburgh Facility on October 30, 2019. The meeting will focus on factors that impact effective use of respirators - e.g. program elements, workplace culture, intuitive design, sensor and other new technologies.

2018 NPPTL/Respirator Manufacturers' Meeting

On October 17, 2018, NPPTL hosted an annual Respirator Manufacturers Meeting at the NIOSH Pittsburgh facility. Topics included Respirator Approval Program Updates and Metrics, an update from the Edgewood Chemical and Biological Center about live agent testing to achieve chemical, biological, radiological and nuclear (CBRN) protections, the combined Food and Drug Administration and NIOSH process for NIOSH approval of N95 filtering facepiece respirators for use in healthcare settings, and

regulatory and voluntary consensus standard updates. Based on an Action Plan developed in 2017-2018, manufacturers were also introduced to new approaches for labeling and quality system requirements, and an updated communication strategy, including notices about facial hair and respirator use and implementation of the anthropometric test panel developed by NIOSH/NPPTL researchers. The next meeting is scheduled for October 29, 2019, at the NIOSH Pittsburgh Facility.

Viral Penetration through Protective Clothing

NPPTL researchers' groundbreaking research shows that liquid (visual) and viral penetration occur at nearly the same time in protective clothing. This paper presented a quantitative approach to evaluate a fabrics' resistance to liquid and viral penetration. To our knowledge, it is the first paper to compare the time of liquid penetration to viral penetration. Testing determined that the difference between liquid and viral penetration was 0.29 minutes for this fabric. Further evidence of the 'viral compatibility' between the liquid and viral test for this fabric may allow the manufacturer to substitute an inexpensive quick screening technique for a costly viral test. Citation: Li M, Furlong JL, Yorio PL, Portnoff L (2019) A new approach to measure the resistance of fabric to liquid and viral penetration. PLoS ONE 14(2):e0211827. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0211827>

100 Years of Respiratory Protection

September 3-6, 2019, NIOSH will celebrate 100 Years of Respiratory Protection approvals in the U.S. with a web-based observance. This is an event to recognize this milestone and utilize it as an opportunity to disseminate a century's worth of experience in preventing disease, injury, and death for the millions of working men and women relying this equipment. NPPTL will work with partner organizations to provide educational materials and resources for stakeholders to emphasize proper respiratory protection practices. Educational materials will be disseminated using social media, the website, webinars, and avenues available through partner participation. The event will occur during Respiratory Protection week, an observance that has expanded out of the established N95 Day event.

Respiratory Health Division (RHD)

Indoor Environmental Quality

NIOSH released The Dampness and Mold Assessment Tool for both general buildings and schools to help employers identify and assess areas of dampness and mold in buildings. These Tools provide an inexpensive mechanism to investigate, record, and compare conditions over time. The tool has been disseminated by the National Safety Council, Association of Occupational and Environmental Clinics, American Industrial Hygiene Association, and the Navy and Marine Corps Public Health Center.

<https://www.cdc.gov/niosh/docs/2019-115/pdfs/2019-115.pdf>

<https://www.cdc.gov/niosh/docs/2019-114/pdfs/2019-114-508.pdf?id=10.26616/NIOSH PUB2019114>

Additive Manufacturing Research

Since 2014, RHD has been actively engaged in Additive Manufacturing (3-D printing) research. Researchers in the Division have been evaluating emissions from various types of 3-D printers in a test chamber and in several workplaces, and collaborating with toxicologists to understand implications of exposure. Laboratory emissions testing studies have identified several factors related to printer design and the feedstock material that influence emission of ultrafine particles and organic vapors. Researchers have visited three workplaces in South Africa and six workplaces in the USA. The workplaces span

small businesses using desktop-scale 3-D printers that extrude plastic to multi-national companies that use plastics, metals, and liquid resins to build objects. One company that was visited eight times is engaged in Big Area Additive Manufacturing and owns two of the largest plastic 3-D printers in the world. NIOSH is working with this company to understand ultrafine particle and organic vapor emissions and develop engineering controls (in collaboration with colleagues from NIOSH DART). In collaboration with university and NIOSH colleagues, researchers have generated exposures from 3-D printers using plastics for toxicology studies and demonstrated that brief exposures lead to acute hypertension in rats and cytotoxicity, generation of reactive oxygen species, and apoptosis in lung cells in vitro. Results of these studies have been disseminated in the form of 8 peer-reviewed publications and one NIOSH Health Hazard Evaluation report.

Ultraviolet (UV) Cured-in-Place Pipe (CIPP) Installation

Researchers in the Respiratory Health Division recently completed a health hazard evaluation and described workplace exposures to styrene during ultraviolet (UV) cured-in-place pipe (CIPP) installation. The CIPP process involves inserting a resin-impregnated liner into a length of existing pipe in need of repair and using UV to cure the resin. CIPP is advantageous because excavation of existing pipes in need of repair is not required. The investigation found that UV-cured CIPP liners emit styrene, an IARC-classified probable carcinogen and known respiratory irritant, and identified tasks that could result in increased occupational exposures to styrene. The researchers made recommendations to protect respiratory health by reducing occupational exposures to styrene.

Electronic Health Records

Work has a profound influence on health, both as a fundamental social determinant of health, and as a set of specific challenges and opportunities for prevention and management of illness and injury. This pertains to illnesses and injuries not considered to be caused by work as well as occupational conditions. At the present time, information about work is recorded, if at all, in electronic health records in unstructured ways that preclude effective use of the information at the time of care, in evaluating populations, or for public health purposes.

Health Level Seven International® (HL7) is an ANSI-approved standards development organization (SDO) that generates consensus interoperability standards for formatting and sharing health and healthcare data. HL7 also produces Implementation Guides (IG) and Profiles that are specific to a particular task a health information system is to perform (e.g., sharing a patient record). All IG's and Profiles are built from an interoperability standard.

NIOSH has developed an information model, Occupational Data for Health (ODH) that provides the data elements and associated value sets needed to provide structured (coded) data for collection, management, and use of work information in electronic health record systems. The model includes Employment Status, Present (or Past) Job, Usual Work, Retirement Date, and work in Military Combat Zones.

HL7 published the *Work and Health Functional Profile* of the EHR-System Functional Model in April 2019. A Functional Profile is a set of specific directions for software developers to use, in this case, for the collection, management, and use of Occupational Data for Health (ODH) in electronic health record systems. Vendors use HL7 products to develop software for EHR and health information systems. A summary of the Work and Health Functional Profile is available at

http://www.hl7.org/implement/standards/product_brief.cfm?product_id=49 . The full document will be available for public download on July 10, 2019.

Lung Function Monitoring

The Defense Health Agency (DHA) approved the use of the NIOSH Spirometry Longitudinal Data Analysis (SPIROLA) software on the Navy Network and highly recommended its use for all Navy occupational health clinics. SPIROLA is an integrated visual and quantitative tool intended aid in monitoring and interpreting computerized longitudinal lung function in individuals and groups. It is available to download for free from the NIOSH web site. A web-based platform is currently under development and expected to be posted to the NIOSH web site fall 2019.

<https://www.cdc.gov/niosh/topics/spirometry/spirola-software.html> .

Mesothelioma

As part of response to a Congressional directive to assess the feasibility of a national mesothelioma registry, on March 26, 2019 the Respiratory Health Division partnered to assist the Mesothelioma Applied Research Foundation in holding a symposium on potential approaches to establishing a registry and develop tools for rapid identification of patients and linking them to clinical resources. The symposium was held in Bethesda, MD. NIOSH presented “Malignant Mesothelioma Mortality in the United States—1999-2017.” A Request for Information (RFI) was posted in the federal register on April 8, 2019 and a docket is open for receiving comments until July 8, 2019. Federal Register Notice: <https://www.cdc.gov/niosh/docket/review/docket327/pdfs/2019-06784-4-8-19.pdf> or see <https://www.regulations.gov/document?D=CDC-2019-0029-0001>.

Silicosis

On May 14, 2019, the NORA Respiratory Health Cross-Sector Council will host a free webinar for employers on controlling worker exposure to silica dust during engineered stone countertop manufacturing, finishing, and installation. Speakers from NIOSH, OSHA, the California Department of Public Health’s Occupational Health Branch, CalOSHA, and the Natural Stone Institute will describe the dangers of silica exposure, employer requirements to comply with OSHA’s Respirable Crystalline Silica Rule, and methods employers can use to protect workers. This webinar was prompted by the identification of one case of silicosis in Washington State, one fatality in California with two additional cases under investigation, and a recent cluster of 12 silicosis cases in Texas (currently under investigation). The first case of silicosis associated with engineered stone in the U.S. was identified in Texas in 2014 and reported in 2015 <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6405a5.htm>. To date, 17 silicosis cases associated with engineered stone manufacturing, finishing, or installation have been confirmed or are under investigation in the U.S.

In January 2019, “[Silicosis prevalence and incidence among Medicare beneficiaries](#)” was published in the *American Journal of Industrial Medicine* doi: 10.1002/ajim.22944. Epub 2019 Jan 18. This work analyzed health insurance claims from nearly 50 million Medicare beneficiaries aged 65+. The authors found that the highest prevalence of silicosis was found among North American Natives (87.2-213.6 per 100 000) and those in New Mexico (83.9-203.4 per 100 000). This analysis concluded that morbidity data from health insurance claims can provide a more complete picture of silicosis burden. Additional analysis using Medicare claims is currently underway.

Opioids Coordination Efforts

By using Total Worker Health® principles, NIOSH is developing solutions to help workers and employers face the opioid epidemic in their communities. Resources are available on a new webpage, <https://www.cdc.gov/niosh/topics/opioids/default.html>, or just google “NIOSH opioids” to find the homepage.

Examples of resources include:

- Using Naloxone to Reverse Overdose (Fact Sheet for Workplaces)
- Medication Assisted Treatment (or Med-Based Tx) Workplace Solutions Document. <https://www.cdc.gov/niosh/docs/wp-solutions/2019-133/default.html>
- Research, data, and surveillance
- Field Studies
- Recommendations for First Responders

Workforce Development

NIOSH is exploring development of a peer-reviewed Journal of TWH and formation of a new professional society for TWH professionals. Currently degree, certificate programs and continuing education are being offered or developed at 10 academic partners.

Total Worker Health Book

- Brings together the state-of-the-science knowledge on integrative prevention strategies that safeguard and ensure the health and well-being of workers.
- Includes contributions from over 60 researchers and practitioners at the forefront of the Total Worker Health® field
- Summarizes the seminal theory and research that underpins the case for integrative workplace prevention strategies addressing the interplay of occupational risk factors and risks beyond the workplace
- Discusses applications of organizational approaches for integrated interventions and evidence of their effectiveness in various occupational and industry contexts
- Describes the design of Total Worker Health® programs targeting specific health and safety risks of central concern in occupational and public health today, such as chronic diseases, aging, fatigue and sleep, and work-life conflict

TWH Affiliates Program

- Totals 44 with 8 new Affiliates since last summer. Six organizations have been Affiliates since the program’s inception in 2014, plus one which became a Center of Excellence (Colorado). We are planning a 3rd meeting of the Affiliates this summer.
- We are exploring the development of international TWH Affiliates given increasing global demand.

Oil and Gas

Industrial Hygienists from WSD completed an assessment of potential hydrocarbon gas and vapor exposures to inspectors from the Department of the Interior's Bureau of Safety and Environmental Enforcement (BSEE). BSEE personnel inspect off-shore oil and gas platforms as part of their duties in the Gulf of Mexico. Results from the personal air sampling did not reveal personal breathing zone exposures to individual chemicals that exceeded occupational exposure levels. However, high concentrations of gases such as methane emitted during certain valve tests into the area did result in multi-gas meter readings up to 100% of the lower explosive limit, presenting a hazard. Results of the assessment will be used by the Department of the Interior and BSEE for improvements in how they approach health and safety practices for their inspectors.

Center for Maritime Safety and Health Studies

Seafood processors, a vulnerable worker population, are at high risk for injuries and illnesses. NIOSH recently published two epidemiologic studies identifying hazards and elevated injury/illness risks in Alaska's seafood processing industry. These studies involved analyzing injuries reported to the US Coast Guard among offshore seafood processors, and analyzing workers' compensation claims data for the onshore industry. A qualitative study, which involved interviewing managers about their safety and health programs in Alaska, is currently under review for publication. Following presentations on our research at the 5th International Fishing Industry Safety and Health conference (IFISH5), NIOSH researchers contributed to a position paper on bioaerosol exposures among seafood processors. This international collaboration aims to help industry members and other stakeholders translate research to practice.

To engage with stakeholders and share our research findings in the United States, NIOSH researchers have presented at other conferences and workshops. Currently, NIOSH is developing relationships with stakeholders in the Gulf of Mexico and East Coast. NIOSH also plans to expand research to investigate (a) ergonomic risk factors and solutions, (b) fatigue risk management for long shifts (e.g., 12 to 18+ hours per day), and (c) health equity issues affecting the many immigrant workers in this industry, who arrive to the US from across the globe and have non-English primary languages.

Social Presence Statistics

NIOSH continues to expand its presence on social networks.

| Social Media and Public Outreach | April 2018 | April 2019 |
|---|---|---|
| Facebook likes | 134,113 | 138,438 |
| Twitter followers | @NIOSH account: 324,539* | @NIOSH account: 30,6054 |
| Instagram | 1,518 followers, 1148 posts | 2,720 followers, 1,432 posts |
| YouTube | 212 videos, 57,7749 views | 249 videos, 78,8601 views |
| LinkedIn Members | 696 | 777 |
| Website Views | 1,400,657 | 1,364,954 |
| eNews Subscribers | 70,633 | 75,155 |
| TWH Newsletter Subscribers | 77,357 | 83,152 |
| Research Rounds Newsletter Subscribers | 68,093 | 72,051 |
| Science Blog: Cumulative Total since inception | Total blog entries: 477 Total comments: 7,624 Blog site views: 36,180 | Total blog entries: 532 Total comments: 8,286 Blog site views: 33,807 |

*Twitter deleted all inactive accounts in July 2018

NIOSH Publications

October 2018

[Officer Road Code Toolkit](#)

[Understanding Small Enterprises: Proceedings from the 2017 Conference](#)

[Spirometry Training Program](#)

[Become a NIOSH-Certified B Reader](#)

[Enhanced Coal Workers' Health Surveillance Program](#)

[Using Naloxone to Reverse Opioid Overdose in the Workplace: Information for Employers and Workers](#)

November 2018

[PPOP: Immune, Infectious and Dermal Disease Prevention Program](#)

[PPOP: Oil and Gas Extraction Program](#)

[Using Total Worker Health® Concepts to Reduce Fatigue among Retail Workers](#)

December 2018

[PPOP: Agriculture, Forestry, and Fishing Program](#)

[Dampness and Mold Assessment Tool – General Buildings](#)

[Dampness and Mold Assessment Tool – School Buildings](#)

January 2019

[Continuing to Protect the Nanotechnology Workforce: NIOSH Nanotechnology Research Plan for 2018 - 2025](#)

[NIOSH Skin Notation Profiles: Sodium Fluoroacetate](#)

[NIOSH Skin Notation Profiles: Pentachlorophenol \(PCP\)](#)

[NIOSH Skin Notation Profiles: Chlorinated Camphere](#)

[NIOSH Skin Notation Profiles: Catechol](#)

[NIOSH Skin Notation Profiles: Atrazine](#)

March 2019

[Illicit Drugs, Including Fentanyl: Preventing Occupational Exposure to Emergency Responders](#)

April 2019

[Responding to a Suspected Opioid Overdose](#)

[Prevent Construction Falls from Roofs, Ladders, and Scaffolds](#)

[NIOSH Coal Workers' Health Surveillance Program](#)

[Bibliography of Communication and Research Products 2018](#)