NIOSH Science and Service Awards 2023
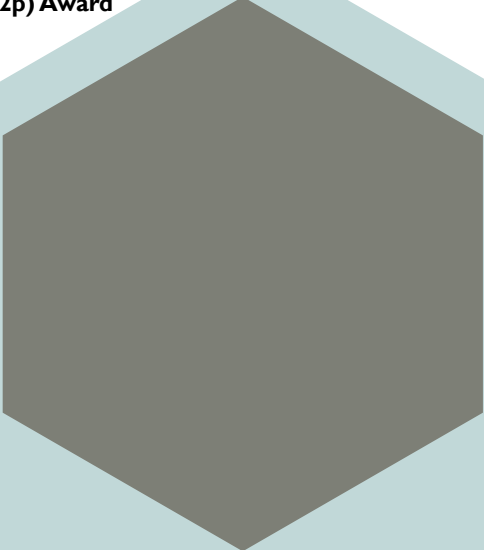
Alice Hamilton Award for Occupational Safety and Health

Service Excellence Award

Bullard-Sherwood Research to Practice (r2p) Award

PLAIN LANGUAGE AWARD

DIA
The Director's Intramural Award

James P. Keogh Award

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April 2023

NIOSH Science and Service Awards 2023

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James P. Keogh Award for Outstanding Service in Occupational Safety and Health

James P. Keogh Award for Outstanding Service in Occupational Safety and Health

This award recognizes a current or former NIOSH employee for exceptional service in the field of occupational safety and health.

James P. Keogh, MD, worked throughout his life for peace and social change. He sought to safeguard workers through education about hazards, and he advocated workplace protections.

Dr. Keogh's earliest work in academic medicine identified dimethylaminopropionitrile as the causal agent in an outbreak of bladder neuropathy in the 1970s. Dr. Keogh could determine this because—unlike many of the clinicians initially contacted by the workers—he took their complaints seriously and applied clear public health principles to his investigation.

Throughout his life, he listened carefully to workers, characterized hazards and diseases, and then fearlessly worked to identify compensation for the individual and prevention strategies for others. Dr. Keogh was instrumental in including construction workers in the Maryland Occupational Safety and Health lead standard, a full decade before the federal standard included them. He was a leading medical educator who always focused on the need to incorporate clinical compassion with public health prevention. His most outstanding legacy, however, was his fierce determination to put knowledge into practice to benefit the worker.
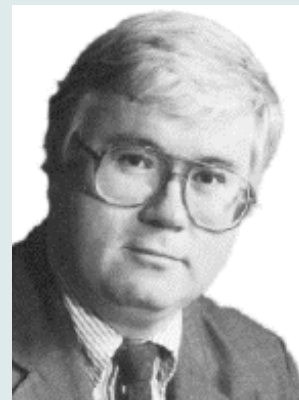
James P. Keogh Awardee
Jonathan Szalajda

Mr. Jonathan Szalajda, Deputy Director of the NIOSH National Personal Protective Technology Laboratory, has demonstrated remarkable leadership and passion in supporting U.S. workers and the public. He is recognized as a world expert on personal protective equipment (PPE) standards development and conformity assessment. He has worked in the field of respiratory protection and PPE for over 35 years. Throughout his federal service, Mr. Szalajda has led PPE standards development efforts serving as a global and national PPE leader on numerous consensus standards committees that impact millions of workers who rely on PPE and technologies, crossing all industry sectors. Mr. Szalajda has held a leadership role in every respiratory protection national standard developed for 25 years.
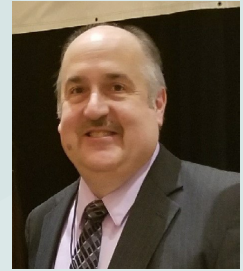
Mr. Szalajda' s greatest contribution is his leadership in developing NIOSH standards for respiratory protection against chemical, biological, radiological and nuclear (CBRN) agents. He led the standards development effort for protection against a full range of expected CBRN terrorist threats. The NIOSH standards development and respirator certification programs led to an increase in national inventory of CBRN capabilities to protect emergency response personnel against respiratory hazards from a terrorist event. The CBRN respirator standards have been endorsed and incorporated by other organizations. These standards led to over 400 approvals of CBRN self-contained breathing apparatuses, which are crucial for protecting the more than one million firefighters. Mr. Szalajda established a multi-agency partnership between NIOSH, the Department of Homeland Security and the U.S. Army leading research to understand new chemical threats and evaluate the NIOSH CBRN approved respirators performance. This highly successful project received the 2020 Mid-Atlantic Region of the Federal Laboratory Consortium Interagency Partnership Award for Technology Transfer and the NIOSH Bullard Sherwood Award.

During the pandemic, Mr. Szalajda served as co-chair of the ASTM Barrier Face Coverings Standard Committee leading a team to develop and publish the standard in months rather than years. This is the first time a face coverings standard has been available to provide workplaces and the public a standard for source control providing wearers a device with consistent performance parameters. Its utility is evidenced by the Defense Logistics Agency's distribution in disadvantaged communities of approximately 25 million face coverings compliant with ASTM F3502-21, part of a White House initiative. The Food and Drug Administration and CDC/NIOSH adopted the guidance for face coverings and the Occupational Safety and Health Administration announced plans to adopt the guidance as part of workplace standard requirements for masks. Since the standard was published, NIOSH has posted 30 ASTM compliant face coverings on the NIOSH PPE INFO website providing clarity on purchasing decisions.

Mr. Szalajda is a sought-after mentor and coach for staff at all levels. He enthusiastically shares his knowledge and expertise and takes a personal interest in developing staff. His dedication is commendable and indicative of his steady, stable, and inspirational demeanor.

Previous James P. Keogh Awardees

2022: Alan Echt

2021: Maryann D'Alessandro

2020: Christopher Coffey

2019: Leslie Nickels

2018: Pete Kovalchik

2017: Diane Porter

2016: Thomas R. Waters

2015: Kathleen Kreiss

2014: Albert E. Munson

2013: Michael Attfield

2012: Alice Suter

2011: Linda Rosenstock

2010: James W. Collins

2009: John Howard

2008: Mitch Singal

2007: Steven Sauter

2006: Marilyn Fingerhut

2005: Rosemary Sokas

2004: Dawn Castillo

2003: James A. Merchant

2002: Philip J. Landrigan

2001: William Edward Halperin

2000: Richard A. Lemen

Alice Hamilton Award for Occupational Safety and Health

This award recognizes the scientific excellence of NIOSH technical and instructional materials. Categories include Behavioral and Social Science, Communication and Guidance, Engineering and Control, Epidemiology and Surveillance, Exposure and Risk Assessment, Methods and Laboratory Science, and Research Service.

The annual award honors Dr. Alice Hamilton (1869– 1970), a pioneering researcher and occupational physician. Many early laws to improve workers' health derived from the work of Alice Hamilton, MD. Born into a prominent Indiana family (her sister was the well-known classicist, Edith Hamilton), Dr. Hamilton graduated from the University of Michigan Medical School in 1893. After joining the Women's Medical School of Northwestern University in 1897, she moved into Jane Addams' Hull House in Chicago and opened a well-baby clinic for poor families in the neighborhood. There she began to study the underlying social problems related to their pains, strange deaths, lead palsy, "wrist drop," and many widowed women. In 1908, Dr. Hamilton published one of the first articles on occupational health in the United States. Two years later, she began exploring occupational toxic disorders. Relying primarily on "shoe leather epidemiology," and the emerging science of toxicology, she pioneered occupational epidemiology and industrial hygiene in the United States. Her scientifically persuasive findings caused sweeping reforms to improve the health of workers. In 1919, Dr. Hamilton became assistant professor of industrial medicine at Harvard Medical School and the school's first female faculty member. While there, she served two terms on the Health Committee of the League of Nations. Upon retiring from Harvard at age 66, she became a consultant to the U.S. Division of Labor Standards and president of the National Consumers League.

Alice Hamilton Award Finalists

Finalists are listed alphabetically by nomination title.

Behavioral and Social Science

Abay Asfaw, Brian Quay, Tim Bushnell, and Regina Pana-Cryan

[Injuries that happen at work lead to more opioid prescriptions and higher opioid costs](#)

J Occup Environ Med 2022;*64*(12):e823-e832

Sharon R Silver, Jia Li, Suzanne M Marsh, and Eric G Carbone

[Prepandemic mental health and well-being: differences within the health care workforce and the need for targeted resources](#)

J Occup Environ Med 2022;*64*(12):1025-1035

Ja K Gu, Penelope Allison, Alexis Grimes Trotter, Luenda E Charles, Claudia C Ma, Matthew Groenewold, Michael E Andrew, and Sara E Luckhaupt

[Prevalence of self-reported prescription opioid use and illicit drug use among U.S. adults: NHANES 2005-2016](#)

J Occup Environ Med 2022;*64*(1):39-45

Communication and Guidance

Sydney Webb, Suzanne Marsh, Murrey Loflin, and Thomas Hales

[Challenges and tactics for fighting row house fires](#)

NIOSH 2022; Morgantown, WV: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2023-101

Gavin P Horn, Kenneth W Fent, Steve Kerber, and Denise L Smith

[Hierarchy of contamination control in the fire service: review of exposure control options to reduce cancer risk](#)

J Occup Environ Hyg 2022;*19*(9):538-557

Lauren Menger-Ogle, Michael Foley, Tim Bell, Anasua Bhattacharya, Scott Bicksler, Diana Ceballos, Jacqueline Chan, Ron Chylinski, Amanda Crim, Tom Cunningham, Sharon Davis, Scott DeBow, Dave DeSario, Rebecca Guerin, Matt Gunter, Sarah Hughes, John King, Robert Lewellen, Carmen Martino, Christopher Mundschenk, Jack Nunes, Carol Pariente Lippi, Ketki Patel, Donna Pfirman, Michael Quinn, Maggie Robbins, Nancy Romano, Marie-Anne Rosemberg, Gary Roth, Brittany Sakata, Kirk Sander, Paul Schulte, Adam Seidner, Katie Shahan, Eric Sygnatur, Jennifer Topmiller, Jora Trang, Paul Vescio, and Joe Zanoni

Protecting temporary workers: best practices for host employers

National Institute for Occupational Safety and Health, National Occupational Research Agenda Services Sector Council, American Society for Safety Professionals, American Staffing Association, Safety and Health Assessment and Research for Prevention Program 2022; Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2022-126

Engineering and Control

Peter Simeonov, Ashish Nimbarte, Hongwei Hsiao, Richard Current, Douglas Ammons, Hee-Sun Choi, Md Mahmudur Rahman, and Darlene Weaver

Evaluation of advanced curve speed warning system to prevent fire truck rollover crashes

J Saf Res 2022;*83*:388-399

John Z Wu, Christopher S Pan, Clayton Cobb, Andrew Moorehead, Tsiu-Ying Kau, and Bryan M Wimer

Evaluation of the fall protection of Type I industrial helmets

Ann Biomed Eng 2022;*50*(11):1565-1578

Warren Myers, Segun Ajewole, Susan Xu, Patrick Yorio, Adam Hornbeck, and Ziqing Zhuang

Laboratory assessment of bacterial contamination of a sterile environment when using respirators not traditionally used in a sterile field environment

Infect Control Hosp Epidemiol 2022;*43*(12):1867-1872

Epidemiology and Surveillance

Andrea L Steege, Sara E Luckhaupt, Rebecca J Guerin, Andrea H Okun, Mei-Chuan Hung, Girija Syamlal, Peng-Jun Lu, Tammy A Santibanez, Matthew R Groenewold, Rachael Billock, James A Singleton, and Marie Haring Sweeney

Characteristics associated with a previous COVID-19 diagnosis, vaccine uptake, and intention to be vaccinated among essential workers in the US Household Pulse Survey

Am J Public Health 2022;*112*(11):1599-1610

Leslie I Boden, Abay Asfaw, Andrew Busey, Yorghos Tripodis, Paul K O'Leary, Katie M Applebaum, Andrew C Stokes, and Matthew P Fox

Increased all-cause mortality following occupational injury: a comparison of two states

Occup Environ Med 2022;*79*(12):816-823

Kyla Hagan-Haynes, Alejandra Ramirez-Cardenas, Kaitlin C Wingate, Stephanie Pratt, Sophie Ridl, Emily Schmick, John Snawder, Elizabeth Dalsey, and Christa Hale

On the road again: a cross-sectional survey examining work schedules, commuting time, and driving-related outcomes among U.S. oil and gas extraction workers

Am J Ind Med 2022;*65*(9):749-761

Marie A de Perio, Katherine A Hendricks, Chad H Dowell, William A Bower, Nancy C Burton, Patrick Dawson, Caroline A Schrodt, Johanna S Salzer, Chung K Marston, Karl Feldmann, Alex R Hoffmaster, and James M Antonini
Welder's anthrax: a review of an occupational disease

Pathogens 2022;*11*(4):402

Exposure and Risk Assessment

Brie Hawley Blackley, Caroline P Groth, Jean M Cox-Ganser, Alyson R Fortner, Ryan F LeBouf, Xiaoming Liang, and Mohammed Abbas Virji
Determinants of task-based exposures to alpha-diketones in coffee roasting and packaging facilities using a Bayesian model averaging approach

Front Public Health 2022;*10*:878907

Seth McCormick, John E Snawder, I-Chen Chen, Jonathan Slone, Antonia M Calafat, Yuesong Wang, Lei Meng, Marissa Alexander-Scott, Michael Breitenstein, Belinda Johnson, Juliana Meadows, and Cheryl Fairfield Estill
Exposure assessment of polycyclic aromatic hydrocarbons in refined coal tar sealant applications

Int J Hyg Environ Health 2022;*242*:113971

Kenneth W Fent, Alexander C Mayer, Christine Toennis, Deborah Sammons, Shirley Robertson, I-Chen Chen, Deepak Bhandari, Benjamin C Blount, Steve Kerber, Denise L Smith, and Gavin P Horn
Firefighters' urinary concentrations of VOC metabolites after controlled-residential and training fire responses

Int J Hyg Environ Health 2022;*242*:113969

Methods and Laboratory Science

Thomas Sean Lendvay, James Chen, Brian H Harcourt, Florine E M Scholte, Ying Ling Lin, F Selcen Kilinc-Balci, Molly M Lamb, Kamonthip Homdayjanakul, Yi Cui, Amy Price, Belinda Heyne, Jaya Sahni, Kareem B Kabra, Yi-Chan Lin, David Evans, Christopher N Mores, Ken Page, Larry F Chu, Eric Haubruge, Etienne Thiry, Louisa F Ludwig-Begall, Constance Wielick, Tanner Clark, Thor Wagner, Emily Timm, Thomas Gallagher, Peter Faris, Nicolas Macia, Cyrus J Mackie, Sarah M Simmons, Susan Reader, Rebecca Malott, Karen Hope, Jan M Davies, Sarah R Tritsch, Lorène Dams, Hans Nauwynck, Jean-Francois Willaert, Simon De Jaeger, Lei Liao, Mervin Zhao, Jan Laperre, Olivier Jolois, Sarah J Smit, Alpa N Patel, Mark Mayo, Rod Parker, Vanessa Molloy-Simard, Jean-Luc

Lemyre, Steven Chu, John M Conly, and May C Chu

[Addressing personal protective equipment (PPE) decontamination: methylene blue and light inactivates severe acute respiratory coronavirus virus 2 (SARS-CoV-2) on N95 respirators and medical masks with maintenance of integrity and fit](#)

Infect Control Hosp Epidemiol 2022;*43*(7):876-885

Shijun Wei, Belinda Johnson, Michael Breitenstein, Lina Zheng, John Snawder, and Pramod Kulkarni

[Aerosol analysis using handheld Raman spectrometer: on-site quantification of trace crystalline silica in workplace atmospheres](#)

Ann Work Expo Health 2022;*66*(5):656-670

Robert A Cohen, Cecile S Rose, Leonard H T Go, Lauren M Zell-Baran, Kirsten S Almberg, Emily A Sarver, Heather A Lowers, Cayla Iwaniuk, Sidney M Clingerman, Diana L Richardson, Jerrold L Abraham, Carlyne D Cool, Angela D Franko, Ann F Hubbs, Jill Murray, Marlene S Orandle, Soma Sanyal, Naseema I Vorajee, Edward L Petsonk, Rafia Zulfikar, and Francis H Y Green

[Pathology and mineralogy demonstrate respirable crystalline silica is a major cause of severe pneumoconiosis in U.S. coal miners](#)

Ann Am Thorac Soc 2022;*19*(9):1469-1478

Research Service

Sophia K Chiu, Jennifer Hornsby-Myers, Christopher Iverson, and Douglas Trout

[A cluster of health symptoms after a law enforcement operation: a case study](#)

Saf Health Work 2022;*13*(4):507-511

Matt Bowyer, Tammy Schaeffer, Robert Saunders, and Judith Eisenberg

[Career probationary firefighter dies during SCBA confidence training at fire academy - New York](#)

NIOSH 2022; Morgantown, WV: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, FACE F2021-08

Melanie Fowler, Nancy Romano, Jennifer E Lincoln, and Stephanie Kraynak

[Officer struck while assisting with temporary traffic control on an interstate – Texas](#)

NIOSH 2022; Morgantown, WV: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, LEO 2021-01

Alice Hamilton Awardees and Honorable Mentions

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A cluster of health symptoms after a law enforcement operation: a case study

Saf Health Work 2022;*13*(4):507-511

Bullard-Sherwood Research to Practice Award

This award recognizes outstanding efforts by NIOSH scientists and their partners in applying occupational safety and health research to prevent work-related injury, illness, and death. It highlights efforts that demonstrate noteworthy impact through partnerships.

The award is named in honor of two distinguished inventers who made significant improvements in workplace injury and illness prevention.

Edward W. Bullard designed the first "hard hat" as protective headgear for miners with his "Hard Boiled Hat," so-called due to the steam used to harden it during manufacturing. Later, he adapted his helmet to protect workers building the Golden Gate Bridge from falling rivets, leading to the bridge site becoming the first designated "Hard Hat Construction Area." Mr. Bullard also designed and sold another helmet specifically to protect sandblasting workers at the bridge site. Similar to the Hard Boiled Hat, this helmet included a hood, or "canopy," a see-through window, and an air supply. The helmets helped to prevent death and injury during the project and in the years since. Even so, 11 workers died at the bridge site—including 10 in 1937 when a scaffold collapsed. Today, about six million hard hats are sold annually throughout the world. Mr. Bullard's family-owned company still produces many of those hard hats, as well as modern sandblasting helmets.
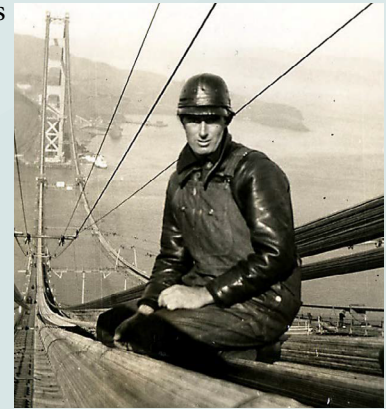
A Golden Gate construction worker wears a Bullard "Hard Boiled Hat" in this photograph, circa 1936. Credit: Labor Archives and Research Center, J. Paul Leonard Library, San Francisco State University
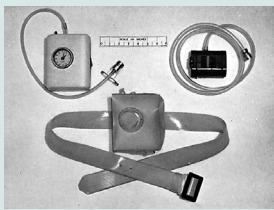
The personal air sampler system designed by R. Jeremy Sherwood, as it appeared in a 1960 Annals of Occupational Hygiene article announcing its invention. From: Sherwood RJ, Greenhalgh DMS [1960]. A personal air sampler. Ann Occup Hyg 2:127–132, https://doi.org/10.1093/annhyg/2.2.127.

R. Jeremy (Jerry) Sherwood merged research and industrial hygiene by inventing the first practical personal sampling pump in the late 1950s. Until then, sampling occurred in a specific area, or while an industrial hygienist followed a worker while carrying bulky equipment. Using the newly developed personal sampling pump, Mr. Sherwood demonstrated that area sampling often severely underestimated worker exposures. Soon, personal sampling pumps became the staple that they are today. He also developed a miniature sampler for sulfur dioxide that became commercially available and was widely used throughout Europe. Finally, his research on respirators led to the first fit testing. While at the International Labour Organization and later at the World Health Organization, Mr. Sherwood trained others in occupational safety and health, particularly in developing countries, benefiting workers around the world.

Bullard-Sherwood Research to Practice Award Finalists

Finalists are listed alphabetically by project name.

Intervention

Protecting the NIOSH Brand: Registering, Monitoring, and Enforcing Certification Marks to Combat Counterfeit and Respirators Misrepresenting Being NIOSH Approved

Andrews A, Powers J, Greenawald L, Attwood W, Dai A, Hogan A, Butterman A, Davis D, Boutin B, D'Alessandro M, Peterson J, Smith A, Stein R, Reed H, Rafky L, Vaughn B, Walters J, Carlson B, Berkley D, van Horn A, Gillerman G, Marshall J, Trawinski K, Rao G

Research that Highlights Quality Concerns and the Need for Post-Market Quality Assurance Requirements for Surgical Gowns to Protect Healthcare Personnel

Greenawald L, Moore S, Kilinc-Balci F, Yorio P

The Impact of a State-Based Workers' Compensation Insurer's Risk Control Services

Wurzelbacher S, Bertke S, Lampl M, Bushnell T, Robins D, Naber S, Moore L

Knowledge

Application of NIOSH Research Results to Successful Re-Entry of Unconventional Shale Gas Wells Influenced by Longwall Mining

Su W, Harris M, Kimutis R, Schatzel S, Zhang P, Ajayi K, Khademian Z, Kim B, Van Dyke M, Zhou L, Addis J, Mazzella M, Minoski T, Dougherty H, Perera E, Murphy M, Slaker B, Yantek D

NIOSH Long-Term Field Evaluation Study

Walbert G, Moore S, Monaghan W, Simons J

Updating ASTM Standards F2407 and F3352 to Ensure Healthcare Personnel Are Adequately Protected

Kilinc-Balci F, Coby C, Rottach D, Moore S, Greenawald L, Yorio P, Shaffer R, D'Alessandro M

Technology

Air Quantity Estimator 2.0

Ajayi K, Cole G, Fritz J, Britton J, Young M

Development of NMAM 3900 Canister Method and Capillary Flow Controllers

LeBouf R

Bullard-Sherwood Research to Practice Awardees and Honorable Mentions

Intervention Awardee

Protecting the NIOSH Brand: Registering, Monitoring, and Enforcing Certification Marks to Combat Counterfeit and Respirators Misrepresenting Being NIOSH Approved

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During the COVID-19 pandemic, the U.S. market was flooded with counterfeit respirators, including both unapproved respirators designed to look similar or identical to one that is NIOSH Approved® and respirators misrepresented as being NIOSH approved. The NIOSH National Personal Protective Technology Laboratory (NPPTL) supported other federal and state agencies in confiscating over 500,000 counterfeit respirators and obtained unfavorable testing results on about 60% of international respirator assessments tested during the first year of the pandemic. Prompted by this experience, NPPTL worked with partners to define and implement a longer-term strategy: 1) obtaining trademark protection for respirator-related certification marks, 2) protecting the marks by monitoring markets to identify counterfeit respirators, and 3) effecting actions to prevent international suppliers from shipping counterfeit respirators to the United States, as well as removing counterfeit respirators from U.S. markets. Throughout 2022, NPPTL and Health and Human Services Office of General Council, and the CDC Office of General Council expanded collaborations to register respirator-related certification marks with the U.S. Patent and Trademark Office, Customs and Border Protection, and internationally. Twelve marks were registered in the United States and in several other countries. Concurrently, NPPTL established a team to develop and execute e-commerce monitoring and enforcement processes. Hundreds of listings were investigated each week from e-commerce platforms with listings that use "NIOSH" or "N95." During 2022, a total of 37,802 listings were reviewed, 6,082 listings were investigated, and legal takedown action was identified as required for 1,863 listings. These certification mark registration, monitoring, and enforcement activities ensure that the expected level of protection will be provided.

Research that Highlights Quality Concerns and the Need for Post-Market Quality Assurance Requirements for Surgical Gowns to Protect Healthcare Personnel

Greenawald L, Moore S, Kilinc-Balci F, Yorio P

During a national emergency, 18 million U.S. healthcare personnel (HCP) may face high-consequence infectious disease or blood-borne pathogen exposures. The use of personal protective equipment (PPE), such as gowns, gloves, and respirators, is an important measure within the infection prevention hierarchy of controls. Level 3 surgical gowns are a type of PPE worn by HCP during surgical procedures to protect both the patient and HCP from the transfer of microorganisms, body fluids, and particulate matter. These gowns are commonly stockpiled in large quantities by hospital, regional, state, and federal facilities to prepare for surge demands. As part of a larger coordinated research project to sample and test thousands of stockpiled respirators and gowns, NIOSH evaluated a total of 1,040 Level 3 surgical gowns from six U.S. stockpile facilities. These gowns were all manufactured in 2008, came from 16 production lots, and from two models. The gowns were visually inspected and tested against industry-accepted test methods. The results were published in a 2022 NIOSH PPE Conformity Assessment Studies and Evaluations report that showed variability and quality assurance concerns in both stockpiled and non-stockpiled (control) gowns. This study and evidence-based output highlighted the need to revise the industry gown standard currently written for pre-market applications so that third parties (e.g., federal and state stockpile managers, researchers) can adequately use this standard for post-market quality assurance purposes for sampling and lot pass/fail determination to inform stockpiling, use, and purchasing decisions. Further, this 2022 publication served to coordinate discussions with partners at the Food and Drug Administration and standard development organizations to inform changes needed to industry standards to ensure HCP and other frontline workers are protected.

Updating ASTM Standards F2407 and F3352 to Ensure Healthcare Personnel Are Adequately Protected

Kilinc-Balci F, Coby C, Rottach D, Moore S, Greenawald L, Yorio P, Shaffer R, D'Alessandro M

Healthcare personnel (HCP), including emergency medical service workers, are routinely exposed to body fluids and infectious materials at work. Engineering controls cannot eliminate all possible exposures. Therefore, personal protective equipment (PPE) is crucial to reducing the potential for skin contact with blood, body fluids, and other potentially infectious materials. Gowns are used to protect HCP, patients, and visitors and deemed to be the second-most-used piece of PPE, following gloves. ASTM F3352 isolation gown standard, published in 2019, and ASTM F2407 surgical gown standard, revised in 2020, have quickly become valuable assets for the many entities involved in combating the COVID-19 pandemic. These standards have been used by the U.S. government as the basis for purchasing products and are recognized by the Food and Drug Administration and stipulated as a recommended product specification by the World Health Organization (WHO). However, these standards lacked conformity assessment requirements and needed several key improvements, additional labeling, sampling, and testing requirements, referenced standards, regulations, and clarifications. These gaps resulted in inconsistent testing, reporting, and labeling, as well as inconsistent quality, which may lead to significant procurement and health problems and economic burden in the workplace. To address these gaps, an ASTM international workgroup consisting of NIOSH and other subject matter experts worked collaboratively to revise these standards, and NIOSH led the development of new requirements. After balloting processes, new revisions were accepted by the ASTM F23 Committee, which consists of PPE manufacturers, testing laboratories, PPE users, and the government, and approved or published in 2022. To date, the Strategic National Stockpile have included these standards in the solicitation requirements, and WHO and CDC included these standards in the PPE guidelines.

NIOSH Long-Term Field Evaluation Study

Walbert G, Moore S, Monaghan W, Simons J

The Mine Safety and Health Administration (MSHA) requires mines to have self-contained self-rescuers (SCSRs) available to protect coal miners from potential disaster risks by providing a continuous source of breathable air for the escape duration. Long-Term Field Evaluation (LTFE) studies performed jointly by NIOSH and MSHA evaluate long-term performance and reliability of SCSRs in the field. Prior to 2022, LTFE studies included randomly sampled SCSRs approved by NIOSH to Title 42, Code of Federal Regulations (CFR), Part 84, Subpart H. This previous LTFE strategy was limited by the inability to collect a smaller sample of units and the logistics of collecting from a much larger number of mines across the United States. In 2019, NIOSH implemented a revised LTFE strategy that includes, for the first time, the collection and evaluation of units approved to the agency's 2012 update to the regulation, Subpart O. This revised strategy targeted units approved to Subpart O that were also exposed to more severe conditions as well as units approved to Subpart H that were within the same mines and exposed to similar conditions. Eighty SCSR units from two mines were sampled, and visually inspected and tested using NIOSH performance tests. As a result, a Subpart O approved model was found to be non-conforming, and the manufacturer subsequently withdrew its NIOSH approval. This LTFE study produced the first-ever data comparing the performance of Subpart H and O devices after deployment to a mining environment. The units tested and evaluated in this study were collected from the same, but significantly fewer, mines, same deployment locations (e.g., worn, mobile cache, or permanent cache), and have nearly the same exposure times. This study, therefore, provides critical data to stakeholders regarding the protections provided by Subpart H and O devices from the same manufacturer, enhancing key policy discussions between NIOSH and MSHA regarding this important safety matter.

Technology Awardee

Development of NMAM 3900 Canister Method and Capillary Flow Controllers

LeBouf R

One of the challenges in protecting the health and safety of workers is accurately estimating occupational exposures to the vast number of chemicals in workplace air. Traditional occupational exposure monitoring for volatile organic compounds (VOCs) uses sorbent tubes, an approach that requires the user to have some prior knowledge of the target analytes and approximate concentrations to effectively sample exposures. NIOSH, in collaboration with partners, developed, tested, and implemented an improved method for detection, quantification and identification of VOCs. This method, NMAM 3900, incorporates whole-air sampling into evacuated canisters, requiring no prior knowledge of air concentrations, can handle part per billion and part per million analyte concentrations, and is amenable to a wide range of compounds using a single technique. The method provides sensitive detection and simultaneous quantification of 17 analytes, including high-priority toxic compounds, and allows for the identification of other VOCs by matching against a National Institute of Standards and Technology library of mass spectra. The method was further improved by equipping canisters with restricted (capillary) flow controllers to limit air sample flow into canisters, enabling the use of canisters for personal occupational exposure monitoring. In collaboration with academic and commercial partners, the capillary flow controllers were further tested, patented, and commercialized. The new commercially available design, an external flow controller, can adapt to any commercially-available canister using fused-silica lined fittings. As of December 2022, approximately 500 units of the commercialized capillary flow controllers had been sold by the manufacturer. The availability of commercial flow controllers coupled with a validated NIOSH method for whole-air sampling has laid the foundation for future, long-term success and adoption.

Air Quantity Estimator 2.0

Ajayi K, Cole G, Fritz J, Britton J, Young M

Diesel-powered engines are important to mining in the United States due to their durability, good-power performance, and efficiency. However, their exhausts may expose workers to diesel particulate matter (DPM). Worker exposure to DPM can cause health issues such as premature death, cancer, asthma, breathing difficulty, chronic obstructive pulmonary disease, coughing, pneumonia, chronic bronchitis, and stroke. Adequate ventilation is critical in mines using diesel-powered engines and requires effective planning using a combination of engineering controls that deliver needed air quantities using auxiliary fans and engineering practices that route the needed air throughout the mine using walls and seals. The Air Quantity Estimator (AQE) software was developed by NIOSH researchers in 2006 to provide mine operators with a practical tool needed to assess ventilation requirements effectively. For 17 years, the software has been widely in the mining industry and academic mining programs for ventilation research and training. Driven by emerging technologies, evolving mining practices, partner requests, and an evaluation of use in three mines, NIOSH identified opportunities for improvement and updated AQE in 2022. Version AQE 2.0 incorporates a new comprehensive database of over 40,000 pieces of equipment through which users can create specific equipment for a customized database, identify equipment that are contributing the highest DPM to the mine, and obtain suggestions for their mine. With this improved tool, mine operators can optimize ventilation plans by exploring different scenarios, including with parameters such as using cleaner engines, filters for existing engines, and ventilation quantities required in the dynamic mining environment. Since its release, AQE 2.0 has received exceedingly positive feedback and demonstrated a wide reach with global downloads spanning 10 countries.

Plain Language Award

The Plain Writing Act of 2010 requires that federal agencies provide clear communication that the public can understand and use. NIOSH encourages plain language in all of its communication products.

Established in 2017, this award recognizes NIOSH fact sheets, brochures, infographics, and web topic pages that demonstrate excellence in applying plain language principles.

Awards are given in two categories:

Before and After: Recognizes a revised NIOSH-branded brochure, infographic, fact sheet, or web topic page that includes both an original, difficult-to-read version and the revised version that uses plain language principles. Judges consider the improvements.

Original: Recognizes a NIOSH-branded brochure, infographic, fact sheet, or web topic page created originally using plain language principles.

Plain Language Award Finalists

Finalists are listed alphabetically by project name.

Before and After

Aircrew Safety & Health – Communicable Diseases

Velazquez-Kronen R, Hartle G

Respiratory Protection Toolbox Talk

Kiederer M, Smith A, Coffey C, Casey M

World Trade Center Health Program Research

Iker K, Morgan C, Bossie C, Hurwitz E, Trucco N

Original

FACE IT | Worker Safety Matters During Lawn Care

Knuth R, Romano N, Fowler M, Tapia E

Fire Aerial Ladders: Improving Ease and Safety with Smaller Rung Spacing

Simeonov P, Clough-Thomas K

Stand Together: Join the National Firefighter Registry

Fent K, Wepsala W, Siegel M, Mayer A, Wilkinson A, Hartle G

Plain Language Awardees and Honorable Mentions
Before and After Awardee

Aircrew Safety & Health – Communicable Diseases

Velazquez-Kronen R, Hartle G

The update to the Aircrew Safety & Health - Communicable Diseases webpage better reflects the variety of resources available to aircrew on general travel health and preventing infectious disease transmission during flights. The updated webpage highlights international, federal, and union resources on aircrew travel health related to infectious disease transmission in a clearly organized directory-style format. It presents a concise summary of methods through which infectious diseases can spread during air travel, how aircrew may be exposed to infectious diseases at work, and how aircrew can manage sick passengers and other aircrew. It also provides a wide range of resources regarding general aircrew travel health and disease-specific resources for aircrew. In addition, the updated webpage provides a timelier resource for aircrew concerned about ongoing disease outbreaks, including COVID-19 and mpox.

World Trade Center Health Program Research

Iker K, Morgan C, Bossie C, Hurwitz E, Trucco N

The new World Trade Center (WTC) Health Program Research landing webpage sheds fresh light on WTC Health Program and 9/11 health effects research. By following plain language guidance and writing and designing for the intended audiences, the webpage effectively addresses two main points of plain language: help readers "find what they need" and "understand and use what they find." The new and much-improved webpage provides a home for scientists and the public to learn about WTC Health Program research work and how to participate in discussions and webinars, and to explore the library of 9/11 health effects research. This information will further the Program's translational capabilities by marketing key information to a broader scientific audience with potential for increased solicitation responses and collaboration. The new research landing webpage had 1,039 occurrences over a three-month period after its launch in September 2022, whereas the previous version of the webpage had only 693 for the same three-month period the previous year.

Stand Together: Join the National Firefighter Registry

Fent K, Wepsala W, Siegel M, Mayer A, Wilkinson A, Hartle G

This fact sheet provides clarity and answers questions about the National Firefighter Registry (NFR) program, which is committed to understanding and reducing cancer among firefighters. Once the NFR program is launched, NIOSH will recruit firefighters to voluntarily register. The fact sheet contains a call-to-action for U.S. firefighters to participate. It addresses some of the most frequently asked questions about the NFR, including why it was created, how it works, why firefighters should join, how participants' information will be protected, and who is eligible to participate. Importantly, the fact sheet also explains how firefighters can register. The fact sheet provides a QR code that links to the NFR website where interested parties can learn more about the NFR and subscribe to its quarterly newsletter. The fact sheet can be viewed online and can also be printed and disseminated to interested firefighters and fire service leadership. Over the last few months, the NFR team has distributed over 1,500 hard copies of the fact sheet to firefighters at health and safety conferences across the country.

Original Honorable Mentions

Recipients are listed alphabetically by project name.

FACE IT | Worker Safety Matters During Lawn Care

Knuth R, Romano N, Fowler M, Tapia E

The landscaping industry employs more than 1 million people and represents over 604,000 landscaping service businesses, according to the National Association of Landscape Professionals. This infographic highlights recommendations from a detailed investigation report by the NIOSH Fatality Assessment and Control Evaluation (FACE) Program, which creates communication products titled 'FACE IT' as a play on the program's name. The infographic provides a brief overview of the investigation before outlining four ways to prevent injuries among lawn care workers. While the investigation report focuses more on the specific incident that led to a worker death and investigation, the purpose of the infographic is to focus on the recommendations, so landscaping employers can use the material as an educational tool with workers. After publishing the English version, the authors also worked with a translator to prepare a Spanish version to reach a broader audience.

Fire Aerial Ladders: Improving Ease and Safety with Smaller Rung Spacing

Simeonov P, Clough-Thomas K

The telescopic fire aerial ladder is specialized firefighting equipment used to gain access to fires and respond to other emergencies occurring at heights. Climbing the current aerial ladders is associated with considerable physical efforts and presents a significant source of risk of falls. This infographic combines graphic and text information to summarize and advertise to the firefighter community the results of a NIOSH experimental study on firefighter safety. Specifically, the goal is to provide new information for potential updates of the design requirements for fire aerial ladders to make them consistent with the anthropometry and physical ability of diverse groups of firefighters. The scientific information was generated by a NIOSH experimental study on fire aerial ladders' climbing biomechanics that compared firefighter performance during climbing ladder models with 14" and 12" rung spacing. The ultimate message to the firefighting community is that implementing this new information in the design of fire aerial ladders may benefit the comfort and safety of diverse groups of firefighters.

Service Excellence Award

These awards focus on both the management and operations side of the Institute and recognize NIOSH staff who provide excellent administrative and managerial support to the Institute's mission and projects.

The awards recognize distinction in four categories:

Excellence in Administration recognizes one current NIOSH employee or group of NIOSH employees each year for exceptional administrative support. This award honors the contributions made by employees in administrative occupations to increase the effectiveness or efficiency of a division, laboratory, or office.

Excellence in Leadership recognizes one current NIOSH employee per grade grouping (GS-14 and above, GS-11 to GS-13, and GS-9 and below) each year for exceptional personal leadership. This award honors the efforts made by employees to exhibit leadership at NIOSH.

Excellence in Workforce Development recognizes one current NIOSH employee or group of NIOSH employees each year for exceptional contributions that promote development of the NIOSH workforce. This award acknowledges those who mentor, teach, promote, or design activities that develop the workforce.

Excellence in Workforce Diversity recognizes one current NIOSH employee or group of NIOSH employees each year whose actions promote the creation and support of a diverse NIOSH workforce. This award acknowledges those whose efforts promote the recognition and value of diversity, including recognition of health equity issues.

Service Excellence Award Finalists

Finalists are listed alphabetically by nominee or team name.

Excellence in Administration

No nominations

Excellence in Leadership

GS-14 and above

James Bennett, Division of Field Studies & Engineering

Ryan LeBouf, Respiratory Health Division

William A. Robison, Office of Extramural Programs

GS-11 to GS-13

Menekse Barim, Division of Field Studies & Engineering

Miriam Calkins, Division of Field Studies & Engineering

Raquel Velazquez-Kronen, Division of Field Studies & Engineering

GS-9 and below

No nominations

Excellence in Workforce Development

Kenny Fent, Division of Field Studies & Engineering

Lauralynn Taylor McKernan, Division of Field Studies & Engineering

Excellence in Workforce Diversity

No nominations

Service Excellence Awardees

Excellence in Leadership: GS-14 and above Awardee

James Bennett, PhD, Division of Field Studies & Engineering

Dr. Bennett has pioneered methods of numerical modeling for occupational health applications throughout his 24-year career at NIOSH, where he works to reduce occupational exposures with a particular interest in aircraft cabins. He collaborates with researchers from government agencies, industry, and academia to study air transport of pathogens in commercial aircraft cabins. This work led him to develop a model that could predict the movement of contaminants in the aircraft.

During the COVID-19 pandemic, Dr. Bennett assessed whether a vacant middle-seat scenario on a commercial airliner was beneficial to reduce the potential for disease transmission. The results of this study helped provide key information to airlines as they assessed their operations and how these decisions might affect risk for the transmission of COVID-19 on the aircraft passengers and cabin crew.

Dr. Bennett saw the opportunity to utilize his expertise in numerical modeling methods combined with his past research on aerosol transmission in aircraft to help answer the question about the impact of airplane occupancy policies on the risk of transmission of SARS-CoV-2. He co-authored a CDC Morbidity and Mortality Weekly Report on this research, which also was picked up by over 300 news outlets. His expertise has also been recognized through committee leadership appointments, including Chair of the Indoor Environmental Modeling Technical Committee of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, a global consensus standards organization. His work has made him a world expert in this field and a key resource for CDC when addressing these critical issues.

Excellence in Leadership: GS-11 to GS-13 Awardee

Menekse Barim, PhD, Division of Field Studies & Engineering

Dr. Barim began her career at NIOSH in 2018 as an Oak Ridge Institute for Science and Education research fellow. She first contributed as a key researcher on a National Occupational Research Agenda (NORA) initial funding request, where she developed procedures for data collection, conducted data analysis and results interpretation. She worked with the NIOSH Future of Work Initiative team and leveraged opportunities to evaluate the impact of innovative and emerging technologies, such as the benefits and risks of robotics on worker well-being. This work summarized the key advances from installing emerging technology and research studies on robotics and automation to improve agricultural practices.

Dr. Barim serves as an assistant coordinator for the NIOSH Musculoskeletal Cross-sector Program to disseminate information on how to protect workers from musculoskeletal disorders and is also an active council member of the NIOSH Center for Occupational Robotics Research. Dr. Barim has published peer-reviewed papers, proceedings, NIOSH Science Blogs, Health Hazards Evaluations, and written NORA IFR proposals. Since 2020, her papers have been cited 99 times.

She has been a true ambassador to increase awareness of occupational safety and ergonomics and has devoted her research to improving work conditions, to include focusing on improving existing ergonomic assessment tools to better understand the problem. She volunteers for NIOSH events, career fairs, laboratory tours, and mentors university students. Her energy and passion have inspired and encouraged other students to pursue careers in occupational safety and ergonomics, pursue graduate school, and to participate in lifelong self-improvement.

Excellence in Workforce Development Awardee

Lauralynn Taylor McKernan, ScD, Division of Field Studies & Engineering

Dr. McKernan has shown extraordinary dedication to staff development as a Long-Term Training (LLT) chair. She has guided numerous individuals through the application process, challenged them to critically evaluate and clarify their academic and career goals, and encouraged them to believe in their value and capacity.

As director of the Division of Field Studies & Engineering, Dr. McKernan is extremely busy; however, she mentors candidates, sets up mock interviews, and connects candidates to resources and other personnel that are helpful in developing a strong application. Dr. McKernan also encourages staff to see themselves as part of a community of mentors and mentees who have benefitted enormously from the agency and will be of even greater service back in return. She does this through the way she speaks with gratitude about her own experience of LTT, and her evident pride in both the LTT program and the accomplishments of those who have completed the LTT program.

Dr. McKernan has supported many staff through the LTT application process. Her commitment to supporting the program and providing transparency and encouragement around the process of applying helps to make this program extremely effective as a tool for improving employee retention, communicating the value NIOSH places on its employees, and encouraging excellent work.

Dr. McKernan is devoted to every LTT candidate by personally guiding them through the process. She gives candidates encouragement and frank feedback that help them become better NIOSH employees, dedicated to producing high quality and impactful science. Regardless of an applicant's success or failure, she builds trust and dedication to NIOSH in her interactions with every candidate, which is an extraordinary accomplishment.

Director's Intramural Award for Extraordinary Science

Science excellence is the foundation upon which NIOSH generates new knowledge to assure safe and healthful work for all.

This award recognizes the outstanding contributions and dedication of NIOSH staff to science excellence. The award honors experienced scientists, early career scientists, and scientific support staff whose collective body of work has resulted in significant contributions to the NIOSH mission.

The **Lew Wade Distinguished Career Scientist Award** recognizes a permanent employee or fellow who has made extraordinary scientific contributions to their field of work.

The **Early Career Scientist Award** recognizes a permanent employee or permanent fellow not on a training fellowship who has received an initial terminal degree in a scientific discipline in the past five years.

The **Scientific Support Award** recognizes technical or administrative staff who are permanent employees or permanent fellows who provide invaluable contributions to the successful completion of NIOSH scientific activities.

Director's Intramural Award for Extraordinary Science Finalists

Finalists are listed alphabetically.

Lew Wade Distinguished Career Scientist

Nancy Clark Burton

Thomas J. Lentz

M. Abbas Virji

Early Career Scientist

Sarah Hughes

Taylor Shockey

Cody Wolfe

Scientific Support

Ronald Jacksha

John Lechliter

Chih-Yu Tseng

Director's Intramural Award for Extraordinary Science Awardees

Lew Wade Distinguished Career Scientist

M. Abbas Virji, ScD, MSc

Research Industrial Hygienist

NIOSH Respiratory Health Division

Dr. Virji has over 25 years' experience in field research on occupational exposure assessment and epidemiology. His expertise is highly sought out by researchers and experts within NIOSH and at the national and international levels, making him a sought-after presenter for conferences and a participant in the development of standard methods. He has successfully competed for funding and carried out numerous innovative research projects.

Dr. Virji's work has been complex and difficult, often requiring the development of innovative and creative new approaches, especially in mixed exposures and sensor development, statistical modeling of exposures, and exposure-response modeling. He has made major advances that have been of exceptional interest to the scientific community and influenced the science of exposure assessment. This work produced over 130 peer-reviewed published papers, abstracts of presentations, and book chapters, as well as over 150 presentations at scientific conferences and invited lectures.

His publications include highly cited and influential papers on exposure assessment methodologies and their application to epidemiology, which have advanced the field immeasurably. A particularly impactful work is a series of landmark articles on beryllium exposure reconstruction, validation, and exposure-response relationships for beryllium sensitization and chronic beryllium disease, which have had a significant impact on the recent promulgation of a Beryllium Standard by the Occupational Safety and Health Administration.

Early Career Scientist

Taylor Shockey, PhD, MPH

Research Health Scientist

NIOSH Division of Field Studies and Engineering

Dr. Shockey has made extraordinary contributions in the fields of epidemiology and exposure assessment. She expanded collaborations within CDC and established and strengthened external collaborations. She was awarded National Occupational Research Agenda (NORA) funding for a project on young workers, an understudied group. Dr. Shockey established new collaborations with other parts of the CDC on topics ranging from diabetes to disabilities. She has furthered the NIOSH mission by demonstrating the importance of considering work in research on health.

She served in leadership roles as Lead Project Officer for two surveillance projects, as Co-Assistant Coordinator for the Cancer, Reproductive, Cardiovascular, and Other Chronic Disease Prevention NORA Sector Council, and on the COVID-19 response. Her current efforts have led to significant progress in the evaluation of the collection and use of exposure data. She participates in leadership roles on several American Industrial Hygiene Association (AIHA) committees and, with a NIOSH industrial hygienist, leads efforts to apply standardized occupation codes and analyze data in the Occupational Safety and Health Administration's consultation and compliance exposure monitoring database. She is serving as a key liaison between NIOSH and AIHA.

In her role as Co-Assistant Coordinator of the NORA Cross-Sector Council, Dr. Shockey has strengthened both internal and external collaborations and partnerships. She was instrumental in assisting the NIOSH Office of the Director to organize the scientific sessions of the NIOSH 2019 Intramural Science Meeting.

Scientific Support

John Lechliter, BS

Supervisory Writer-Editor

NIOSH Division of Science Integration

Mr. Lechliter has provided extraordinary administrative support to NIOSH scientists for more than 13 years by supporting them in their development of clear, effective scientific products such as NIOSH publications and manuscripts, resulting in direct benefits to NIOSH interested parties. He has provided exemplary scientific support by assisting scientists with the development, refinement, and clear communication of their scientific information. This task is often quite challenging. Overcoming these obstacles by demonstrating the utility and clarity of plain language principles for scientists has been a major accomplishment, helping to increase the effectiveness and impact of the information and products developed and disseminated by NIOSH. His dedication and effectiveness have allowed NIOSH scientists to focus on their scientific activities while facilitating the NIOSH review process for scientific products and directly improving the uptake of NIOSH science.

Mr. Lechliter is very solution oriented. He programmed or developed tools including automation and streamlining of the NIOSH bibliography production as well as the programming and development of a customized plain language software analysis system. One of his initiatives and innovative works is the improvement of the NIOSH Bibliography of Communication and Research Products. He wrote the code to program the development of the annual bibliographies, making the bibliography more useful, readable, and interesting.

NIOSH Nominations for the 2022 Charles C. Shepard Science Award

CDC/ATSDR established the Charles C. Shepard Science Award in 1986 in honor of Charles C. Shepard, MD, an internationally recognized microbiologist whose career was marked by a pursuit of scientific excellence. He served as chief of the Leprosy and Rickettsia Branch at CDC for more than 30 years, until his death on February 18, 1985. The Charles C. Shepard Science Award recognizes excellence in science at CDC and ASTDR.

An award is presented for outstanding scientific publications in the following categories: Assessment, Prevention and Control, Laboratory Science, Data Methods and Study Design, and Health Equity Science. An award is also presented for Lifetime Scientific Achievement.

2022 NIOSH Nominations for Outstanding Scientific Publications

Assessment Category

Fisher EM, Kuhlman MR, Choi YW, Jordan TL & Sunderman M, Persistence of SARS-Co-V-2 on N95 filtering facepiece respirators: implications for reuse, Journal of Occupational and Environmental Hygiene, 2021 18:12, 570-578

Chen GX, Sieber WK, Collins JW, Hitchcock EM, Lincoln JE, Pratt SG, Sweeney MH; Truck driver-reported unrealistically tight delivery schedules linked to their opinions of maximum speed limits and hours-of-service rules and their compliance with these safety laws and regulations; Safety Science, Volume 133, 2021, 105003, ISSN 0925-7535

Navarro KM, West MR, O'Dell K, Sen P, I-Chen C, Fischer EV, Hornbrook RS, Apel EC, Hills AJ, Jarnot A, DeMott P, Domitrovich, JW; Exposure to particulate matter and estimation of volatile organic compounds across wildland firefighter job tasks; Environmental Science & Technology 2021 55 (17), 11795-11804

Data Methods and Study Design Category

Foreman AM, Friedel JE, Hayashi Y, Wirth O, Texting while driving: A discrete choice experiment, Accident Analysis & Prevention, Volume 149, 2021, 105823, ISSN 0001-4575

Health Equity Science Category

Cox-Ganser JM, Henneberger PK; Occupations by proximity and indoor/outdoor work: Relevance to COVID-19 in all workers and Black/Hispanic workers; American Journal of Preventive Medicine, Volume 60, Issue 5, 2021, Pages 621-628, ISSN 0749-3797

Laboratory Science Category

Coyle JP, Derk RC, Lindsley WG, Blachere FM, Boots T, Lemons AR, Martin SB Jr., Mead KR, Fotta SA, Reynolds JS, McKinney WG, Sinsel EW, Beezhold DH, Noti JD. Efficacy of ventilation, HEPA air cleaners, universal masking, and physical distancing for reducing exposure to simulated exhaled aerosols in a meeting room. Viruses. 2021; *13*(12):2536

Lindsley WG, Blachere FM, Law BF, Beezhold DH, Noti JD; Efficacy of face masks, neck gaiters and face shields for reducing the expulsion of simulated cough-generated aerosols, Aerosol Science and Technology, 55:4,449-457, 2021

Ranpara A, Stefaniak AB, Fernandez E, LeBouf RF; Effect of puffing behavior on particle size distributions and respiratory depositions from pod-style electronic cigarette, or vaping, products, Front. Public Health 9:750402. 2021

Prevention and Control Category

Xu XS, Welcome DE, McDowell TW, Warren C, Service S, Lin H, Chen Q, Dong RG; An investigation of the effectiveness of vibration-reducing gloves for controlling vibration exposures during grinding handheld workpieces, Applied Ergonomics, Volume 95, 2021, 103454, ISSN 0003-6870

Simeonov P, Hsiao H, Nimbarte A, Current R, Ammons D, Choi H, Rahman MM, Weaver D; Evaluation of advanced curve speed warning system for fire trucks, Applied Ergonomics, Volume 97, 2021, 103527, ISSN 0003-6870

2022 NIOSH Nominee for the Shepard Lifetime Scientific Achievement Award

James P. O'Callaghan, PhD

Dr. O'Callaghan joined NIOSH in 1997 as the Head of the Molecular Neurotoxicology Laboratory in the NIOSH Health Effects Laboratory Division (HELD), and recently retired as a CDC Distinguished Consultant. He currently acts as a Guest Researcher in HELD.

Dr. O'Callaghan's career focused on neurotoxicity (particularly amphetamine and dopaminergic neurotoxicity), the importance of better identifying potentially neurotoxic compounds to prevent long-term illness and unraveling the pathobiology of chronic neurotoxicant-driven illnesses to identify treatment targets and potential therapeutics. As such, he identified glial-fibrillary-acidic-protein (GFAP) as a biomarker for neurotoxicity and developed a quantitative assay that can be used in tissues to assess neurotoxicity. He has published several methods papers and book chapters for this assay; their significance is highlighted by over 700 citations.

Implementation of the GFAP assay he developed will enhance the identification of potentially neurotoxic compounds by adding the activation of the brain's immune system to the repertoire of assays for chemical screening. By refining this aspect of toxicology, Dr. O'Callaghan's research could assist in protecting the health of workers exposed to these chemicals, as well as the public-at-large who may interact with these potential toxicants.

Dr. O'Callaghan's research has impacted how researchers and companies address neurotoxicity risk by including the assessment of astrogliosis via his GFAP assay. Additionally, his research on organophosphate-driven, long-term illness has had a significant impact on the health of the over 250,000 US veterans affected by Gulf War Illness. It stands to support outcomes for other illnesses that have an underlying chronic neuroinflammatory component, such as depression, chemotherapy-induced cognitive impairment, or myalgic encephalomyelitis/chronic fatigue syndrome.