

National Institute for Occupational Safety and Health (NIOSH) Board of Scientific Counselors Update October 2021

Budget

- FY 2021 Budget is \$345.3M, an increase of \$2.5M from FY 2020 Enacted level.
 - \$1.5M increase to create a new Total Worker Health Center for Excellence for Workplace Mental Health
 - \$1M increase to support Underground Mine Evacuation Technologies and Human Factors
- The President submitted a request for FY 2022 discretionary funding on April 9, 2021, with the expectation of submitting the President's Budget with additional detail in the months ahead.
- On July 27th, the House passed the FY 2022 Consolidated Appropriations Act providing \$360.3M in funding for NIOSH. This is a \$15M increase over the FY 2021 enacted and the FY 2022 President's Budget.
 - \$2M – Education Research Centers (ERC)
 - \$2M – Agriculture, Forestry & Fishing (AgFF)
 - \$3M – Personal Protective Technology (PPT)
 - \$4M – Total Worker Health (TWH)
 - \$4M – National Occupational Research Agenda (NORA)
- The Senate has not scheduled markups at this time.

Organizational and Personnel Announcements

NIOSH Leadership Updates

- Dr. Stephen G. Sawyer, Jr. was selected as the Director of the Pittsburgh Mining Research Division (PMRD) effective June 6, 2021.

Retired Staff

- Dr. Charles Geraci, Associate Director for Emerging Technologies in the Office of the Director at NIOSH and Manager of the Nanotechnology Research Center retired on July 31, 2021.

COVID-19 Response

NIOSH continues to maintain a substantial presence in the federal COVID-19 response. NIOSH primarily staffs the Worker Safety and Health Team (WSHT) as part of the CDC Health Systems and Worker Safety Taskforce with some staff supporting other response task forces (e.g., vaccine, epidemiology, and health department). The WSHT provides occupational safety and health technical assistance on workplace mitigation strategies including ventilation, barrier protection, and workplace testing. Since COVID-19 work is also being conducted within NIOSH programs, the WSHT ensures findings from programmatic work are integrated into the response and shared with response leadership to inform decisions. Given the availability of updated OSHA COVID-19 guidance for workplaces and the need to streamline federal COVID-19 resources, NIOSH began archiving its many workplace guidance documents, fact sheets, and toolkits in August 2021. These communication products will remain on the CDC's website with a banner stating that they are now archived. Users are redirected to the most recent applicable recommendations. In addition, NIOSH staff continue to deploy in the field to support outbreak investigations and other needs at the request of the local and state jurisdictions. Many activities are being handled from the Divisions and are presented below.

Construction Safety and Health

Prevention of Heat-related Illness and Injury

Workers exposed to hot environments or extreme heat can be at risk of heat-related illnesses (HRI) and injuries. While important for all workers, planning for prevention of work-related heat exposure and the potential for HRI is particularly important for construction workers. In May 2021, NIOSH published a Science Blog [Take Action Now to Prevent Heat-Related Illness at Work](#). This blog discusses HRI and kidney injury as well as presenting the many resources that are available to help address this issue. Information to create a [complete heat stress program](#) is available at the [NIOSH Heat Stress](#) topic page which also has a variety of useful materials such as posters, fact cards, and access to a [mobile app](#). Heat stress and heat strain as risk factors for workplace injuries among construction workers is the topic of a recent NIOSH [infographic](#) which was also released in coordination with the [2021 National Safety Stand-Down to Prevent Falls in Construction](#).

CPWR (The Center for Construction Research and Training) presented the webinar "Heat related Illness & Death in Construction" in June and is accessible at [Informational Webinar Series](#); A Spanish language webinar is being planned by NIOSH, OSHA, and CPWR for later this summer.

Division of Field Studies and Engineering (DFSE)

NIOSH Sound Level Meter App

The NIOSH Sound Level Meter (SLM) app reached 1-million downloads in July 2021. The app was developed under an MOU agreement between NIOSH and EA LAB (Electroacoustic Laboratory), and was launched in 2017 as a tool to increase awareness about hazardous occupational noise exposures. The

app has garnered an impressive 4.7/5.0 star rating on the Apple app store (based on 7,200 raters), the highest of all NIOSH and CDC apps to date. In addition to individual use, the app continues to spur collaborative studies among NIOSH and other government, academic, and industry partners which have resulted in several peer-reviewed publications, conference presentations, and trade journal articles.

Adding Infectious Disease Surveillance Capacity for 18 Jurisdictions

CDC awarded 16 states, a city, and a county funding to build capacity to collect, code, analyze and use industry and occupation data for COVID-19 case reports as well as other infectious diseases. Throughout this year-long cooperative agreement, which started August 1, 2021, NIOSH and 2 IPA (Intergovernmental Personnel Agreement) partners are developing content for a series of 12 to 16 trainings and will provide coaching for the jurisdictions to help establish these activities in their infectious disease programs. This project is being conducted in collaboration with the National Center for Immunization and Respiratory Diseases (NCIRD).

COVID-19 Response Contributions

Many COVID-19 response activities have been integrated into DFSE's regular operations including:

- A manuscript based on a study funded by the NIOSH internal Just-In-Time call for proposals was recently posted to the medRxiv preprint server. The study found that barriers 36 inches above table height, for both sitting and standing scenarios, blocked over 68% of particles sized between 0.35 – 3 μm generated from a simulated cough. They are conducting the field study phase of the project and are visiting stores, schools and salons to test the effectiveness of installed barriers in those locations.
- NIOSH was funded to add work-related questions to a survey being conducted by the CDC Response Epi Task force to assess COVID-19 seroprevalence in American Red Cross blood donors.
- CDC funded 39 jurisdictions (states) to participate in the NIOSH-sponsored optional module to collect industry and occupation (I&O) for the 2022 BRFSS (Behavioral Risk Factor Surveillance System) annual survey. In addition the National Center for Immunization and Respiratory Diseases (NCIRD) is sponsoring questions in the 2022 BRFSS annual survey on vaccination uptake and hesitancy, which will enable analysis of the vaccination data by I&O.

Division of Science Integration (DSI)

NIOSH/OSHA Small Business Safety and Health Handbook

The Occupational Safety and Health Administration (OSHA) and the [NIOSH Small Business Assistance Program](#) updated and cobranded the [Small Business Safety and Health Handbook](#) which provides workplace safety and health information for general industry, summarizes the benefits of an effective safety and health program, provides self-inspection checklists for employers to identify workplace hazards, and reviews key workplace safety and health resources for small businesses. The handbook has

been one of the most visited publications on the OSHA website, and the self-inspection checklists are referenced in many safety and health materials. The self-inspection checklists address various work processes, such as fire protection, hazard communication, permit-required confined spaces, respiratory protection, and walking-working surfaces. The handbook identifies resources that are available to help employers recognize and fix safety and health hazards in their workplace.

NIOSH Current Intelligence Bulletin 70: Health Effects of Occupational Exposure to Silver Nanomaterials

NIOSH assessed the risks of potential adverse health effects from occupational exposure to silver nanoparticles in the recently published [Current Intelligence Bulletin 70: Health Effects of Occupational Exposure to Silver Nanomaterials](#). Nanoscale silver particles are some of the most widely used nanomaterials in commerce, with numerous uses in consumer and medical products. NIOSH evaluated the data from two published subchronic (intermediate duration) inhalation studies in rats. These studies revealed lung and liver effects that included early-stage lung inflammation and liver bile duct hyperplasia. NIOSH estimated the dose of silver nanoparticles that caused these effects in rats and extrapolated the dose expected to cause a similar response in humans. NIOSH derived a recommended exposure limit (REL) for silver nanomaterials (≤ 100 nanometer primary particle size) of 0.9 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) as an airborne respirable 8-hour time-weighted average (TWA) concentration. In addition, NIOSH continues to recommend an REL of $10 \mu\text{g}/\text{m}^3$ as an 8-hour TWA for total silver (metal dust, fume, and soluble compounds, as Ag). NIOSH further recommends the use of workplace exposure assessments, engineering controls, safe work procedures, training and education, and established medical surveillance approaches to protect workers.

Inaugural Prevention through Design Award

In July NIOSH joined with the National Safety Council (NSC) and the American Society of Safety Professionals (ASSP) to present the inaugural [Prevention through Design \(PtD\) Award](#). Mr. Fred A. Manuele, PE, CSP, was recognized for his major accomplishments through his leadership and initiative to prevent harm to workers by helping organizations design-out hazards. The Prevention through Design (PtD) annual award recognizes individuals, teams, businesses, and other organizations that have eliminated or reduced hazards through design or re-design efforts or have contributed to the body of knowledge that enables PtD solutions. In addition to extending appreciation for these champions for workers, the award partners, NIOSH, the American Society of Safety Professionals (ASSP), and the National Safety Council (NSC), seek to advance PtD awareness and usage.

Division of Safety Research (DSR)

Impact of the COVID-19 Pandemic on Public Health Workers' Mental Health

Researchers coauthored an MMWR [report](#) that 53% of the 26,174 public health workers in state, tribal, local and territorial health departments who responded to an online survey reported symptoms of at least one mental health condition in the previous 2 weeks. The report has been widely viewed, with an

Altmetric score of 613 and more than 30,000 page views. More than half of those surveyed reported symptoms of depression, anxiety, PTSD or suicidal ideation.

Law Enforcement Officer Anthropometry

Researchers coauthored a [paper](#) on the need and extent for a national anthropometry survey of law enforcement officers (LEOs) via an exploratory investigation of anthropometric changes of LEOs in four decades and comparisons of the LEO anthropometry with three military and civilian anthropometry sources. The study confirmed that the available 45-year-old LEO dataset and recent Army and civilian datasets would not be suitable for armor and equipment design for the current LEO population. Additional analyses are underway from a national LEO anthropometry study and recommendations will be made for LEO vehicle and personal protective equipment design applications. This is one of a series of anthropometry studies of various public safety workforces; the data and related information (as developed) are made available to manufacturers for free online.

Firefighter Safety Advisories

The Fire Fighter Fatality Investigation and Prevention Program has published two safety advisories to address factors contributing to fatalities. The [advisory on Odor Fade in Natural Gas and Propane](#) recommends that fire departments ensure all firefighters responding to natural gas or propane incidents: use gas detection equipment and do not rely upon sense of smell to determine if propane or natural gas is present; understand that the odorant in natural gas or propane can fade; are trained on the proper calibration, maintenance, and use of gas detection equipment; and recognize that natural gas or propane contacting soil, concrete, and building materials can cause a lack of odor. The [advisory on Preventing Freewheeling of Public Safety Portable Radio Volume-Power Knob](#) recommends that firefighter portable radio volume-power knobs cannot be accidentally turned down or off. Fire departments should ensure that firefighters recognize that the volume-power knob may be unintentionally turned down or off on some portable radios, and consider upgrading to portable radios with function knobs located on top of the radios, knobs of different size with detents at each position with hard stops, and knobs that are resistant to accidental turning.

Economic Research and Support Office (ERSO)

Recent technological and work organization changes have resulted in an increased prevalence of nonstandard work arrangement types and work precariousness. Two studies highlighted the association of worker flexibility and work precariousness with worker health and well-being:

- The study on worker flexibility concluded that working at home increased the likelihood of job stress and job satisfaction. Taking time off when needed decreased the likelihood of job stress and days with activity limitations due to health problems and more than doubled the likelihood of job satisfaction. Changing one's schedule decreased the likelihood of job stress and increased the likelihood of job satisfaction.

- The study on work precariousness generated a scale to measure work precariousness and examine the associations between this scale with job stress, unhealthy days, and days with activity limitations due to health problems. Workers reporting work precariousness were more likely to experience more days in poor physical and mental health and more days with activity limitations due to health problems.

A third study assessed the association between [occupational injury to parents and the psychological well-being of their children](#). Children of injured workers exhibited greater impairment than children of workers who had not sustained injuries for four of five measures of emotional and behavioral functioning that were hypothesized to differentiate these two child groups. A significant group difference was not observed for a sixth behavioral measure that was expected to be insensitive to parent occupational injury. Findings heighten concern over downstream effects of occupational injury and signal need for additional related research and prevention.

Health Effects Laboratory Division (HELD)

Fit of Cloth and Medical Procedure Masks

An MMWR report was published in February titled “Maximizing Fit for Cloth and Medical Procedure Masks to Improve Performance and Reduce SARS-CoV-2 Transmission and Exposure,” 2021. The paper was the second highest on the CDC top outputs list with an altmetric score of 13451. The ongoing work from this group has been used in several CDC guidance documents and has resulted in 5 publications within the last year examining the efficacy of masks, gaiters, face shields, and portable air cleaners for source control and personal protection. The team currently has 3 additional manuscripts in internal review.

Conference on Human Vibration

The Physical Effects Research Branch organized the virtual 8th American Conference on Human Vibration that was held in June. More than 130 people attended, and 42 studies were presented.

National Personal Protective Technology Laboratory (NPPTL)

Barrier Face Coverings (BFC)

NPPTL supported development of the ASTM International standard 3502-21 Standard Specification for Barrier Face Coverings. NPPTL has developed a web page that provides a table of [Barrier Face Coverings and NIOSH Performance/Performance Plus Masks](#), that conform to the ASTM F3502-21 standard and NIOSH recommendations. . A [web page](#) was added to [PPE-Info](#) to list Barrier Face Coverings and Workplace Performance/Workplace Performance Plus masks that conform to the ASTM F3502-21 Barrier Face Covering standard and NIOSH recommendations on the “[Making Masks for the Workplace](#)” web page, respectively. The quantitative test results, supporting reports, and manufacturer declarations of conformity are provided to NIOSH by the manufacturers for review. These products are not tested by NIOSH. Nine products have been reviewed and are or will be listed.

ANSI Z87.62 Eye and Face Protection Standard

NIOSH/NPPTL was instrumental in facilitating the approval on July 6, 2021 of a new PPE consensus standard for protection of the eyes and face from biological hazards, ANSI Z87.62. The formal name of this standard is ANSI/ISEA Z87.62-2021, American National Standard for Occupational and Educational Eye and Face Protection Devices for Preventing Exposures Caused by Sprays or Spurts of Blood or Body Fluids. As ISEA stated in their press release on July 29, 2021, "This standard represents the first industry effort to standardize eye and face protectors used in occupational settings where the presence of spray and spurt biological hazards poses a risk." Dr. Jim Harris of NPPTL is chair of the subcommittee that developed this standard, and NPPTL scientists and engineers contributed important test methodology. This standard provides specific performance criteria to better inform workers regarding the eye and face safety equipment they depend on to be protected from potentially infectious bodily fluids.

Respiratory Health Division (RHD)

Collection of Work Information in Community Health Centers

RHD received \$900,000 through the COVID-19 pandemic response to pilot collection of work information in community health centers. The data will be used to assess health and vaccination status related to work, outreach efforts, case reporting, and research on the impact of COVID-19 on essential and frontline workers. This demonstration project will help validate work information as an essential data class in the [US Core Data for Interoperability](#) (USCDI) and support future inclusion in EHR certification criteria.

MMWR: Outbreak of SARS-CoV-2 Infections Associated with Large Public Gatherings

RHD staff were senior and co-authors of an MMWR [report](#) on outbreak of SARS-CoV-2 Infections, including COVID-19 vaccine breakthrough infections, associated with large public gatherings. This MMWR was part of the evidence that supported the CDC update on guidance for vaccinated people.

NIOSH B Reader training and examination sessions offered by the American College of Radiology

NIOSH and the American College of Radiology (ACR) have partnered to present B Reader training and examination sessions through the [ACR website](#). Courses are planned in January and March 2022. The three-day course provides practicing physicians with the skills needed to sit for the National Institute for Occupational Safety and Health (NIOSH) B Reader Certification Examination. Participants will receive lectures on the imaging features of pneumoconiosis and the International Labor Organization (ILO) classification system for chest radiographs interspersed with hands-on classification of chest radiographs, and will have the opportunity to sit for the NIOSH B Reader Certification Examination.

Total Worker Health® (TWH)

Workplace Supported Recovery

NIOSH released a [video](#) to introduce the concept of Workplace Supported Recovery and encourage the adoption of Workplace Supported Recovery principles. The video describes how these principles help employers prevent exposure to workplace factors that could cause or perpetuate substance use disorder (SUD) while lowering barriers to seeking or receiving care and maintaining recovery. Employers and workers can learn more about [Workplace Supported Recovery](#) on the NIOSH website.

International Symposium

The [3rd International Symposium](#) to Advance *Total Worker Health*® is scheduled for October 2022. The theme is “Shaping Work Now and in the Future.” This NIOSH-sponsored event is focused solely on advancing *Total Worker Health* (TWH) research, practice, policies, and programs. The symposium will bring together an audience of safety and health professionals, employers, researchers, policymakers, and the academic community to examine opportunities to make workplaces safer and improve the health and well-being of workers. Proposals will be accepted in November 2021 and registration will open in April 2022.

Western States Division (WSD)

Wildland fires are occurring more frequently in the United States and present a health hazard for outdoor workers. In addition to wildland firefighters whose mission is to manage the fire, many other outdoor workers may be exposed to smoke from wildland fires. These include: (a) workers engaged in supporting a fire response or working at the fire base camp or evacuation centers; (b) cleanup workers or demolition crews; and (c) other groups who continue to do their usual non-fire-related outdoor job (e.g., agricultural workers, landscapers, utility workers, construction workers, park personnel). Information specific to wildland firefighters can be found on the [NIOSH Fighting Wildfire webpage](#).

Wildland Firefighter Exposures

Wildland firefighters are exposed to smoke containing particulate matter and volatile organic compounds while suppressing wildfires. The US Forest Service collected wildland firefighters' exposures to PM₄ during fire suppression tasks, and calculated emission ratios of VOC/PM₁ using data from a 2018 field study. The emission ratios were used to estimate wildland firefighter exposures to acrolein, benzene, and formaldehyde and indicated that exposure to PM₄ and VOCs varied across wildland firefighter crew type and job task. Of the PM₄ exposures 19% exceeded the recommended National Wildland Fire Coordinating Group occupational exposure limit indicating a need to develop strategies to reduce smoke exposures.

COVID-19 Transmission in School Buses

Researchers from the NIOSH and the Colorado School of Public Health have partnered to study the impact specific school bus ventilation and airflow variables may have on exposures to SARS CoV-2. The

study measured natural and mechanical ventilation and airflow patterns in a school bus (without passengers) under stationary and moving conditions and evaluated the impact of several controlled variables (e.g., mechanical ventilation, windows, roof hatches, fans, etc.) on the air change rate in the bus. This project seeks to recommend detailed, data-driven ventilation and airflow control strategies that school districts may employ to minimize and prevent COVID-19 transmission in this enclosed environment

Social Presence Statistics

NIOSH continues to expand its presence on social networks.

Social Media and Public Outreach Accounts and Services	August 2020	August 2021
Facebook	152,861 likes	155,777 likes
Twitter	@NIOSH account 304,139	@NIOSH account 297,443* Twitter is continuously deleting inactive accounts
Instagram	8,292 followers	40,538 followers
YouTube	246 videos, 31,315 views	273 videos, 22,217 views
LinkedIn	1,047 members	1,209 members
Website Views	3,130,156 site views in Aug 2020	3,115,708 site views in Aug 2021
eNews Subscribers	60,422	43,362* CDC removes duplicates or invalid emails monthly
TWH Subscribers	61,439	42,797* CDC removes duplicates or invalid emails monthly
Science Blog	Total blog entries: 640 Total comments: 9,151 Blog site views (Aug 2020): 100,770	Total blog entries: 723 Total comments: 9,806 Blog site views (Aug 2021): 77,185

* Twitter is actively deleting inactive accounts

NIOSH Publications

August 2021

- [Best Practices for Dust Control in Coal Mining. Second edition.](#)

July 2021

- [Safe and Proper Use of Disinfectants to Reduce Viral Surface Contamination in Correctional Facilities](#)
- [Small Business Safety and Health Handbook](#)

June 2021

- [FAST - Field Analysis of Silica Tool](#)
- [Preventing Freewheeling of Public Safety Portable Radio Volume-Power Knob](#)

May 2021

- [Prescription Opioid and Benzodiazepine Medications and Occupational Safety and Health: Information for Employers and Healthcare Providers](#)
- [National Firefighter Registry Understanding & Reducing Cancer](#)
- [Current Intelligence Bulletin 70: Health Effects of Occupational Exposure to Silver Nanomaterials](#)
- [NIOSH Worker Well-Being Questionnaire \(WellBQ\)](#)