

## NIOSH eNews



Director's  
Desk



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Monthly  
Features

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## From the Director's Desk

John Howard, M.D. Director, NIOSH

### NIOSH Center for Work and Fatigue Research Celebrates First Anniversary

This month marks the one-year anniversary of the [NIOSH Center for Work and Fatigue Research \(CWFR\)](#). NIOSH has a longstanding interest in the health and safety effects of nonstandard work hours—such as shift work and long hours—on the U.S. workforce. At some point, we have all experienced fatigue—that feeling of weariness that requires extra effort to get things done. Fatigue reduces attention spans, slows down reaction times, limits short-term memory, and impairs judgement [1]. Over time, fatigue can lead to adverse health effects, including cancer [2]. When a worker is fatigued in the workplace, it can impact the health and safety of other workers, with [spillover effects](#) to their families, and even to the general public.

Fatigue can come from different sources [3,4] but is most often related to poor sleep and nonstandard work schedules. However, fatigue can result from other workplace factors like physically or mentally demanding work, monotony, and environmental exposures like heat. Workers can also be fatigued from personal issues—such as physical and mental health concerns, use of certain medications, and stress.



Commercial fishing vessel Day Island on Ventura Beach, California, after grounding resulting from human fatigue. Photo credit: U.S. Coast Guard

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Estimates show that fatigue [costs employers](#) \$136 billion a year in health-related lost productivity. Lack of sleep results in about \$434 billion in annual losses from increased mortality rates, absenteeism, and reduced productivity, along with future losses because of reduced skill development in youth who do not get enough sleep [5]. And these estimations don't capture the cost to workers and their families in how fatigue affects their quality of life. This cost can include less enjoyment of leisure activities, lower household productivity, and loss of income resulting from workplace fatigue-related injuries or illnesses.

To keep workers in nonstandard schedules safe and healthy, NIOSH has collaborated with our partners and stakeholders in industry, labor, academia, and government to develop a wide range of products and research.

CWFR strengthens our work in this area by building upon our previous work on sleep and nonstandard schedules to include other sources of fatigue, such as physically and mentally demanding work, comorbidities, and environmental exposures. CWFR collaborates with researchers, policy makers, and others to develop practical, effective solutions to mitigate these risks. It serves as a resource to NIOSH researchers who are interested in pursuing activities in this area, developing opportunities for cross-Institute and cross-partner collaborations with external partners and stakeholders. Using this multidisciplinary approach, CWFR creates new and innovative industry-specific approaches and outreach initiatives to protect workers and promote worker health and safety. Stay tuned for more to come in the second year of the CWFR!

For more information on CWFR and its efforts to help workers, please visit the [CWFR webpage](#).

## References

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- [Pivotal Study Links Lung Cancer Death to Diesel Exhaust](#)

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## Research Rounds

For the NIOSH 50th Anniversary, please enjoy this limited time series of “NIOSH Now” and “NIOSH Then” where we look back at research efforts inside & outside of NIOSH from the past 50 years.

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## NIOSH Now:

### Weather Is Factor in Pesticide Drift and Related Illness in Agriculture

Pesticides protect our nation's food supply from pests, but these chemicals can be toxic and cause injury or illness. Pesticides can drift from areas where they are sprayed to other locations due to changing winds, application method, crop type, and other factors, exposing nearby agricultural workers and other bystanders.

In fact, pesticide drift accounts for 37–54 percent of pesticide-related illnesses among U.S. agricultural workers. It is a public health concern in many farming areas, including the Pacific Northwest. However, research linking weather conditions to illness from pesticide drift is limited.

The NIOSH-funded Pacific Northwest Agricultural Safety and Health Center aimed to better understand this issue by examining historical weather information and records of pesticide-related illness from the Washington State Department of Health. They linked 252 pesticide drift events with 690 confirmed cases of pesticide-related illness from 2000 through 2015, according to the study published in [Environmental Health](#).

To characterize the conditions that are prone to pesticide drift, the researchers focused on wind speed and direction, types of crops, application method, work activity during exposure, and reports of illness. They compared weather information from pesticide applicator records to those of a network of 171 weather stations. Pesticide applicator records were available for only 23 percent of the pesticide drift events. Those records showed an average wind speed two miles per hour lower than that of the weather stations. Most pesticide drift events resulted from ground spraying (68 percent) and the spraying of tree fruit (60 percent). Aerial application (applying pesticides from the air) accounted for 23 percent of drift events. In this study, 69 percent of those affected by pesticide drift were agricultural workers, and the rest were bystanders.

While researchers need more complete information on location, time, and wind speed and direction, future trainings could include these findings to help improve pesticide application and record-keeping on pesticide drift.

More information is available:

- [NIOSH | Centers for Agricultural Safety and Health](#)
- [University of Washington: Pacific Northwest Agricultural Safety and Health Center](#)

## NIOSH Then:

### Pivotal Study Links Lung Cancer Death to Diesel Exhaust

In 2012, a study of non-metal miners showed that exposure to diesel exhaust particulate, or small particles, greatly increased the risk of death from lung cancer. This study, published in the [Journal of the National Cancer Institute](#), was an important advance in understanding the relationship between this exposure and the risk of lung cancer death.

## Highlights

Prior studies had showed that diesel exhaust increased the risk of lung

### NIOSH Appoints New Director of Pittsburgh Mining Research Division

NIOSH has appointed Stephen C. Sawyer, Jr., PhD, as the Director of the Pittsburgh Mining Research Division (PMRD). Dr. Sawyer has worked in PMRD's Human Systems Integration Branch for the past year. Prior to joining NIOSH, he spent 16 years working in the Mine Safety and Health Administration Technical Support program area. In his new role, Dr. Sawyer will lead the diverse group of division researchers to eliminate mining fatalities, injuries, and illnesses through relevant research and impactful solutions.

In this study, investigators used death records to look at the relationship

### Workplace Health Disparities: A Total Worker Health Perspective

Join the NIOSH Total Worker Health® Program on June 3, from 2:00-3:30 p.m. (EDT), for a closer look at workplace health disparities. Speakers will discuss the relationship between inequities, work, and health and share strategies to address workplace health disparities. NIOSH speakers Constance Franklin, MPA, and Michael A. Flynn, MA, will be joined by Kendra Mason, PhD, from the University of North Carolina at Charlotte. Register today.

on industrial hygiene measurements taken during the study and historical

### NIOSH Partners With UW-Madison to Advance Occupational Robotics Safety & Health Research

NIOSH's Center for Occupational Robotics Research has signed an agreement with the University of Wisconsin-Madison (UW-Madison) to enable collaborative robotics research between the institutions and provide educational opportunities for UW-Madison students. The 5-year NIOSH and UW-Madison partnership will encompass collaborative research using complementary labs, guest research appointments, coauthored publications, and experiential learning.

underground for 5 years or more were at the greatest risk, but surface

### New Survey Instrument Available From NIOSH to Help Assess Worker Well-being

NIOSH recently announced a new resource designed to measure worker well-being. The NIOSH Worker Well-Being Questionnaire (WellBQ) is a freely available instrument intended to help researchers, employers, workers, practitioners, and policymakers understand workers' well-being and target interventions to improve it. The questionnaire measures "worker" well-being as a holistic construct rather than simply "workplace" or "work-related" well-being. Visit the

[NIOSH website](#) for more information.

This pivotal study helped lay the groundwork for current NIOSH research

on controlling and monitoring exposure to diesel exhaust.

### Celebrate National Safety Month

More information is available:

Join NIOSH and the National Safety Council in celebrating the 25<sup>th</sup> anniversary of National Safety Month. With the United States seeing the highest number of workplace deaths since 2007, this observance is more important than ever.

Participants can access a variety of free materials on four weekly topics on the [National Safety Month webpage](#). NIOSH will be sharing information all month long across social media. Be sure to follow along on [Twitter](#), [Facebook](#), and [Instagram](#).

### Using Flu Data to Guide Vaccination Planning for Workers

NIOSH assessed flu vaccinations among currently employed workers who responded to the 2018 Behavioral Risk Factor Surveillance System (BRFSS) survey. Researchers created data summaries by industry and occupation that describe

analyses of flu vaccine prevalence among participating workers, along with where they received their flu vaccines. These data summaries can be used to plan future vaccination efforts. Learn more on the [BRFSS webpage](#).



### NIOSH Researcher Nominated for Public Service Recognition Week

Dr. Sarah Felknor, NIOSH Associate Director, was nominated last month by the [Federal Foresight Community of Interest](#) during [Public Service Recognition Week](#) [☑](#) (May 2–8) for her work championing the use of strategic foresight at NIOSH. Dr. Felknor leads the NIOSH Office of Research Integration (ORI). Established in January 2019, ORI collaborates with the external occupational safety and health community to promote strategic foresight, a

planning and action-oriented discipline to help organizations prepare for uncertain futures.

### ClearMark Award

[The Center for Plain Language](#) [☑](#) hosted the ClearMark Award Ceremony at the virtual Access for All Conference on May 13. Congratulations to Melanie Stefanick, Jeff Funke, Nancy Romano, Jennifer Lincoln, Hope Tiesman, and Rebecca Knuth, who won an [Award of Distinction](#) [☑](#) for their ClearMark entry, [Prevent Struck-by Incidents at Crash Scenes](#).

### Prescription Opioid and Benzodiazepine Medications and Occupational Safety and Health: Information for Employers and Healthcare Providers

A new CDC/NIOSH [fact sheet](#) summarizes scientific literature and information from relevant CDC and NIOSH publications for employers and healthcare providers about the prescription use of opioids and benzodiazepines. Some occupational factors, such as work-related motor vehicle crashes, job stress, falls, and other injuries, can potentially increase the chances that a worker is given a prescription for an opioid or benzodiazepine.

### Health Effects of Occupational Exposure to Silver Nanomaterials

In a new publication, [Current Intelligence Bulletin 70: Health Effects of Occupational Exposure to Silver Nanomaterials](#), NIOSH researchers assessed the potential health risk from occupational exposure to silver nanomaterials. They derived a recommended exposure limit (REL) of 0.9 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) as an airborne respirable 8-hour time-weighted average (TWA) concentration to protect workers. This REL applies to a primary particle size of  $\leq 100$  nanometers. In addition, NIOSH continues to recommend a REL of  $10 \mu\text{g}/\text{m}^3$  as an 8-hour TWA for total silver (metal dust, fume, and soluble compounds, as silver).

## Monthly Features

## New Communication Products & Reports

## Face Reports

- [Newly Hired Lighting Technician Electrocuted while Working Night Shift—Oregon](#)

## Firefighter Fatality Investigation and Prevention Program Report

- [46-Year-Old Airport Firefighter Suffers Fatal Heart Attack Responding to Call—Pennsylvania](#)

## Health Hazard Evaluation Report

- [Evaluation of Exposures to Metals and a Perceived Excess of Cancer Cases in a Train Maintenance Facility](#)

## Publications

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

## Topic Page


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- 

## NIOSH Science Blog

- [Lifejackets for Lobstermen](#)
  - [Take Action Now to Prevent Heat-related Illness at Work](#)
  - [Celebrating 25 Years of the National Occupational Research Agenda](#)
  - [NIOSH Program Portfolio: Promoting Research Collaboration for 16 Years and Counting](#)
  - [Protecting Firefighters](#)
  - [Recognizing Exemplary Science and Service](#)
  - [The Who, What, How, and When of Implementing Fatigue Monitoring and Detection Technologies](#)
  - [The Role of Artificial Intelligence in the Future of Work](#)
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## Federal Register Notice

### World Trade Center Health Program Scientific/Technical Advisory Committee (WTCHP, STAC); Notice of Charter Renewal

The [notice](#)  was posted on May 28.

### **Advisory Board on Radiation and Worker Health (ABRWH), Subcommittee on Dose Reconstruction Review (SDRR), National Institute for Occupational Safety and Health (NIOSH)**

The [notice](#) was posted on April 23. Comments must be received by June 9. The meeting will be held on June 16 from 10:30 a.m.–2:30 p.m. (EDT).

### **Mine Safety and Health Research Advisory Committee Meeting (MSHRAC)**

The [notice](#) was posted on April 23. The meeting will be held on June 21 from 10:00 a.m.–2:30 p.m. (EDT).

### **Advisory Board on Radiation and Worker Health (ABRWH), National Institute for Occupational Safety and Health (NIOSH)**

The [notice](#) was posted on May 3. Comments must be received by June 16. The meeting will be held on June 23 from 10:30 a.m.–1:00 p.m. (EDT).

### **Proposed Data Collection Submitted for Public Comment and Recommendations: A Baseline of Injury and Psychosocial Stress for Applied Behavior Analysis Workers**

The [notice](#) was posted on May 7. Comments must be received by July 6.

### **Proposed Data Collection Submitted for Public Comment and Recommendations: Generic Clearance for the Collection of Qualitative Feedback on Agency Service Delivery**

The [notice](#) was posted on May 7. Comments must be received by July 6.

### **Coal Workers' Health Surveillance Program: Autopsy Payment**

The [notice](#) was posted on May 6. Comments must be received by July 7.

### **Proposed Data Collection Submitted for Public Comment and Recommendations: Nurse Fatigue-Mitigation Education: Does it Change Nurse Sleep Behavior?**

The [notice](#) was posted on May 14. Comments must be received by July 13.

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## NORA

### **Oil and Gas Extraction Research Featured in Podcast**

Three NIOSH scientists share research made possible through the NORA Oil and Gas Extraction Council in episodes of the [Probability Matters](#) podcast. This podcast discusses the potential, philosophy, impact, and role that technology can play in the future of health and safety. The episodes are [Tales of Toxicology](#) (episode 33) with John Snawder; [Complexity of Controls](#) (episode 36) with Emanuele Cauda; and [The Human Hygienist](#) (episode 43) with Bradley King.

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## News from Our Partners

### **New Study Focuses on Personal and Work Factors and Risk for Neck Pain**

Neck pain is among the top and fastest-growing causes of global disability, but can we blame this issue solely on bad posture? Not so, according to a [study](#) at Texas A&M University that found both work and personal factors, such as



body mass index, age, and work-related habits, can influence the neck's strength and endurance. The study, published in the journal *Human Factors* [↗](#), was funded by NIOSH through a [Large Occupational Safety and Health Research Grant \(R01\)](#).

### Latest News From the Center for Health, Work & Environment

Read the latest [newsletter](#) [↗](#) from the Center for Health, Work & Environment at the Colorado School of Public Health. The Center also recently launched the [Workplace Mental Health Module](#) [↗](#) in partnership with the University of Colorado Helen and Arthur E. Johnson Depression Center. Employers can use this online toolkit to raise awareness of mental health issues in their workplaces and better support workers' mental well-being. The Center for Health, Work & Environment is one of six NIOSH-funded [Centers of Excellence for Total Worker Health](#)<sup>®</sup>.

### New CDC Drug Overdose Website in Spanish

CDC recently launched a [drug overdose website](#) in Spanish. The page includes basic information about the opioid epidemic and overdose prevention, as well as frequently asked questions, commonly used terms, and other resources to raise awareness. There are also fact sheets, posters, infographics, and conversation starters in Spanish. Visit the website to learn more.

### Washington State's TIRES Program Ends After Over 15 Years

The [Trucking Injury Reduction Emphasis \(TIRES\)](#) [↗](#) program in Washington state will end this summer after more than 15 years of partnering with industry and labor to prevent injuries to Washington truck drivers. TIRES began in 2005 out of the Safety and Health Assessment and Research for Prevention Program within the Washington State Department of Labor and Industries—a NIOSH-funded [State-based Occupational Safety and Health Surveillance Program](#). Since then, TIRES has created widely used publications and educational materials, including trainings, that identify workplace hazards and provide low-cost, simple solutions to prevent injuries. The TIRES program is currently developing a customizable [online safety program](#) [↗](#). TIRES publications will remain available at [KeepTruckingSafe.org](#) [↗](#).

### New Opioid Awareness Trainings for Employers and Employees

In collaboration with Health Resources in Action, the Massachusetts Department of Public Health's Occupational Health Surveillance Program is creating online opioid awareness trainings for employers and employees. These trainings, entitled [Preventing Injury, Pain & Opioid Use in the Workplace](#) [↗](#), describe how workplace conditions may lead to injury, pain, and opioid use. They also explore strategies in creating a work environment that helps prevent opioid use and addiction, as well as support treatment and recovery. The trainings are now being pilot tested. Workers in industries at high risk of injury and/or opioid overdose are welcome to join the pilot trainings and contribute feedback.

### Connecticut Improves Recovery Friendly Workplace Toolkit

The [Recovery Friendly Workplace Toolkit](#) [↗](#) is a resource for employers to implement a recovery friendly workplace program using a standardized and accepted policy and practice framework. The online toolkit is intended for companies with little experience and information on opioid use disorders. Connecticut's [Occupational Health Fundamental-Plus Surveillance Program's](#) earlier work on [Opioid Use in Connecticut's Workforce](#) [↗](#) is also available on the Connecticut Department of Public Health's website.

### Call for Proposals:

- *National Occupational Injury Research Symposium*: The deadline to [submit](#) abstracts and proposals for sessions is October 1.

# Conferences, Meetings, Webinars, & Events

This page provides a list of publicly available occupational safety and health-related [conferences, meetings, webinars, and events](#) sponsored by NIOSH as well as other government agencies, and nongovernment agencies, such as universities, professional societies, and organizations.

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