The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research NIOSH

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From the Director’s Desk

John Howard, M.D., Director, NIOSH

Advancing Safe Human-Robot Interaction in Construction

Robots have been part of popular culture for decades, from R2-D2 to the Terminator to Optimus Prime. More recently, however, robots have moved from the big screen to our everyday lives, including where we work.

These workplace robots can improve worker safety and well-being by operating in environments that are dangerous or unhealthy for people. There are an increasing number and type of robots in the workplace. Compared with 6 years ago, the global average robot density (robots per 10,000 employees) has more than doubled .

However, the use of robotics in the workplace also presents its own unique worker safety and health challenges. NIOSH created the Center for Occupational Robotics Research to address such challenges. The center aims to help ensure the safety of workers who use, wear, or work near robots.

While NIOSH robotics research crosses multiple work sectors, one area of specific focus is construction. In 2019, the construction industry employed about 11.4 million workers. It also has some of the highest numbers of fatalities and injuries of all industries. As a high-risk industry, construction is a natural fit for using robots to minimize risk to workers. Robots laying bricks (masonry robots), demolishing buildings (demolition robots), and doing inspections at elevation (drones) are a few examples where robotic technologies could reduce worker risks.

The NIOSH Robotics Center is using virtual reality (VR) to identify and prevent potential hazards in this high-risk industry. For example, NIOSH researchers are using VR to identify hazards and assess the machine-, human-, and environment-related factors of using demolition robots. This research will provide a base of scientific knowledge for future research.

Researchers are also using VR to look at drone use in construction and its effects on workers at heights. For example, VR can help determine if using drones distracts workers at height. This includes evaluating the effect of drone use on worker attention as well as physiological response.

Ensuring that this technology integration occurs in a way that increases productivity and lessens job-related safety and health risk requires experts from many different perspectives. Recently, NIOSH and its partners hosted a webinar, "Safe Human-Robot Interaction in Construction." One presenter, who discussed innovative field robotics applications, was the robotics lead from one of the largest U.S. general construction contractors. Other webinar topics included the following:

- Funding opportunities for human-robot interaction as it applies to construction.
- Removing barriers to construction work through remote construction operations.
- Exploring biomechanics of human-robot collaboration.
- Identifying special safety considerations for the future of increased automation in construction.

Moving forward, NIOSH will continue to focus our research efforts on keeping workplaces that use robotics safe for workers.

Research Rounds

The Respiratory Health of Working U.S. Coal Miners Since 2014—Radiography, Spirometry and Symptom Assessments

NIOSH study authors: Noemi B. Hall, Laura Reynolds, David J. Blackley, and A. Scott Laney

Why is this study important?

Over the past two decades, more coal miners have developed the serious lung disease known as coal workers' pneumoconiosis, or black lung disease. This increase follows 30 years of a steady decrease in cases. This incurable disease is caused by breathing in coal mine dust. The good news is that dust-control technology exists to reduce exposure and prevent black lung disease. However, if health assessments show that black lung disease has developed in a miner, job reassignment can slow further progression of disease. To prevent the disease from becoming severe, it is important to identify disease as soon as possible and provide interventions early.

How did you do the study?

Through the NIOSH Coal Workers' Health Surveillance Program, we looked at the results of X-rays and spirometry, or breathing tests, from October 1, 2014, through June 30, 2022. Coal miners participating in the program receive screenings for black lung disease at no cost to them.

What did you find?

Our results showed that miners in central Appalachia were much more likely than miners in other regions to have black lung disease and other signs of lung damage. Compared with other miners, central Appalachian miners were more than four times as likely to have black lung disease on X-ray. They were 40% more likely to have abnormal breathing test results. Central Appalachia includes Kentucky, Virginia, and West Virginia.

In other findings, underground miners, regardless of which region of the country in which they worked, were twice as likely than other miners to show signs of black lung disease on X-ray.

What are the next steps?
Continued intense efforts to monitor and prevent the development of black lung disease are especially important in central Appalachia, where disease rates are highest.

National Estimates of Home Care Workers Nonfatal Emergency Department-treated Injuries, United States 2015–2020

NIOSH study authors: Susan J. Derk, Kitty J. Hendricks, and Dan Hartley

Why is this study important?
For people who have difficulty performing daily tasks due to aging, illness, or other challenges, home care workers can be a lifeline. In 2021, approximately 3.6 million home health and personal care aides were employed in the United States, according to the Bureau of Labor Statistics. By 2031, this number is projected to increase by 25% to 4.6 million workers.

Home care workers typically work alone with their clients in private homes, which presents unique safety challenges. To protect these workers, it is important to understand how and why injuries occur.

How did you do the study?
We looked at nonfatal injuries among home care workers from 2015 to 2020, using data from the National Electronic Injury Surveillance System—Occupational Supplement (NEISS-Work). A partnership between NIOSH and the Consumer Products Safety Commission, NEISS-Work collects information on work-related injuries treated in hospital emergency departments.

What did you find?
In the five years studied, 117,000 home care workers were treated in emergency departments for work-related injuries. Nearly all (93%) of the injured workers were female. More than half of the injuries were from overexertion and repetitive motions. Falls, slips, and trips accounted for 15% of injuries, as did violent acts by people or animals.

What are the next steps?
More research is needed to understand and prevent the factors that increase the risk of work-related injuries among home care workers. This research is especially important as the number of home care workers continues to grow, putting more workers at risk for injury.

Photo by ©Getty Images

In This Issue:

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Highlights

TIME Magazine Cites NIOSH *Total Worker Health*® Program as Model for Workplace Health

A recent article, titled "Work Is the New Doctor's Office ," cites the NIOSH *Total Worker Health*® Program as a model for workplace health. Published in *Time* magazine, the article examines how work factors influence individual well-being.

Safe-in-Sound Award Winners Announced

Winners of the 2024 Safe-in-Sound Award for Excellence in Hearing Loss Prevention™ will be recognized at the 48th National Hearing Conservation Association annual conference on Friday. The award is an effort between NIOSH, the National Hearing Conservation Association, and the Council for Accreditation in Occupational Hearing Conservation. Read the NIOSH Update to learn more.

Upcoming Workshop to Increase Reusable Healthcare Textiles Used in PPE

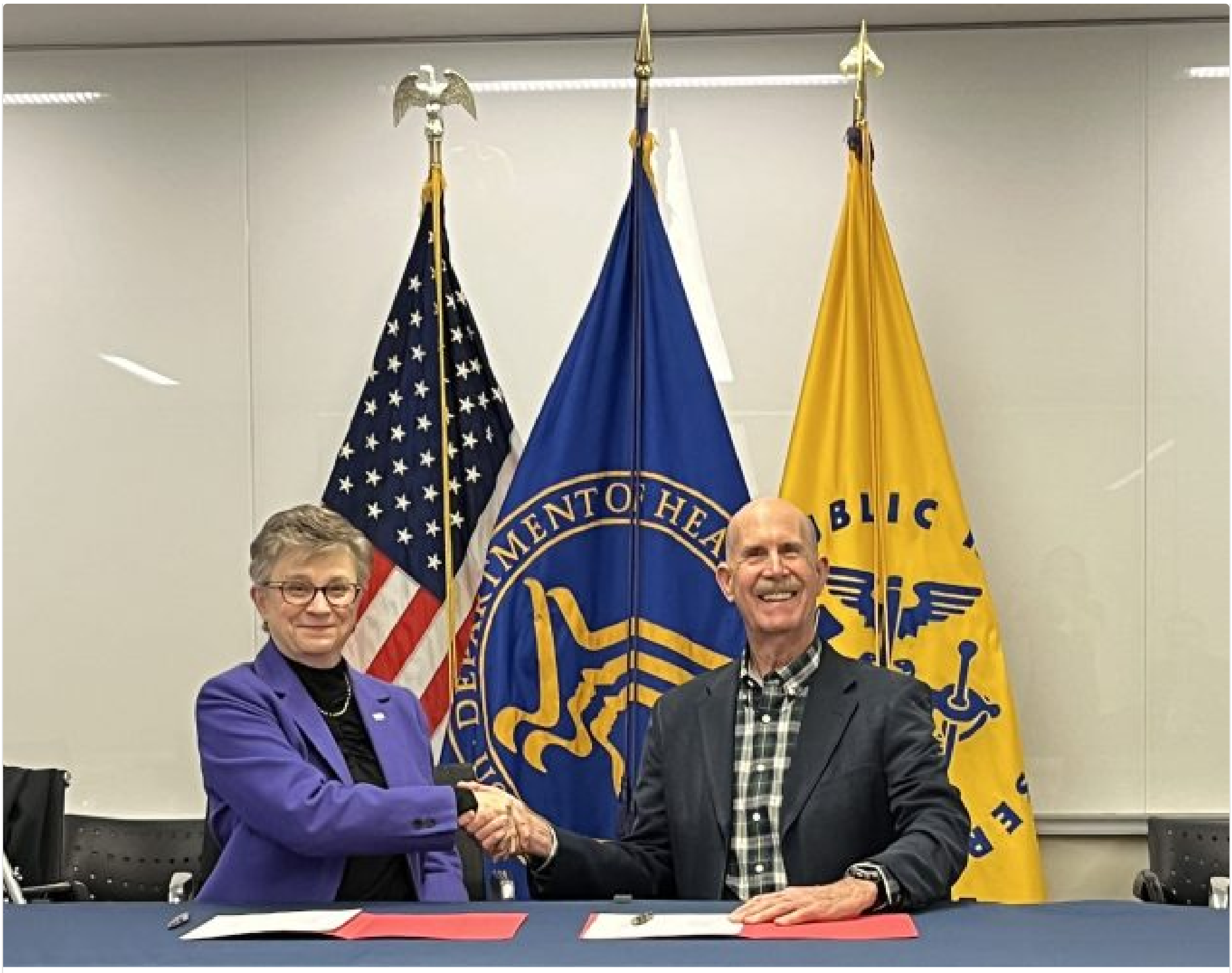
NIOSH is sponsoring a virtual public workshop hosted by the National Academies of Sciences, Engineering, and Medicine. The aim is to find ways of increasing the use of reusable healthcare textiles for personal protective equipment in healthcare settings. Register for the March 4–5 workshop or visit the project webpage to learn more.

The NIOSH *Total Worker Health*® Program: The Third Decade

A new publication describes how the NIOSH *Total Worker Health*® Program prepares employers and workers for an evolving workplace. Published in the *Journal of Occupational Environmental Medicine*, the article highlights the program's current and future goals and outlines past and present successes.

NIOSH Renews Research Effort on Styrene Exposure and Cancer Risk

NIOSH, Aarhus University Hospital, and Aarhus University are pleased to announce their continued joint research on styrene exposure. Their work focuses on the cancer risk among reinforced plastics industry workers. For more information about this partnership or NIOSH's styrene research efforts, contact Stephen Bertke.



NSC President & CEO Lorraine Martin and NIOSH Director Dr. John Howard. Photo by NIOSH

NSC & NIOSH Renew Commitment to Keep Workers Safe

In January NIOSH and the National Safety Council (NSC) renewed their partnership to work collectively on worker and workplace safety and health. The work under the partnership spans from research, outreach, communication, and professional development opportunities. Read the NSC press release for more information about this partnership or contact Eric Glassford.

Monthly Features

Meetings and Events

Register Now for the Next NIOSH Expanding Research Partnerships Webinar!

On February 14, from 11:00 a.m.–12:00 p.m. (ET), NIOSH will host the next Expanding Research Partnerships Series webinar, "Protecting Wildland Firefighter Safety and Health." The event will focus on wildland firefighter safety and health in their unique and hazardous work environment. See the full speaker list and register .

View more occupational safety and health-related conferences, meetings, webinars, and events hosted by NIOSH and partners.

Communication Products

FACE Reports

- Rigging Crew Leader Crushed by Light Tower Weight—Massachusetts
- Truck Driver Crushed by Freight Pushed Off Flatbed Trailer—Washington (slideshow)

Fire Fighter Fatality Investigation and Prevention Program Report

- 26-Year-Old Firefighter Dies of Complications From Acute Promyelocytic Leukemia

Health Hazard Evaluation Report

- Evaluation of Exposures to Metals, Metalworking Fluids, Alcohols, and Volatile Organic Compounds at an Acrobatic Equipment Manufacturer

Safety and Health Advisory

- Training on the Rapid Removal of an Unresponsive Firefighter from Turnout Gear and Self-Contained Breathing Apparatus

Workplace Solutions

- Preventing Law Enforcement Officer (LEO) Motor Vehicle Crashes

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Science Blog

Sign up to receive updates about new NIOSH Science Blogs delivered directly to your inbox! Here are the blogs from last month:

- Looking to the Past and the Future of NIOSH Nanotechnology Guidance
- Health Equity, Work, and Motor Vehicle Safety
- Is Occupational Physical Activity Harmful to Health?
- ONDCP Launches New Recovery Ready Workplace Toolkit
- Long COVID and Occupational Medicine Practice
- Most-viewed NIOSH Products in 2023
- Nonfatal Occupational Injury Surveillance Data: Examples From Michigan

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NORA

Upcoming NORA Meetings

- Join the **Health and Social Assistance NORA council** for their meeting on February 21, from 1:00–2:30 p.m. (EST). Please contact Suzanne Tomasi for the meeting invite.
- Join the **Public Safety Sector NORA council** for their meeting on February 28, from 1–4 p.m. (EST). Please contact Wesley Attwood for the meeting invite.

News from Our Partners

New Fact Sheet on Workplace Mental Health

The Occupational Safety and Health Administration (OSHA) issued a new fact sheet titled *Workplace Mental Health*. Available in English and Spanish, it offers vital information and resources to address mental health in the workplace. The fact sheet will be incorporated into an OSHA training module and Outreach Training courses.

New PFAS Information for Clinicians

CDC and the Agency for Toxic Substances and Disease Registry released a document titled PFAS: Information for Clinicians. Clinicians will find updated information to consider when seeing patients concerned about per- and polyfluoroalkyl substances (PFAS) exposure or possible health effects.

Kentucky Occupational Health Indicators Report Available

This report presents the most recently available data for each occupational health indicators at the time this report was developed. A couple of highlights from the report, reflect Kentucky's nonfatal work-related injury and illness rate has steadily decreased over the past decade, but remains consistently higher than the rate. Additionally, Kentucky's occupational fatal injury rate has fluctuated over the past decade and continues to be above the U.S. rate.

New Mental Health Resources from Kentucky Public Health Partners

This resource provides some new Mental Health Resources that are available in the state of Kentucky, and it reminds the public, that it's okay to ask for help.

New Runover/Backover Safety Alert Available

The purpose of this Hazard Safety Alert is to: 1) Highlight an industry's occupational health risks for the Tree Care Industry; 2) Share a case study of an occupational fatality of a Tree Care worker that was fatally struck by log; and 3) Provide guidance with some prevention recommendations to prevent similar incidents.

Federal Register Notices

Advisory Board on Radiation and Worker Health, National Institute for Occupational Safety and Health

The notice was posted on December 18, 2023. Comments must be received by February 7. The meeting will be held on February 14.

Request for Public Comment on NIOSH Initial Recommendations to Change the Status of Liraglutide and Pertuzumab on the NIOSH List of Antineoplastic and Other Hazardous Drugs in Healthcare Settings

The notice was posted on January 16. Comments must be received by February 15.

Newsroom

Careers

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