# National Institute for Occupational Safety and Health Update

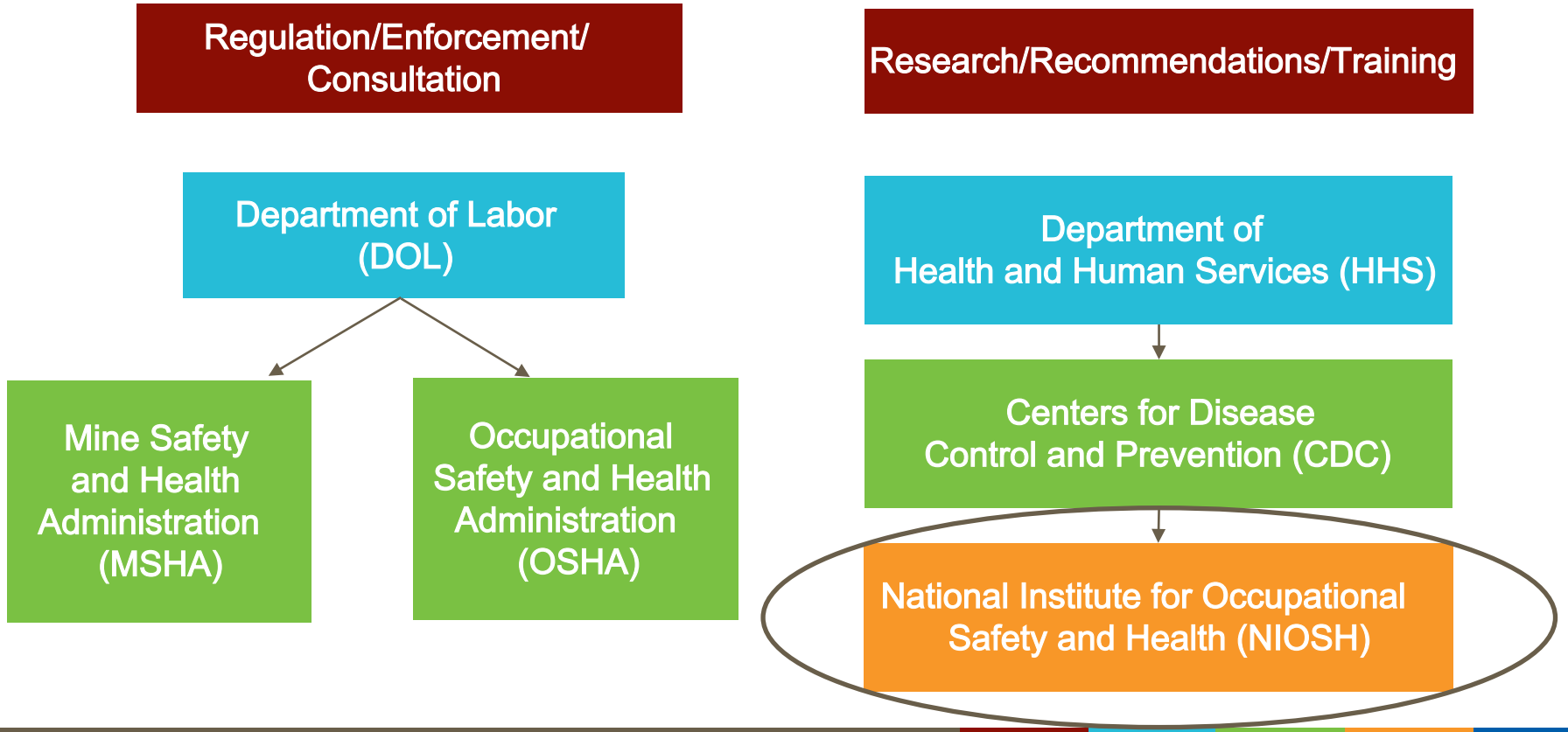
SRP Progress in Research
May 17, 2024

Elizabeth H. Maples, PhD, CIH
Program Official
Office of Extramural Programs

# Objectives

- Overview of NIOSH
- Programs and Initiatives
- Product Highlights
- NIOSH Training Portfolio
  - Opportunities for Collaboration

# US Occupational Safety and Health



# NIOSH

Mission: *To develop new knowledge in the field of occupational safety and health and to transfer that knowledge into practice.*

Vision: *Safer, Healthier Workers*

*Science at Work for People at Work*

# What President signed the OSH Act of 1970?

# NIOSH Locations

Washington, DC
Atlanta, GA
Cincinnati, OH
Morgantown, WV
Pittsburgh, PA
Spokane, WA
Denver, CO
Anchorage, AK

Approx. 1,100 Staff + 1,000 contractors/fellows

# Programs and Initiatives

# Center for Motor Vehicle Safety

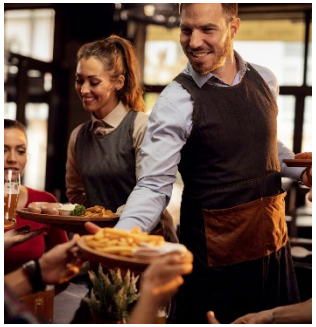
- Leading cause of worker injury death
- Research to identify causes and effective interventions
- Actionable information

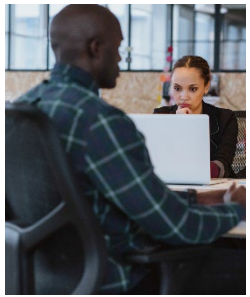
Pickup driver with lengthy record held in Florida bus crash that killed 8 Mexican farmworkers

Motor Vehicle Safety at Work Research Program | NIOSH | CDC

# Center for Work and Fatigue Research





## Mission

- Raising awareness of different sources of worker fatigue
- Methods to assesses workplace fatigue-risk
- Strategies to reduce  risks associated with workplace fatigue

## Highlights

- Training for Nurses on Shift Work and Long Work Hours
- How to Choose the Right Fatigue Detection Technology for Your Workplace (cdc.gov)

Work and Fatigue: About the Center | NIOSH | CDC

# Center for Occupational Robotics Research

## Mission

- Provide scientific leadership to guide the use of occupational robots that enhance worker safety health and well-being.

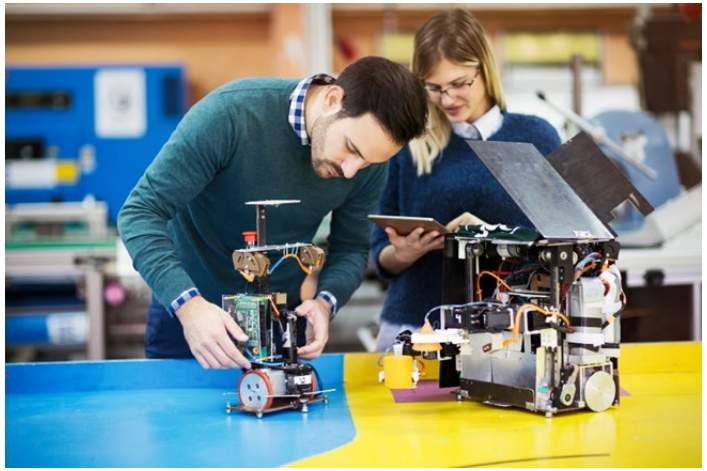


Photo by © 2016 nd3000/Getty Images

## Highlights

- OSHA/NIOSH/Robotic Industries Association Alliance
- Case studies of robots and automation as health/safety interventions.

Robotics | NIOSH | CDC

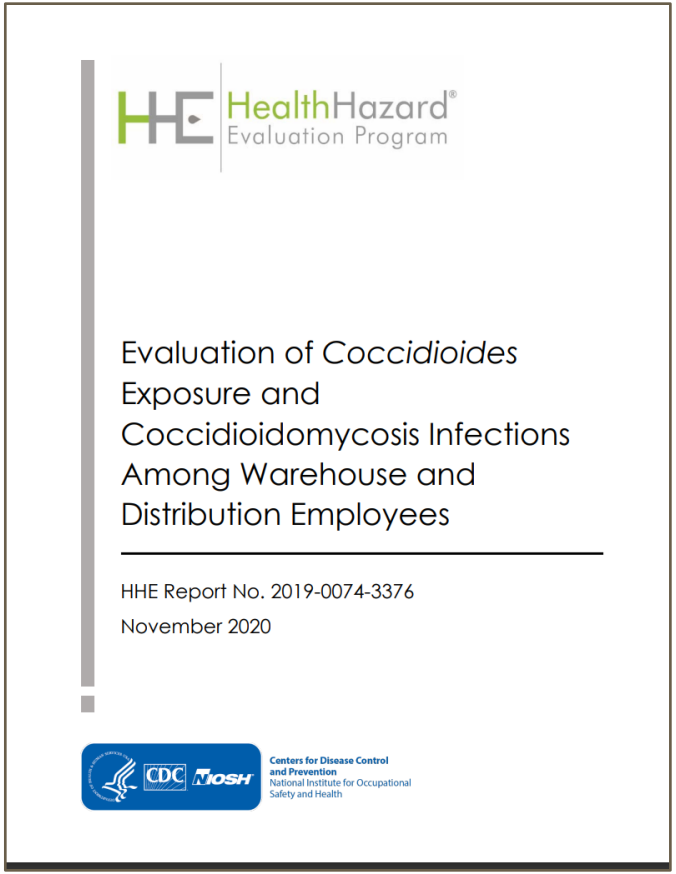
# Emergency Preparedness and Response Program

- Prepares for, responds to, and supports research on chemical, biologic, radiologic and natural disasters
- Integrates and evaluates occupational safety and health topics to protect response and recovery workers
- Coordinates NIOSH participation in CDC response with a worker focus
  - COVID-19, Monkeypox


Emergency Preparedness and Response Program | NIOSH | CDC

# Health Hazard Evaluation (HHE) Program

- Provides authoritative assistance in evaluating new and recurring workplace hazards
- Can be requested by employers, unions, and employees
- No charge
- Dependent on knowledge of hazard or illness, may involve site visits, interviews, medical examinations, etc.



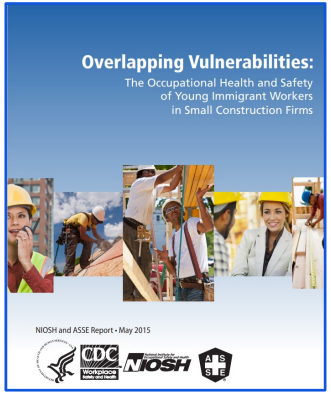

[Health Hazard Evaluations (HHEs) | NIOSH | CDC]

# Occupational Health Equity Program

Promotes research, outreach, and prevention activities that reduce health inequalities for workers who are at higher risk for occupational injury and illness as a result of social and economic structures historically linked to discrimination or exclusion

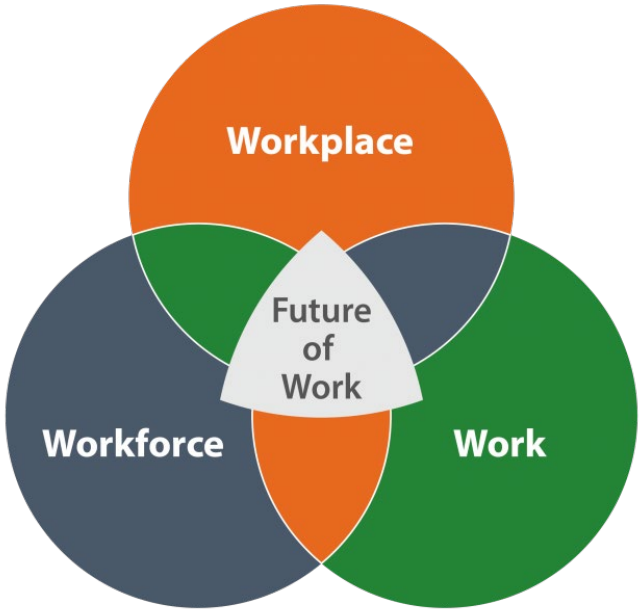
## Highlights

Prevalence of workplace discrimination and mistreatment in a national sample of older U.S. workers




NIOSH Occupational Health Equity Program

# Future of Work Initiative

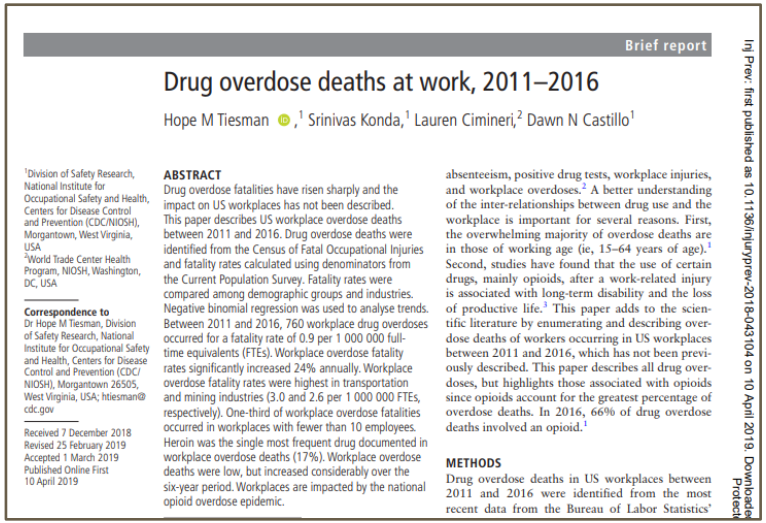



- Compiles studies on the future of work
- Promotes research in new technologies, industries
- Connects trends in workplace, work, and workforce to OSH
- Webinar Series

Future of Work Initiative | NIOSH | CDC

# Science-based Recommendations

**Scientific Literature** → **Documents Targeted to Stakeholders**



Brief report

## Drug overdose deaths at work, 2011–2016

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[2]World Trade Center Health Program, NIOSH, Washington, DC, USA

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Published Online First
10 April 2019

**ABSTRACT**
Drug overdose fatalities have risen sharply and the impact on US workplaces has not been described. This paper describes US workplace overdose deaths between 2011 and 2016. Drug overdose deaths were identified from the Census of Fatal Occupational Injuries and fatality rates calculated using denominators from the Current Population Survey. Fatality rates were compared among demographic groups and industries. Negative binomial regression was used to analyse trends. Between 2011 and 2016, 760 workplace drug overdoses occurred for a fatality rate of 0.9 per 1 000 000 full-time equivalents (FTEs). Workplace overdose fatality rates significantly increased 24% annually. Workplace overdose fatality rates were highest in transportation and mining industries (3.0 and 2.6 per 1 000 000 FTEs, respectively). One-third of workplace overdose fatalities occurred in workplaces with fewer than 10 employees. Heroin was the single most frequent drug documented in workplace overdose deaths (17%). Workplace overdose deaths were low, but increased considerably over the six-year period. Workplaces are impacted by the national opioid overdose epidemic.

absenteeism, positive drug tests, workplace injuries, and workplace overdoses.[2] A better understanding of the inter-relationships between drug use and the workplace is important for several reasons. First, the overwhelming majority of overdose deaths are in those of working age (ie, 15–64 years of age).[1] Second, studies have found that the use of certain drugs, mainly opioids, after a work-related injury is associated with long-term disability and the loss of productive life.[3] This paper adds to the scientific literature by enumerating and describing overdose deaths of workers occurring in US workplaces between 2011 and 2016, which has not been previously described. This paper describes all drug overdoses, but highlights those associated with opioids since opioids account for the greatest percentage of overdose deaths. In 2016, 66% of drug overdose deaths involved an opioid.[1]

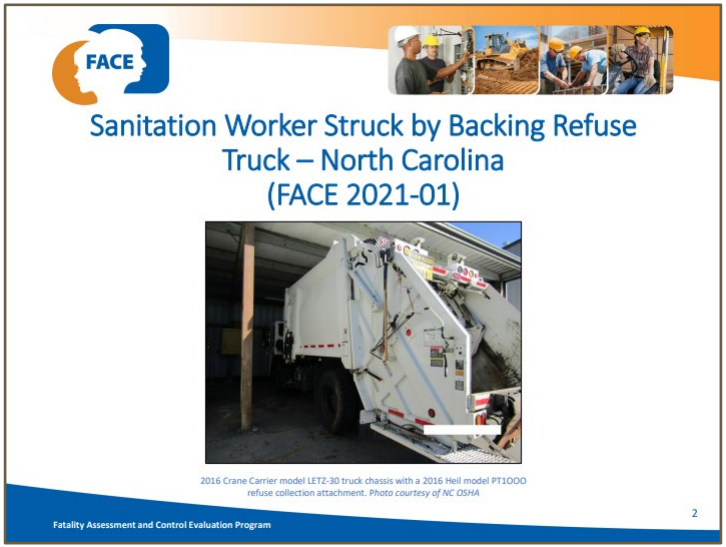
### METHODS

Drug overdose deaths in US workplaces between 2011 and 2016 were identified from the most recent data from the Bureau of Labor Statistics'



# Fatality Assessment and Control Evaluation (FACE)

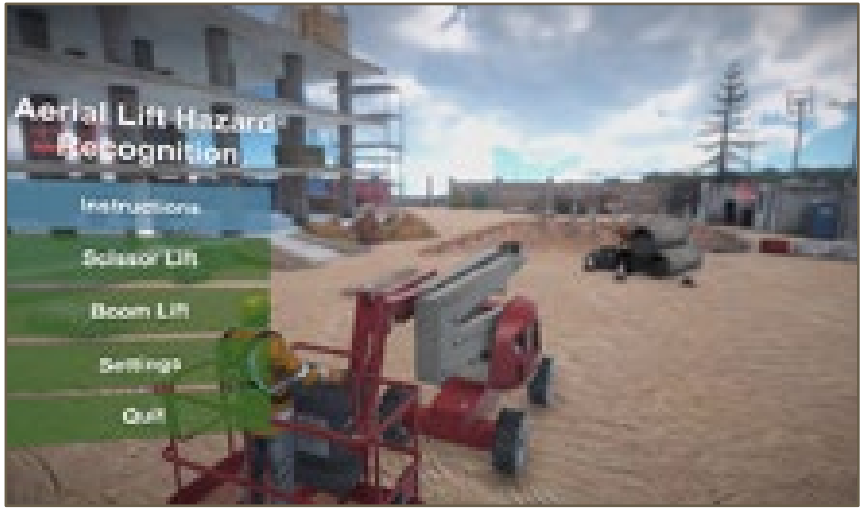
- Began in 1982
- Non-regulatory research-based investigations
- In 8 states
- > 2,700 fatality reports
- Summary documents & slides for training




Fatality Assessment and Control Evaluation (FACE) Program | NIOSH | CDC

# Interactive Tools

## NIOSH Aerial Lift Hazard Recognition Simulator




[Falls in the Workplace: Aerial Lifts | NIOSH | CDC]

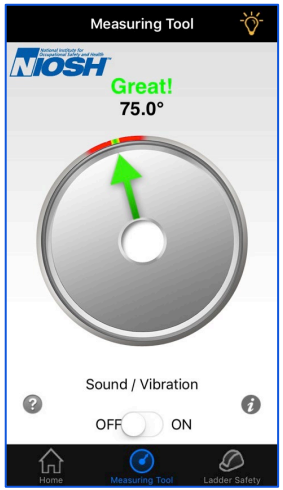
## Mast Climbing Work Platform Daily Inspection Walkthrough Tool

[Falls in the Workplace: Mast Climbing Work Platforms | NIOSH | CDC]

# NIOSH Apps

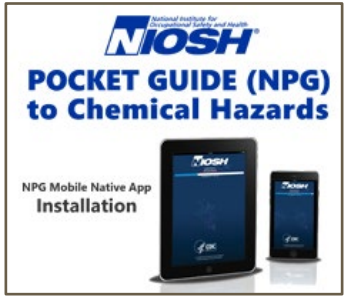

PPE Tracker


Heat Safety (OSHA/NIOSH)




Ladder Safety


NIOSH Lifting Equation Calculator




Mobile Pocket Guide


Sound Level Meter

[NIOSH Mobile Applications | NIOSH | CDC]

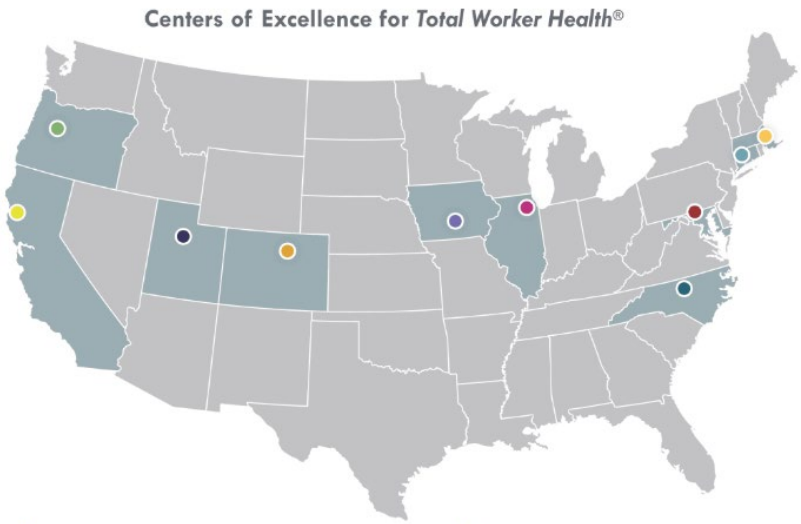
# KEEPING APPRISED OF NIOSH RESEARCH

- National Institute for Occupational Safety & Health | NIOSH | CDC
- NIOSH eNews | NIOSH | CDC
- NIOSH National Institute for Occupational Safety and Health | Facebook
- NIOSH (@nioshusa) • Instagram photos and videos
- 38 Workplace Safety and Health ideas | workplace safety and health, workplace safety, workplace (pinterest.com)
- NIOSH (@NIOSH) /x
- Workplace Safety and Health - YouTube

# Office of Extramural Coordination & Special Projects
# Director, Dawn N. Castillo, MPH

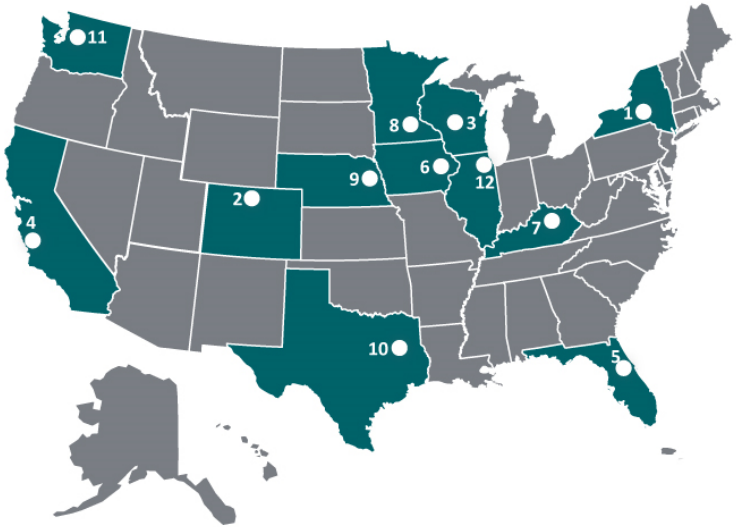
Mission:  is to lead and support national occupational safety and health research and training programs to reduce work-related injuries and illnesses through a diversified portfolio of high-quality extramural research, education, and training in collaboration with global partners.

# Total Worker Health® Centers




NIOSH Centers of Excellence for Total Worker Health | NIOSH | CDC

# NIOSH Agricultural Safety & Health Centers




Northeast Center for Occupational Health and Safety (Bassett Healthcare Network)

High Plains Intermountain Center for Agricultural Health and Safety (Colorado State University)

National Children's Center for Rural and Agricultural Health and Safety (National Farm Medicine Center)

Western Center for Agricultural Health and Safety (University of California, Davis)

Southeastern Coastal Center for Agricultural Health and Safety (University of Florida)

Great Plains Center for Agricultural Health (University of Iowa)

Southeast Center for Agricultural Health and Injury Prevention (University of Kentucky)

Upper Midwest Agricultural Safety and Health Center (University of Minnesota)

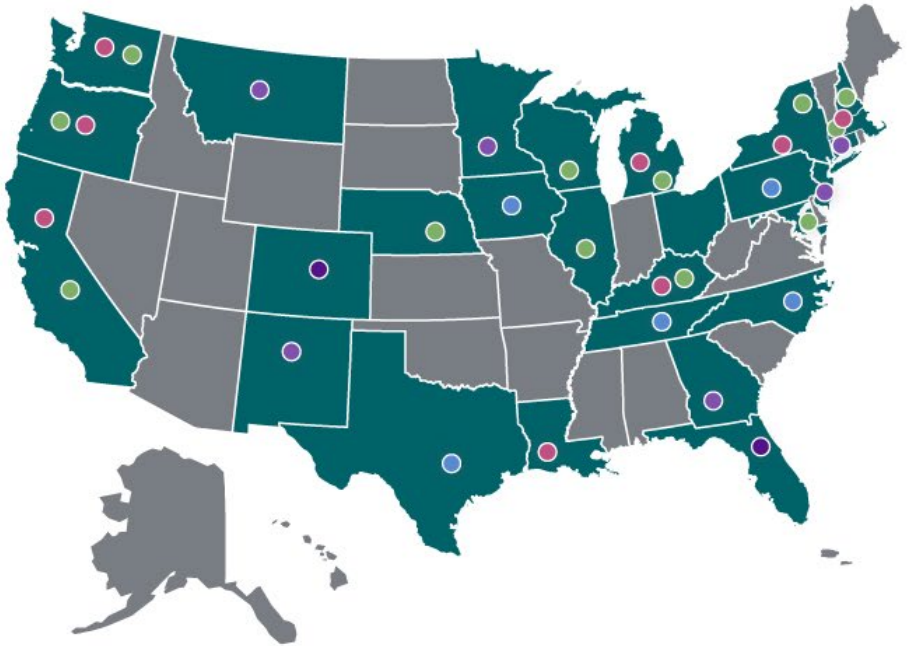
Central States Center for Agricultural Safety and Health (University of Nebraska Medical Center)

Southwest Center for Agricultural Health, Injury Prevention and Education (University of Texas Health Science Center at Tyler)

Pacific Northwest Agricultural Safety and Health Center (University of Washington)

Great Lakes Center in Illinois

# NIOSH State Occupational Health & Safety Surveillance Program



**Fundamental Programs**

North Carolina
Pennsylvania
Tennessee
Texas

**Fundamental-Plus Programs**

Connecticut
Georgia
Minnesota
Montana
New Jersey
New Mexico

**Expanded Programs**

California
Kentucky
Illinois
Maryland
Massachusetts
Michigan
Nebraska
New Hampshire
New York
Oregon
Washington
Wisconsin

**Fatality Assessment & Control Evaluation**

California
Kentucky
Louisiana
Massachusetts
Michigan
New York
Oregon
Washington

[Extramural Workforce Development: Conference Grants | NIOSH | CDC]

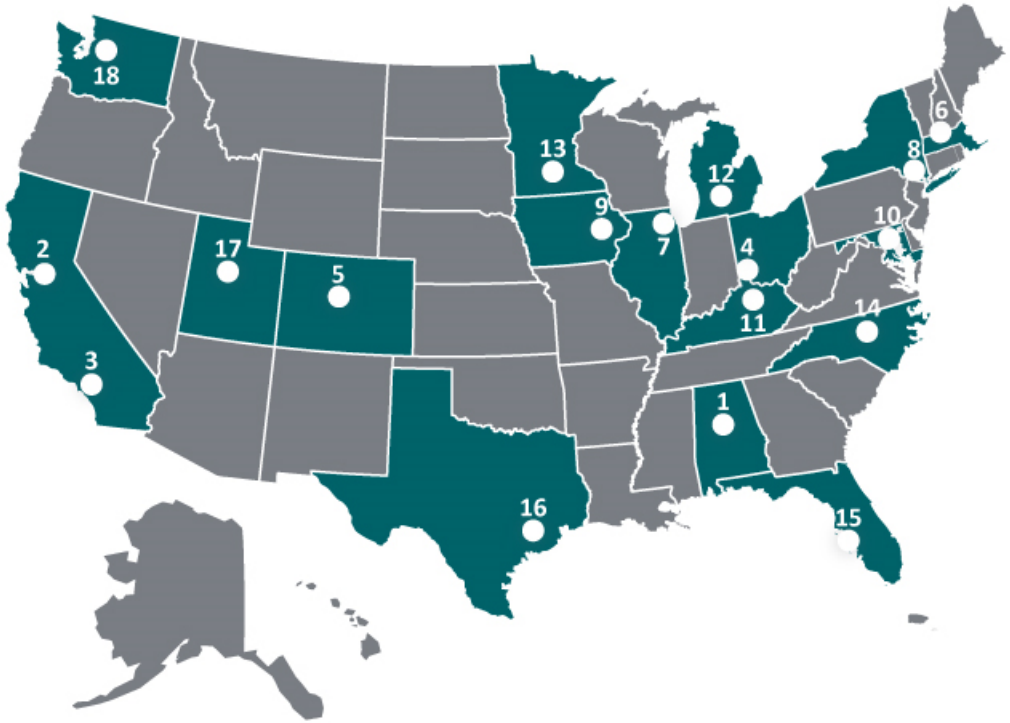
[Extramural Workforce Development: Research Grants | NIOSH | CDC]

# NIOSH Training Grant Portfolio

## Education & Research Training Grants

## Training Project Grants

# NIOSH Education & Research Centers (ERCs)




University of Alabama at Birmingham

University of California, Berkeley

University of California, Los Angeles

University of Cincinnati

University of Colorado Denver

Harvard University

University of Illinois at Chicago

Icahn Mount Sinai School of Medicine

University of Iowa

Johns Hopkins University

University of Kentucky

University of Michigan

University of Minnesota

University of North Carolina at Chapel Hill

University of South Florida

University of Texas Health and Science Center at Houston

University of Utah

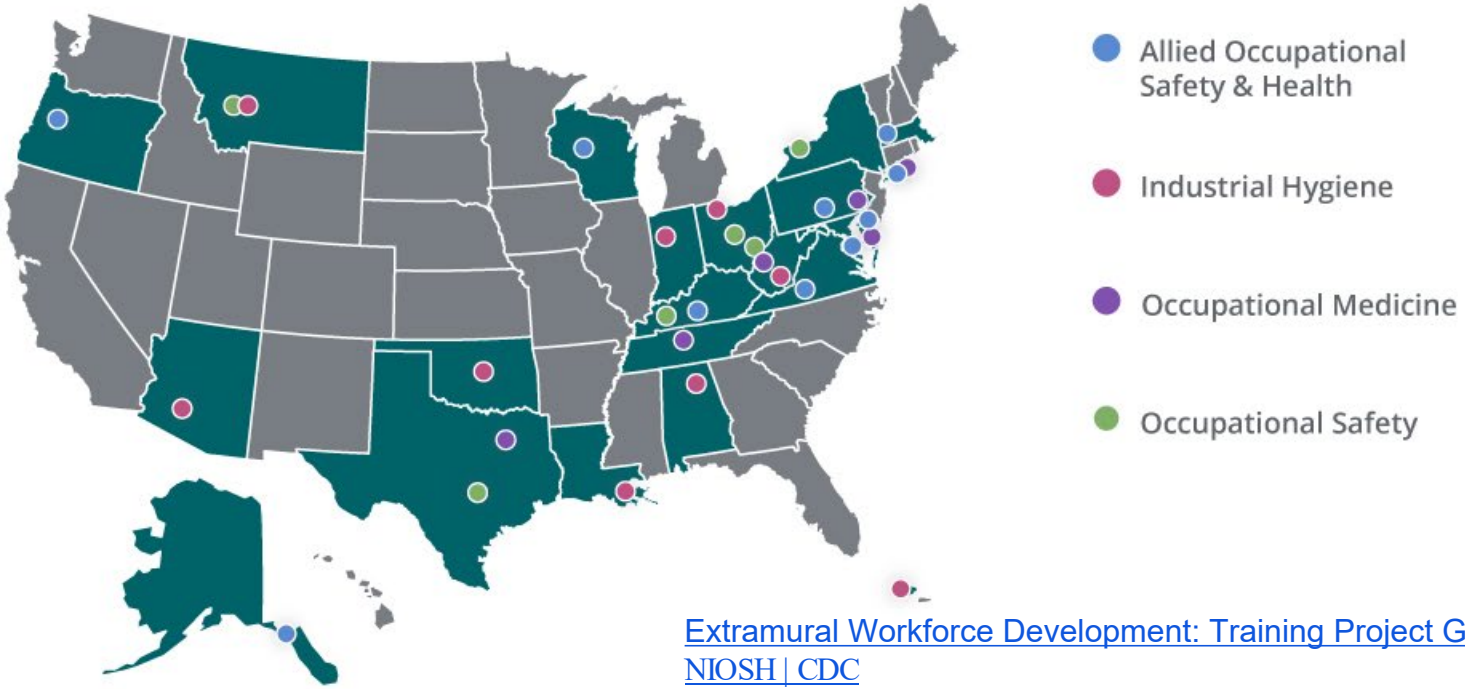
University of Washington

[Extramural Workforce Development: Education & Research Centers Portfolio | NIOSH | CDC]

# ERCs:  Regional Presence

- Evaluation & Planning
- Interdisciplinary Activities
- Emerging Issues/Developmental Program Support
- Research Training Core
- Outreach
- Continuing Education
- Academic Programs
  - Minimum of 3
  - 2 of 3 Required:  Core disciplines of Industrial Hygiene, Occupational Health Nursing, Occupational Medicine, Occupational Safety

# NIOSH Training Project Grants (TPGs)




Extramural Workforce Development: Training Project Grants | NIOSH | CDC

# TPGs

- Academic:  Core disciplines, Allied disciplines
  - Risk Control, Occupational Health Psychology, Ergonomics
  - Undergraduate, Graduate, Post-graduate (Occupational Medicine)

- Non-academic:
  - Firefighters, International Association of Fire Fighters
  - Occupational Health Internship Program, ACOEM
  - Marine Safety, AMSEA

# TPGs:  Academic & Non-academic

- Academic:  Core disciplines, Allied disciplines
  - Risk Control, Occupational Health Psychology, Ergonomics
  - Undergraduate, Graduate, Post-graduate (Occupational Medicine)

- Non-academic:
  - Firefighters, International Association of Fire Fighters
  - Occupational Health Internship Program, ACOEM
  - Marine Safety, AMSEA

# ERC & TPG Graduates Period 07/01/2022 – 06/30/2023

| | ERC | TPG | Total |
|---|---|---|---|
| Occupational Safety | 142 | 68 | 210 |
| Industrial Hygiene | 74 | 60 | 134 |
| Occupational Medicine | 36 | 13 | 49 |
| Occupational Health Nursing | 36 | 0 | 36 |
| Allied OSH | 80 | 43 | 123 |
| Total | 368 | 184 | 552 |

# ERC & TPG Placement Period 07/01/2022 – 06/30/2023

| | ERC | TPG |
|---|---|---|
| Occupational Safety | 99% | 96% |
| Industrial Hygiene | 100% | 98% |
| Occupational Medicine | 100% | 92% |
| Occupational Health Nursing | 100% | na |
| Allied OSH | 92% | 100% |
| Total | 98% | 97% |

# NIOSH ERCs Continuing Education & Outreach

- Last year CE
  - 1424 courses
  - Across disciplines
  - Collaboration
  - Webinar serie

- Outreach
  - Vunerable workers; increase awareness

# Research Training Efforts at ERCs & TPGs

- Emerging contaminant(s) PFAS in the occupational setting of firefighting
  - *A major concern of the AZ fire service is exposure to per- and polyfluoroalkyl substances (PFAS). Exposure to some PFAS congeners has been linked to cancer, cardiovascular disease, and other diseases. Perfluorooctane sulfonic acid (PFOS), a PFAS congener generally found at the highest levels in serum, has been linked to epigenetic modifications and altered immune response. As part of a larger study requested by AZ firefighters, we measured serum PFAS levels and collected survey information on potential occupational exposures, then conducted exploratory analyses to determine which factors exhibited significant relationships with serum PFOS levels.*

  - *University of Arizona Industrial Hygiene Graduate Program, NIOSH Trainee Regan Conner, Mentor: Dr. Jeff Burgess AIHA Connect 2024;* Home | Firefighter Collaborative Research Project (arizona.edu);

# Research Training Efforts at ERCs & TPGs

## Air Quality in Homes and Childhood Obesity

"Currently, 22.4% of children and adolescents are obese — nearly 17 million children — and rates of obesity are increasing in all age groups in the pediatric population," said Maggie Murphy, Ph.D., an assistant professor and registered dietitian in the Department of Pediatrics in the UK College of Medicine and the principal investigator of the study, funded by the National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health (NIH).

"Our goal with this research is to address a significant public health issue by understanding and identifying environmental exposures in a vulnerable, high-risk group of rural children to develop new treatments to improve their health," said Murphy.

- *This study brings together expertise in the colleges of Medicine, Education and the Martin-Gatton College of Agriculture, Food and Environment. The study team includes John Bauer, Ph.D., vice chair of research and professor in the Department of Pediatrics; Stefan Kiessling, M.D., the chief of the Division of Pediatric Nephrology; Jody Clasey, Ph.D., the director of the Body Composition Core Lab; and Wayne Sanderson, Ph.D., a professor in the Department of Biosystems and Agricultural Engineering and director of the Central Appalachian Regional Education Research Center.*

- UK researchers to study how air quality impacts high-risk rural children | UKNow (uky.edu)

# Research Training Efforts at ERCs & TPGs

## Evaluate Microplastics Exposures from Synthetic Athletic Surfaces

*Researchers at the University of Kentucky (UK) are collaborating with ERC faculty and trainees to investigate microplastic exposures at playing fields and thoroughbred racing surfaces.*

*The ERC role is to develop the sampling techniques and recruit the sites to participate. This work is partially funded by UK Pilot funds, but ERC trainees are working in the field and lab now to develop the protocol for collecting and analyzing samples. There is little literature on this and so techniques for sampling and analysis are being developed.*

# Research Training Efforts at ERCs & TPGs

## Study of Infection Control and Practice Behaviors among Career and Volunteer Fire in Rural Kentucky

- *Faculty and TPG trainees from the Western Kentucky University Training Project Grant surveyed 444 firefighters, both career and volunteer, in rural Kentucky to analyze their exposure to biological agents. The study aimed to assess firefighter knowledge and practices regarding infection control. Findings underscore the necessity for training on infection control policies to enhance practice behaviors during emergency calls and in dayroom settings. Results suggest that strategies are needed to improve the culture of personal protective equipment (PPE) use and training for selecting appropriate PPEs for various emergency response scenarios.*

- Sanyang, E, Adams, A. (TPG trainee), Taylor, R., McDonald, V. (TPG Trainee), Macy, G. & Basham, J. (2024). Knowledge of infection prevention and control and practice behaviors among career and volunteer firefighters in rural communities. *Merits*, 2024, *4*, 146-158. https://doi.org/10.3390/merits4020011

# Research Training Efforts at ERCs & TPGs

## Bionic Leg Developed by Rocky Mountain Center for Occupational & Environmental Health (RMCOEH)

*The bionic leg was recognized by TIME magazine as one of the "Best Inventions of 2023" - the list was a compilation of technologies and developments that the publication says are "changing how we live."*

*Tommaso Lenzi, PhD, a professor within the University of Utah's Department of Mechanical Engineering and the director of RMCOEH's Ergonomics and Safety program, has led the development of the bionic leg. A number of RMCOEH trainees, as well as other students within the Department of Mechanical Engineering, have also contributed to the project, as well as Lenzi's other bionics research.*

Rocky Mountain Center for Occupational and Environmental Health - Bionic leg developed by RMCOEH faculty one of TIME's 'Best Inventions of 2023'

# Research Training Efforts at ERCs & TPGs

Collaboration!  Total Worker Health Certificate Program with The Oregon Healthy Workforce Center, University of Washington and Portland State University

*This certificate program offers working professionals and students an understanding of the Total Worker Health® approach. It provides information on the key determinants of physical and psychological health encountered at work, and demonstrates how to be better equipped to act on these determinants as part of an interdisciplinary workplace team. Participants will gain skills to improve worker health and well-being and better support organizational and human capital sustainability, success, and productivity.*

*The enrollment of this certification program has increased by 133% since its first offering a year ago.*

https://oshce.uw.edu/sites/default/files/documents/Total%20Worker%20Health%20certificate%202023%208-8-23.pdf

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John Talty, Program Official, NIOSH ERCs and TPGs

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov