NIOSH Construction Program Update

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NIOSH Office of Construction Safety & Health

November 2021

NORA CONSTRUCTION WORK GROUPS

Preventing COVID-19

Co-Chairs:

Travis Parsons

Ann Marie Dale

Preventing Falls

Chair:

Tom Shanahan

Preventing Struck-by

Co-Chairs:

Brad Sant

Alanna Klein

*If interested in joining, reach out to Liz Garza egarza@cdc.gov

ROBOTICS IN CONSTRUCTION

Study to identify hazards and risk factors for demolition robot operators

Hugo Camargo, Hongwei Hsiao, Doug Ammons, Justin Haney, Christopher Pan

- Assessed machine-related, human-related, and environment-related contributing factors of demolition robot hazards.
- Assessed the preparedness of demolition robot operators to unexpected robot motions.

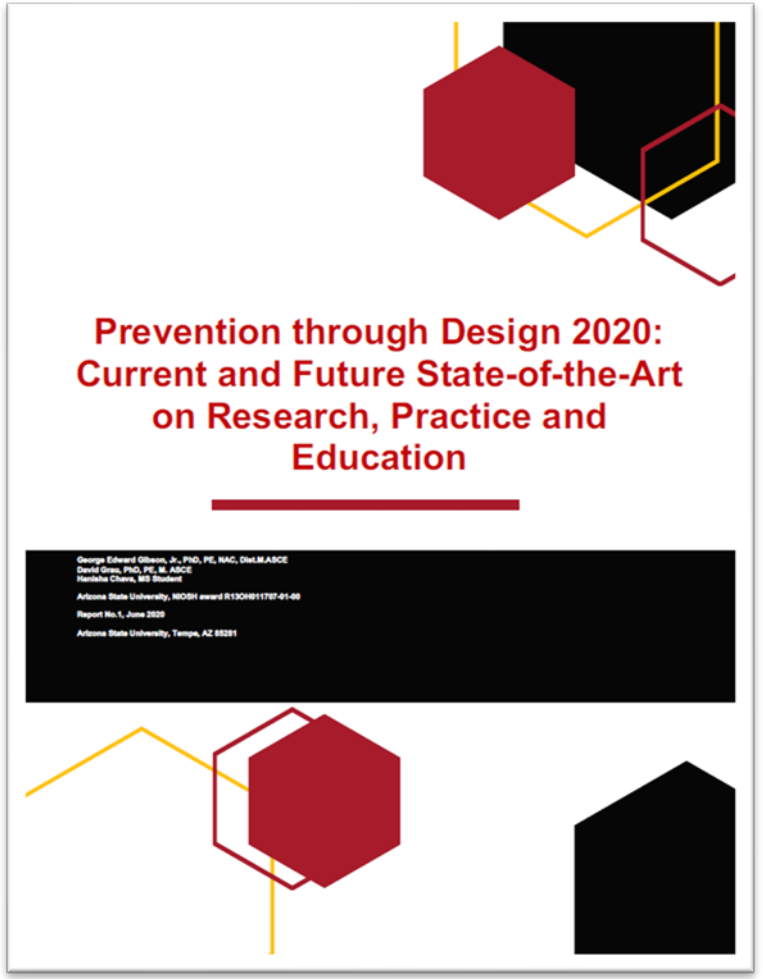
PREVENTION THROUGH DESIGN (PtD)

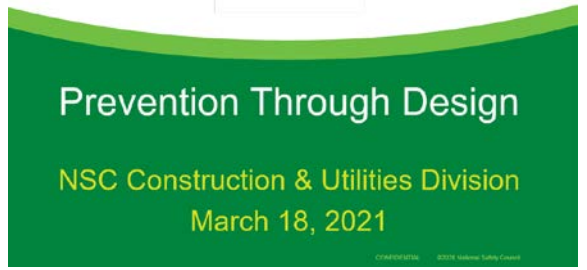
Series of workshops funded by NIOSH in collaboration with Arizona State University

- 2nd Workshop: May 26–27 ’21
- 3rd Workshop planned for Spring ‘22
- Goals
  - To drive the implementation of PtD at large industry organizations
  - To advance knowledge in PtD
  - To promote the instruction of PtD in construction management and construction engineering programs at US universities

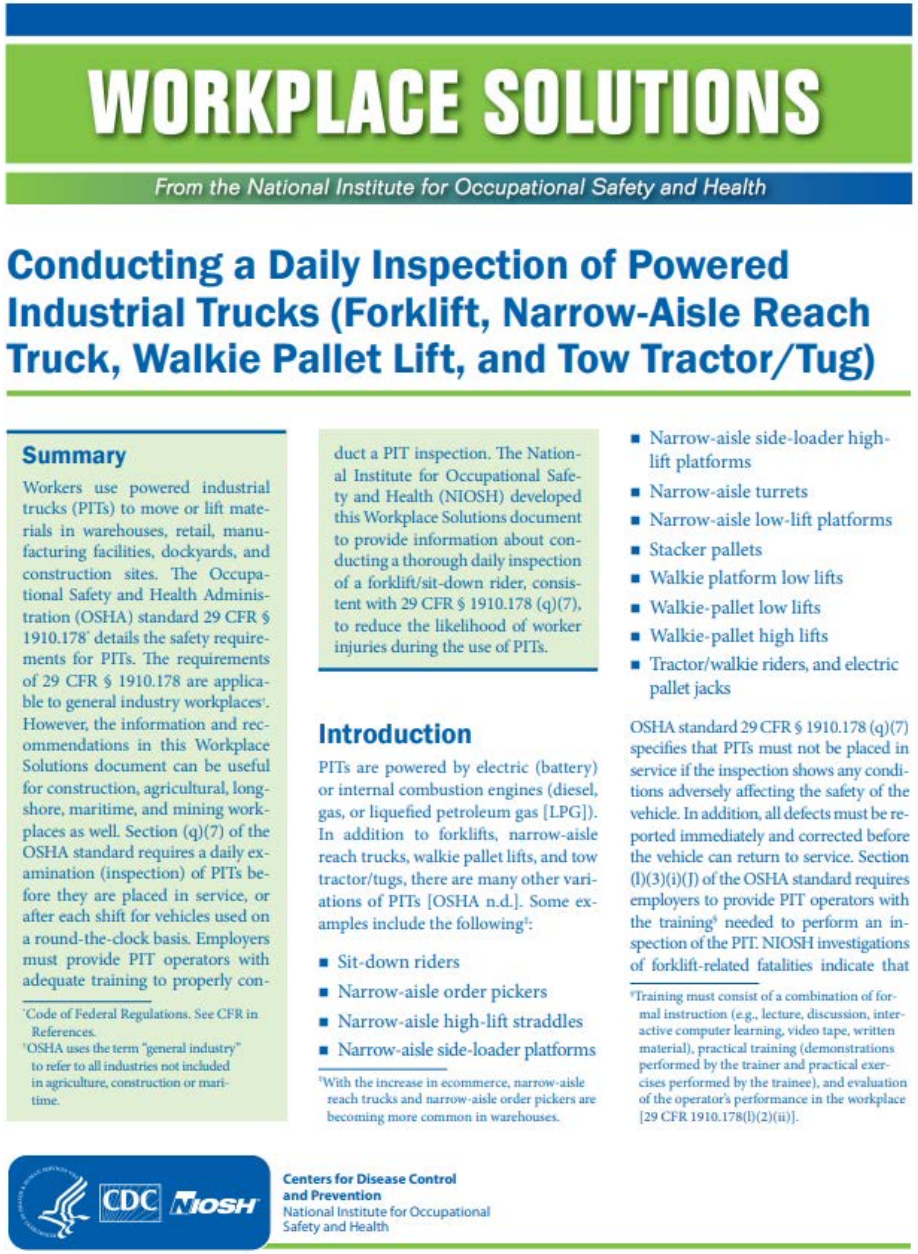
Prevention through Design | (asu.edu)

Arizona State University





POWERED INDUSTRIAL TRUCK – WORKPLACE SOLUTION (OCT 2021)



WORKPLACE SOLUTIONS

From the National Institute for Occupational Safety and Health

Conducting a Daily Inspection of Powered Industrial Trucks (Forklift, Narrow-Aisle Reach Truck, Walkie Pallet Lift, and Tow Tractor/Tug)

Summary

Workers use powered industrial trucks (PITs) to move or lift materials in warehouses, retail, manufacturing facilities, dockyards, and construction sites. The Occupational Safety and Health Administration (OSHA) standard 29 CFR § 1910.178[1] details the safety requirements for PITs. The requirements of 29 CFR § 1910.178 are applicable to general industry workplaces[2]. However, the information and recommendations in this Workplace Solutions document can be useful for construction, agricultural, longshore, maritime, and mining workplaces as well. Section (q)(7) of the OSHA standard requires a daily examination (inspection) of PITs before they are placed in service, or after each shift for vehicles used on a round-the-clock basis. Employers must provide PIT operators with adequate training to properly conduct a PIT inspection. The National Institute for Occupational Safety and Health (NIOSH) developed this Workplace Solutions document to provide information about conducting a thorough daily inspection of a forklift/sit-down rider, consistent with 29 CFR § 1910.178 (q)(7), to reduce the likelihood of worker injuries during the use of PITs.

[1]Code of Federal Regulations. See CFR in References.

[2]OSHA uses the term "general industry" to refer to all industries not included in agriculture, construction or maritime.

Introduction

PITs are powered by electric (battery) or internal combustion engines (diesel, gas, or liquefied petroleum gas [LPG]). In addition to forklifts, narrow-aisle reach trucks, walkie pallet lifts, and tow tractor/tugs, there are many other variations of PITs [OSHA n.d.]. Some examples include the following[3]:

- Sit-down riders
- Narrow-aisle order pickers
- Narrow-aisle high-lift straddles
- Narrow-aisle side-loader platforms
- Narrow-aisle side-loader high-lift platforms
- Narrow-aisle turrets
- Narrow-aisle low-lift platforms
- Stacker pallets
- Walkie platform low lifts
- Walkie-pallet low lifts
- Walkie-pallet high lifts
- Tractor/walkie riders, and electric pallet jacks

[3]With the increase in ecommerce, narrow-aisle reach trucks and narrow-aisle order pickers are becoming more common in warehouses.

OSHA standard 29 CFR § 1910.178 (q)(7) specifies that PITs must not be placed in service if the inspection shows any conditions adversely affecting the safety of the vehicle. In addition, all defects must be reported immediately and corrected before the vehicle can return to service. Section (l)(3)(i)(J) of the OSHA standard requires employers to provide PIT operators with the training[4] needed to perform an inspection of the PIT. NIOSH investigations of forklift-related fatalities indicate that

[4]Training must consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace [29 CFR 1910.178(l)(2)(ii)].

CDC NIOSH

Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

- Powered industrial trucks (Forklift, Narrow-Aisle Reach Truck, Walkie Pallet Lift, and Tow Tractor/Tug, etc.) must be inspected daily, before they are placed in service (or after each shift for vehicles used on a round-the-clock basis).
- Pgs. 4-5 can be printed to conduct a thorough inspection

https://www.cdc.gov/niosh/docs/wp-solutions/2022-100/

Co-branded NEW! Toolbox Talk on Respiratory Protection with CPWR

Andrea's Story

Andrea spent the day on a renovation project sawing concrete with a handheld masonry saw. Andrea did not wear a respirator because she used water to suppress the dust. However, due to the direction of the wind that day, the water suppression was less effective than usual, and she was still exposed to airborne contaminants. After completing the project, Andrea noticed her chronic bronchitis worsened.

- **What should Andrea have done to protect herself from the airborne contaminants?**
- **Have you or someone you know ever suffered from an occupational lung disease?**

CPWR THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING TOOLBOX TALK

How can we stay safe today?

What will we do at the worksite to promote respirator use and prevent respiratory-related illnesses?

1. _____
2. _____

CDC NIOSH CPWR THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING

NIOSH FACE PROGRAM

KIPRC
KENTUCKY INJURY PREVENTION AND RESEARCH CENTER

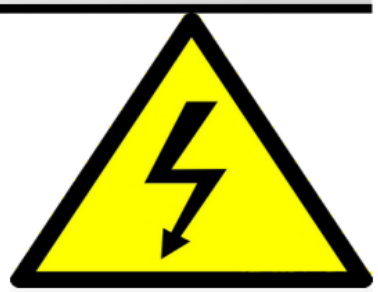
HAZARD ALERT

Electrocutions in the Construction Industry

Kentucky Occupational Safety and Health Surveillance, February 2021

What is the hazard?

From 2000-2019, 64 workers in Kentucky died by electrocution, accounting for 3.2% of all work-related fatalities in the state during that time. Of the 64 deaths, 25 (39%) occurred in the construction industry[1]. Nationally, electrocution is one of the construction's 'Fatal Four', and accounted for 8.5% of the industry's 1008 fatalities in 2018[2].



The following deaths by electrocution occurred in Kentucky's construction industry:

Case 1: An electrical foreman was working on a 480-volt electrical enclosure, pulling cable for a new pump that was being installed, when he contacted energized conductors. (2013)

Case 2: The contract field service technician was on top of an electrical cabinet performing testing. He came into contact with a wire and yelled to workers to shut off the power. He was taken by ambulance to a medical center where he later died. (2015)

Case 3: A dump truck driver was backing up to unload a load of debris with the dump bed extended in the raised position. The bed made contact with the overhead power lines, causing one of the wheels to catch on fire. The driver was electrocuted as he tried to exit the truck cab. (2018)

Recommendations:

- **Perform a job hazard analysis prior to beginning work at a new or changing worksite.**
- **Train employees on and enforce proper lock-out/tag-out practices to ensure equipment is de-energized.**
- **Ensure all electrical equipment is properly grounded.**
- **Personally disconnect the plug from electrical outlet prior to inspecting or repairing any power tool.**
- **Inspect tools and electrical cords before use to ensure they are in good repair. If damaged, remove from service.**

California Department of Public Health
Occupational Health Branch

FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM (CA/FACE)

A pipefitter, working in a trench, died when he was struck by an excavator bucket that detached from a quick coupler

Case Report: 20CA002

SUMMARY

A pipefitter, working in a trench, died after being struck by an excavator bucket that detached from a quick coupling device (quick coupler) that was attached to the end of the boom. The operator of the excavator was curling the bucket into the boom when the bucket came loose and fell on the victim. There was no competent person onsite the day of the incident. The CA/FACE investigator determined that, in order to prevent similar incidents, construction companies who operate excavators should:

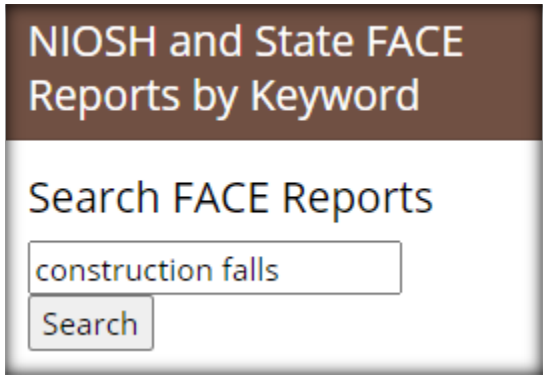


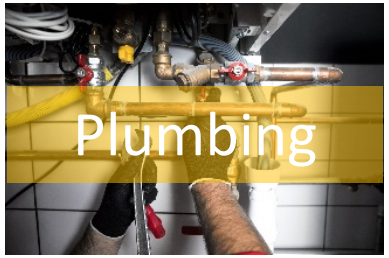
Exhibit 4. Slope and depth of the trench.

https://www.cdc.gov/niosh/face/default.html

https://www.cpwr.com/research/data-center/construction-face-database/

VIRTUAL SAFETY CONSULTANT FOR SMALL CONSTRUCTION CONTRACTORS

- **Small business - VSC**
  - **Case studies**
  - **Toolbox talks**
  - **Checklists**



COVID-19

NIOSH Science Blog

COVID-19 Poses Big Challenges for Small Construction Firms

March 9, 2021 by Claudia Parvanta, PhD; Tessa Bonney, MPH, PhD; Lee Newman, MD, MA; Eileen Betit; and CDR Elizabeth Garza, MPH, CPH

Occupational safety and health (OSH) professionals can help small construction firms build safety into their worksites, even during the COVID-19 pandemic.

https://blogs.cdc.gov/niosh-science-blog/2021/03/09/construction_covid/

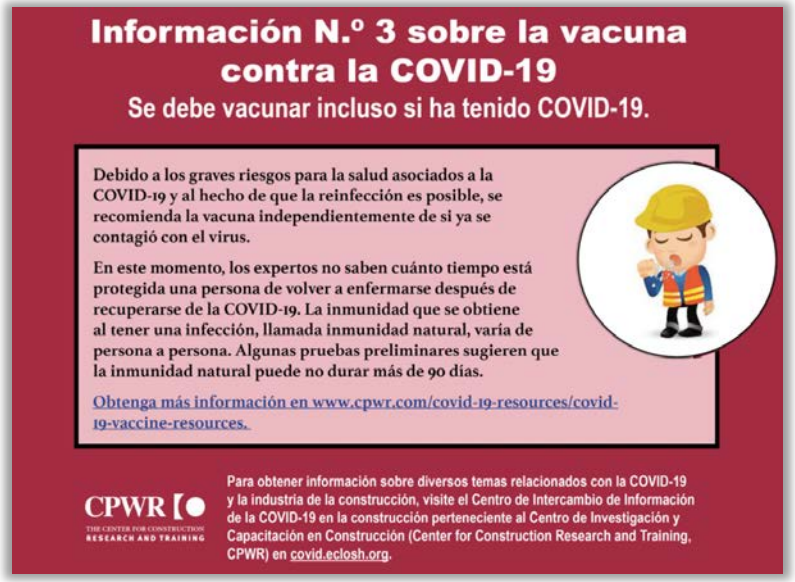
CONSTRUCTION FORUM "VAX FACTS STL"

https://www.constructforstl.org/vax-facts-stl/

CPWR
THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING

COVID-19 Vaccine FAQs for the Construction Industry

Version 5: September 3, 2021



https://www.cpwr.com/covid-19-resources/covid-19-vaccine-resources/

COVID-19 continued

Why is it important that construction workers get vaccinated?

This document was developed by the NH Occupational Health Surveillance Program at University of New Hampshire in coordination with the National Institute for Occupational Safety & Health (NIOSH)

Construction work is considered essential during the pandemic. Because most construction work continues in-person, your workers are at greater risk of becoming infected with SARS-CoV-2, the virus that causes COVID-19.[i]

For the 2020-2021 season, construction occupations experienced a 3.43% absenteeism rate compared to 2.32% for all other occupations.[iii]

The estimated cost of lost work hours, among U.S. full-time construction workers, associated with the COVID-19 pandemic due to health-related issues was $360 million.[ii]

Unplanned absences due to illness are among the most costly impacts of COVID-19 within essential workplaces. And with the quarantine requirements around COVID, unplanned absences become a 10-day loss of productivity versus one day of planned (or even unplanned) productivity.

Motivating workers to receive their vaccination is one of the most important steps toward ending the pandemic, getting back to life as we knew it, and for maintaining business activities.

Your employees are your most valuable asset. When one worker is down, the whole crew feels it. This impacts every aspect of the business, causing indirect costs such as:

- Training replacement employees
- Increased stress
- Lower morale
- Reduced productivity
- Increased mandatory overtime
- Increased # of safety issues
- Increased employee health problems
- Higher turnover rates

What can you do to prevent these added costs to your bottom line?

- Provide accurate information about COVID-19 vaccination.
- Establish supportive policies and practices to allow your workers to take the time to get the vaccine.

Waiting to get the COVID-19 vaccine is like leaving your tools out overnight. You're taking your chances and throwing away good money.

For more information about the COVID-19 vaccines, visit:
https://www.cdc.gov/coronavirus/2019-ncov/vaccines/index.html

[i] NIOSH Blog, "COVID-19 Poses Big Challenges for Small Construction Firms," at: https://blogs.cdc.gov/niosh-science-blog/2021/03/09/construction_covid/
[ii] Compilation from U.S. Census Bureau Current Population Survey (CPD) Questionnaire. Available at: https://www.census.gov/programs-surveys/cps/technical-documentation/questionnaires.html.
[iii] NIOSH Absenteeism in the Workplace at: https://www.cdc.gov/niosh/topics/absences/default.html
Compilation from U.S. Census Bureau Current Population Survey (CPS) Questionnaire. Available at: https://www.census.gov/programs-surveys/cps/technical-documentation/questionnaires.html.

CPWR
THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING

https://www.cpwr.com/covid-19-resources/covid-19-vaccine-resources/

Workplaces and Businesses

Plan, Prepare, and Respond

Updated Oct. 18, 2021 Languages Print

CDC has archived several workplace-related guidance documents, factsheets, and toolkits. The Occupational Safety and Health Administration (OSHA) provides resources to assist employers and workers in identifying COVID-19 exposure risks and help take appropriate steps to prevent exposure and infection. See the OSHA Coronavirus Disease (COVID-19) topic page for the most current requirements, guidance, and tools.

Workplace Prevention Strategies

To prevent and reduce transmission and maintain healthy business operations and work environments

Workplace Vaccination Program

COVID-19 County Check

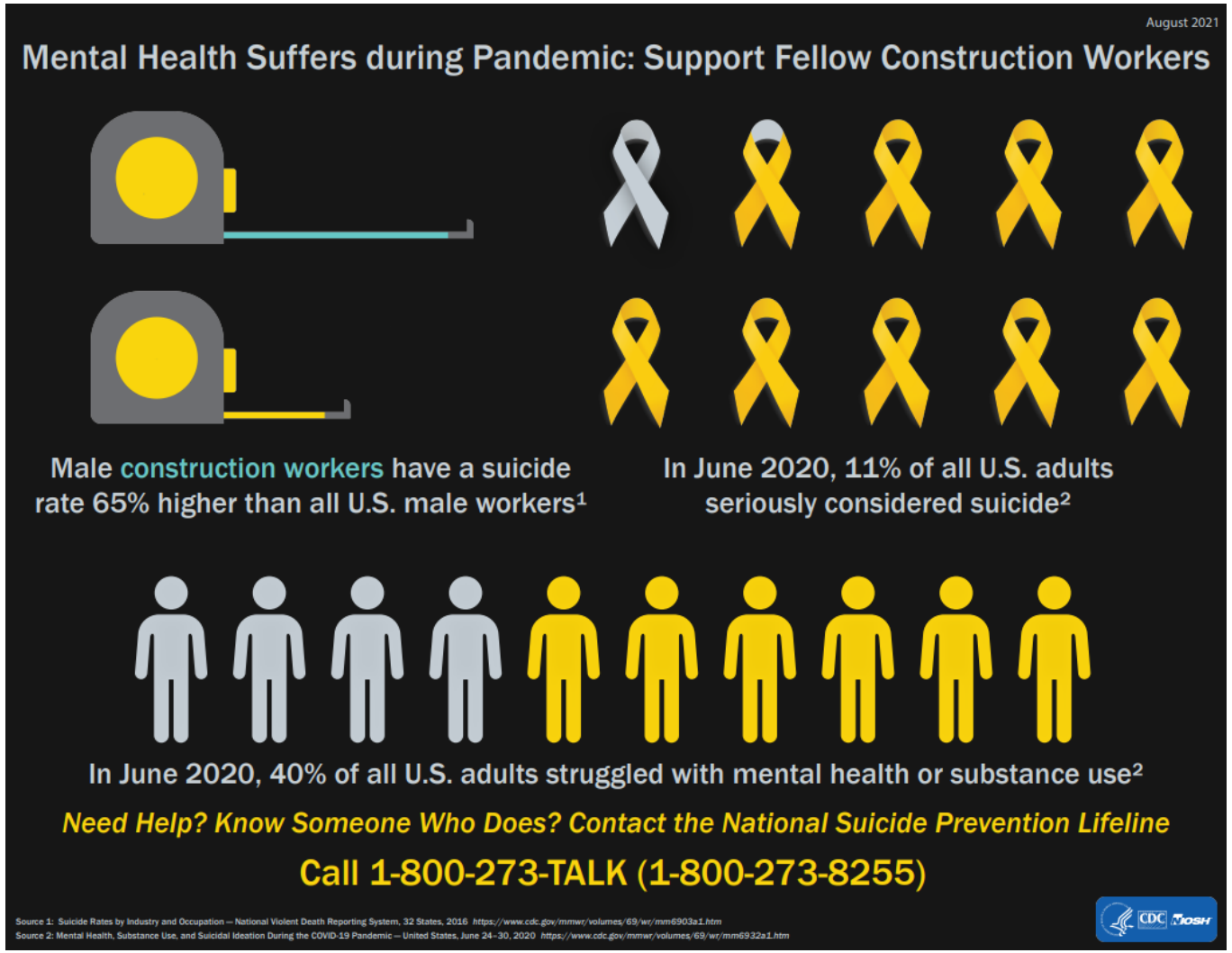
Find community transmission levels and masking guidance by county.

https://www.cdc.gov/coronavirus/2019-ncov/community/workplaces-businesses/index.html

Construction Covid-19 Safety Checklist for Employees

https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/construction-worker-checklists.html

MENTAL HEALTH, SUICIDE PREVENTION, & SUBSTANCE USE



WORK, STRESS, AND HEALTH: APA 2021 CONFERENCE, Poster presentation:
Pandemic Squeeze on Already Fragile Workforce: Work Conditions and Mental Health in the Construction Industry and Interventions to Prevent Injuries and Support the Workforce

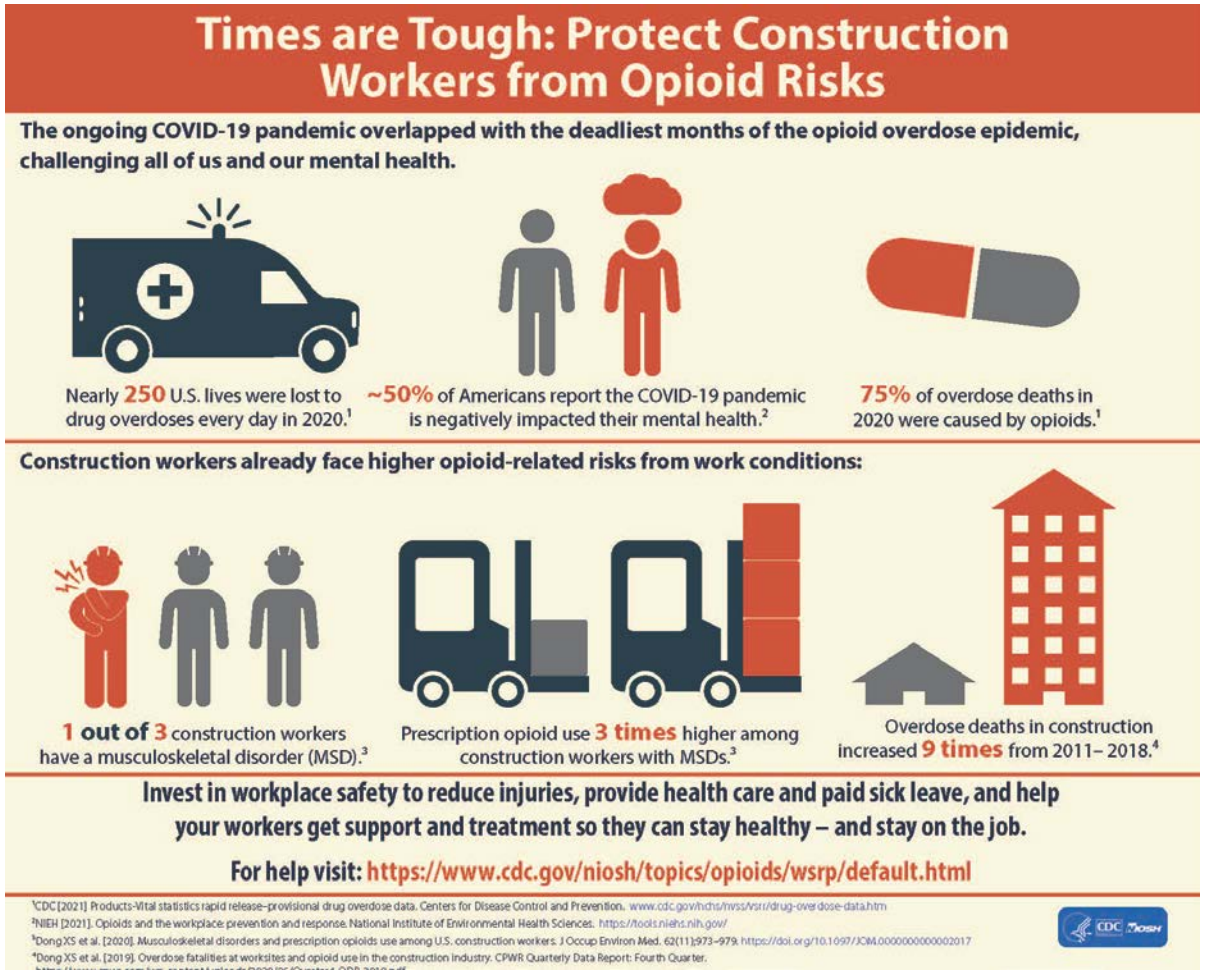
https://www.cdc.gov/niosh/construction/pdfs/Suicide-Awareness-Graphic_FINAL_8-19_SP.pdf

Workplace Supported Recovery (WSR) Program

- Eliminate workplace factors that could cause or maintain a substance use disorder
- Lower barriers to seeking and receiving care and maintaining recovery.
- Educate management and workers on substance use disorders
- Reduce stigma surrounding substance use disorder and recovery

https://www.cdc.gov/niosh/topics/opioids/wsrp/default.html

OPIOID USE DISORDER



[Addressing the Opioid Overdose Epidemic in Construction: Minimize Work Factors that Cause Injury and Pain | Blogs | CDC]

[CPWR | Resources to Prevent Opioid Deaths in Construction]

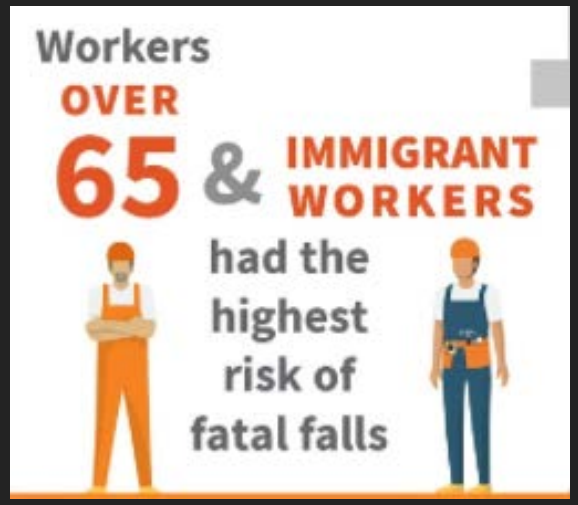
Evolution of a Crisis

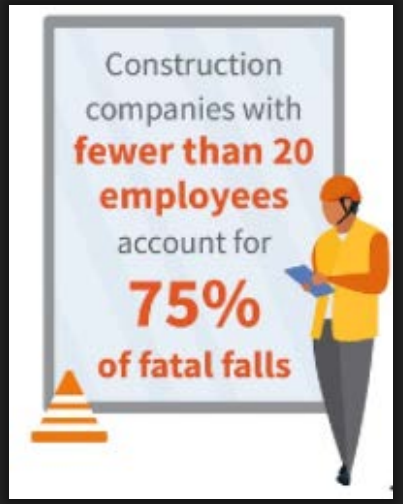
Impacting Lives

Pathways to Recovery

Not all workers have the same risk of experiencing a work-related health problem, even when they have the same job.

In 2019, 374 HIspanic construction workers died at workplaces, surging nearly 27% from 2018 and 90% since 2011. For comparison, Hispanic employment in construction rose 55% from 2011 to 2019.





Occupational health inequities

Avoidable differences in work-related disease incidence, mental illness, or morbidity and mortality that are closely linked with social, economic, and/or environmental disadvantage such as:

- work arrangements (e.g. contingent work),
- socio-demographic characteristics (e.g. age, sex, race, and class),
- and organizational factors (e.g. business size)

Occupational Health Equity | NIOSH | CDC

Growing awareness of diversity and social inequality is a top Administration and CDC priority.

INTERESTED IN HEALTH EQUITY RESEARCH?

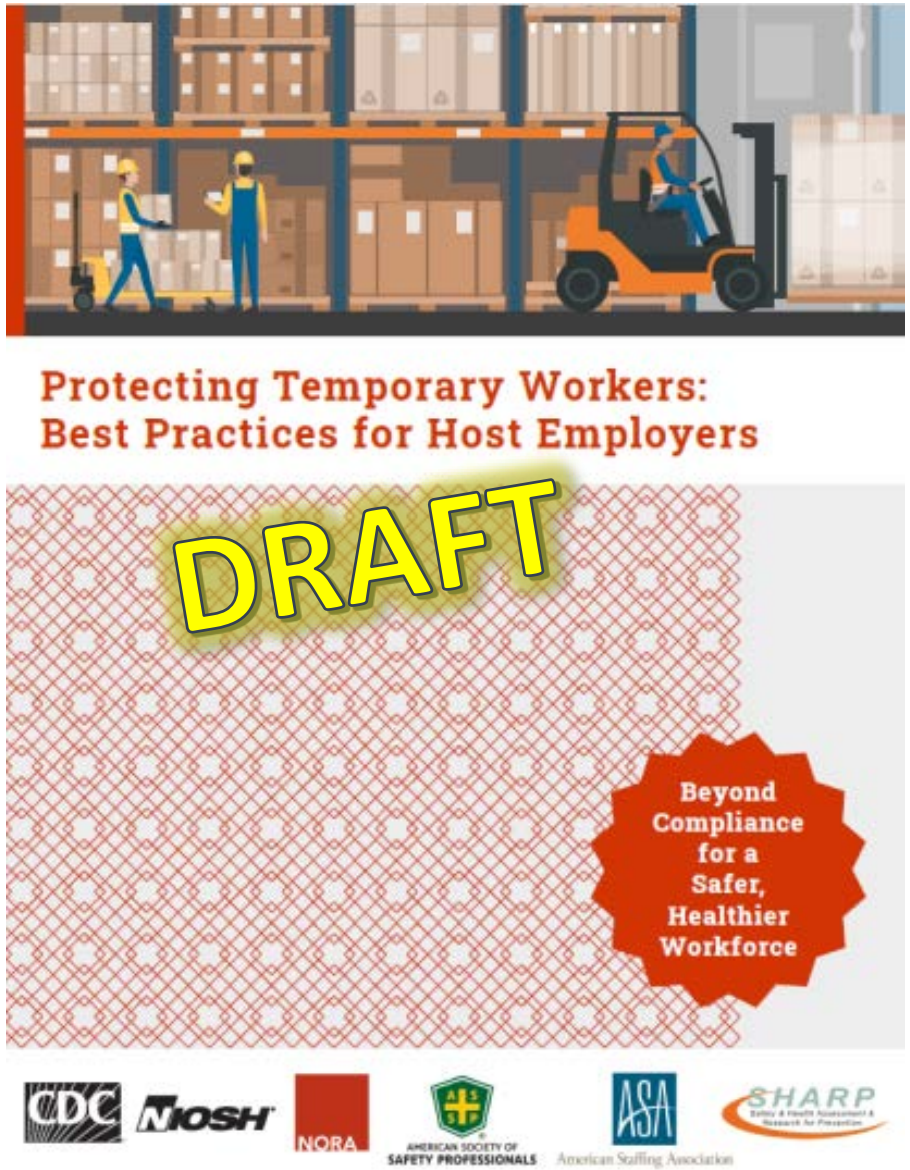
NIOSH Occupational Health Equity Program and Mission:

Promote **research, outreach, and prevention activities** that reduce avoidable differences in workplace injury and illness that are closely linked with **social, economic, and environmental disadvantage**.

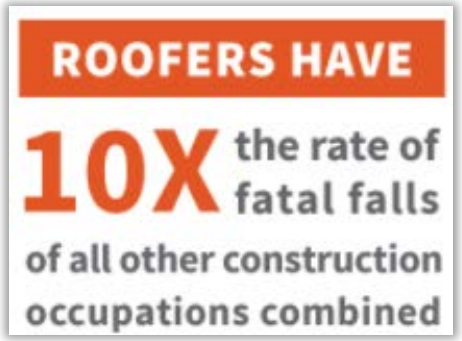
HEALTH EQUITY
Dissemination & Implementation

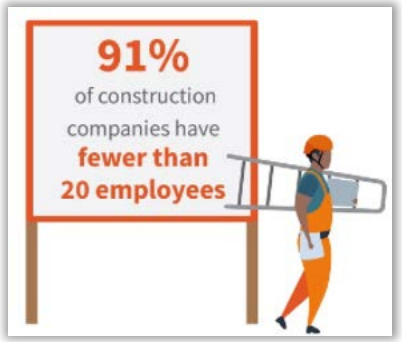
- Developing resources in other languages for fall prevention
- Translating construction safety products into Spanish 2021
- Developing original factsheets and posters/not translations for Hispanic audiences Spring 2022
- Holding a Spanish language heat stress webinar in Spring 2022
- Continuing focused outreach to construction workers most at risk

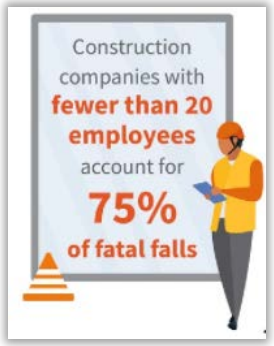
PROTECTING TEMPORARY WORKERS



FALLS







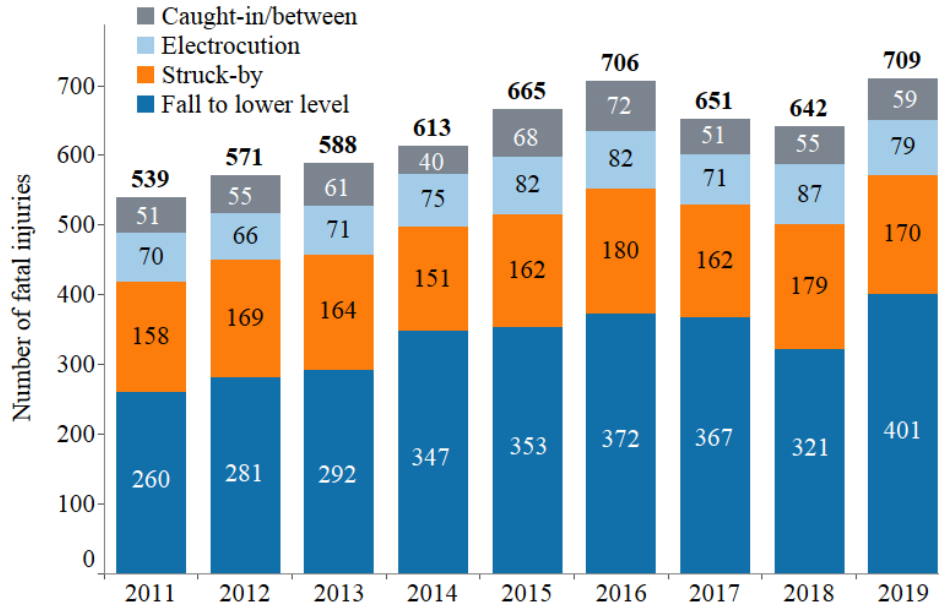
2022

- 10-Year Anniversary of National Campaign to Prevent Falls in Construction
- 9th National Stand-Down to Prevent Falls
- Focus on outreach to most at-risk
  - Small residential contractors, immigrant (Hispanic), roofer
  - Other Languages | Stop Construction Falls
  - En español (coming) NIOSH Construction YouTube Playlist

2021

- 5 NIOSH NORA Falls videos published in 2021
- CDC Construction Safety & Health YouTube Playlist
- CPWR Fall Hazards & Prevention YouTube Playlist

6. Number of fatal injuries caused by Construction Focus Four, 2011-2019

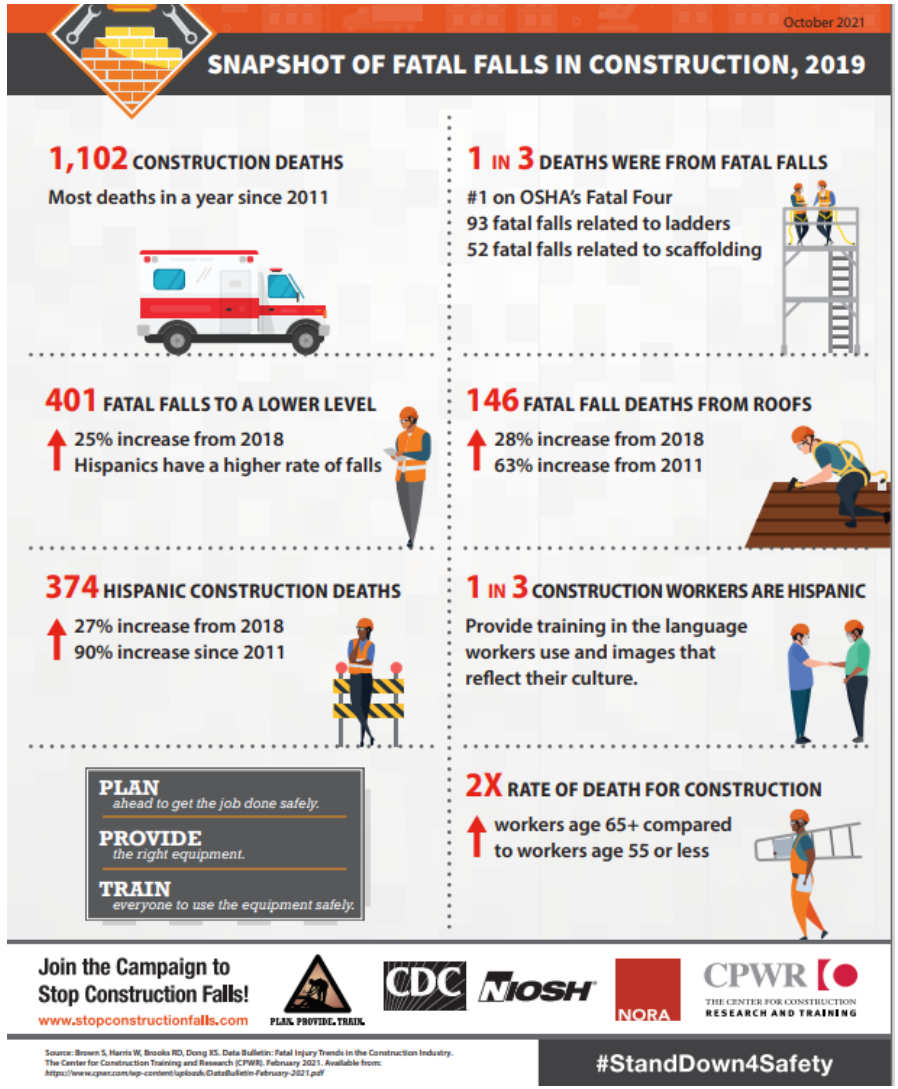


Source: U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

http://stopconstructionfalls.com/

https://www.osha.gov/stop-falls-stand-down

FALLS continued



2021 True Fall Video Series

The Impact on Lives

Saving Lives

Changing Old Behaviors

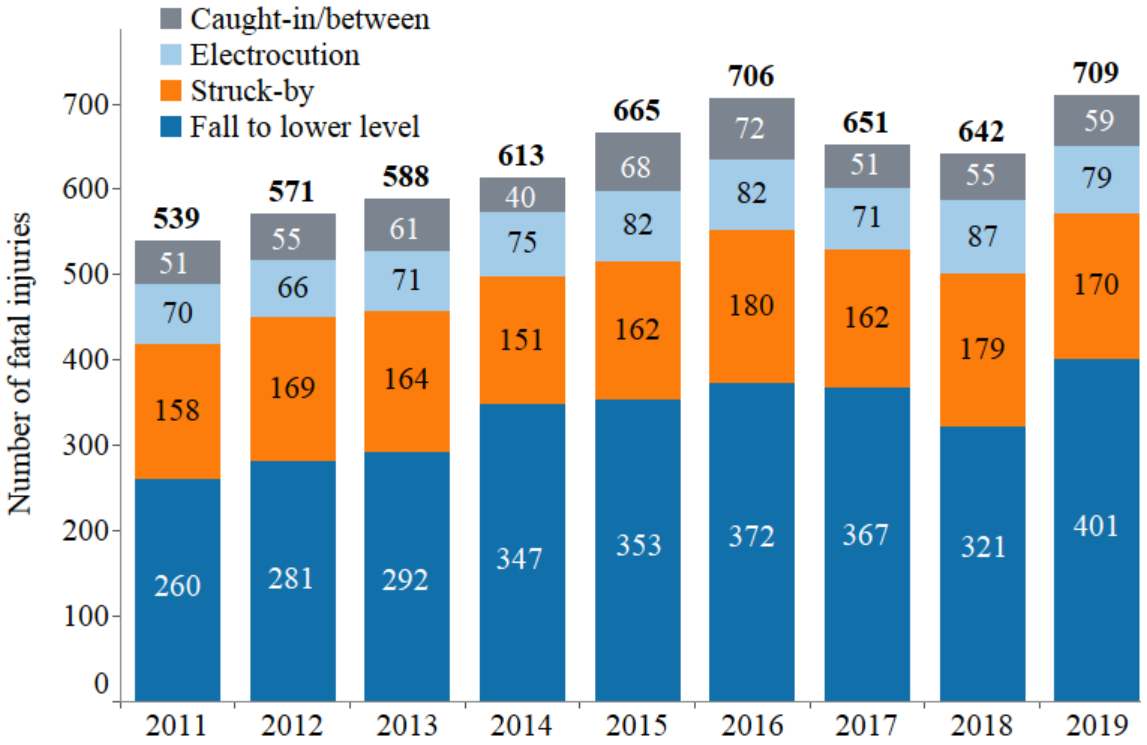
https://www.cdc.gov/niosh/construction/infographics.html

https://stopconstructionfalls.com/infographics/

STRUCK-BY

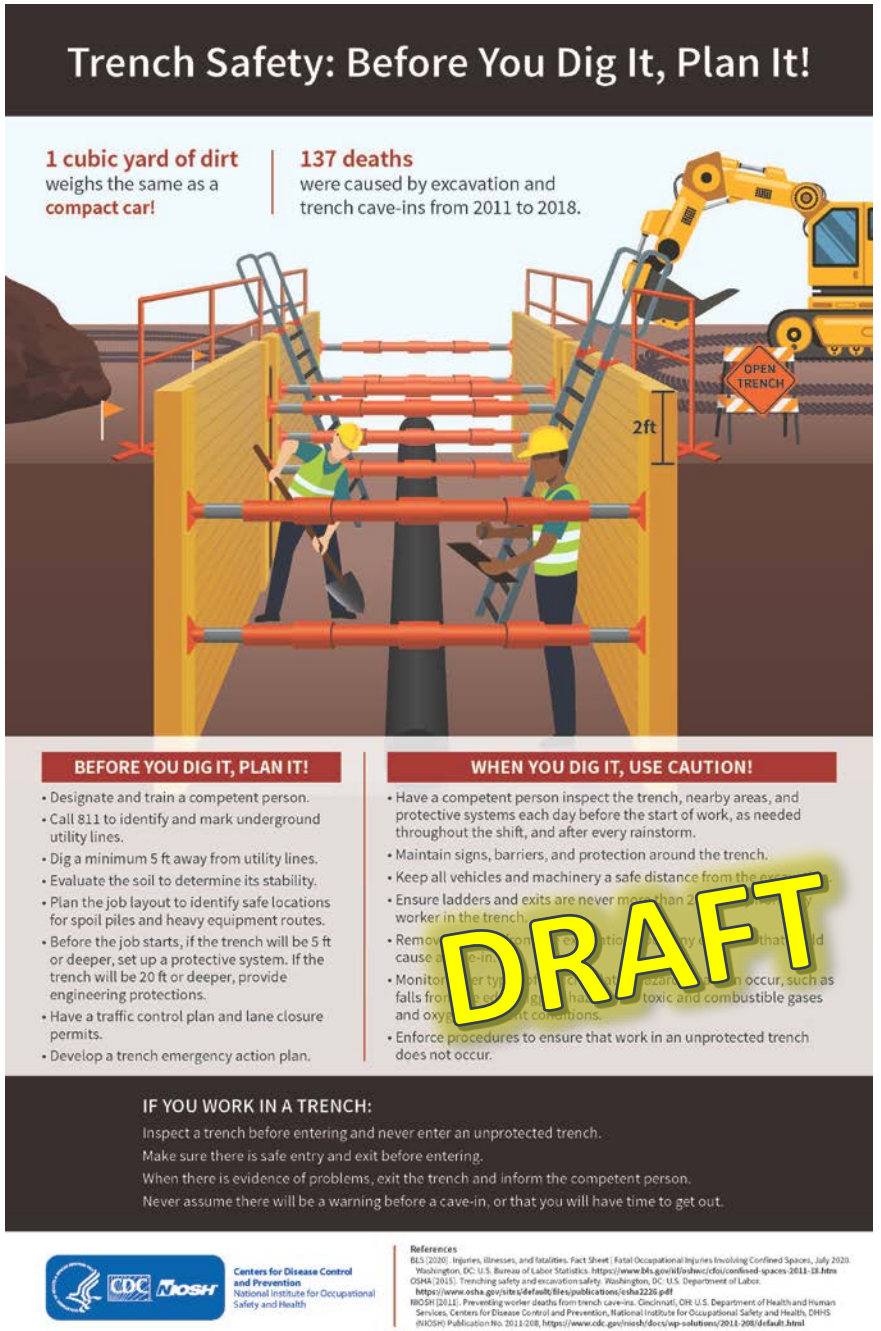
2022— 3rd National Stand-Down to Prevent Struck-by Injuries

6. Number of fatal injuries caused by Construction Focus Four, 2011-2019



Source: U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

https://www.cpwr.com/struck-by-hazards



NIOSH Science Blog

NOISH Science Blogs on Construction

- Addressing the Opioid Overdose Epidemic (Sep 2021)
- 50 Years of NIOSH Construction Safety & Health Research (Aug 21)
- Heat Stress in Construction (May 2021)
- Preventing Struck-by Injuries: Lift Zone Safety (April 2021)
- COVID-19 Poses Big Challenges for Small Construction Firms (Mar ‘21)
- Future of Construction: Challenges and Opportunities (Feb 2021)
- Hearing Loss among Construction Workers (Oct 2020)

SELECTION OF RECENT NIOSH PUBLICATIONS

- Dong, R.G., et al. (2021). A Review of Hand–Arm Vibration Studies Conducted by US NIOSH since 2000. Vibration 4, 482–528. https://www.mdpi.com/2571-631X/4/2/30
- Green D. et al. Prevalence of Hearing Protection Device Non-Use Among Noise-Exposed US Workers in 2007 and 2014 (August 2021) https://onlinelibrary.wiley.com/doi/10.1002/ajim.23291
- Kaur, H. et al. CDC MMWR Workers' Compensation Claim Rates & Costs for Musculoskeletal Disorders Related to Overexertion Among Construction Workers – Ohio, 2007–2017; (April 2021) https://www.cdc.gov/mmwr/volumes/70/wr/mm7016a1.htm
- Bello A et al. (2021). Urinary biomonitoring of occupational exposures to epoxy resins among construction painters in metal structure coating. Environ Int.156:106632. https://doi.org/10.1016/j.envint.2021.106632
- Hughes S et al. (2021). Conducting a daily inspection of powered industrial trucks. DHHS (NIOSH) Publication No. 2022-100:1–6 https://www.cdc.gov/niosh/docs/wp-solutions/2022-100/
- Brown S et al. (2021). Fatal and nonfatal struck-by injuries in the construction industry, 2011–2019. CPWR Data Bulletin. Silver Spring, MD: CPWR Data Bulletin. Silver Spring, MD: CPWR, 1–7. https://www.cpwr.com/wp-content/uploads/DataBulletin-April2021.pdf
- Kaur H et al. (2021). Workers' compensation claim rates and costs for musculoskeletal disorders related to overexertion among construction workers - Ohio, 2007–2017. MMWR. 70(16):577–582. https://doi.org/10.15585/mmwr.mm7016a1
- Dennerlein JT (2021). Associations between work-related factors and psychological distress among construction workers. J Occup Environ Med. https://doi.org/10.1097/JOM.0000000000002311
- Moskowitz AF (20210. What are the risks to minors who work in the construction industry? J Occup Environ Med. 63(7):e462-e463. https://doi.org/10.1097/JOM.0000000000002273
- Lara M et al. (2021). Pilot of a community health worker video intervention for immigrant day laborers at occupational health risk. Front Public Health 9:662439 https://doi.org/10.3389/fpubh.2021.662439
- Dale AM (2021). Work organization factors associated with health and work outcomes among apprentice construction workers. Int J Environ Res Public Health 18(17):8899. https://doi.org/10.3390/ijerph18178899
- Dutta A et al. (2021). Application of data fusion via canonical polyadic decomposition in risk assessment of musculoskeletal disorders in construction. J Constr Eng Manage. 147(8):04021083. https://doi.org/10.1061/(ASCE)CO.1943-7862.0002106
- Dale et al. (2021). Predictors of long-term opioid use and opioid use disorder among construction workers: analysis of claims data. Am J Ind Med 2021 Jan; 64(1):48–57 https://doi.org/10.1002/ajim.23202

National Occupational Injury Research Symposium

NOIRS
National Occupational Injury Research Symposium

- **May 10–12, ‘22 in Morgantown WV**
- Conference registration will open in **mid-January 2022**. (No fee to attend NOIRS)
- Theme is ‘Preventing Workplace Injuries in a Changing World’

If you’re interested in learning about emerging issues in occupational safety and cutting-edge occupational injury research findings from leading experts, then NOIRS is for you!

QUESTIONS?

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