

Session 1: Fatal Construction Injuries

Work-related Fatal Injury Risk of Construction Workers by Occupation and Cause of Death—Chen G-X, Fosbroke D

Guiding Construction Injury Research: Data Coupled with Industry Experience—Fosbroke D, Casini V, Furrow K, Hause M, Linn H, Washenitz F

In 1996, the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) initiated a process of examining current construction injury research, identifying research gaps, and developing a strategic research plan. Through existing injury surveillance data systems, much is known about the leading causes of fatal (falls, motor vehicles, machines, and electrocutions) and nonfatal injury (overexertion, falls, and struck by objects) in the construction industry; however, little research has focused on identifying injury problems for specific subsectors of the construction industry. Research that is focused on specific injury problems and specific types of construction work (e.g., falls during truss installation) may lead more directly to identification of effective interventions than research on general injury categories in the construction industry as a whole (e.g., falls in construction). Three high-risk construction industry sectors (highway and street construction, residential building construction, and roofing and truss installation) were selected based on a review of fatal and nonfatal injury data, the number of workers at risk, current trends in the construction industry, OSHA's regulatory agenda, an external panel evaluation of The National Program for Occupational Safety and Health in Construction, the National Occupational Research Agenda, and DSR expertise and research projects. For each industry sector, NIOSH conducted a facilitated workshop with participants from labor unions, construction companies, contractor associations, product manufacturers, insurance companies, and State and federal agencies. DSR staff identified brainstorming topics for each workshop based on the leading causes of fatal and nonfatal injury for that industry subsector. Brainstorming topics included motor vehicle incidents, falls from elevation, "struck by" incidents, and overexertion. Workshop participants were asked to suggest potential safety research ideas that could lead to a reduction of injuries from these causes in their industry sectors.

Each workshop yielded a list of more than 100 ideas about general problem areas where the participants felt further research was warranted. Following each workshop, NIOSH staff, with the assistance of federal partners, used a multivoting technique to narrow these lists to approximately 30 ideas for further study. Some suggestions were very specific (e.g., design a fall restraint system for workers riding in pickup truck beds while placing or removing traffic cones); others were broad in scope (evaluate the effectiveness of training). Other broad themes that crossed industry sector and injury categories included the following: identify high-risk construction tasks, activities, processes, and stages; improve the quality and coverage of surveillance data; develop new, or adapt existing technologies to the unique conditions of specific industries; compare the relative risks of different types of construction projects; study the relationship of training, experience, and injury; improve partnerships among research organizations, industry, and labor; and improve, simplify, and more effectively disseminate safety information. The process of combining injury surveillance data with the experience of individuals in the affected industries provided NIOSH researchers with a broader perspective on the safety research needs of the construction industry.

Background. Construction is both one of the largest and one of the most dangerous industries in the United States, but there is little literature on fatality risk by occupation within this industry. This study assessed work-related injury fatality risk by occupation and cause of death within the construction industry, using data contained in the NIOSH National Traumatic Occupational Fatality (NTOF) surveillance system and the BLS Current Population Survey (CPS) from 1990 to 1991.

Method. Annual fatality rates were calculated for occupations with six or more work-related injury deaths during the 2-year period and presented as the number of deaths per 100,000 workers. Cause-specific annual rates were also calculated for occupations with 50 or more deaths during the 2 years. Frequencies and rates are presented for the civilian workforce only, because denominator data were not available for military personnel.

Results. A total of 1,964 work-related injury deaths occurred in the construction industry in the United States during 1990 to 1991. Construction has an average annual fatality rate of 13.2 deaths per 100,000 workers. Occupations with 100 or more deaths during the 2 years are construction laborers (463 deaths), construction supervisors (161), carpenters (153), operating engineers (146), electricians (103), and managers and administrators, n.e.c. (100). Fatalities from these six occupations accounted for 57.3% of fatalities in the construction industry. Annual fatality rates by occupation were presented and there were 22 occupations which have higher annual fatality rates than the average of 13.2 per 100,000 workers for the entire construction industry. The six occupations with the highest annual fatality rates were electrical power installers and repairers (84.6 deaths per 100,000 workers); structural metal workers (74.7); operating engineers (47.7); engineering technicians, n.e.c. (44.8); drillers, earth (40.7); and construction laborers (33.3). Operating engineers and construction laborers were the occupations with both a high annual fatality rate and a large number of injury deaths. The leading cause of death varied among occupations. Falls were the leading cause of death for construction laborers; construction supervisors; carpenters; managers and administrators, n.e.c.; roofers; structural metal workers; construction and maintenance painters; and plumbers, pipe fitters, and steamfitters. Motor vehicle crashes were the leading cause of death for truck drivers and heavy construction trades, n.e.c. Machines were the leading cause of death for operating engineers. Electrocutions were the leading cause of death for electricians. Findings from this study are consistent with previous studies and underscore the urgent need for prevention measures for work-related fatalities among construction workers. Information on fatality risk by occupation and by cause of death could be useful for planning preventive strategies in the construction industry.

Preventing Injuries and Fatalities in Highway Construction Work Zones—Melius J, Kojola W, Hoffner K, Lapping K, Blacklow B

With support from the United States Department of Transportation, the Laborers' Health and Safety Fund of North America (LHSFNA) has been conducting a project to prevent injuries and fatalities among highway construction workers. Surveillance data indicated that these workers have a fatality rate twice as