



3276.0 - A trend analysis to examine the effects of climate change on heat-related illnesses and deaths among United States construction workers



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1:20 PM - 1:40 PM

Abstract

background and objectives: Construction workers perform strenuous tasks and are exposed to temperature extremes. Consequently, they are at risk for heat-related illnesses (HRI) and heat-related death (HRD). Research suggests climate change will exacerbate adverse effects of heat stress, but few studies document the impact of heat among U.S. construction workers. The objectives were to assess temporal and geographic trends in HRI and HRD among U.S. construction workers, and to evaluate the relationship between temperature variability and HRD.

methods: Fatality data, denominator data, and climate data were obtained from the Census of Fatal Occupational Injuries, Current Population Survey, and National Oceanic and Atmospheric Administration, respectively. OSHA Severe Injury Reports involving heat exposure were mapped using G.I.S. software. Distribution of HRD by month, time of day, and region were tabulated for 2011-2016. Pearson's correlation and linear regression tested the association between HRD and average summer temperatures.

results: Construction workers represent approximately 6% of the U.S. workforce but accounted for 36% (n=285) of occupational HRD from 1992-2016. Most deaths from 2011-2016 occurred between June and August (78%), primarily between 2:00-3:59 pm (82%). Rate of HRD was statistically significantly elevated in the Southern U.S., where 62% of cases occurred. Rising summer temperatures correlated with increasing frequency ($r = 0.609, p = 0.001$) and rate of HRD ($r = 0.414, p = 0.040$). A preliminary interactive map illustrates the geographic distribution of severe injuries involving heat exposure in federal OSHA states and provides case-specific information, including examples of heat exposure contributing to traumatic injury.

conclusions: Construction workers are disproportionately at risk for HRD. Results support increasing construction deaths may be due to climate change. A multi-factor approach may help to mitigate adverse occupational effects of climate change including enhancing surveillance, evaluating intervention effectiveness, conducting dissemination research, and by improving regulations and enforcement.

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Learning Areas

Environmental health sciences Epidemiology Occupational health and safety

Learning Objectives

Define the burden of heat-related occupational mortality among U.S. workers and construction workers. Explain three or more ways by which workers could be adversely affected by climate change.

Keyword(s)

Climate and Health, Workplace

View Related

3276.0 - Health & Safety in the Construction Industry

Occupational Health and Safety

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