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Contact with Electricity: An Interdisciplinary Annotated Bibliography

Anderson, N. J., et al. (2011). "Psychiatric diagnoses after hospitalization with work-related burn injuries in Washington State." *J Burn Care Res* 32(3): 369-378.

This study aims to describe workers who were hospitalized with work-related burn injuries and their psychiatric sequelae in Washington State. Psychiatric sequelae of interest were depression, posttraumatic stress disorder, and other anxiety disorders. Workers' compensation claims meeting a definition for a hospitalized burn patient from Washington State from January 2001 through April 2008 were analyzed. The resulting claims were searched for the presence of certain psychiatric diagnoses or treatment codes, and descriptive analyses performed. In Washington State during the time period, the prevalence of claims with psychiatric diagnoses after hospitalization with burn injury was 19%. Claims with psychiatric diagnoses had higher medical costs and more days of time loss than those without these diagnoses. Workers with electrical burns in the construction industry and in construction and extraction occupations had a higher proportion of psychiatric sequelae. Burns are devastating yet preventable injuries. Workers who were hospitalized with work-related burn injuries, particularly those in certain industries and occupations and those with electrical burns, are at high risk for developing serious psychiatric sequelae with major costs to both the individual and the society.

Arnoldo, B. D., et al. (2004). "Electrical injuries: a 20-year review." *J Burn Care Rehabil* 25(6): 479-484.

Electrical injuries continue to present problems with devastating complications and long-term socioeconomic impact. The purpose of this study is to review one institution's experience with electrical injuries. From 1982 to 2002, there were 700 electric injury admissions. A computerized burn registry was used for data collection and analysis. Of these injuries, 263 were high voltage (≥ 1000 V), 143 were low voltage (< 1000 V), 277 were

addresses exposure to all EMF Factors taking into account job category, work environment, and occupied environment. Exposures for all factors were classified into three ordinal levels for 22 job categories. Electric and magnetic field exposures were classified by the geometric mean of daily average of personal exposure measurements. Although relatively sparse, survey data on nuisance shocks were adequate for exposure assignment by job category and indicate that the frequency of these exposures has diminished over time. The least information was available for imperceptible contact currents that are associated with electric field exposures and small contact voltages. Data for electrical injuries by job category were derived from the Electric Power Research Institute Occupational Health Surveillance Database, with exposure assignments based on combined injury rates for flash burn and electric shock/electrocution. The highest exposures for all EMF Factors are essentially limited to four job categories that work on or close to electrical equipment: (1) cable splicers, (2) electricians, (3) line workers, and (4) substation operators.

Chen, G. X., et al. (2000). "Expanded analysis of injury mortality among unionized construction workers." *Am J Ind Med* 37(4): 364-373.

BACKGROUND: To evaluate the utility of expanding the number and precision of injury categories used in previous occupational mortality studies, this study reanalyzed data from four previous studies of unionized construction workers (construction laborers, ironworkers, sheet metal workers, and operating engineers), by expanding the number of injury categories from 6 to 33. **METHODS:** Proportionate mortality ratios (PMRs) were computed using the distribution of deaths from the National Occupational Mortality Surveillance System, a mortality surveillance system from 28 states, as a comparison. A blue collar comparison group was also used in additional analyses to adjust for socioeconomic and other factors. **RESULTS:** This reanalysis identified significantly elevated PMRs in at least one of the four worker groups for falls, motor vehicle crashes, machinery incidents, electrocutions, being struck by falling objects, being struck by flying objects, explosions, suffocation, and water transport incidents. Limiting the comparison population to deaths among blue collar workers did not change the results substantially. **CONCLUSIONS:** This study demonstrates that increasing the precision of categories of death from injury routinely used in mortality studies will provide improved information to guide prevention. *Am. J. Ind. Med.* 37:364-373, 2000. Published 2000 Wiley-Liss, Inc.

Dan Bracken, T., et al. (2010). "Measured breakdown voltage and leakage current of line worker boots." *IEEE Transactions on Power Delivery* 25(1): 508-517.

Sixty-hertz breakdown voltage and leakage current for 48 pairs of used line worker boots were measured under dry and wet conditions. Line workers wear conventional work boots, hiking boots, or traditional lineman boots. The outer soles of work and hiking boots are predominantly a single molded piece, called a unisole; lineman boots generally have a separate heel nailed to the sole. Our survey found mainly (81%) unisole work and hiking boots. Laboratory measurements showed dry and wet breakdown were associated with sole and boot type but not with recent use, resoling, or estimated wear. Unisole boots had higher resistances and withstand voltages than separate-heel construction. Breakdown occurred at much lower voltages for wet conditions than for dry. Wet breakdown voltage determined the electrical integrity of boots for leakage currents of 50 mA or higher. For lower currents, leakage and boot resistance were the determining factors for minimizing risk from shocks. © 2009 IEEE.

Eiris, R., et al. (2018). "PARS: Using Augmented 360-

significantly higher for younger workers when compared to all other industries. Focusing prevention measures toward younger workers who work near overhead power lines could have a significant impact upon death rates. For older workers, the focus should be on those who work on or near transformers, electrical wiring, and components. Across the construction industry, implementation of effective lockout-tagout programs, and verification of energy isolation, can prevent approximately 125 fatalities per year in the construction industry.

McCann, M. (2003). "Deaths in construction related to personnel lifts, 1992-1999." *J Safety Res* 34(5): 507-514.

PROBLEM: This study examined deaths of construction workers due to personnel lifts (boom-supported and scissor lifts, suspended scaffolds, and crane platforms). **METHODS:** Deaths of construction workers for 1992-1999 were examined using data from the Census of Fatal Occupational Injuries, a Bureau of Labor Statistics database. **RESULTS:** The study identified 339 deaths: 42% from boom-supported lifts; 26% from suspended scaffolds; 19% from scissor lifts; 5% from crane platforms; and 7% from unapproved lifts (e.g., forklift platforms). The main causes of death were falls (36%), collapses/tipovers (29%), and electrocutions (21%). **DISCUSSION:** Recommendations include: following OSHA regulations, wearing personal fall protection equipment, adequate maintenance, inspection before use, and training on the model of lift used. Precautions are also needed to prevent contact with overhead power lines. **IMPACT ON INDUSTRY:** The increasing popularity of boom-supported lifts and scissor lifts, both in construction and other industries, make their safety an important issue. rtrucR (r)lchom

Zhao, D., et al. (2014). "Electrical deaths in the US construction: An analysis of fatality investigations." *Int J Inj Contr Saf Promot* 21(3): 278-288.

Electrocution is among the 'fatal four' in US construction according to the Occupational Safety and Health Administration. Learning from failures is believed to be an effective path to success, with deaths being the most serious system failures. This paper examined the failures in electrical safety by analysing all electrical fatality investigations (N = 132) occurring between 1989 and 2010 from the Fatality Assessment and Control Evaluation programme that is completed by the National Institute of Occupational Safety and Health. Results reveal the features of the electrical fatalities in construction and disclose the most common electrical safety challenges on construction sites. This research also suggests the sociotechnical system breakdowns and the less effectiveness of current safety training programmes may significantly contribute to worker's unsafe behaviours and electrical fatality occurrences. © 2013 © 2013 Taylor & Francis.

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