

EDITORIAL

Health & Safety in Construction

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After a few recent years of economic challenges, the construction industry sector continues to grow internationally [1], providing jobs in affluent and developing countries as populations increase and infrastructures expand. Additionally, as demands for rebuilding and repair increase in the aftermath of natural, human-caused, and technologically-induced disasters, construction work will continue to be a relatively higher-growth sector compared to other industry sectors. Consequently, these factors contribute to the need for large numbers of workers who can complete construction projects rapidly while under a variety of resource constraints.

Construction trades in particular provide many opportunities for small businesses and for individuals to start and operate their own businesses. For instance, in the USA there are 7.2 million wage and salary jobs in construction and 1.8 million self-employed companies that use unpaid family members (Bureau of Labor Statistics/BLS, 2010-2011) [2]. Sixty-eight percent (68%) of construction companies employ fewer than five people (BLS, 2010-2011) [2]. But, the same organizational factors that facilitate independence and job satisfaction may also set the stage for hazard exposures. Construction jobs are a predominant cause of non-fatal injuries for 18 to 24 year olds internationally, and account for a large percentage of hazardous exposures among children [1, 3]. The construction sector also continues to have one of the highest fatality and injury rates across all sectors. In the USA alone, construction has a non-fatal injury incident rate of 4.7 per 100,000 workers and an 8.9 fatal injury incident rate per 100,000 workers (BLS, 2008) [4, 5]. These statistics provide a strong justification of the need for research focused on safety and health in the construction industry.

This special issue arose from a construction safety and health symposium sponsored by the Virginia Tech Occupational Safety and Health Research Center (formally comprised of the Center for Innovation in Construction Safety and Health) as part of the 2009 annual conference of the International Society for Occupational Ergonomics and Safety (ISOES) held in Dallas, Texas, USA. The symposium featured several papers that addressed safety and health challenges in construction, ranging from safety practices in construction trades to impacts of safety culture on day-to-day safety practices. From the symposium, expanded papers

were peer reviewed and selected for inclusion in this special issue.

The four papers in this issue address the diverse challenges to safety and health using a variety of methodologies. But, one common theme in the work of the researchers featured here is the importance of addressing safety from a systems perspective. For example, Arezes *et al.* explored the relationship between risk perception and alcohol consumption in Portugal. The acceptance of alcohol in the workplace and while working differs across countries. Consequently, the contribution of alcohol to injuries and fatalities appears in many forms and at varying levels. The findings can be generalized to many other countries with some influence from each country's policies and regulations, especially for companies that are smaller, more informal, and with fewer or more lenient government regulations. Abdelhamid *et al.* identified the importance of contextual factors in the identification of hazards in the workplace. Using signal detection theory, they indicate that the context, which includes the physical system components and worker attributes, was a factor that influenced the level of "response bias" in a worker's detection of hazards (beta criterion). Thus, several system factors will influence a worker's capabilities to work safely and avoid injury. Yuan *et al.* examined system factors by focusing on knee injuries among carpenters using secondary analysis of hospital records. The workers' level (journeyman or apprentice) within a unionized environment was associated with the type of knee injury. Smith-Jackson *et al.* used a critical incident reporting method to identify the challenges faced by small informal construction companies, which are under-represented in the research literature yet comprise a large portion of the construction companies in most countries around the world, including the USA. Factors such as family conflict, lack of resources, and time constraints were key contributors to critical incidents or "close calls."

Beyond the applied research contributions, this special issue represents an information base of new challenges to explore in research, training, and technology design to support prevention of injuries and fatalities in construction.

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