



## **Editorial**

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The construction industry is fraught with safety and health risks in the short and long term. In most countries, the proportion of all serious occupational injuries accounted for by construction is roughly three times greater than the proportion of total employment. Since the construction industry is also a large part of the economy, accounting for somewhere between 7% and 12% of employment in industrialized countries, it accounts for somewhere around 20–30% of all serious injuries.

The characteristics that make the industry hazardous are common to all countries. All the work is temporary. It is always urgent to complete the projects since capital investment remains unproductive during construction. The worksites are temporary. Employment is frequently temporary. Many different employers are frequently engaged to complete parts of the work on the same worksite. Workers frequently work with little or no supervision and with long workhours. Worktasks are frequently improvised or changed in the process due to unanticipated circumstances that arise. The worksites are often in remote locations. Work is often performed under difficult climatic conditions. Few industries are more dependent on the business cycle. In a down-turn economy, the first action many enterprises take is to halt new development, which typically involves construction; in upturns, construction frequently also leads the way. This situation makes for a “boom and bust” industry.

These characteristics also affect employment. While construction work entails risk, it also has great rewards. In good times, it can produce high incomes, the work is creative, and it provides more freedom than most other kinds of employment situations. Nevertheless, it has become more difficult to recruit new workers into the industry and to stop the excessive outflow of young construction workers into other industries. The workforce is typically becoming older, and in most countries more culturally diverse, with an influx of workers from “new” ethnic backgrounds, and also more and more women.

These industry characteristics also affect our understanding of the risks in the industry. Because employment is so transient, long-term health effects from exposures in the industry are vastly underreported, and therefore frequently neglected.

In spite of its size and risk to workers’ safety and health, the proportion of occupational safety and health research devoted to the industry has been very small. Until about 20 years ago, what existed in terms of research dealt with traumatic risks, such as deaths from falls. More recently research has begun to focus on musculoskeletal diseases and complaints, as well as on toxic risks that result in chronic diseases. But, for an industry as large as construction, there is remarkably little in the way of reviews of evidence-based safety and health interventions.

In this supplement, we attempt to address some of this void. We have attempted to identify papers that both represent the state of science and also illustrate opportunities for research into the many different facets of safety and health in the construction industry. We have included an editorial [Snashall (p 5–10)], which outlines the uniqueness of the industry, and its characteristics, which are both fascinating and challenging. The remainder of the supplement consists of individual research papers that we have grouped as best we can into the areas of epidemiology, risk assessment, musculoskeletal disorders, and intervention strategies.

*Epidemiology.* Occupational epidemiology has barely scratched the surface of the construction industry. Two of the papers [Welch et al (p 11–21); Tüchsen et al (p 22–26)] begin to address one void, that of characterizing the prevalence of injuries and illnesses on large construction projects using different types of data sources. Clearly, the opportunity to learn from following large projects should be used more often in the future. One paper [Engholm & Englund (p 27–30)] begins to document long-term trends in morbidity and mortality due to one hazard—*asbestos*. Without such long-term analysis,

we will never know the true magnitude of risk from long-lasting health hazards, and, as long as the magnitude is not understood, the recognition of chronic risks is likely to be equally measured.

*Risk assessment.* We have included four papers that illustrate different types of risk assessment. The first of these [Burdorf et al (p 31–36)] presents a model to identify individual workers at risk of permanent disability. We have included this paper even though it is not definitive because it begins to address one of the most difficult problems we face today: how to retain early aging workers and provide meaningful work for them. The second paper [Spee et al (p 37–42)] addresses other common problems: the difference between real and perceived levels of risk in the absence of absolute knowledge and a technological solution to one problem possibly creating new and unintended problems. The third paper [Priha et al (p 43–48)] discusses the possibility to calculate occupational risk with specific formulas. As an example, they used the exposure to polychlorinated biphenyls in the removal of old sealants from buildings. The last paper addresses risk for a specific hazard, and Tjoe Nij & Heederik (p 49–56) investigate the health effects of silica exposures.

*Musculoskeletal disorders.* We have included what may appear to be a disproportionately large number of papers addressing issues related to musculoskeletal disorders. The reason for this emphasis is that musculoskeletal disorders are responsible for a larger portion of morbidity and costs than any other safety and health category, and they remain poorly investigated. We think these papers provide an interesting cross-section of major issues that have been identified to date. The first of these [Engholm & Homlström (p 57–67)] addresses the risk from physical and psychosocial factors. The second [Kirkeskov Jensen (p 68–74)] addresses the problem of working in awkward postures. The last two [van der Molen et al (p 75–87); Hartmann & Fleisher (p 88–95)] address the problem of manually handling heavy loads.

*Intervention strategies.* Of course, research does little if it is not translated into practical intervention. We have included three intervention-related papers. The first [van der Molen et al (p 96–103)] presents a conceptual framework for the implementation of interventions addressing musculoskeletal disorders. The second [Spangenberg et al (p 104–109)] focuses on an evaluation of two different approaches to providing on-site first-aid services, and the third [Stenlund (p 110–115)] describes a model for the rehabilitation and re-employment of injured workers.

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We hope that by publishing this supplement we will spark further interest in improving safety and health in the construction industry, both through more research and through innovation in practice.

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