



# Disparity between construction safety standards: A global analysis



Adeeba A. Raheem\*, Jimmie W. Hinze

Rinker School of Building Construction, University of Florida, Gainesville, FL 32611, USA

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## ABSTRACT

Construction workers are often exposed to the inherent risks associated with working conditions on construction sites. Safety standards of various countries prescribe a variety of mechanical safeguards and procedures to ensure that work is performed safely, but it is evident from the available statistical data on construction safety standards that there is no globally-standardized system of regulations nor is there a common definition for the computation of injury/fatality rates. The components that form these statistics vary from country to country in many aspects, including the legal framework for reporting accidents, the economic sectors covered, and the definitions of injuries/fatalities. Thus, the statistics from different countries are not directly comparable and cannot be interpreted with a single approach. The aim of this paper is to compare and contrast the methods for defining and reporting construction safety performance as adopted by selected countries throughout the globe and then to propose suggestions for a well-structured system of construction safety standards that would be workable with limited variations while addressing geographical limitations or economic distinctions.

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## 1. Introduction

The construction industry plays a major role in many eastern and western economies, accounting for around 10% of the world's gross domestic product (Murie, 2007). Despite the considerable economic contributions of the construction industry, the construction industry is associated with a disproportionately high number of injuries and fatalities. In industrialized countries the construction sector employs approximately 6–10% of the workforce but it accounts for 20–40% of the occupational fatal accidents. This trend is similar or even worse in developing nations. It is estimated that a total of 60,000 construction fatalities occur per year around the world which equates to one construction fatality every nine minutes (ILO, 2005).

Construction work is dynamic and complex. It is inherently dangerous (Carter and Smith, 2006; Gambatese et al., 2008; Jørgensen, 2008; Smallwood, 1996; Toole et al., 2006), but many risks can be avoided through the proper implementation of safe work practices. Construction safety standards are rules that specify the minimum acceptable level of safe work performance. These rules are usually a combination of prescriptive and performance requirements, the development and enforcement of which varies

considerably among different countries. In most of the developed and developing countries the power of forming and regulating these standards is vested in government agencies or quasi-governmental organizations, whereas in some developing countries it is the responsibility of the federal government, but is actually performed by the local authorities.

Safety management practices vary not only between developed and developing countries but this situation also exists among developing nations (Raheem et al., 2011). This can be attributed to the varying defining characteristics of safety performance adopted by different nations. Research studies related to safety regulations have shown that even in those developing countries where safety legislation exists, the governing authority is often weak or nonexistent and employers 'pay lip service' to the regulations (Lee and Halpin, 2003). According to a study done by Koehn et al. (2000) injuries are often not reported in developing countries and the employer merely provides some form of compensation (usually a small cash amount) for any injuries to employees. The major causes of injuries/fatalities in construction are related to the unique nature of this industry, human behavior, difficult work-site conditions, and poor safety management (Abdelhamid and Everett, 2000). The construction industry has unique work conditions so it requires a unique approach for controlling human behavior and managing site conditions that are acceptable to ensure worker safety. This standardization process could be helpful in comparing safety performances of different countries in a quick and comprehensive manner.

\* Corresponding author. Address: M.E. Rinker, Sr. School of Building Construction, University of Florida, 304 Rinker/P.O. Box 115703, Gainesville, FL 32611-5703, USA. Tel.: +1 (352) 273 1178.

E-mail address: [adeebakas@ufl.edu](mailto:adeebakas@ufl.edu) (A.A. Raheem).



Fig. 1. Continents selected for the study. (Source: <http://www.worldpress.org>).

Table 1  
Survey statistics.

Continent	No. of surveys sent	No. of surveys received	Response rate (%)
Africa	8	3	38
Asia	10	6	60
Europe	16	8	50
N. and S. America	10	5	50
Australia	1	1	100
Total	45	23	51

Occupational health and safety (OHS) laws and standards are based on a technical approach to manage the risks associated with working conditions (Holmes et al., 1999). Poor safety standards and lax enforcement make workers vulnerable to accidents in both the northern and the southern hemispheres (Watterson, 2007). Although occupational accidents and work-related diseases have been of interest for decades, the lack of effective recording and notification systems for the number of occupational accidents and work-related diseases result in missing data in many countries (Hamalainen et al., 2009). Enhassi et al. (2008) concluded that in many developing countries, the legislation governing occupational safety and health is significantly limited when compared with many developed nations. In many developing countries, construc-

tion activities are not adequately planned, resulting in workers being exposed to hazardous conditions without proper training or appropriate personal protective equipment. Many safety measures are taken only after a dramatic incident occurs (Raheem et al., 2011, Mbuya and Lema, 2002). On the other hand, in developed countries, construction activities are generally carefully planned and are carried out by a skilled workforce which is trained to execute the work properly. Despite these efforts, a lack of awareness of safety requirements and other circumstances can still result in injury accidents.

As defined by the Occupational Safety and Health Administration (OSHA) in the USA, occupational safety and health standard means “a standard which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment”. The importance of this defined safe working environment in construction is more extensive than in any other industry because this sector cannot be completely mechanized. Every construction worker in any part of the world has a right to have a safe working environment, but unfortunately these standards vary considerably in the global arena. According to research done by the Center for Construction Research and Training USA, there are numerous obstacles to developing an effective international construction safety standards system to improve injury/fatality data comparability. The most

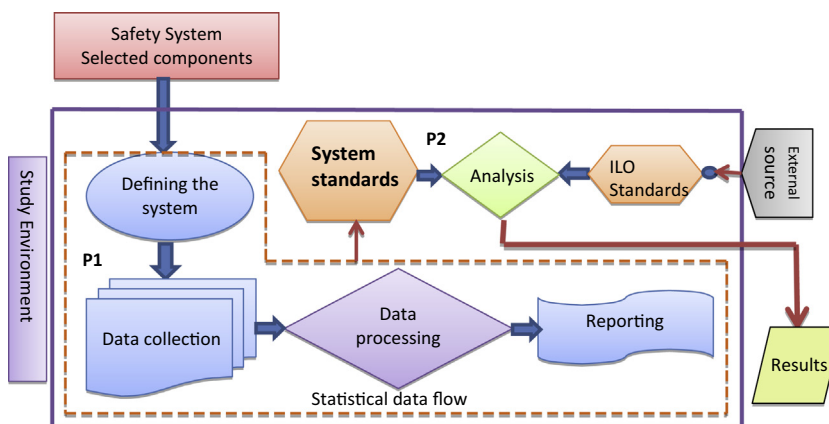


Fig. 2. Methodology flowchart.

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