

# Occupational Safety Management in The Mining Sectors of China and Australia: a Short Introduction

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## Opinion

Occupational safety is a critical issue in the mining industry since accidents in mining companies are very likely to cause death, injury and huge loss of property. This is especially the case in China [1]. Work-related illnesses and injuries are costing China 100 billion RMB annually (US\$12.5 billion) in direct losses, while the indirect costs could double the figure to 200 billion RMB annually (US\$25 billion); these costs account for 6% of the national GDP [2]. Further, it is estimated that there are more than one million work-related injuries and nearly 80,000 work-related deaths occurring in China each year. In 2005, it was estimated that 16 million enterprises were using toxic and hazardous materials and 200 million workers were engaged in hazardous jobs [3]. According to the Ministry of Health (2006), 5 out of every 1,000 workers in hazardous jobs suffered from occupational diseases. In the same year, 728,000 accidents claimed 127,000 deaths. Among these accidents, work-related injuries and fatalities in the mining sector accounted for about 10%. In 2008, more than 3,000 people died from coal mine accidents and the mortality per million-ton produced was 1.182 according to official statistics [4,5]. The average mortality per million-ton in China from 2000 to 2007 was 3.04, which was over 100 times higher than that of the US at 0.027 [6]. These frightening national figures reveal just the 'tip of the iceberg', as under-reporting in data collection is widely recognized as a problem in China.

Such a severe workplace safety problem in China is a result of a combination of many factors, such as the complex geological conditions, out-dated technology in the mining industry, and inefficient safety management. However, many mining accidents in China are due to human errors because of deficiencies in safety management and supervision rather than natural calamities [1]. Moreover, engineering solutions are not available or appropriate for all safety-related issues. In these situations, it is important to understand how management, especially human resource (HR) practices such as safety training and motivation can influence the creation of a 'safe culture/climate in the workplace' and may affect safety outcomes in the mining sector as a whole.

Thus far, research on occupational health and safety (OHS) and safety management has been heavily concentrated on developed countries [7]. Consequently OHS research in

emerging economies lags behind the OHS theoretical and empirical development of countries such as China, which is the world's largest developing country. Zhu suggest that the study of occupational safety in China is at an early stage that currently focuses solely on the technical aspects of engineering systems and processes, in contrast to the greater emphasis on the impact of the attitudinal, organizational, cultural, and social dimensions of OHS in research that has been carried out in developed countries. Moreover, Jin and Courtney (2009) point out that there is a paucity of research conducted in China that investigates OHS management in Chinese organisations, despite the fact that there are regular reports of horrific injuries due to safety problems occurring in China.

Compared with China, Australia's OHS management record in the mining industry is much better. In 2011, for example, the fatality rate per 100,000 workers in the mining industry in Australia was 3.86, much lower than China's [8]. Also, many more studies on OHS have been conducted in Australia than in China. For example, Fan reviewed 278 empirical studies that were published in 9 top safety and management journals, among which 31 were conducted in Australia and only 13 focused on OHS issues in China.

Mining in Australia is dominated by large multinational corporations and it is estimated that the mining industry is about 83% foreign owned [9]. Up until 2010, accumulated direct investment stocks from China to Australia were about \$7.8 billion, with 81.6% invested in the mining sector [10]. Of more than 500 Chinese-owned companies in Australia, 31% are in the mining sector. However, there is very limited information about how these companies manage their OHS operations [11]. For example, it is not known how well these Chinese multinational enterprises (MNEs) have performed in terms of occupational safety and how their safety management practices are similar to, or different from, their parent companies and foreign-owned/local companies based in Australia. As a result, more research needs to be done to shed light on these gaps and to provide valuable information about how to improve OHS outcomes through safety-related HR practices in the mining sector [12].

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