



# Managing occupational health and safety in the mining industry<sup>☆</sup>

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## ABSTRACT

The mining industry is a high health risk occupation. Companies should implement occupational health and safety management (OHSM) rules and regulations. These companies face a rapidly booming mining sector and need the help of OHSM to achieve business goals. Being aware of the influential factors on the OHSM is needed to reduce work-related fatalities and increase the company's efficiency. Few studies identifying the influential factors on the implementation of OHSM in the mining industry are available. This study provides a general overview of OHSM and investigates the relationship between five factors influencing the implementation of occupational health and safety management among currently operational mining companies. The results show that the correlation of the five domains varies. Using factor loading to examine the most influential factor to the least influential factors, the order is shown as follows: act and regulation, stakeholder pressure, investment, integrated OHSM and organizational culture. In addition, lack of adequate investment from the government was reported by the majority of the OHS specialists. This finding is noteworthy in that there was an OHS specialist agreement that their companies do not spend at least 1% of their production and service cost to implement OHSM requirements.

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## 1. Introduction

In every country around the globe, governments are increasing the quality, health, and safety requirements in several occupations. Many organizations in the Americas, Europe, and Asia Pacific regions are adopting stringent safety management practices to manage hazards and risks and to resolve workplace problems and accidents (HKG, 1995). Cooper (1997) argues that safety management practices help organizations to manage health and safety risks, and comply with health and safety legislation. Ineffective safety policies can contribute to the causes of accidents. It is therefore necessary for an organization to install a set of safety management practices and to be capable of foreseeing the potential risks. Many organizations also employ international and national safety standards as guidance to develop their own safety management systems. Maguire (2002), Osborne and Zairi (1997), and Wilkinson and Dale (1998) describe a safety management system (SMS) as a system comprising standards, procedures and monitoring arrangements that aim at promoting the health

and safety of people at work and to protect the public from work accidents.

Economic activities in Mongolia are based traditionally on herding and agriculture. Mongolia's mineral deposits; such as copper, coal, molybdenum, tin, tungsten, and gold; account for a large part of the industrial production. Because of a booming percentage in the mining sector, Mongolia's economy had a high growth rate of 7% in 2010. The Mongolian mining industry plays a major role in the economy, especially in the total output of the industrial sector. For the last 5–6 years it has been a main driver of the economic growth, which has averaged at over 7% per annum.

Currently, Mongolia's mining and minerals sector generates more than three quarters of its total export. Mongolia's vast territory has a great potential to have rich mineral deposits including gold, copper, coal, fluorspar, silver, and uranium. Therefore, there are so many foreign investors who have been interested in investing in the Mongolian mining sector and co-operate with the Mongolian government. Companies and corporations running mining and exploration businesses in Mongolia make substantial contributions to the economy by paying over 20 types of taxes, fees and charges to the state and local budgets. The mining industry is a leading industry in terms of contribution to the economic development of the country, and it is also considered as one of most dangerous fields of industry by the number of accidents, injuries, occupational diseases and fatalities. As this sector develops, the demand of qualified occupational health and safety management grows. The importance of managing OH&S has been highlighted in official reports of major industrial accidents

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in Mongolia and is receiving increasing emphasis in OH&S legislation (Johnson, 1996).

However, Mongolia executives lack the attitude necessary for implementing occupational health and safety management. This absence appears in the speech by Mark Bailey, Board Member of MISA who says, "It is observable that the way Mongolians implement something is quite different from Australia. In Asia, particularly in Mongolia, there is quite different attitude. In general, many Mongolians are risk-takers and are not likely to take responsibility for what they are doing. However, Mongolian mining industry grows and a merging of two cultures occurs to produce a more pragmatic approach to occupational health and safety. An approach that not only promotes responsible awareness and behavior to safety in the workplace and at home, but also factors to implement the occupational health and safety management successfully here in Mongolia."

The remainder of this paper is organized as follows. Section 2 discusses the related theoretical concepts of OHSM. Section 3 discusses the research method. Section 4 describes the data analysis and outcome result. Section 5 presents the finding and discussion. Section 6 presents the conclusion.

## 2. Literature review

Workplace fatalities and injuries bring great losses to both individuals and societies. Magretta (2002) points out that (1) human error is the fundamental reason behind accidents and (2) management is responsible for the prevention of accidents. Management affects everyone because it is present in every aspect of the world. It applies to managing oneself—focusing our abilities toward our goals. It applies to our working relationships with others because it affects our choices about them. Management is about putting together organizations that work to accomplish a mission.

### 2.1. Overview of OHSM

Getting hurt at work or becoming ill through work is not a pleasant subject to think about. The reality is that over 200 people a year lose their lives at work in Britain. In addition, around 150,000 non-fatal injuries are reported each year, and an estimated 2 million suffer from ill health caused or made worse by work (Health and Safety Executive, 2008). State Specialized Inspection Agency (SSIA) Inspectors of Mongolia revealed that in 2010, there were 366 industrial accidents with 401 people involved.

Believing that these things happen in highly unusual or exceptional circumstances that rarely occur in the workplace is a mistake. Some basic thinking and acting beforehand could usually have prevented these things from happening. Implementing health and safety measures doesn't have to be expensive, time consuming or complicated. In fact, safer and more efficient working practices can often save money, and more importantly, they also can help to save lives (Health and Safety Executive, 2008). ASCNI study group on human factors (1993) states that the primary aims of health and safety management is to intervene in the accident causation process and break that chain. Booth and Lee (1993) express this view and they go on to say that occupational safety should be a part of everyday decision making. These safety management practices may vary with the types of organization and the stages of organizational development.

The evaluation of factors that influence an OHS provides a useful feedback to employees, personnel and administrative staff. This process may produce higher safety consciousness as well as contribute to the well-being in a workplace (Gallagher, 2000; Huang et al., 2009). Currently, supervisors or auditors can use a number of instruments or audit tools in their evaluation of OHSM influential factors. The factors or criteria that affect OHS practices usually depend on company policy and regulations, where its evaluation process involves a number of approaches or/and parameters, which are often

based on imprecise data (Watada & Pedrycz; 2008; Watada, Tanaka, & Anna Rosa, 1998). Generally, OHS has become common and important in companies/organizations' code of ethics over the past 20 years. Closely related to this distinct term is OHS management system (OHSM), which has been defined as "a combination of the planning and review, the management organizational arrangements, the consultative arrangement and the specific program elements that work together in an integrated way to improve health and safety performance" (Gallagher, Underhill, & Rimmer, 2003).

Asfahl (2009) says that health and safety of the employees is an important aspect of a company's smooth and successful functioning. Health and safety are decisive factors in organizational effectiveness. Health and safety ensure an accident-free industrial environment.

Companies must attach the same importance toward implementing high OH&S performance as they do to the other key objectives of their business activities. This may result to proper attention to the safety and welfare of employees which can yield valuable returns to a company by improving employee morale, reducing absenteeism and enhancing productivity, and minimizing potential of work-related injuries and illnesses. Therefore, occupational health and safety management should be a central concern of any business.

### 2.2. Investment

Investment takes one of the crucial places for implementing and prospering occupational health and safety management. Especially, government's financial support has much contribution to the OHSM. Nowadays, the growing use of OHSM shows both a choice of one kind of OHS intervention in preference to others and a significant investment of financial and human resources by both government and business (Gallagher, Underhill, & Rimmer, 2001; Wooden & VandenHeuvel, 2000). Quinlan (1999) advocates that if organizations do not invest in health and safety then legislation will be produced to force investment and decrease profitability.

Using a recent accident at a mine owned by the Jixi Mining Group as an example, Zhao pointed out that the State Administration of Coal Mine Safety Supervision (SACMSS) had issued six warnings to the group. The warnings stated that its investment in safety systems and operations had fallen and as a result there were serious hazards. The lack of investment in safety systems Zhao mentions has been the subject of widespread discussion.

The formation of gas underground causes the most serious threat to coal miners. According to a report quoted in the *People's Daily*, gas-related accidents caused 43% of all fatalities in coal mines during 2001. Furthermore, in the ten-year period from 1991 to 2000, the number of coal miners killed in gas-related accidents nearly doubled. In recent years, investment in safety in China's key mines has fallen between 3 and 4 billion Yuan short of previously set targets. In Heilongjiang Province alone, investment in coal-mining safety was 570 million Yuan short of the planned target figure (Pringle & Frost, 2003). Occupational research is seen as a more complex issue in India, which includes child labor; poor industrial legislation; vast informal sector; less attention to industrial hygiene and poor surveillance data across the country. In India, general awareness about occupational safety, and occupational and environmental hazards was not spread in the society. With these structural changes the workers in low resource settings are more likely to be affected by the dangers of high technology than their counterparts in developed countries. Under the supervision of the inspector general of India, a small number of three hundred factory inspectors are responsible of checking the industrial safety in this vast country, compared to 3000 factory inspectors in a small country like Japan. This shows the poor concern of the government about industrial safety and subsequently occupational health (Agnihotram, 2005).

Based on the above examples, it is obvious that efficient investment makes OHSM more effective and prosperous. In the Mongolian

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