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Series on International Best Practice

Occupational Health and Safety

Dr. Vlado Vivoda

Centre for Social Responsibility in Mining, Sustainable Minerals Institute,
University of Queensland

Dr. Jonathan Fulcher

T.C. Beirin School of Law, University of Queensland

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About This Series and MLRI

This *Working Papers Series on International Best Practices* is prepared within the scope of the **Mining Legislation Reform Initiative (MLRI)**, a project of the **AUA Center for Responsible Mining**. MLRI is a multi-year effort, funded by the **Tufenkian Foundation**, to improve Armenia's legislation ensuring that mining in Armenia provides sufficient benefits to the country and local communities. The initiative involves drafting and passing legislation that elevates the socio-economic benefits of mining, while reducing the negative environmental and public health impacts. A key component of the MLRI is collaborating and partnering with civil society, advocacy groups, academic institutions, and relevant national and international organizations. MLRI works with the key governmental and legislative bodies in getting the draft legislation passed into law. For more information visit <http://mlri.crm.aua.am>.

About the AUA Center for Responsible Mining

The American University of Armenia (AUA) Center for Responsible Mining promotes the creation and adoption of global best practices in socially, environmentally, and economically responsible Mining in Armenia and the region. To achieve this, the Center conducts research, training, and advocacy engaging all key stakeholders including industry, civil society, financial institutions, and the public sector. For more info, visit <http://crm.aua.am>.

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Introduction

Mining operations include a diverse range of activities and involve work that has an equally diverse health and safety risk profile. Inherent hazards can lead to unacceptable rates of fatalities and injuries. Health and safety in the mining sector can only be improved if risks are identified and effectively addressed. Over the past three decades, great progress has been made in reducing accidents and incidents in the mining industry in leading jurisdictions. Large, highly-mechanised mines that employ relatively small workforces have achieved significant reductions in fatality and injury incidence rates. In contrast, occupational health and safety system has severely deteriorated in other jurisdictions. For example, in Russia, between 1980 and 2010, more than 60% of accidents and fatalities can be attributed to management practices – violation of safety regulations, poor organisation of work, deficiency of certified occupational safety specialists and inadequate personnel training.¹ With legislators promoting the interests of industry and business, they tend to neglect occupational health and safety and workers' rights. Workers are often employed in conditions that do not meet minimum international standards.

Current situation in Armenia

Over the past decade, approximately 50% of all workplace injuries in Armenia occurred in the Syunik region, home to only 5% of Armenia's population and labour force. However, Syunik's economy is overwhelmingly dependent on mining (90% of all output in the mining sector comes from Syunik and 85% of all output in Syunik comes from mining), leading to a conclusion that mining is the riskiest industry in Armenia.

The Labour Code of the Republic of Armenia (Labour Code) 2004 is the main legislation on occupational safety and health. Chapter 23 of the Labour Code is dedicated to occupational safety and health and working conditions.² As mandated in the Labour Code, issues of occupational safety and health are regulated by the Ministry of Labour and Social Issues (MLSI), with the State Labour Inspectorate enforcing regulations through employer consultation and regular inspections.

Depending on the specific industry, regulatory framework for occupational health and safety (OHS) is either reliant on outdated Soviet regulations or non-existent. Public awareness of health and safety issues is low and knowledge on the actual extent of hazards and risks is

¹ Dudarev, A.A., Karnachev, I.P., & Odland, J.Ø. (2013). [Occupational accidents in Russia and the Russian Arctic](#). *International Journal of Circumpolar Health*.

² See http://www.ilo.org/ifpdial/information-resources/national-labour-law-profiles/WCMS_158891/lang-en/index.htm.

local and decentralised.³ There is no systemic approach to the issues of OHS. Insufficient attention of employers to OHS, the training of workers in safety rules and perfunctory conduct of briefings are associated with a high rate of injuries, mortality and occupational diseases.⁴

From a legal perspective, directors and officers liability is provided for under the Armenian Criminal Code. **Article 157 of the 2003 Criminal Code provides for up to 5 years’ imprisonment if a director’s failure to ensure safety in the workplace has led to an employee’s death.**

International best practice

Australia

Mining OHS legislation in Australia is generally viewed as the most progressive in the world. The legislation is based upon duty of care, risk management principles and workforce representation, with the primary responsibility for the provision of a safe work place residing with the operator of the mine site. Government inspectors act as both enforcers of regulations and mentors who encourage good health and safety performance. Enforcement protocols are generally risk-based, with action being defined by both the level and immediacy of the risk.⁵

The Commonwealth *Work Health and Safety Act 2011* sets out framework that protects the health, safety and welfare of all workers at work. It also protects the health and safety of anyone else who might be affected by the work that is being conducted. While mine safety in Australia is a state-level responsibility, there is some national uniformity in mine safety standards (see Table 3).

Table 3: Legislative frameworks for health and safety in mining⁶

Jurisdiction	Legislative framework
Australian Capital Territory, Tasmania	<i>Model WHS (Mines) Regulations</i> implemented in 2014
Northern Territory, Victoria, Commonwealth	Mining regulated under general work health and safety legislation with some specific mining regulations
New South Wales	<i>The Work Health and Safety (Mines) Bill</i> was passed in July 2013, enabling the development of mining specific regulations

³ See http://pdf.usaid.gov/pdf_docs/Pnadp497.pdf.

⁴ See http://www.un.am/up/library/Safety-Health_RA_NP_eng.pdf.

⁵ Cliff, D. (2012). *The Management of Occupational Health and Safety in the Australian Mining Industry*. International Mining for Development Centre Mining for Development: Guide to Australian Practice.

⁶ Source: <http://www.safeworkaustralia.gov.au/sites/swa/whs-information/mining/pages/mining>.

Queensland	Mining regulated under stand-alone mining health and safety legislation
South Australia	The new <i>Model (WHS) Mines Regulations</i> commenced on 1 January 2014 as Chapter 10 of the <i>Work Health and Safety Regulations 2012 (SA)</i>
Western Australia	New work health and safety legislation for the resources sector was introduced in early 2015 based on the model WHS laws

Australian OHS legislation requires companies and workers to exercise a “duty of care”. The duty of care is shared between employer and employee. However, primary responsibility rests with the employer, who largely has control over working conditions. The duty owed by the employer may be higher to an employee who is inexperienced than to one who has experience. Similarly, high duty of care exists in hazardous environments. Legislation requires the reporting of all accidents and significant incidents, injuries and serious illnesses. In addition, the legislation requires that mine sites undertake regular audit and review processes, which are subject to scrutiny by the regulator. Most mine sites use accredited third party auditors to review their systems.⁷

In addition to the strong legal framework, many large-scale operations have internal safety standards that are even stricter than what is required by law. As a result, the accident rate in Australia’s mining sector is low by world standards. Over the five years from 2007–08 to 2011–12, 36 mining workers died from work-related injuries, 21 of which involved a vehicle. The total number of deaths equates to 3.84 fatalities per 100,000 workers, which is higher than the national rate of 2.29, but is low in comparison to other countries.⁸ In 2012–13, the frequency rate of work-related injuries and diseases in Australia’s mining sector (the number of cases expressed as a rate per million hours worked by employees) stood at 5, compared to 6.7 for all industries.⁹ In the same reporting period, the incidence rate of work-related injuries and diseases (the number of cases expressed as a rate per thousand employees), stood at 11.4 for mining compared to 11 for all industries.¹⁰

All mining companies have *Health and Safety Plans* and *Emergency Management Plans* in place for all aspects of construction and operation of their respective projects. These plans consider first aid and basic medical services, fire prevention and firefighting equipment and security. Broader *Workforce Management Plans* guide workforce management by project

⁷ Cliff (2012).

⁸ Safe Work Australia (2012). [Mining Fact Sheet](#).

⁹ Safe Work Australia (2013). [Work Health and Safety Statistics: Frequency Rates of Serious Claims by Industry, 2000–01 to 2012–13](#).

¹⁰ Safe Work Australia (2013).

developers and all contractors, and include all elements of workforce welfare, health and safety, a code of conduct and education and training.

An integral part of the Australian mining OHS legislation is the inherent role that the workforce plays in implementing OHS management. At each mine site there are OHS committees with workforce representation that have input into the development of safety procedures and plans. There are generally site safety and health representatives, elected by the workforce. These representatives have limited powers to review procedures and plans but can direct workers to leave a place of work deemed unsafe. These representatives are usually the first point of contact for a worker with OHS concerns. The representative will raise the issue with mine management. If he or she cannot obtain satisfactory resolution, he or she can forward the complaint to a mines inspector or the industry-wide workforce representative for further action.¹¹ Australia's mining industry leads the world in compensation when accidents do occur. Victims of serious workplace accidents can expect a lump sum payment of more than half a million dollars.

Chile

Primary legal instrument governing OHS is the *Labour Code*, with provisions on a range of workplace issues, including health and safety applicable, but not specific, to the mining sector. The *Labour Code* establishes that employers have the obligation to take all means necessary to effectively protect the life and health of their workers.¹²

Law 16.744 on Work-Related Accidents and Illnesses establishes several important provisions and rights around occupational health and safety.¹³ Among these is workers' right to free medical care in the case of a workplace accident or illness. The law also creates an insurance system to make this possible. *Law 16.744* also requires that companies with 25 or more employees establish Peer Committees on Hygiene and Safety.

Ministry of Labour and Social Security Decree 54 of 1969 (as modified by Decree 50 of 2010),¹⁴ approves the regulation that operationalises the peer committees, and establishes a range of details about their functioning.

Ministry of Health Supreme Decree 594 of 1999 establishes basic workplace health regulations, many of which are relevant for the mining sector.¹⁵ For instance, it establishes specific medical care requirements for workplaces located over 3,000 metres above sea level,

¹¹ Cliff (2012).

¹² Código del Trabajo (2015).

¹³ Ministry of Labour and Social Security (1968), 'Ley 16.744 Establece Normas sobre Accidentes del Trabajo y Enfermedades Profesionales'.

¹⁴ Ministry of Labour and Social Security (1969), 'Decreto 54 Aprueba Reglamento Para la Constitución y Funcionamiento de los Comités Paritarios de Higiene y Seguridad'.

¹⁵ Ministerio de Salud (1999), 'Decreto Supremo 594, Aprueba Reglamento sobre Condiciones Sanitarias y Ambientales Básicas en los Lugares de Trabajo'.

applicable to approximately 80% of Chile's mining operations.¹⁶ These requirements include, for example, the availability of an on-site emergency team and, for operations with over 50 workers, an on-site health clinic.

Ministry of Mining Supreme Decree 132 of 2002 includes specific requirements, for instance, around health care at mining sites.¹⁷ Importantly, it makes mining companies liable for the health and safety of their contractors and service providers.

Law 19.300 establishes Chile's environmental impact assessment system and identifies a range of environmental and social impacts – including health impacts - that companies must address.¹⁸

Two key enforcement agencies are the Bureau of Labour, which oversees compliance with general norms, and the National Geological and Mining Service (SERNAGEOMIN), which oversees the mining sector. While SERNAGEOMIN can issue fines and temporary halt operations, it does not have the authority shut down operations completely.

The mining sector is widely considered to have the highest safety standards in Chile. This has to do with the country's strong legal framework governing OHS, as well as the fact that many large-scale operations have strict safety standards. As a result, the accident rate is low in Chile's mining sector - in 2014 there were 1.7 accidents per 100 workers, a rate that is well below the accident rate of other sectors and the national average of 5 accidents per 100 workers.¹⁹

Accidents tend to be more serious when they do occur, resulting, for instance, in more days lost than in other sectors. In 2013, for example, mining accidents resulted in an average of 38.5 days lost, a rate that is significantly higher than those of other sectors and the national average of 17.3 days lost.²⁰ The seriousness of mining accidents is also reflected in the sector's mortality rate, which is high compared to most other sectors. In 2014, for example, there

¹⁶ Oñate, C.C. & López, P.V. (2011), 'Cuaderno de Investigación 40: Una Aproximación a las Condiciones de Trabajo en la Gran Minería de Altura', Santiago: Dirección del Trabajo de Chile.

¹⁷ Ministry of Mining (2002), 'Decreto Supremo 132 Reglamento de Seguridad Minera'.

¹⁸ Ministry of Environment (1994), 'Ley 19.300 Sobre Bases Generales del Medio Ambiente' (as modified by law 20.417 of 2010).

¹⁹ Consejo Minero (2015), 'Minería en Cifras', Santiago: Consejo Minero. The sector with the worst accident rate in Chile is manufacturing, with 6.8 accidents per 100 workers in 2014.

²⁰ Larraín, M.J.Z. (2014), 'Estadísticas de Accidentabilidad', Santiago: Superintendencia de Seguridad Social.

were 18.17 deaths per 100,000 workers,²¹ a rate that is well above the national average of 4.54 deaths per 100,000 workers.²²

Overall both the mortality rate and the accident rate have declined significantly in recent years.²³ In 2003, the number of deaths per million working hours was 0.13, a rate that improved to 0.07 in 2011 and 0.06 in 2014.²⁴ There is evidence that even when companies comply with legal requirements, workers do not always incorporate them into a “culture” of health and safety. For instance, although *Supreme Decree 594* requires on-site changing rooms and showers for workers who are exposed to chemical substances and, according to one study, 77% of companies comply with this regulation, only 24.2% of workers use these areas. The rest shower at home or at camps, meaning they bring chemical pollutants into their living spaces.²⁵

Peer committees are important and well-respected vehicles for promoting health and safety. According to one study, almost 90% of workers interviewed knew about peer committees and how they work, and almost 70% said peer committees regularly visit their work site. Most workers characterise peer committees as efficient and concerned about their health and safety.²⁶ Peer committees must include three company representatives and three worker representatives; and worker representatives must be elected by secret ballot. If the company has a risk prevention division, an expert from this division must be part of the peer committee. The committees must meet once per month and whenever an accident occurs that causes the death of one or more workers, among other circumstances.

Conclusions and recommendations

As demonstrated above, Australia’s mining sector has the strongest health and safety record. In Chile, the mining sector is widely considered to have the highest safety standards among all industry sectors. In Armenia, there is no systemic approach to the issues of OHS in mining. There is very little uniformity across mining companies in the application of health and safety management systems and in risk management practice. Against this background, the government should undertake a detailed assessment of health and safety practice at all significant mines in order to identify specific areas of concern. The review should be informed by the International Labor Organization’s [C176 Safety and Health in Mines Convention](#), which sets out the basic requirements for national practices for mine health and safety. The study could also serve as a basis for drafting mining health and safety standards, which are

²¹ Consejo Minero (2015).

²² Ibid. The only sector whose death rate is higher than mining is transport and communications, whose death rate in 2014 was 20.15 per 100,000 workers.

²³ Ibid.

²⁴ Ibid.

²⁵ Oñate & López (2011).

²⁶ Ibid.

necessary if the government is to transform the country's OHS environment and reduce mining-related accidents and fatalities. In parallel, capacity building initiatives both within the government and the mining sector are required in order to build a safety culture, improve workplace safety practice and enable effective regulatory oversight.

AUA Center for Responsible Mining
American University of Armenia
40 Baghramyan Ave.
Yerevan, Republic of Armenia
+374-60-612520
crm@aua.am
crm.aua.am

mlri.crm.aua.am

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