



Chapter 3.2 Occupational Health and Safety

BACKGROUND

Occupational health impacts related to the mining industry may include physical injuries, musculoskeletal disorders, noise-induced hearing loss, hand-arm vibration syndrome, skin cancer, dermatitis, heat exhaustion, hypothermia, eye disorders from radiation exposure, asphyxiation, pneumonia, respiratory disorders and lung diseases such as silicosis, damage to internal organs and other effects related to chemical/metal exposures, decreased mental health and well-being, and others.¹¹⁰

Key hazards related to mining include, but are not limited to: rocks falls, ground subsidence, vehicle collisions with other vehicles, equipment, humans or wildlife, explosions, release of noxious gases, catastrophic failure of mine infrastructure.¹¹¹

Due to the many hazards and potential impacts associated with mining, a strong focus on occupational health and safety must be present at responsible mines.

In 1995, *Convention 176—Safety and Health in Mines* was adopted by the International Labour Organization (ILO).¹¹² The convention set out international standards with respect to occupational health and safety at mine sites, including the need for: safety and health inspections, accident reporting and investigations, hazard assessment and management, and workers' rights to participate in workplace health and safety decisions, be adequately trained in their tasks, be informed of occupational hazards, and to remove themselves from dangerous workplace situations.

TERMS USED IN THIS CHAPTER

Affected Community ■ Biological Exposure Indices (BEI) ■ Competent Authority ■ Competent Professionals ■ Comprehensible Manner ■ Consultation ■ Contractor ■ Corporate Owner ■ Grievance ■ Hazard ■ Health Surveillance ■ Inform ■ Mining Project ■ Mining-Related Activities ■ Occupational Exposure Limit (OEL) ■ Operating Company ■ Stakeholder ■ Supplier ■ Training ■ Worker ■ Workers' Representative ■

These terms appear in the text with a dashed underline. For definitions see the Glossary of Terms at the end of the document.

OBJECTIVES/INTENT OF THIS CHAPTER

To identify and avoid or mitigate occupational health and safety hazards, maintain working environments that protect workers' health and working capacity, and promote workplace safety and health.

SCOPE OF APPLICATION

RELEVANCE: This chapter is relevant for all mines applying for IRMA certification, however, requirements 3.2.1.5.d and e, and 3.2.3.2.c are only applicable for underground mining operations.

¹¹⁰ ICMM. 2009. Good Practice Guidance on Occupational Health Risk Assessment. https://www.icmm.com/website/publications/pdfs/health-and-safety/161212_health-and-safety_health-risk-assessment_2nd-edition.pdf

¹¹¹ ICMM website: "Preventing Fatalities." <https://www.icmm.com/en-gb/health-and-safety/safety/preventing-fatalities>

¹¹² International Labour Organization. 1995. Safety and Health in Mines Convention, 1995 (No. 176). www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_ILO_CODE:C176

Occupational Health and Safety Requirements

3.2.1. Health and Safety Management System

3.2.1.1. The operating company shall implement a health and safety management system for measuring and improving the mining project's health and safety performance.¹¹³

3.2.2. Health and Safety Risk Assessment and Management

3.2.2.1. The operating company shall implement an ongoing, systematic health and safety risk assessment process that follows a recognized risk assessment methodology for industrial operations.

3.2.2.2. The assessment process shall identify and assess the significance/consequence of the full range of potential hazards associated with the mining project, including those related to:

- a. The design, construction and operation of the workplace, mining-related activities and processes, the physical stability of working areas, the organization of work, use of equipment and machinery, and waste and chemical management;¹¹⁴
- b. All personnel, contractors, business partners, suppliers and visitors;
- c. Unwanted events;¹¹⁵
- d. Routine and non-routine activities, products, procedures, and services; and
- e. Changes in duration, personnel, organization, processes, facilities, equipment, procedures, laws, standards, materials, products systems and services.

3.2.2.3. The operating company shall pay particular attention to identifying and assessing hazards to workers who may be especially susceptible or vulnerable to particular hazards.

3.2.2.4. The operating company shall develop, implement and systematically update a risk management plan that prioritizes measures to eliminate significant hazards, and outlines additional controls to effectively minimize negative consequences and protect workers and others from remaining hazards.¹¹⁶

3.2.2.5. The operating company shall demonstrate that it has developed procedures and implemented measures to:

- a. Ensure that the mine has electrical, mechanical and other equipment, including a communication system, to provide conditions for safe operation and a healthy working environment;
- b. Ensure that the mine is commissioned, operated, maintained and decommissioned in such a way that workers can perform the work assigned to them without endangering their own safety and health or that of other persons;
- c. Maintain the stability of the ground in areas where persons may have access in the context of their work;

¹¹³ See the Government of Western Australia Department of Mines, Industry Regulation and Safety for information on suggested components of a health and safety management system: <http://www.dmp.wa.gov.au/Safety/What-is-a-safety-management-4598.aspx>

¹¹⁴ See also IRMA Chapter 4.1—Waste and Materials Management, requirements 4.1.2.1 and 4.1.3.1.

¹¹⁵ An unwanted event is a situation where a hazard has or could possibly be released in an unplanned way. (Source: ICMM. 2015. Health and Safety Critical Control Management Good Practice Guide. <https://www.icmm.com/website/publications/pdfs/health-and-safety/8570.pdf>)

¹¹⁶ Re: "systematically update," plans should be updated as necessary based on the outcomes and information from the company's ongoing risk assessment process, monitoring, and other information.

For information on the hierarchy of controls see ILO C176 – Safety and Health in Mines (1995). http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C176

- d. If relevant, whenever practicable provide two exits from every underground workplace, each connected to separate means of egress to the surface;¹¹⁷
- e. If relevant, ensure adequate ventilation for all underground workings to which access is permitted;¹¹⁸
- f. Ensure a safe system of work and the protection of workers in zones susceptible to particular hazards;
- g. Prevent, detect and combat accumulations of hazardous gases and dusts, and the start and spread of fires and explosions; and
- h. Ensure that when there is potential high risk of harm to workers, operations are stopped and workers are evacuated to a safe location.

3.2.3. Communication and Engagement with Workers and Others

3.2.3.1. Workers shall be informed of their rights to:

- a. Report accidents, dangerous occurrences and hazards to the employer and to the competent authority;
- b. Request and obtain, where there is cause for concern on safety and health grounds, inspections and investigations to be conducted by the employer and the competent authority;
- c. Know and be informed of workplace hazards that may affect their safety or health;
- d. Obtain information held by the employer or the competent authority that is relevant to their safety or health;
- e. Remove themselves from any location at the mine when circumstances arise that appear, with reasonable justification, to pose a serious danger to their safety or health; and
- f. Collectively select safety and health representatives.

3.2.3.2. In all cases a worker attempting to exercise in good faith any of the rights referred to in 3.2.3.1 shall be protected from reprisals of any sort.

3.2.3.3. The operating company shall develop systems to effectively communicate with and enable input from the workforce on matters relating to occupational health and safety.¹¹⁹

3.2.3.4. The operating company shall develop and implement a formal process involving workers' representatives and company management to ensure effective worker consultation and participation in matters relating to occupational health and safety including:¹²⁰

- a. Health and safety hazard identification and assessment;
- b. Design and implementation of workplace monitoring and worker health surveillance programs;
- c. Development of strategies to prevent or mitigate risks to workers through the health and safety risk assessments or workplace and workers' health surveillance; and
- d. Development of appropriate assistance and programs to support worker health and safety, including worker mental health.

3.2.3.5. The operating company shall provide workers' health and safety representatives with the opportunity to:

- a. Participate in inspections and investigations conducted at the workplace by the employer and by the competent authority;
- b. Monitor and investigate safety and health matters;

¹¹⁷ This is only relevant at underground mines.

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¹¹⁹ See also Chapter 1.2 for requirements relating to communications with stakeholders, which should also apply to workers.

¹²⁰ For example, a joint health and safety committee or its equivalent.

- c. Have recourse to advisers and independent experts; and
- d. Receive timely notice of accidents and dangerous occurrences.

3.2.3.6. Visitors and other third parties accessing the mining premises shall receive an occupational health and safety briefing, and be provided with relevant protective equipment for areas of the mine site that they will be entering.

3.2.4. Measures to Protect Workers

3.2.4.1. The operating company shall implement measures to protect the safety and health of workers including:

- a. Informing workers, in a comprehensible manner, of the hazards associated with their work, the health risks involved and relevant preventive and protective measures;
- b. Providing and maintaining, at no cost to workers, suitable protective equipment and clothing where exposure to adverse conditions or adequate protection against risk of accident or injury to health cannot be ensured by other means;
- c. Providing workers who have suffered from an injury or illness at the workplace with first aid, and, if necessary, prompt transportation from the workplace and access to appropriate medical facilities;
- d. Providing, at no cost to workers, education and training/retraining programs and comprehensible instructions on the work assigned and on safety and health matters;
- e. Providing adequate supervision and control on each shift; and
- f. If relevant, establishing a system to identify and track at any time the probable locations of all persons who are underground.¹²¹

3.2.4.2. If the risk assessment process reveals unique occupational health and safety risks for certain groups of workers (e.g., pregnant women, children, HIV-positive, etc.) the operating company shall ensure that additional protective measures are taken, and trainings and health promotion programs are available to support the health and safety of those workers.

3.2.4.3. The operating company shall provide workers with clean toilet, washing and locker facilities (commensurate with the number and gender of staff employed), potable drinking water, and where applicable, sanitary facilities for food storage and preparation. Any accommodations provided by the operating company shall be clean, safe, and meet the basic needs of the workers.

3.2.4.4. The operating company shall ensure that workers are provided with compensation for work-related injuries and illnesses as follows:

- a. In countries where workers' compensation is not provided through government schemes or a collective bargaining agreement:¹²²
 - i. The operating company shall compensate workers for work-related injuries or illnesses at a rate that, at minimum, covers medical expenses and wages during the recovery and rehabilitation period;¹²³
 - ii. If a worker is not able to return to work due to the severity of a work-related injury or illness, the operating company shall compensate for lost earnings until the worker qualifies for an adequate

¹²¹ This is only relevant at underground mines.

¹²² Many, but not all countries have workers' compensation schemes. For example, a 2002 report found that 136 countries had worker compensation programs, meaning that approximately 60 did not. (Eleson, R. 2002. International Workers' Compensation. Prepared for the Indiana Compensation Rating Bureau. <http://compclues.icrb.net/file/29dbcff9-2752-4fed-bfdc-422c8c403483>)

¹²³ If medical expenses are fully covered by health insurance, then companies are not required to provide additional compensation.

pension (i.e., 2/3 or more of the salary they would otherwise normally receive if healthy and working),¹²⁴ or

- iii.  If an occupational illness manifests after a worker has retired, the operating company or its corporate owner shall, at minimum, compensate the worker for medical expenses, unless the operating company or its corporate owner can establish that the occupational illness was not connected to the worker's employment at the mining project.¹²⁵
- b. In countries that do not provide for worker rehabilitation as part of their workers' compensation schemes, the operating company shall ensure that workers have free or affordable access to rehabilitation programs to facilitate an expeditious return to work; and
- c. Where a worker dies as a result of a work-related injury or disease, the operating company shall, at minimum, provide to spouses and dependent children benefits to cover funeral expenses and transportation of the worker's body, if appropriate, as well as compensation that is equal to or greater than three months' salary of the deceased worker.



[flag] 3.2.4.4.a.iii Issue in brief: The IRMA Steering Committee is interested in exploring with mining companies and workers whether or not requirement 3.2.4.4.a.iii, as written, is reasonable, and verifiable.

In particular, IRMA recognizes that illnesses related to occupational exposures or incidents may not manifest until after the worker has stopped being employed by the mine, and at that point it can be extremely difficult for workers to prove that working at the mine caused their illnesses.

Mine sites, on the other hand, should be retaining records related to occupational exposures, accidents, workers' medical surveillance, etc., that can establish whether or not there is a probable link between occupational issues and the ex-worker's subsequent illnesses

3.2.5. Inspections, Monitoring and Investigations

3.2.5.1. The operating company and workers' representatives on a joint health and safety committee, or its equivalent, shall perform regular inspections of the working environment to identify the various hazards to which workers may be exposed, and to evaluate the effectiveness of occupational health and safety controls and protective measures.

3.2.5.2. The operating company shall carry out workplace monitoring and worker health surveillance to measure exposures and evaluate the effectiveness of controls as follows:

- a. Workplace monitoring and worker health surveillance shall be designed and conducted by certified industrial hygienists or other competent professionals;
- b. Health surveillance shall be carried out in a manner that protects the right to confidentiality of medical information, and is not used in a manner prejudicial to workers' interests;
- c. Samples collected for workplace monitoring and health surveillance purposes shall be analyzed in an ISO/IEC-17025-certified or nationally accredited laboratory;

¹²⁴ If the government does not provide for an "adequate pension," the operating company would be expected to supplement the government pension so that a worker was receiving equivalent to 2/3 or more of the salary he or she would otherwise receive; if no government pension program exists, the operating company would be expected to pay compensation equivalent to 2/3 or more of the salary the worker would otherwise normally receive if healthy and working. Normally, this requirement can be met by providing the appropriate public or private disability insurance coverage.

¹²⁵ If medical expenses are fully covered by health insurance or relevant compensation schemes covering occupational health matters, then companies are not required to provide additional compensation.

- d. Sample results shall be compared against national occupational exposure limits (OELs) and/or biological exposure indices (BEIs), if they exist,¹²⁶ or OELs/BEIs developed by the American Conference of Governmental Industrial Hygienists (ACGIH);¹²⁷ and
- e. If an OEL/BEI is exceeded, the affected worker(s) shall be informed immediately, and controls shall be reviewed and revised in a timely manner to ensure that future exposure levels remain within safe limits.

3.2.5.3. Controls, protective measures, health risk assessments, risk management plans, and training and educational materials shall be updated as necessary based on inspection and monitoring results.

3.2.5.4. The operating company shall ensure that all workplace injuries, fatalities, accidents and dangerous occurrences, as defined by national laws or regulations, are documented, reported to the competent authority and investigated, and that appropriate remedial action is taken.

3.2.6. Health and Safety Data Management and Access to Information

3.2.6.1. The operating company shall maintain accurate records of health and safety risk assessments; workplace monitoring and workers' health surveillance results; and data related to occupational injuries, diseases, accidents, fatalities and dangerous occurrences shall be collected by the company and submitted to competent authorities. This information, except for data protected for medical confidentiality reasons, shall be available to workers' health and safety representatives.

3.2.6.2. The operating company shall establish a data management system that enables worker health data to be readily located and retrieved, and data protected by medical confidentiality to be securely stored. Data shall be retained for a minimum of 30 years,¹²⁸ and responsible custodians shall be assigned to oversee the health data management system.

3.2.6.3. The operating company shall allow workers access to their personal information regarding accidents, dangerous occurrences, inspections, investigations, remedial actions, health surveillance and medical examinations.

NOTES

Many of the requirements in this chapter are based on International Labour Organization Convention *C176 - Safety and Health in Mines*.

¹²⁶ Some countries have developed occupational hygiene standards for workplaces. The International Labour Organization website provides links to agencies responsible for establishing exposure limits in various countries. [www.ilo.org/safework/info/publications/WCMS_151534/lang--en/index.htm](http://www.ilo.org/safework/info/publications/WCMS_151534/lang-en/index.htm)

¹²⁷ The American Conference of Governmental Industrial Hygienists is a member-based organization composed of independent knowledgeable experts that advances occupational and environmental health. ACGIH develops Threshold Limit Values (TLVs) (akin to OELs) and BEIs through a committee process that involves review of peer-reviewed literature and public input. www.acgih.org/

¹²⁸ The intention is not that the data should be destroyed after 30 years. Rather, where possible it should be retained indefinitely as the data may be important for future medical research or legal purposes. If a company is sold, provisions should be made for successor custodianship, i.e., transfer of records to the successor company. If a company ceases to operate, it is good practice to notify current employees of their right to access their records before the company goes out of business. (See: U.S. Dept. of Labor. 2001. "Access to Medical and Exposure Records," www.osha.gov/Publications/pub3110text.html)

CROSS REFERENCES TO OTHER CHAPTERS	
CHAPTER	ISSUES
1.1—Legal Compliance	<p>As per Chapter 1.1, if <u>host country laws</u> (i.e., national laws) address occupational health and safety, the company is required to abide by those laws. If IRMA requirements are more stringent than <u>host country law</u>, the company is required to also meet the IRMA requirements, as long as complying with them would not require the <u>operating company</u> to violate <u>host country law</u>.</p> <p>Also, the <u>operating company</u> is responsible for ensuring that <u>contractors</u> involved in <u>mining-related activities</u> comply with the requirements of this chapter of the IRMA Standard, i.e., <u>contract workers</u> and any other workers who provide project-related work and services should be afforded a safe and healthful work environment.</p>
1.2—Community and Stakeholder Engagement	<p><u>Workers</u> are <u>stakeholders</u>, and also often members of the <u>affected communities</u>. As such, the engagement process with <u>workers</u> should align with the requirements in Chapter 1.2.</p>
1.3—Human Rights Due Diligence	<p><u>Workers</u> have the right to health. Consequently, during the human rights assessment companies should include an assessment the potential that employees may be exposed to unacceptable health impacts that impinge on this right.</p>
2.5—Emergency Preparedness and Response	<p>Chapters 2.5 and 2.2 share the similar objective of protecting the health and safety of workers, but 2.5 also addresses <u>affected communities</u>. <u>Workers</u> and their representatives are to be consulted in the development of the Emergency Response Plan as per 2.5.2.</p>
3.1—Fair Labor and Terms of Work	<p>Note that there are some requirements in Chapter 2.1 that share the objective of protecting the health and safety of <u>workers</u> (such as those relating to <u>child labor</u> in 3.1.7, and working hours in 3.1.9).</p> <p>The <u>grievance mechanism</u> in Chapter 3.1, criterion 3.1.5, may be used to hear health- and safety-related worker <u>grievances</u>.</p>
3.3—Community Health and Safety	<p>Chapter 3.3 shares similar objectives to Chapter 3.2 of protecting the health and safety of communities, of which <u>workers</u> are often members. The community health and safety risk and impact assessment process includes collaboration with <u>workers</u> as per criteria 3.3.5. Also, criteria 3.3.4 has requirements that pertain to <u>workers/employees</u> that are triggered if there are significant risks to <u>workers/communities</u> related to HIV/AIDS, tuberculosis or malaria.</p>
3.4—Mining in Conflict-Affected or High-Risk Areas	<p>There may be particular risks to <u>workers</u> when projects are located in <u>conflict-affected or high-risk areas</u>. These risks may include potential impacts on health or safety, as well as risks to human rights. The conflict risk assessment should evaluate such risks to <u>workers</u>, and the information should be integrated in the occupational health and safety risk assessment (or vice versa).</p>