IRMA

Initiative for Responsible Mining Assurance

EXCERPT FROM THE

IRMA Standard

for

Responsible Exploration, Extraction, and Processing of Minerals

2nd DRAFT

for public consultation

CHAPTER 3.2 – **Occupational Safety, Health and Wellbeing**

IRMA Standard v2.0 DRAFT 2

July 2025

English Version

Disclaimer and Context on this Draft

The 2nd DRAFT Version of the IRMA Standard for Responsible Exploration, Extraction, and Processing of Minerals V2.0 (hereafter referred to as the "2nd DRAFT") is being released for public consultation, inviting the world to join once again in a conversation around expectations that drive value for greater environmental and social responsibility in mining and mineral processing.

The 2nd DRAFT does not represent content that has yet been formally endorsed by IRMA's equally-governed multi-stakeholder Board of Directors. IRMA's Board leaders seek the wisdom and guidance of all readers to inform this through an inclusive revision process one more time, to improve the Standard.

This draft document builds on the 1st DRAFT Version published in October 2023, and invites a global conversation to improve and update the 2018 IRMA Standard for Responsible Mining V1.0. This 2nd DRAFT is intended to provide as final of a look-and-feel as possible, although input from this consultation will result in final edits, and consolidation to reduce overall number of requirements (more on this on page 6), for a version that will be presented to IRMA's equally-governed multi-stakeholder Board of Directors for adoption and implementation.

This 2nd DRAFT has been prepared and updated by the IRMA Secretariat based on:

- learnings from the implementation of the current IRMA Standard (V1.0)
- experience from the first mines independently audited (as of July 2025, 24 sites have completed audits or are in the process of being audited)
- evolving expectations for best practices in mining to reduce harm
- comments and recommendations received from stakeholders and Indigenous rights-holders
- the input of subject-specific Expert Working Groups convened by IRMA between 2022 and 2024
- all comments and contributions received during the public-comment period of the 1st DRAFT version (October 2023-March 2024)

Please note that Expert Working Groups were created to catalyze suggestions for solutions on issues we knew most needed attention in this update process. They were not tasked to come to consensus nor make formal recommendations. Their expertise has made this consultation document wiser and more focused, but work still lies ahead to resolve challenging issues. We encourage all readers to share perspectives to improve how the IRMA system can serve as a tool to promote greater environmental and social responsibility, and create value for improved practices, where exploration, extraction, and processing of minerals happens.

IRMA is dedicated to a participatory process including public consultation with a wide range of affected people globally and seeks feedback, comments, questions, and recommendations for improvement of this Standard. IRMA believes that diverse participation and input is a crucial and determining factor in the effectiveness of a Standard that is used to improve environmental and social performance in a sector. To this end, every submission received will be reviewed and considered.

This current 2nd DRAFT is based on content already in practice in the IRMA Standard for Responsible Mining V1.0 (2018) for mines in production, and its accompanying normative Guidance document and Supplementary Guidance, combined with the content drafted in the IRMA Standard for Responsible Mineral Development and Exploration ('IRMA-Ready' Standard – Draft v1.0 December 2021) and in the IRMA Standard for Responsible Minerals Processing (Draft v1.0 June 2021), and offers an updated version of the 1st DRAFT Version of the IRMA Standard V2.0 that received over 2,500 unique points of comments between 2023 and 2024.

Please note: The IRMA Standard V2.0 is new in its approach in that it now covers more phases of the mining and mineral supply chain, from exploration and development, through mining, closure, and mineral processing. IRMA also, separately, oversees a Chain of Custody Standard for tracking materials through the supply chain from mine-to-market end use products.

Disclaimer on Language and Corrections

For this public consultation, only an English version is available. A Glossary of Terms used in this Standard is provided at the end of the full version of the document (see below). IRMA reserves the right to publish corrigenda on its web page, and readers of this document should consult the corresponding web page for corrections or clarifications.

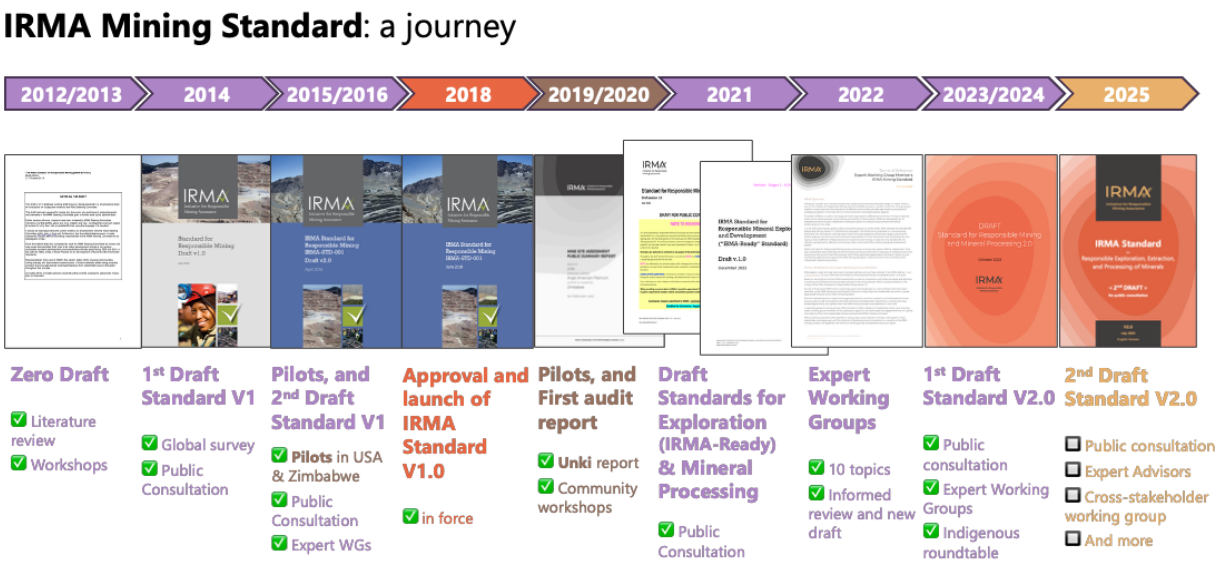
This document provides only one chapter excerpt from the IRMA Standard v2.0 DRAFT 2.

The full version contains 27 Chapters, click here to view it.

Objectives of this 2nd public consultation

Following the release of a 1st DRAFT of the IRMA Standard V2.0 in October 2023 for a 90-day public consultation, the IRMA Secretariat received more than 2,500 points of comments from 82 organizations, then organized additional engagement with stakeholders and Indigenous rights-holders, and solicited complementary guidance from multiple topic-specific Expert Working Groups.

We anticipated release of this 2nd DRAFT for a second round of public consultation as early as Q3 2024, then subsequently announced that more time was needed to support engagement of diverse stakeholders; the revised release date was July 2025. We provided more detailed explanation for the extended process here and here.



The release of this 2nd DRAFT marks a significant milestone on the road to the revision of the IRMA Standard: this public consultation will be the last of this revision cycle on V2.0.

Informed by the outcomes of this public consultation, along with guidance from Expert Advisors and IRMA Working Groups (see more below), and additional engagement with Indigenous rights-holders and stakeholders as requested, the IRMA Secretariat will prepare a final version. This final version will be discussed by the IRMA Board and refined to reach consensus for adoption by all six governing houses of IRMA: Affected Communities including Indigenous Rightsholders; Environmental and Social NGOs; Organized Labor; Finance and Investment Professionals; Mining Companies; Purchasers of Mined Materials.

In IRMA's strategic decision-making, Board members work to achieve consensus. IRMA believes a majority vote is not a model of equal governance. Instead, any motion that results in both of the two representatives from the same governing house voting "no" must go back to the full group for further discussion. In other words, a proposed course of action cannot proceed if both representatives from one of our six governing houses are opposed. Board members will keep talking until a resolution that works for all groups is found. It is a model that has worked for IRMA for nearly two decades and is fundamental to IRMA's credibility, accountability and service to all six houses of governance.

What is IRMA seeking guidance on?

Comments, feedback, and suggestions are welcome on any aspect of this 2nd DRAFT version (including intent and text of the requirements, endnotes, annexes, format and structure, design, readability, etc.).

IRMA is particularly interested in hearing the views of rights-holders and stakeholders on **the provisions in the Standard that are substantially new compared to the IRMA Standard for Responsible Mining V1.0.** These provisions (requirements or at a sub-requirement level) are highlighted in yellow throughout this Draft, to ensure they are easily identifiable.

We ask readers to assist us in weighing these potential new provisions, and also hold awareness that, prior to adoption of the final version, many of these will be consolidated and reduced in overall number.

Although these new requirements have each been drafted in response to lessons learned, the current state of best practices, emerging expectations, and/or in response to requests and suggestions made during the previous public consultation, collectively they represent substantive increased expectations for both implementing entities and audit firms. The IRMA Board of Directors seeks to ensure that the IRMA Standard, while recognized the world's most rigorous and comprehensive mining standard, continue to welcome and support uptake of newcomer companies engaging from the mineral supply chain around the world.

Thus, in this consultation, we seek guidance from all on **the new provisions that seem most urgent** to be integrated in the final version of the Standard V2.0, so that the revised Standard's expectations are paced at a realistic level to support engagement of mineral operations of a range of sizes, materials and global contexts.

It is important to note that all new requirements and sub-requirements, including those not retained in the final V2.0, will serve as the basis for the ongoing review process once the V2.0 is approved and released by our Board, and will provide fodder for future revisions, when it is decided that a V2.1 or V3.0 is needed.

Chapter 3.2
Occupational Safety, Health and Wellbeing

SECOND DRAFT (JULY 2025): SUMMARY OF CHANGES

- Chapter title updated to include "Wellbeing", see note in the Background.
- Added a Scoping requirement (3.2.2), which is in line with ISO 45001:2018, and adds consistency across the Standard.
- Moved the list of principal hazards to an annex (Annex 3.2-B), and updated the list with risks specific to mineral processing.
- Proposed to mark 'critical' the requirements for an on-site emergency preparedness and response plan, and for its regular testing. Failure to conform with those is likely to result in immediate harm or disproportionate exposure to risks, and would be consistent with the 'criticality' of off-site emergency measures included in the dedicated Chapter 2.6.
- Clarified scope of the Stop Work Authority to ensure all conditions or behaviors that could cause serious harm are included, regardless of the 'imminent' nature of the danger (3.2.7.5.a)
- Re-organized all requirements related to performance review and continuous improvement under one new dedicated Section (3.2.15 – Continuous Improvement), to increase clarity and consistency across the Standard.
- Added 'high potential incidents' (HPI) in the list of OSH metric to be publicly reported in 3.2.16.1, and as a result, added a requirement to determine which near miss incidents are HPI in 3.2.12.3.d.
- Added reporting sub-requirements related to occupational diseases (3.2.16.1.g to i).
- Added one optional requirement (IRMA+) related to an annual report on workplace accessibility, in line with the 2021 GRI updated guide on Disability in sustainability reporting (3.2.16.2).
- Substantial structural changes, to increase clarity and consistency with the rest of the Standard.

RESPONSE TO CONSULTATION QUESTIONS OUTLINED IN FIRST DRAFT

Question #	Question	Feedback and Decision
3.2-01	(**3.2.2.1, Annex 3.2-A Potential Workplace Hazards**) **Question**: Are there major potential hazards that have been missed in Annex 3.2-A or that you believe are not applicable to mining and/or mineral processing operations? Sub-requirement 3.2.2.1.a.iii is NEW. External factors can exacerbate hazards. In particular, climate-related events such as high heat waves, or unusually large precipitation events can lead to an increase in heat-related illnesses, flooding-related safety issues, or increase in vector-borne disease, etc. Sub-requirement 3.2.2.1.b replaces 3.2.2.3 from the 2018 Mining Standard which said "The operating company shall pay particular attention to identifying and assessing hazards to workers who may be especially susceptible or vulnerable to particular hazards." Instead of using the phrase 'pay particular attention' we are clear that susceptible workers, if any, needs to identified in relation to each hazard.	**Feedback received**: Comments suggested that Annex 3.2-A was mining focused and not inclusive of major potential hazards related to mineral processors, particularly downstream metallurgical and chemical processing operations. Comments also pointed out that transport of mined and/or processed material may include railway transport, and IRMA subsequently identified conveyor and marine transport as also not being explicitly included in Annex 3.2-A. Other comments suggested hazards including climate, lack of quality PPE, and worker capabilities that were intended to be inclusive in the proposed IRMA requirements in 3.2.2.1. **Proposed Decision**: The applicability to those suggested hazards to the existing requirements will be clarified in the Guidance document.
3.2-02	**(3.2.3.3 – Minimum set of procedures for common OHS hazards)** **Question**: Do you agree with this approach? If so, do you agree with the categories of hazards listed, or would you suggest other types of hazards that should always have procedures or controls (if relevant at the operation)?	**Feedback received**: Responses were unanimous as to agreement with the approach and categories. **Proposed Decision**: No change
3.2-03	**(3.2.3.8 – Reporting and investigation of health and safety issues)** **Question**: Is it common to have a procedure related to the reporting and investigation of health and safety issues in the workplace? If not, do you believe this is something that would be useful or not? Are there any elements you would add or remove from such a procedure?	**Feedback received**: Responses were unanimous as to agreement that reporting and investigation of health and safety issues in the workplace is both common and useful. One commenter recommended that a risk matrix be added as a requirement. **Proposed Decision**: The recommendation above will be addressed in the Guidance document.
3.2-04	**(3.2.4.4 – First aid)** **Question**: In 3.2.4.4.a, we are suggesting that all workers have at least basic training in first aid. Should there also always be others on site who have a higher level or depth of first aid training or certification (e.g., supervisors)? Also, mine sites and mineral processing operations can be extremely large complexes. Do you have a suggestion for what might be an adequate number of on-site employees/workers with certified first aid on site at all times?	**Feedback received**: Responses were split between yes and no and answers not consistent within sectors. Examples point that, for example, in US, required by MSHA, but not by OSHA. Also may be some confusion between EMT (emergency medical technician) level responder and basic first aid (incl. Cardiopulmonary Resuscitation, CPR), which are vastly different. Many mines/processors require at least one or two to be on-site at all times. The approach is also highly size-dependent. Additional research shows that several

		mining countries require a fixed number per shift and per total number of workers. **Proposed Decision**: Proposed to add a normative minimum number of workers with a certified training in first aid, based on review of existing regulations across relevant jurisdictions. See 3.2.9.4.
3.2-05	**(3.2.4.6 – Housing)** **Question**: There are many more specific requirements that could be added based on the ILO and IFC/EBRD guidance. Do you have suggestions for additional or different requirements that should be viewed as the most material when it comes to worker accommodations?	**Feedback received**: Comments suggested addressing fatigue, privacy from employers, site security controls and personnel, and fire equipment and emergency procedures and alarm systems as additional or different requirements. A general objective of current Section 3.2.10 is to ensure that housing arrangements provided to workers are restful and provide respite from the fatigue of work activities. Fire equipment and emergency procedures and alarm systems are inferred in 3.2.10.1.e. "Appropriate protection against… fire …" Privacy was already covered in 3.2.4.6.c.v (see the new 3.2.10.1 and the accompanying footnote). **Proposed Decision**: The IRMA v2 Guidance document will clarify the requirements regarding fatigue and noise. Security is covered through a new explicit reference to "the right to liberty and security of person" in 3.2.10.3.
3.2-06	**(3.2.5.2 – Monitoring and surveillance)** **Question**: Is the selection of factors to be monitored and surveilled solely based on the outcomes of the risk assessment? Or should IRMA be requiring separate assessments (e.g., an exposure assessment or baseline monitoring) to help inform the monitoring program? For example, the ESG Standard developed by the RBA/RMI requires documentation of temperature exposure hazards, which presumably requires some monitoring of the workplace, and an "ergonomic assessment of workplace jobs, tasks and activities."	**Feedback received**: Responses were overall in favor of specific separate exposure level assessments and/or gathering of baseline data where needed to inform the risk assessment, i.e., knowing how close certain hazards are to health-based or regulatory limits will help to better understand the level of risk. **Proposed Decision**: Assessment of exposure levels was already covered in the risk assessment. This is now further clarified in 3.2.4.2.a.
3.2-07	**(3.2.5.2 – Monitoring and surveillance)** **Question**: Should we be separating out workplace environmental monitoring from health surveillance activities, and adding more specific expectations for both? For example: 1) Environmental monitoring in the workplace (e.g., sampling for chemicals/toxins in air, measuring noise levels, monitoring temperatures in the workplace, evaluating ergonomics); and 2) Worker health testing and surveillance (e.g., routine physical examinations, chest x-rays,	**Feedback received**: Responses were overall not in favor of separating out workplace environmental monitoring from health surveillance activities. **Proposed Decision**: No substantial changes were made to the content (see now 3.2.11.2).

	pulmonary function tests (PFT), testing blood, hair for chemicals, etc.)?	
3.2-08	**(3.2.5.2 – Monitoring and surveillance)** **Question**: If certain known hazards are identified during the ENTITY's hazard identification process (e.g., known carcinogens or hazardous substances, or potential that certain noise decibel levels will be exceeded) should the IRMA Standard outline specific monitoring and/or health surveillance actions to be taken? For example, OSHA in the United States has developed guidance related to a number of known hazards. Or, if normative requirements are not added, should IRMA add some guidance on what might be appropriate monitoring and health surveillance actions?	**Feedback received**: Responses were split as to whether the IRMA Standard should outline specific monitoring and/or health surveillance actions to be taken. Response from trade unions signaled that the "enormous diversity of workplaces covered by the Standard together with the enormous number of hazards makes this a very difficult task". **Proposed Decision**: 3.2.11.2 now mentions that 'all the significant hazards identified' need to have some form of monitoring and surveillance in place, but no specific monitoring or surveillance actions were added to the requirement. Further clarification will be provided in the Guidance document.
3.2-09	**(3.2.6.2 – Counseling and psychological support)** **Question**: Do you support the addition of sub-requirement 3.2.6.2.b? Do you agree that some form of counseling or psychological support be provided even if accidents don't result in fatalities? Should all employees (not just those who experienced or witnessed the accident be eligible for counseling or support?	**Feedback received**: All comments supported the addition of sub-requirement 3.2.6.2.b (now 3.2.12.3.b, and integrated in 3.1.10.4.e) as well as the other questions posed. **Proposed Decision**: No change.
3.2-10	**(3.2.6.2 – Categories of incidents)** **Question:** Should IRMA include requirements for entities to investigate and report on high-potential incidents instead of near miss incidents? Or in addition to near miss incidents? Or not at all? Please provide a rationale for your opinion.]	**Feedback received**: Responses were split between high potential incidents (HPI) and near miss incidents (NMI), with some suggesting they were synonymous and it depended on regional preferences. However, there was general support for the need to investigate all incidents. **Proposed Decision**: Added a definition in the glossary to clarify that "An HPI is a near-miss incident that could have ended in someone getting seriously hurt or killed, but for some reason that was avoided." Also added to the Glossary. Because HPI is a subset of NMI, we are proposing that all near misses be investigated. We have also added in 3.2.12.3 that for all near miss incidents there needs to be a determination of whether or not the NMI is also an HPI, because reporting of both NMI and HPI is now required in 3.2.16.1 (see response to Consultation Question 3.2-12).
3.2-11	**(3.2.7.3 – Retraining)** **Question**: What is an appropriate periodicity for retraining workers, and would the retraining programs cover the same information as the initial training?	**Feedback received**: Responses ranged from not supporting retraining, using OSHA MSHA requirements (e.g. annual retraining), and one to three years. **Proposed Decision**: No changes were made to this requirement. Further clarification will be provided in the Guidance document.

3.2-12	**(3.2.8.3 – OHS statistics)** **Question**: Are there any other health and safety statistics that may be relevant to publicly report?	**Feedback received**: Comments identified number of management safety interactions, number of High Potential Incidents (HPIs), % of actions resulting in closure, % requirements in compliance as leading indicators of health and safety. **Proposed Decision**: Added HPIs in the list of metrics in 3.2.16.1.

BACKGROUND

Occupational safety and health (OSH) impacts related to the mining and mineral processing industries 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.[1]

Some key hazards related to mining include but are not limited to: exposure to dust, rocks falls, ground subsidence, vehicle collisions, equipment failures, explosions, release of noxious gases, failure of mine infrastructure or facility[2], while key hazards related to mineral processing include, but are not limited to: exposure to dust, hazardous waste, chemicals in liquid or gaseous form, exposure to high-temperatures and molten or caustic materials, conveyors and pulleys, equipment maintenance, failure of ventilation systems, drowning, falls and vehicle collisions.

Due to the many hazards and potential impacts associated with mining and mineral processing, a strong focus on OSH must be present at responsible mines.

In 1995, *Convention 176 on Safety and Health in Mines* was adopted by the International Labour Organization (ILO).[3] The convention set out international standards for OSH 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. The *ILO Code of Practice for Safety and Health in the Non-Ferrous Metals Industries*, published in 2003, recommends a similar approach for mineral processing.

In 2022, the right to a safe and healthy working environment was added to the ILO's list of fundamental principles and rights at work, thus elevating the universal importance of health and safety protections in the workplace.[4]

Around the same time, the concept of 'wellbeing' (or well-being, or welfare) in the workplace was gaining traction as international best practice. In 2020, ISSA Vision Zero released a set of proactive leading indicators that included the concept of worker 'wellbeing' alongside those of 'health' and 'safety' in the workplace. As is commonly known, the concept of 'safety' at work is focused on sustaining injury-free workplaces, while the concept of 'health' is aimed at promoting the working conditions conductive to the physical health and working capacity of workers. While the concept of health often includes prevention of adverse psychological conditions, the concept of wellbeing goes farther than this to incorporate healthy psychosocial working conditions to sustain individuals' positive mental health and ability to work productively and creatively, and the active prevention of ill health and poor psychosocial working conditions.

his is in line with the modern ILO approach, which recognizes that "health promotion in the workplace is effective when health promotion activities protect and improve the health and well-being of people at work"[5]. The fundamental principles of this approach are found in the Occupational Safety and Health Convention (No. 155) and its accompanying Recommendation (No. 164) as well as in the Occupational Health Services Convention (No. 161) and its accompanying Recommendation (No. 171).

This chapter uses the acronym OSH to refer to all three components (safety, health, and wellbeing), and actively incorporates the concept of wellbeing as an integral component of health in several of its requirements.

KEY REFERENCES

This chapter strongly builds on, or aligns with, the following international or multilateral frameworks, conventions, and guidance:

- UN International Bill of Human Rights
- UN Guiding Principles on Business and Human Rights
- ILO Declaration on Fundamental Principles and Rights at Work
- ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, 2023
- ILO Convention C176 on Safety and Health in Mines, 1995
- ILO Convention C155 on Occupational Safety and Health
- ILO Convention C161 on Occupational Health Services
- ILO Convention C148 on Working Environment
- ILO Recommendation R115 on Workers' Housing, 1961
- ILO Code of Practice for Safety and Health in the Non-Ferrous Metals Industries, 2003
- IFC Performance Standard 2: Labor and Working Conditions, 2012
- IFC Environmental, Health, and Safety Guidelines for Base Metal Smelting and Refining, 2007
- IFC and EBRD, Workers' accommodations: Processes and standards - A guidance note by IFC and the EBRD, 2009
- ISO 45001:2018 Occupational Health and Safety
- International Social Security Association (ISSA), Vision Zero, 2017
- UN Convention on the Rights of Persons with Disabilities, 2006

OBJECTIVES OF THIS CHAPTER

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

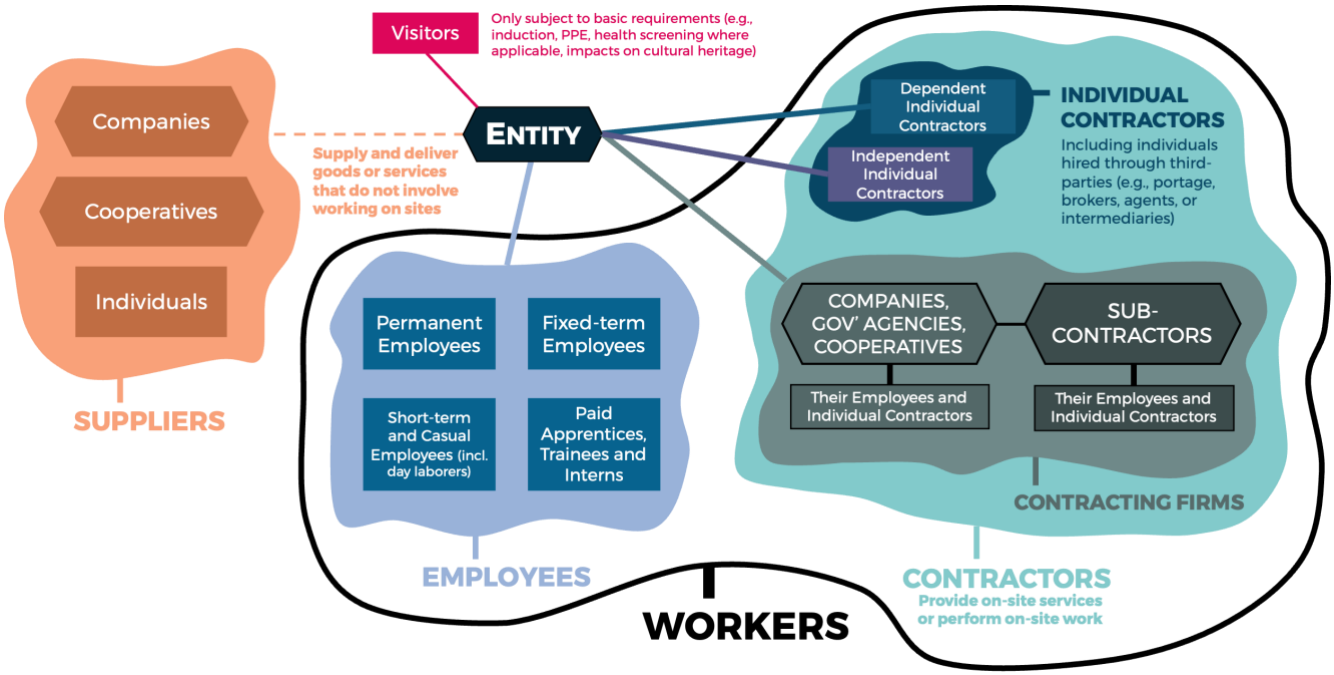
SCOPE OF APPLICATION

This chapter is applicable to all exploration, mining and mineral processing projects and operations. Requirement 3.2.7.4 is only relevant for underground mining operations.

For each requirement, the following colors are displayed in the margin to indicate the phases for which it is required:

E1	Exploration – Stage 1
E2	Exploration – Stage 2
E3	Exploration – Stage 3
D	Project Development and Permitting
M	Operating Mine
P	Operating Mineral Processor

FIGURE 3.2. Scope and Terminology related to Employees, Contractors, Suppliers, and Visitors



Adapted from *ILO ICSE-18-A: Status in Employment according to type of authority* (2018, Resolution concerning statistics on work relationships)

CRITICAL REQUIREMENTS IN THIS CHAPTER

Throughout the Standard, critical requirements are identified using a red frame.
There are four (4) **critical requirements** in this Chapter.

OPTIONAL IRMA+ REQUIREMENTS IN THIS CHAPTER

Throughout the Standard, optional IRMA+ requirements are identified using a dotted blue frame. There are two (2) **optional IRMA+ requirements** in this Chapter.

In this second draft, IRMA introduces a new category of requirements: IRMA+. These requirements are aspirational and forward-looking. They reflect emerging expectations and recommendations from stakeholders, but currently go above and beyond existing and established best practice. IRMA+ requirements are entirely optional, and they will not affect the scores and achievement levels obtained by the entities choosing to be assessed against them.

IRMA Requirements

3.2.1 Formalized Policy

E1 E2 E3 D M P

3.2.1.1 The ENTITY has a formal policy in place that:

a. Commits to provide safe and healthy working conditions, to promote occupational wellbeing, to consultation and participation of workers, and, where they exist, workers' representatives, to eliminate hazards, to reduce occupational safety and health (OSH) risks, and to continuously improve the effectiveness of its OSH management systems;

b. Is approved at the top management level of the ENTITY;

c. Is publicly accessible;

d. Is proactively communicated to all employees and all contractors; and

e. The ENTITY has allocated financial and staffing resources to implement this policy at the level of the project/operation.

E1 E2 E3 D M P

3.2.1.2 At least one member of the ENTITY's top management level is accountable for the implementation of this policy at the level of the project/operation, through:

a. OSH objectives and key performance indicators and/or targets that are distinct for the three aspects individually (safety, health, and wellbeing);

b. These objectives and key performance indicators and/or targets are related to both lagging and leading indicators; and

c. They include distinct indicators and/or targets for employees and contractors (if relevant).

E2 E3 D M P

3.2.1.3 **IRMA+**
The ENTITY has a system in place to:

a. Select new OSH supervisors and managers, including at the top management level of the ENTITY, based on their intrinsic motivation for or proven record in safety, health, and wellbeing management and promotion;

b. Measure and document how often new OSH supervisors and managers, including at the top management level of the ENTITY, are selected in accordance with 3.2.1.3.a; and

c. Track and document the percentage of new OSH supervisors and managers, including at the top management level of the ENTITY, who showed a proven record in actively promoting OSH among those who came into office during the last 12 months.

3.2.2 Scoping

E2 E3 D M P

3.2.2.1 A scoping process (or equivalent) is carried out and documented by competent professionals to:

a. Define the scope of OSH risks and impacts to be considered;

b. Define the boundaries and applicability of the ENTITY's OSH management system;

c. This process determines and considers external and internal issues that are relevant to the site and its associated facilities, and that affect the ENTITY's ability to achieve the intended outcome(s) of its OSH management system;

d. This process determines and considers: 1) the other interested parties, in addition to workers, that are relevant to the OSH management system; 2) the relevant needs and expectations of workers and other interested parties; and 3) which of these needs and expectations are, or could become, legal requirements; and

e. This process considers all the planned or performed work-related activities.

3.2.3 Meaningful Consultation and Participation of Workers

E2 E3 D M P

3.2.3.1 The ENTITY has a system in place to enable and facilitate consultation and participation of workers in the development, planning, implementation, monitoring and evaluation, and continuous improvement of the OSH management system. This system ensures that the ENTITY:

a. Collaborates with worker's representatives to jointly identify and assess obstacles or barriers to meaningful participation of workers[6];

b. Collaborates with worker's representatives to jointly develop and implement measures to remove those obstacles and barriers and to minimize those that cannot be removed[7]; and

c. Collaborates with worker's representatives to jointly develop and implement specific measures to involve non-managerial workers, and their representatives, in all consultation and participation mechanisms and training.

E2 E3 D M P

3.2.3.2 The consultation and participation system required in 3.2.3.1 identifies, in collaboration with workers and their representatives:

a. Which laws and regulations are applicable to communications and information-sharing with workers and their representatives, and how to comply with those;

b. How, when and in what formats relevant information will be communicated to workers to ensure that communications and information-sharing with workers and their representatives occur not only in compliance (see a.) but in a manner that is deemed meaningful and usable by workers, including to workers who present sensory disabilities and/or sensory impairment[8];

c. Also in a manner that is culturally appropriate and easily accessible to workers[9]; and

d. Also in a manner that is deemed timely by workers.[10] When information cannot be shared in a timely manner, the ENTITY systematically provides workers with a documented justification or explanation for the delay.

E2 E3 D M P

3.2.3.3 The ENTITY has a joint health and safety committee (or equivalent) that includes workers' health and safety representatives and ENTITY's management:

a. It is mandated to facilitate dialogue and worker participation in matters relating to OSH, and to conduct joint inspections and investigations;

b. The workers' representatives on the joint committee are selected by workers[11];

c. The workers' representatives on the joint committee make up 50% of more of the total number of members on the joint health and safety committee; and

d. The workers' representatives on the joint committee include representatives of non-managerial workers, to the extent possible[12].

E2 E3 D M P

3.2.3.4 The workers' health and safety representatives on the committee are provided with the opportunity to:

a. Participate in inspections and investigations conducted at the workplace by the ENTITY and by the competent authority;

b. Participate in the design and implementation of workplace monitoring and worker health surveillance programs;

c. Monitor and investigate health and safety matters, and receive timely notice of accidents and dangerous occurrences; and

d. Access the following data and documentation: hazard identification, risk assessments, risk management plans, procedures, training materials, monitoring data, health surveillance results,[13] inspection reports, and reports related to unwanted events[14] including those submitted to regulatory authorities.

E2 E3 D M P

3.2.3.5 To enable the effective participation of the workers' representatives in the joint committee, the ENTITY ensures that they:

a. Receive free training, relevant to their prerogatives;

b. Have access to resources, and recourse to advisers and independent experts, as necessary, to participate effectively; and

c. Are entitled to take time from regular work duties, with pay, to carry out committee related responsibilities.

3.2.4 Hazard Identification and Risk Assessment

E2 E3 D M P

3.2.4.1 A process is carried out by competent professionals to identify, and document in a hazard register (or equivalent), the hazards that are, or may be, associated with the site and associated facilities,[15] including:

a. Safety, chemical, biological, physical, ergonomic, and psychosocial hazards, informed by a comprehensive review of the Potential Workplace Hazards listed in Annex 3.2-A;

b. Hazards associated with the design of the workplace, organization of work,[16] routine and nonroutine tasks, and foreseeable emergency scenarios;

c. External factors with the potential to exacerbate a hazard or affect the ENTITY's management of hazards[17];

d. This process identifies, and documents in the hazard register, the categories of people, including employees, contractors, suppliers, visitors, who may be harmed by each hazard;

e. It also identifies, and documents in the hazard register, any individuals or sub-categories who may be particularly susceptible to the hazard[18]; and

f. It is carried out in collaboration with workers' health and safety representatives and relevant workers[19].

E2 E3 D M P

3.2.4.2 Building on the hazard identification required in 3.2.4.1, a risk assessment is carried out and documented by competent professionals, in collaboration with workers' health and safety representatives and relevant workers[20], to:

a. Determine the exposure levels, potential severity of consequences, and probability of occurrence, of all hazards identified as per 3.2.4.1;

b. Identify any existing controls for the identified hazards, and identify **high-risk hazards** (or equivalent) for which additional controls will be prioritized, including those that have caused or have a reasonable potential to cause a life-altering or fatal injury or disease[21];

c. Identify key potential emergency scenarios including, but not limited to, those related to all potential accidents that have a moderate or high severity or probability of occurrence[22];

d. This process documents any assumptions made in relation to the number of people at risk, the probability, and severity of consequences for each hazard that inform the level of risk assigned to each hazard;

e. It documents any criteria used to determine the high-risk activities or conditions for which additional controls will be prioritized; and

f. It documents any criteria used to determine the reasonably-foreseeable key potential emergency scenarios.

3.2.5 Management Plan and Procedures

E2 E3 D M P

3.2.5.1 They ENTITY consults with workers' health and safety representatives and relevant workers to develop controls for high-risk hazards in a manner that aligns with the widely accepted hierarchy of controls, through:

a. The process of selecting controls is documented;

b. The hierarchy of controls has been considered in proper sequence, beginning with serious consideration of the most effective strategies, even if they are the most expensive[23]; and

c. A rationale for rejecting higher hierarchy controls is systematically provided[24].

E2 E3 D M P

3.2.5.2 Building on 3.2.4, an OSH risk management plan (or equivalent) is developed and documented by competent professionals to manage high-risk hazards. The plan:

a. Outlines specific controls to address the high-risk hazards identified through the assessment process, and these controls have been selected in collaboration with workers' health and safety representatives and relevant workers as per 3.2.3.1;

b. Includes performance indicators of effectiveness for each control[25]; and

c. Includes specific measures to be taken if the controls are not working within established performance indicators.

E2 E3 D M P

3.2.5.3 Besides the OSH high-risk hazards identified and included in the OSH risk management plan required in 3.2.5.2, the plan at least includes and addresses:

a. All unique OSH risks to the specific individuals or sub-categories (see 3.2.4.1.e[26]) who may be particularly susceptible to hazards identified in the risk assessment required in 3.2.4.2;

b. All OSH risks associated with the hazards listed in Annex 3.2-B, that are applicable to the site and associated facilities; and

c. If any of the OSH risks mentioned in a. and b. are not covered in the OSH risk management plan, the ENTITY can demonstrate that documented procedures or measures are in place and implemented to address them.

E2 E3 D M P

3.2.5.4 To ensure effective implementation of the OSH risk management plan, the ENTITY:

a. Assigns implementation of measures to responsible staff with adequate skills and expertise;

b. Assigns responsibility to its top management level to oversee plan implementation, monitoring, and recordkeeping[27];

c. Has clearly-defined timelines and an implementation schedule in place that specifies the expected outcomes;

d. Maintains estimates of human resources and budget required; and

e. Has a financing plan in place to ensure that funding is available for the effective implementation of the plan.

E2 E3 D M P

3.2.5.5 To protect and promote health and wellbeing in the workplace, the ENTITY collaborates with workers and workers' health and safety representatives to:

a. Review psychosocial hazards and identify those that are priority concerns for workers;

b. Develop and implement programs to support the mental health of workers; and

c. Develop and implement programs to encourage and promote overall health and wellbeing in the workplace.

3.2.6 Infectious Diseases

E2 E3 D M P

3.2.6.1 If the risk assessment required in 3.2.4.2 indicates a significant risk of worker exposure to **HIV/AIDS**, the ENTITY:

a. Provides free, voluntary and confidential HIV testing and counseling for all workers;

b. Provides HIV/AIDS treatment for employees where not covered by public or private insurance schemes at an affordable rate; and

c. Provides contractors with access to education and other preventative programs, and works with contracting firms to identify ways for contractors to access affordable HIV/AIDS treatment.

E2 E3 D M P

3.2.6.2 If the risk assessment required in 3.2.4.2 indicates a significant risk of worker exposure to **tuberculosis**, the ENTITY provides free and voluntary testing for workers/employees where it is not reasonably likely to be provided by public or private health programs at an affordable rate.

E2 E3 D M P

3.2.6.3 If the risk assessment required in 3.2.4.2 indicates a significant risk of worker exposure to **malaria**, the ENTITY:

a. Has a vector control plan (or equivalent);

b. Takes action to prevent the site and associated facilities from becoming breeding environments for malaria-carrying mosquitoes; and

c. Provides protection from infection by malaria-carrying mosquitoes at the site and associated facilities, and any housing provided to workers by the ENTITY.

E2 E3 D M P

3.2.6.4 If the risk assessment required in 3.2.4.2 indicates a significant risk of worker exposure any **emerging infectious disease** (including **SARS-CoV-2 (COVID-19)**), the ENTITY:

a. Provides training at no cost for workers on preventive measures to reduce the risk of infection and spread of the disease;

b. Provides health screening to workers and visitors, testing to workers;

c. Provides, if available, a voluntary vaccination program at no cost to workers;

d. Cleans and disinfects the working environment based on best international guidance, and provides suitable personal protective equipment to workers and visitors at no cost;

e. Modifies shift patterns and changeover times to minimize close contact between workers and/or contractors;

f. Provides for isolation and/or medical treatment of workers where infection is suspected or confirmed; and

g. Suspends non-essential activities, or all activities, if necessary.

3.2.7 On-Site Emergency Preparedness and Response[28]

E2 E3 D M P

3.2.7.1 **Critical Requirement**

To address the key on-site emergency scenarios identified in the risk assessment process as per 3.2.4.2.c:

a. Emergency preparedness and response plans (or equivalent) are developed and documented by competent professionals, in collaboration with workers' health and safety representatives and relevant workers;

b. These plans include mechanisms to alert workers about emergency situations, and response measures, including evacuation plans if relevant, to be taken for all key emergency scenarios identified;

c. These plans provide clear definition of roles, responsibilities and relationships of all employees and contractors responsible for the development and/or implementation of some or all of the plan and associated procedures; and

d. These plans are accessible to all workers in languages and formats that are comprehensible to them.

E2 E3 D M P

3.2.7.2 **Critical Requirement**

The following types of training and testing are performed and documented to test emergency response plans:

a. At least annually, and without delay if the ENTITY has developed or undertaken significant modifications to the plan, **table-top discussions** that include ENTITY personnel responsible for emergency response, relevant workers' health and safety representatives, and local emergency response personnel if relevant, and testing of alert mechanisms;

b. At least every three years, and without delay if the ENTITY has developed or undertaken significant modifications to the plan, a full, on-the-ground, **emergency response simulation** with the ENTITY's personnel responsible for emergency response, relevant workers' health and safety representatives, workers, and local emergency response personnel if relevant; and

c. Lessons learned and identified corrective measures are documented.

E2 E3 D M P

3.2.7.3 As part of the emergency preparedness and response plans, ENTITY also ensures that:

a. The workplace is equipped with emergency response equipment in sufficient quantities and in working condition to respond appropriately to foreseeable emergencies;

b. All emergency response equipment is inspected on an annual basis; and

c. Relevant first responders receive training in first aid, fire-fighting, and handling of hazardous chemicals and materials, as relevant[29].

M

3.2.7.4 If the site and/or associated facilities involve underground work, the ENTITY implements a system to identify and track at any time the most-probable locations of all individuals who are underground.

E2 E3 D M P

3.2.7.5 A Stop Work Authority (SWA) procedure (or equivalent) is developed and implemented, in collaboration with workers' representatives[30]. The SWA procedure:

a. Ensures that all employees and contractors are provided with the right, the responsibility, and the authority to either refuse to undertake or to stop work if they believe that conditions or behaviors could reasonably cause serious physical harm, chronic health effects, or damage to the facility, community, environment, and cannot be promptly resolved through routine mechanisms;

b. Ensures that the authority to stop work with reasonable justification may be exercised by employees or contractors without fear of reprisal by the ENTITY or their employers;

c. Ensures that retaliation by other workers will not be tolerated[31];

d. Outlines the conditions whereby workers may initiate a stop work action;

e. Outlines who needs to be notified of the stop work action;

f. Outlines the investigation process to determine validity of the stop work action (see 3.2.7.6);

g. Outlines a process for coming to agreement on any containment or corrective measures and verifying that those measures have been implemented before work is restarted;

h. Outlines who has authority to restart work, and any monitoring that need to occur after work has resumed to ensure that corrective measures remain effective; and

i. Outlines follow-up steps for communicating the event to relevant workers, contractors and management, and integrating learning from the stop work event[32].

E2 E3 D M P

3.2.7.6 A reporting and investigation procedure (or equivalent) is developed and implemented, in collaboration with workers' representatives, to establish the steps to be taken by workers, internal inspectors, and/or others, to inform the ENTITY of unwanted events[33] or unsafe working conditions[34]. This procedure:

a. Outlines the rights and responsibilities of workers, internal inspectors, and/or others to report unwanted events, ineffective controls, or unsafe working conditions;

b. Outlines the process to be followed when reporting unwanted events or unsafe working conditions, including who to contact, how to contact them, what types of information to include, and any forms that need to be submitted as part of the process;

c. Ensures that workers, internal inspectors, and others can use this procedure without fear of reprisal by the ENTITY, and that retaliation by other workers for reporting unwanted events will not be tolerated[35];

d. Outlines a provision that any use of stop work authority by workers or internal inspectors is investigated promptly and expected timelines for commencing investigations of other reported unwanted events or unsafe working conditions;

e. Outlines who participates in different types of investigations[36]; and

f. How the outcomes of investigations are communicated to workers and others.

3.2.8 OSH of Contractors[37]

E2 E3 D M P

3.2.8.1 A system is developed and implemented to manage the OSH of all contractors. The system includes:

a. Clear stipulation of consequences if OSH performance of contractors does not meet the ENTITY's expectations;

b. A clear process for communicating with, and receiving input from, contractors on OSH matters;

c. A documented system for monitoring contractors' OSH performance, overseen by a member of the ENTITY's top management;

d. A signed contract between the ENTITY and each contracting firm or individual contractor, that outlines how the OSH of contractors will be managed in a manner that aligns with the requirements of this Chapter.

E2 E3 D M P

3.2.8.2 The contract required in 3.2.8.1.d addresses[38]:

a. The ENTITY's and contractors' rights and responsibilities[39];

b. The right of the ENTITY specifically to carry out inspections of work areas and work being conducted by contractors (see 3.2.3 and 3.2.11);

c. Training those carrying out contracted work on hazards, controls and any relevant plans and procedures that apply to them, such as stop work authority, and emergency response and reporting procedures (see Sections 3.2.5 and 3.2.7);

d. Reporting unsafe conditions and unwanted events to the ENTITY and government authorities (see 3.2.12.3);

e. Identification of hazards associated with contracted work (see 3.2.4.1), including responsibility to notify the ENTITY if the contractor proposes to introduce new or different tools, equipment, materials, chemicals or work processes that could pose a new hazard or elevated risk to contractors and/or ENTITY personnel;

f. Assessment of risks associated with contracted work (see 3.2.4.2);

g. Development of controls for high-risk hazards associated with contracted work (see 3.2.5);

h. Workplace monitoring and health surveillance and evaluation of the effectiveness of the controls (see 3.2.11.2); and

i. Provision and oversight of the proper use of personal protection equipment (see 3.2.9.3 and 3.2.9.2.c, respectively).

3.2.9 Specific Measures to Protect Workers

E2 E3 D M P

3.2.9.1 The ENTITY has a system in place to communicate information to workers on matters related to OSH.[40] This system ensures that:

a. Health and safety data sheets, labels, and signage[41] in the workplace are in formats and languages that are understandable to the workers;

b. Health and safety data sheets, labels, and signage in the workplace are maintained in legible/understandable condition, and kept up to date; and

c. Workers can provide input on matters related to OSH, and their input will be considered and responded to.

E2 E3 D M P

3.2.9.2 The ENTITY ensures that every shift has competent supervision[42] that:

a. Is at a level commensurate with the risks and the competence of workers[43];

b. Provides oversight and enforcement of adherence to relevant procedures and controls related to the tasks being carried out; and

c. Ensures consistent and correct usage of personal protective equipment and clothing appropriate to the working environment.

E2 E3 D M P

3.2.9.3 **Critical Requirement**

The ENTITY ensures that personal protective equipment, and working clothes and shoes:

a. Are provided, at no cost, to workers when exposure to adverse conditions or adequate protection against risk of accident or injury to health cannot be ensured by other means[44];

b. Are fit for purpose, and the size and fit are gender-appropriate and provide adequate protection; and

c. Are maintained by the ENTITY in clean and good working condition;

d. Are replaced, at no cost, as necessary.

E2 E3 D M P

3.2.9.4 Building on the risk assessment process required in 3.2.4, the ENTITY ensures that first aid is available on site as follows:

a. The minimum number of workers with up-to-date certified first aid training is: 1) one every 50 workers for low-risk work areas; 2) one every 25 workers for high-risk work areas that have timely access to medical and ambulance services; and 3) one every 10 workers for high-risk work areas that do not have such timely access to medical and ambulance services[45];

b. Workers have unrestricted access to first aid and rapid response equipment appropriate to the work area[46]; and

c. In areas where chemicals are stored, handled, and used, safety data sheets and instructions on first aid for all potential exposure routes[47] are available (see also 3.2.9.1).

E2 E3 D M P **3.2.9.5** The ENTITY ensures that workplaces include:

a. Safe, potable water that is readily accessible to workers;

b. Clean toilet, washing and locker facilities commensurate with the number and gender of workers, and that accommodate LGBTIQA+ workers;

c. Sanitary facilities for eating and storing food;

d. Primary and emergency power supply and lighting, and adequate ventilation, in particular for confined spaces and underground workings;

e. Fire safety equipment and alarms; and

f. Clearly marked, unlocked and unblocked evacuation routes and emergency exits, including, for any underground workplace, two exits that are each connected to separate means of egress to the surface where practicable.

3.2.10 Workers' Housing

E2 E3 D M P **3.2.10.1** If any housing is provided to workers by the ENTITY[48], it ensures that any of such housing provides:

a. Safe and potable water in the dwelling in quantities sufficient to provide for all personal and household uses;

b. Adequate sanitary and washing facilities, ventilation, cooking and storage facilities;

c. Adequate natural and artificial lighting;

d. Adequate sewage and garbage disposal systems;

e. Appropriate protection against heat, cold, damp, noise, fire, and disease-carrying animals and insects; and

f. A reasonable degree of privacy both between individuals within the household, and for the members of the household against undue disturbance by external factors[49].

E2 E3 D M P **3.2.10.2** If any housing is provided by the ENTITY to single workers or workers separated from their families, the ENTITY ensures that any of such housing provides:

a. A separate bed for each worker, and beds are not arranged in tiers of more than two;

b. Adequate safety, including sleeping rooms, and toilet and bathroom facilities, that are separated by gender and can accommodate the needs of LGBTIQA+ workers; and

c. Common dining rooms, canteens, and recreation rooms that are located away from the sleeping areas, and, where not otherwise readily accessible and available in a nearby community, health facilities.

E2 E3 D M P **3.2.10.3** The ENTITY also ensures that, during time spent in housing provided by the ENTITY, workers are able to enjoy their fundamental human rights, including:

a. The right to liberty and security of person;

b. The freedom of movement; and

c. The freedom of association.

3.2.11 Inspections, Workplace Monitoring and Health Surveillance

E2 E3 D M P

3.2.11.1 The ENTITY, and workers' health and safety representatives if they so choose[50], have a joint inspection program (or equivalent) in place that:

a. Ensures joint inspections of the working environment are conducted to identify any hazards to which workers may be exposed, and to evaluate the effectiveness of OSH controls and protective measures;

b. Includes a plan that outlines the frequency of inspections for different work areas/tasks/equipment, ensuring coverage of the entire site and all high-risk hazards each year;

c. Empowers those carrying out inspections to use stop work authority if a hazard is uncovered that poses a threat to the health or safety of any person(s); and

d. Documents, in an inspection report[51], any observed unsafe conditions and actions, recommended containment and/or corrective measures, and their priority levels[52].

E2 E3 D M P

3.2.11.2 A workplace monitoring and health surveillance program is in place to measure exposures to all the significant hazards identified, and to evaluate the effectiveness of the OSH controls being implemented to protect health and safety as follows:

a. Workplace monitoring and worker health surveillance are designed and conducted by certified industrial hygienists or other competent professionals;

b. Workers' health and safety representatives have the opportunity to suggest improvements to the design of, and to participate in the implementation of, workplace monitoring and worker health surveillance programs;

c. Health surveillance is 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;

d. Samples collected for workplace monitoring and health surveillance purposes are analyzed in an ISO/IEC-17025-certified or nationally-accredited laboratory, if available in the country of operation;

e. Sample results are documented, and compared against national occupational exposure limits (OELs) and/or biological exposure indices (BEIs), if they exist,[53] or OELs/BEIs developed by the American Conference of Governmental Industrial Hygienists (ACGIH);[54] and

f. Whenever an OEL/BEI is exceeded: 1) Affected people[55] are informed immediately, and provided with instructions on the appropriate measures to take[56]; 2) any supervisors and management not present at the affected location are informed as soon as possible; and 3) controls are reviewed and revised in a timely manner to ensure that future exposure levels remain within safe limits.

3.2.12 Response to Unsafe Working Conditions and Unwanted OSH Events

E2 E3 D M P

3.2.12.1 The ENTITY can demonstrate that, if unsafe working conditions are observed and reported by workers including managers and supervisors, inspectors or others, they are investigated in a timely manner, in accordance with the procedure required in 3.2.7.6.

E2 E3 D M P

3.2.12.2 Whenever an investigation verifies that there is an imminent and serious threat to human health, the ENTITY ensures that

a. In cases where an area is affected, all workers are evacuated immediately;

b. Workers re-entering the affected area to reinstate safe working conditions are protected from harm;

c. Working conditions in the affected area are verified as safe before general workers and contractors are allowed to enter; and

d. In cases where machinery or equipment is the cause of unsafe working conditions, use of the machinery or equipment ceases immediately, the equipment or machinery is fixed or replaced by an appropriate trained specialist, and the equipment or machinery is verified as safe before being put into service.

E2 E3 D M P

3.2.12.3 Whenever a near miss incident, accident, injury, illness or fatality occurs in the workplace, the ENTITY ensures that:

a. Workers who have suffered an injury or illness are provided with first aid, and, if necessary, with prompt transportation from the workplace to appropriate medical facilities;

b. Affected workers, including those present at the time of an accident, are offered counseling or other forms of psychological support;

c. The events are reported to the joint health and safety committee and accountable member of the ENTITY's top management, and, if required, to the competent authority;

d. The events are investigated as per requirement 3.2.7.6, and include a root cause analysis and a determination of whether any near miss incidents are also high-potential incidents (HPI);

e. Corrective action plans are developed and implemented; and

f. The circumstances surrounding the event, the investigation, the corrective action plans and the outcomes are documented, and the outcomes are communicated to workers in accordance with 3.2.7.6.

3.2.13 Education and Training

E2 E3 D M P

3.2.13.1 The ENTITY ensures that workers are informed of their rights[57] to:

a. Know and be informed of workplace hazards that may affect their safety or health;

b. Collectively select safety and health representatives;

c. Report accidents, dangerous occurrences and hazards to the ENTITY and to the competent authority;

d. Either refuse to undertake or to stop work if they believe that conditions or behaviors pose an imminent and serious danger to the health or safety of themselves or others, or serious risk of harm to the environment, in accordance with the SWA procedure required in 3.2.7.5;

e. Request and obtain inspections and investigations by the ENTITY and the competent authority where there is cause for concern on safety and health grounds; and

f. Obtain personal data and information held by the ENTITY or the competent authority that is relevant to their safety or health[58].

E2 E3 D M P

3.2.13.2 The ENTITY ensures that, in all cases, workers attempting to exercise in good faith any of the rights referred to in 3.2.13.1 are protected from reprisals or retaliation of any sort.

E2 E3 D M P

3.2.13.3 The ENTITY has an OSH training program in place, as follows:

a. All workers receive an initial general training before they are allowed to commence their work[59];

b. All workers receive specific task training under supervision for a required period before they are deemed qualified to undertake the work without immediate supervision, and retraining takes place periodically;

c. Effectiveness of training is assessed, and worker competency for conducting work safely is verified using a variety of techniques[60];

d. Records of worker attendance and competency evaluations are maintained;

e. Trainings are conducted by competent professionals, and in formats and languages that are understandable and appropriate to the workers trained[61]; and

f. Trainings are free for all employees and contractors.

E2 E3 D M P **3.2.13.4** **Critical Requirement**

The content of the training program required in 3.2.13.3 ensures that workers are trained on:

a. The range of specific health and safety hazards associated with specific job/tasks, as identified through the hazard identification and risk assessment process required in 3.2.4;

b. How to perform routine and non-routine tasks in a manner that avoids placing themselves or others at risk;

c. Control measures that have been developed to prevent and respond to high-risk hazards relevant to specific jobs/tasks;

d. Procedures that have been developed that are specific to their work area/job/tasks[62];

e. The proper use and fitting of personal protective equipment;

f. How to identify workplace hazards, and how to exercise their stop work authority in accordance with the SWA procedure required in 3.2.7.5;

g. Any off-site emergency response plans developed as per Chapter 2.6 that are relevant to them;

h. The reporting and investigation procedure required in 3.2.7.6; and

i. How to access first aid and medical assistance.

E2 E3 D M P **3.2.13.5** The ENTITY ensures that all visitors and suppliers accessing the site and associated facilities:

a. Receive an OSH briefing;

b. Are provided with clean personal protective equipment, at no cost, that is relevant to the areas of the site or associated facilities that they will be entering; and

c. Receive instruction on proper use and fitting of personal protective equipment and the ENTITY's expectations for when and where the equipment must be used.

3.2.14 Record-Keeping and Data Management

E2 E3 D M P **3.2.14.1** The ENTITY maintains the following records:

a. Workplace monitoring results[63], for at least 40 years or the period specified in the relevant regulations (if they exist) whichever is the highest;

b. Health surveillance results[64], for at least 40 years or the period specified in the relevant regulations (if they exist) whichever is the highest; and

c. All data on unwanted events collected by the company[65] and all reports on unwanted events submitted to competent authorities, for at least 5 years after any given event.

E2 E3 D M P **3.2.14.2** The ENTITY has a data management system in place to enable worker health data[66] to be readily located and retrieved. The system:

a. Is overseen by a responsible custodian;

b. Securely stores data that are protected by medical confidentiality; and

c. Retains data on workers for at least 40 years or the period specified in the relevant regulations (if they exist) whichever is the highest[67].

3.2.15 Continuous Improvement

E2 E3 D M P **3.2.15.1** On an ongoing basis, the ENTITY:

a. Reviews inspections reports, workplace monitoring and health surveillance information, occurrences of stop work actions, hazards, accidents, near-miss incidents, injuries and fatalities.

b. If the review indicates significant failure and/or performance indicators/targets related to control measures not being met, the ENTITY collaborates with workers to carry out a root cause analysis, develop corrective measures and modify controls;

c. Then revises the management plan and/or relevant procedures and training materials, accordingly; and

d. Then includes the information in the annual occupational health and safety management review (see 3.2.15.2).

E2 E3 D M P **3.2.15.2** On an annual basis, the member of the ENTITY's top management accountable for the OSH management system:

a. Reviews the site's OSH record for the year[68] against the ENTITY's OSH objectives and key performance indicators and/or targets required in 3.2.1.2;

b. If the ENTITY's OSH objectives and/or key performance indicators/targets required in 3.2.1.2 are not being achieved, it develops and documents changes to relevant policies, procedures, and systems, to improve performance, and shares this information with top management and the joint health and safety committee; and

c. It ensures those changes are implemented in a timely manner.

E2 E3 D M P **3.2.15.3** To continuously improve the effectiveness and appropriateness of its OSH management systems, the ENTITY:

a. At least **annually**, but without undue delay after a significant change, reviews the hazard identification and OSH risk assessments, and updates them, if necessary, in accordance with Section 3.2.4;

b. At least **every two years**, but without undue delay after a significant change, reviews the on-site emergency preparedness and response plans, and updates them, if necessary, in accordance with Section 3.2.7; and

c. **Regularly** reviews the OSH training program and updates it in accordance with Section 3.2.13, when there are changes to procedures, risk assessments or management plans, or if evaluations of the ENTITY's performance suggest areas that need attention.

E2 E3 D M P **3.2.15.4** To continuously improve the effectiveness and appropriateness of its measures to protect and promote health and wellbeing in the workplace, at least annually, but without undue delay after a significant change, the ENTITY:

a. Reviews the programs to support the mental health of workers, developed and implemented as per 3.2.5.5.b;

b. Reviews the programs to encourage and promote overall health and wellbeing in the workplace, developed and implemented as per 3.2.5.5.c; and

c. Updates these programs and/or the identification of psychosocial hazards, if necessary[69], in collaboration with workers and workers' health and safety representatives.

3.2.16 Information-Sharing and Public Reporting

E2 E3 D M P

3.2.16.1 At least annually, and with due regard for workers' safety and data privacy, the ENTITY makes publicly accessible updated versions of, and maintains[70] publicly accessible all previous versions of, the following information, for the last reporting period:

a. Number of near-miss incidents, in total and disaggregated by employees and contractors;

b. Number of high-potential incidents (HPI), in total and disaggregated by employees and contractors;

c. Number of accidents, in total and disaggregated by employees and contractors;

d. Number of injuries, in total and disaggregated by employees and contractors;

e. Number of lost-time injuries, in total and disaggregated by employees and contractors;

f. Number of fatalities, in total and disaggregated by employees and contractors;

g. Number of incidents of occupational disease, in total and disaggregated by employees and contractors;

h. Number of incidents of occupational disease that led to lost time, in total and disaggregated by employees and contractors; and

i. Number of incidents of occupational disease that led to fatalities, in total and disaggregated by employees and contractors.

E2 E3 D M P

3.2.16.2 **IRMA+**

At least annually, and with due regard for workers' safety and data privacy, the ENTITY makes publicly accessible updated versions of, and maintains[71] publicly accessible all previous versions of a report on workplace accessibility that includes:

a. Total number of workers that have acquired a disability, disaggregated by employees and contractors;

b. Policies and specific measures related to employment and decent work of workers with disabilities[72]; and

c. Strategies and specific measures aimed at improving the accessibility of the ENTITY's site, facilities, products, services, and communications for workers with disabilities[73].

CROSS REFERENCES TO OTHER CHAPTERS

This table will be added when the new content for all chapters is finalized and approved.

CHAPTER ENDNOTES

[1] 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

[2] ICMM website: "Preventing Fatalities." https://www.icmm.com/en-gb/health-and-safety/safety/preventing-fatalities

[3] 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

[4] ILO now recognizes the Occupational Safety and Health Convention, 1981 (No. 155) and the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187) as fundamental Conventions. https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_874743.pdf

[5] ILO, Workplace Health Promotion and Well-being. https://www.ilo.org/workplace-health-promotion-and-well-being

[6] Worker representation can be a mechanism for consultation and participation.

[7] "It is recognized that the provision of training at no cost to workers and the provision of training during working hours, where possible, can rernove significant barriers to worker participation." (ISO 450001:2018).

[8] These dimensions must be collaboratively defined as per 1.2.3.1, and regularly reviewed and updated as per 1.2.7.1.

[9] As these will depend largely on a specific context, stakeholders will help define what is considered culturally appropriate and easily accessible. These dimensions must be collaboratively defined as per 1.2.3.1, and regularly reviewed and updated as per 1.2.7.1.

[10] "in a timely manner" will likely vary based on the ENTITY's resources and procedures (e.g., some companies may have due diligence procedures in place for releasing data publicly) and also the size/nature of the request. Generally, however, requests should be fulfilled within 1 to 3 months, although for particularly large requests or requests made to companies with limited capacity to fulfill information requests, some flexibility may be needed. Also, some companies have stringent quality assurance procedures that must be followed in order to share data publicly, and so may require more time to prepare materials for release. (See also 1.2.3.2 for requests that are not responded to in what seems like a "timely manner"). This dimension must be collaboratively defined as per 1.2.3.1, and regularly reviewed and updated as per 1.2.7.1.

[11] This could include representatives selected by workers' organizations, or through elections by workers, or a combination of the two. It does not include workers appointed by the ENTITY.

[12] See 3.2.4.1.c.

[13] This would exclude any data protected for medical confidentiality reasons.

[14] I.e., excessive exposures, losses of control or accidents that lead to harm.(including but not limited to injuries, diseases, fatalities).

[15] The site and associated facilities include: processes, facilities, equipment, materials, procedures, infrastructure, systems, and services.

[16] For more context, see: Organization of Work Taxonomy. https://www.cdc.gov/niosh/topics/workorg/taxonomy.html

[17] External factors could include political, economic, social, technological, environmental or legal (PESTEL) influences.

[18] E.g., pregnant women, breastfeeding mothers; children, older persons; Indigenous workers; LGBTIQA+ persons; persons with different health status including HIV-positive persons or suffering from other infectious diseases; persons with different physical characteristics, ethnicities, disabilities;, etc. See "Consideration of vulnerable populations in risk assessment." https://www.canada.ca/en/health-canada/services/chemical-substances/fact-sheets/consideration-vulnerable-populations-risk-assessment.html

[19] Workers and contractors who are most likely to be exposed or susceptible to particular hazards should be consulted during the risk assessment of those hazards, and in the development of controls.

[20] ibid

[21] The risk assessment must therefore clearly identify the high-risk work areas, i.e. work areas where workers are exposed to such high-risk hazards (as opposed to low-risk work areas).

[22] These scenarios will feed into the emergency preparedness and response plans required in 3.2.5.

[23] United Steelworkers. 2022. Bargaining for Stop Work Authority To Prevent Injuries and Save Lives. https://m.usw.org/act/activism/health-safety-and-environment/resources/bargaining-for-stop-work-authority-to-prevent-injuries-and-save-lives

[24] New Zealand Ministry of Business, Innovation and Employment. 2013. Guidance for a Hazardous Management System. https://www.worksafe.govt.nz/assets/dmsassets/zero/188WKS-2-excavations-hazard-management-system-for-mines.pdf

[25] Appropriate performance criteria or indicators must include those required by country of operation's law (e.g., maximum concentrations of certain chemicals in air), and, as relevant, those associated with external standards (e.g., IRMA references the ACGIH for occupational exposures), and any indicators agreed with workers.

[26] E.g., pregnant women, breastfeeding mothers; children, older persons; Indigenous workers; LGBTIQA+ persons; persons with different health status including HIV-positive persons or suffering from other infectious diseases; persons with different physical characteristics, ethnicities, disabilities;, etc. See "Consideration of vulnerable populations in risk assessment." https://www.canada.ca/en/health-canada/services/chemical-substances/fact-sheets/consideration-vulnerable-populations-risk-assessment.html

[27] If work is carried out by third party contractors, then there needs to be a staff employee responsible for overseeing the quality of work, timelines, etc.

[28] Off-site emergency preparedness, response, and recovery is fully addressed in Chapter 2.6.

[29] See also requirements related to spill preparedness and response in Chapter 2.6.

[30] The importance of the SWA has been highlighted by several labor unions. See United Steelworkers (USW), Bargaining for Stop Work Authority to Prevent Injuries and Save Lives, 2022 (https://m.usw.org/get-involved/health-safety-and-environment/bargaining-for-stop-work-authority-to-prevent-injuries-and-save-lives/); IndustriALL Global Union, The right to refuse, 2020 (https://www.industriall-union.org/right-to-refuse).

[31] Retaliation could include penalizing, dismissing, disciplining, suspending or threatening to do any of these things to a worker.

[32] E.g., into risk assessment updates, management plans or procedures, or training materials.

[33] I.e., excessive exposures, losses of control or accidents that lead to harm.(including but not limited to injuries, diseases, fatalities).

[34] E.g., uncontrolled hazards, risk-prone behavior.

[35] Retaliation could include penalizing, dismissing, disciplining, suspending or threatening to do any of these things to a worker.

[36] E.g., accidents, near miss incidents or observations of hazards in the workplace, etc.

[37] The systems and contracts required in this Section can be either stand-alone or integrated into the systems required for contractor oversight and compliance required in Chapter 1.1, Section 1.1.3; as long as they meet all the requirements/sub-requirements of this Section.

[38] These are minimum requirements. Some companies create dedicated manuals for their contractors related to health and safety. See, for example, Freeport-McMoran. 2022. Contract Health, Safety and Environmental Manual. https://www.fcx.com/sites/fcx/files/documents/suppliers/csm.pdf

[39] Management of contractors carrying out work may be done by either the ENTITY or the contracting firm, or carried out in a collaborative manner. But the responsibilities must be clearly delineated. Some companies create manuals for their contractors related to health and safety. See, for example, Freeport-McMoran. 2022. Contract Health, Safety and Environmental Manual. https://www.fcx.com/sites/fcx/files/documents/suppliers/csm.pdf

[40] See also Chapter 1.2, requirement 1.2.4.1, relating to communications with stakeholders, which should also apply to workers (e.g., that communications be timely, and culturally appropriate).

[41] E.g., warning signs, exits, evacuation routes.

[42] Competent supervision means that supervisors have appropriate qualification and training, or have gained sufficient knowledge, skills and experience to oversee OSH, including identification of hazards, implementation of preventive measures, monitoring of the status of OSH in operations for which they are responsible, and implementation of corrective action in the event of non-compliance with requirements.

[43] The competence of workers is determined as part of the training program (see 3.2.13.3 and 3.2.13.4).

[44] Example of guidance: inventories should be such that PPE is always immediately available to workers and visitors when required - this could be checked by assessing the inventory and interviews with workers. Adverse conditions include extremes of temperature, exposure to chemicals, etc.

[45] Identification of low-risk and high-risk areas is required in 3.2.4.2. These figures are in line with recommendations of Safe Work Australia for high risk workplaces. See 'First Aid in the Workplace Code of Practice', 2012 https://www.safeworkaustralia.gov.au/system/files/documents/1705/mcop-first-aid-in-workplace-v1.pdf . For reference, the recommendation in the UK is one trained first aider per 50 workers, regulation in Québec requires one every 100 workers but one every 5 in forestry.

[46] Example of guidance rapid response equipment may include eye wash stations and showers in areas where chemical handling could lead to contact with the eyes and skin). Document regular inspections, tests and refills of first aid equipment and supplies.

[47] E.g., inhalation, ingestion, eye or skin contact.

[48] See Chapter 3.1 for more requirements related to rental fees for housing that are not provided for free (requirement 3.1.10.6)

[49] Including protection against any illegal surveillance conducted by the ENTITY.

[50] As per requirement 3.2.3.4, workers' health and safety representatives must be given the opportunity to participate in these inspections.

[51] Note that these inspections reports are reviewed by the ENTITY and inform continuous improvement of the health management system. See Section 3.2.15.

[52] E.g., immediate action, short-term action or long-term action.

[53] 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

[54] 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/

[55] I.e., employees and contractors, including supervisors and managers; but also any visitor involved in an unwanted OSH event.

[56] E.g., evacuation, machinery stoppages, etc.

[57] Rights may be outlined in the country of operation's laws, and/or outlined in a collective bargaining agreement, and/or established by the joint health and safety committee.

[58] This includes personal information and data related to accidents, incidents, inspections, investigations and remedial actions, workplace monitoring, health surveillance and medical examinations.

[59] Although this is a time-dependent subrequirement (i.e., training needs to occur before the workers begin working), the ENTITY may be scored on its performance in the previous three years only. So, for example, if there are workers who have been with an operation for six years who were not trained prior to commencing work, but a program has since been implemented to train all new workers before they begin work, then a site could fully meet this expectation (if the workers who were not trained at the appropriate time did eventually receive training upon commencement of the program). Training of contractors' employees may be organized by contracting firms, but the Entity will need to demonstrate that those OSH training programs also conform with this requirement.

[60] Such as training comprehension evaluation, observation of workers performing tasks correctly and safely, and incorporating results of workplace evaluations and incident tracking to assess effectiveness of training.

[61] By comprehensible it is meant that all procedures, signs and instructions for using equipment and machinery, material safety data sheets, emergency response evacuation routes and instructions, first aid equipment, and control measures to address unsafe conditions must be in local language(s) and formats appropriate to any disability or impairment. Example of guidance training and retraining in appropriate language(s) for the workforce should include at least basic first aid and refer to proper use and fitting of PPE, safe use of equipment and vehicles, working in confined spaces, working at height (preventing falls, preventing falling objects), instructions on proper handling of hazardous materials, and emergency response instructions. All new employees should receive induction training covering any activities that require training before commencing work.

[62] E.g., some may need training on chemical safety, or fire safety, or working at heights, etc.

[63] E.g., air quality, noise levels, temperatures, etc.

[64] E.g., physical and biological assessments and testing.

[65] I.e., injuries, diseases, fatalities, accidents, and near-miss incidents.

[66] Including medical records (health insurance claims, first aid records made onsite), and exposure records and any health surveillance results.

[67] The intention is not that the data should be destroyed after 40 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 (and may be mandatory in some jurisdictions) to notify current employees of their right to access their records before the company goes out of business. The regulation in South Africa requires 40 years data retention for mine workers, the UK requires 40 years for workers under the Control of Substances Hazardous to Health Regulations (COSHH), the USA require 30 years in general, Australia requires 30 years in general and 40 years for asbestos risk; by comparison Brazil only requires 20 year, and Chile and Mexico only 15 years.

[68] Including unwanted events, monitoring and inspection results, worker grievances, and the information gathered and developed as per 3.2.15.1.

[69] This will be informed by the review processes required in this Section.

[70] All material must remain publicly accessible at least until the completion of all post-closure activities (including any previous versions, iterations and revisions). Note that the intention is not that the reports should be removed from the public domain after that. Rather, where possible, it should be retained indefinitely as the information may be important for legal or other purposes.

[71] All material must remain publicly accessible at least until the completion of all post-closure activities (including any previous versions, iterations and revisions). Note that the intention is not that the reports should be removed from the public domain after that. Rather, where possible, it should be retained indefinitely as the information may be important for legal or other purposes.

[72] This may cover aspects such as recruitment, retention, promotion, remuneration, adaptation of jobs and equipment, reasonable accommodation, training, or health and safety. (GRI (2021) Disability in sustainability reporting: Updated Guide).

[73] This may include making reasonable accommodations in the workplace, providing training programs and assistance to develop skills of employees with disabilities, providing resources to access program-related information, and the accessibility of the organization's website. (GRI (2021) Disability in sustainability reporting: Updated Guide).

CHAPTER ANNEXES

ANNEX 3.2-A: Potential Workplace Hazards

Hazard Type	Examples	Sources of information
Safety	Unsafe conditions in the workplace that can cause injury, illness and death.	[1], [2], [3], [4], [5], [6], [8], [9], [12]
	Safety hazards are associated with many types of work, including: • Blasting (e.g., post-blast gases, falls of ground, damage to ground support, lack of barricades, lack of visibility) • Confined spaces (e.g., poor ventilation, exposure to toxic gases and dust, unguarded machinery, live wires, heat stress, excessive noise, potential for inrush or being crushed when working underground, or in or around tanks, vessels, pits, tunnels, pipelines, equipment house) • Driving (e.g., distractions, seasonal factors, ergonomic considerations, poor technique, blind spots) • Electrical (e.g., frayed cords, missing ground pins, improper wiring) • Explosives/explosions (e.g., improper storage, inadvertent ignition, lack of inventory management/quality degradation) • Fatigue (e.g., from sleep deprivation, shift work, overtime, seasonal production pushes) • Fires (e.g., spontaneous combustion, improper storage of flammable, combustible or explosive materials) • Machinery (e.g., lack of or improper lockout or guarding of machinery and moving machinery parts; guards removed or moving parts that a worker can accidentally touch; jammed materials); lack of worker training and experience) • Materials Handling (e.g., slings, cranes, hoists, forklifts – all come with their own safety hazards, but issues include poor maintenance of equipment, poor technique, improper signaling, blind spots, improper loads, improperly-secured loads, volume of traffic or obstacles) • Mobile equipment (e.g., lack of maintenance, lack of tire safety, brake failures, being struck or crushed due to lack of visibility or poor traffic management, falling off equipment, driving into an unguarded open hole) • Non-routine tasks (e.g., stuck conveyance, crusher bearing changes, kinked hoist rope, rehabilitation after sizable ground fall, retrieving undetonated explosives) • Pressurized vessels (e.g., poisonings, suffocations, fires, and explosions from leaks or ruptures) • Slips, trips and falls (e.g., from poor housekeeping such as spills on floors, tripping hazards such as blocked aisles or cords across the floor, uneven ground, poor footwear, inappropriate pace of walking; falling into operating machinery, water or other liquid, onto a hazardous substance or object, through an opening – see also working from heights, below) • Tools (e.g., poor maintenance, poor technique, lack of or inappropriate personal protective equipment while using, wrong tool for the task) • Working at heights (e.g., falling from ladders, platforms, scaffolds, raised work areas, cliff edges)	
Chemical	Unsafe conditions that may occur when a worker is exposed to a chemical preparation in the workplace in any form (solid, liquid or gas).	[7], [8]

Hazard Type	Examples	Sources of information
	Chemical hazards include: • Exposure to toxic processing chemicals, paints, adhesives, acid mists, organic vapors and solvents, toxic gases, soluble oil (e.g., due to lack of training in handling, transport, lack of or improper use/fitting of personal protective equipment, lack of proper labeling, signage, usage instructions)	
Physical	Factors within the environment that threaten physical safety and can harm the body.	[2], [3], [4], [7], [8], [9], [10], [11], [13]
	Physical hazards include: • Air quality (e.g., in adequate ventilation, excessive dust, diesel exhaust, dust, welding fumes and other metallic particulates, asbestos, synthetic mineral fibers, toxic, metals) • Ground instability (e.g., fall of rock/ground, rock outbursts, too steep excavations, unstable slopes, excessively high bench heights, adverse geology, elevated water table) • Ground subsidence (e.g., due to removal of solid or fluids from underground) • Inrush/inundation (e.g., failures of levies or dam structures, inrush from mine workings, surface water bodies, seams, faults, boreholes) • Noise, vibration or blast concussion (e.g., constant loud noise, too many blasts, working in too close of proximity to blast areas) • Radiation: including ionizing, non-ionizing (EMFs), microwaves, radiowaves, etc. • Temperature extremes – hot and cold • Unsecured mine openings • Water (e.g., excessive accumulation in open pits or floors, runoff of water or water-saturated materials, hazards around ponds, drowning, musculoskeletal disorder injuries from hidden hazards in accumulated water)	
Ergonomic	Occur when the type of work, body positions and working conditions put strain on the body. Short- term exposure may result in "sore muscles" the next day or in the days following exposure, but long-term exposure can result in serious long-term illnesses and musculoskeletal disorders.	[2], [7], [13]
	Ergonomic hazards include: • Manual lifting (frequent lifting, lifting heavy objects) • Poor posture • Improperly configured workstations (e.g., presence of obstacles, unstable surfaces) • Repeating the same movements over and over • Awkward movements, especially if they are repetitive • Being in the same position for long periods of time • Having to use too much force, especially frequently • Poorly lit areas	
Psychosocial	Aspects of the work environment and the way that work is organized that are associated with a negative impact on mental health and/or physical injury or illness	[1], [4], [12]
	Psychosocial hazards include: • Working alone, working long hours, physically demanding work, work in remote areas, performing hazardous tasks	

Hazard Type	Examples	Sources of information
	• Poor physical environment (e.g., unpleasant conditions cause by noise, odors, temperatures, working with poorly maintained or uncomfortable personal protective equipment) • Stress (e.g., caused by harassment, bullying, violence, inadequate training, lack of support to do work safely, or stress external to work, etc.) • Lifestyle (e.g., drug or alcohol use/abuse) • Trauma (e.g., from witnessing fatalities or being involved in work-related accidents)	
Biological	Bacteria, viruses, fungi, other microorganisms, insects, plants and animals and their associated toxins. They have the ability to adversely affect human health in a variety of ways, ranging from relatively mild, allergic reactions to serious medical conditions—even death. Some organisms, including various types of mold and Legionella bacteria, are found readily in the natural and built environment.	[1], [2]
	Biological hazards include: • Infectious diseases • Insect-borne or rodent-borne diseases or bites • Microbiological agents (bacteria, mold) • Foodborne illnesses	

List of Sources:

[1] Canadian Centre for Occupational Health and Safety. "Hazards" (includes chemical, ergonomic, health, physical, psychosocial, safety, with examples and fact sheets on each hazard type). https://www.ccohs.ca/topics/hazards/

[2] U.S. Occupational Health and Safety Administration. Safety and Health Topics. https://www.osha.gov/topics/text-index

Biological agents: https://www.osha.gov/biological-agents

Confined Spaces: https://www.osha.gov/confined-spaces

Ergonomics: https://www.osha.gov/ergonomics

Pressure vessels: https://www.osha.gov/pressure-vessels

Toxic metals: https://www.osha.gov/toxic-metals

[3] NIOSH Mine and Mine Works Charts. "Number and percentage of nonfatal lost-time injuries by accident class, 2021. https://wwwn.cdc.gov/niosh-mining/MMWC/Injuries/Count

[4] Workplace Safety North web site. "Mining surface – Top Risks."

Risk categories overview: https://www.workplacesafetynorth.ca/industries/mininghttps://www.workplacesafetynorth.ca/sites/default/files/uploads/Mining-surface-risk-categories_FullListRanked_Overview-2016-MLTSD.pdf

Risk categories detailed: https://www.workplacesafetynorth.ca/sites/default/files/uploads/Mining-surface-risk-categories_FullListRanked_Detailed-2016-MLTSD.pdf

[5] International Council on Mining and Metals (ICMM). 2015. Health and Safety Critical Control Management. "Table 2. Typical Mining- and Metals-Related Material Unwanted Events Based on Historical Analysis." p. 11. https://www.icmm.com/website/publications/pdfs/health-and-safety/2015/guidance_ccm-good-practice.pdf?cb=39952

[6] ICMM. 2022. Safety Performance: Benchmarking Progress of ICMM Company Members in 2021. https://www.icmm.com/en-gb/research/health-safety/benchmarking-2021-safety-data

[7] U.S. National Mining Association. CORESafety Handbook. pp. 23, 61. https://nma.org/wp-content/uploads/2016/09/CORESafety-Handbook.pdf

[8] New Zealand Government. Worksafe. 2013. Guidance for a Hazard Management System for Mines. https://worksafe.govt.nz/dmsdocument/188-guidance-for-a-hazard-management-system-for-mines

[9] Government of Ontario web site: Hazards in the Mining Sector:

Ground control, water management, remote control equipment, explosives, mobile equipment, occupational illness and diseases: https://www.ontario.ca/page/hazards-mining-sector#section-2

Non-routine hazardous tasks in mines: https://www.ontario.ca/page/non-routine-hazardous-tasks-mines

Post-Blast examinations: https://www.ontario.ca/page/post-blast-examinations-mines

[10] Best Practices for Assessing Ground Control Hazards in the Workplace. https://www.workplacesafetynorth.ca/sites/default/files/resources/WSN-Best-Practices-for-Assessing-Ground-Control-Hazards-in-the-Workplace.pdf

[11] Testing undiluted exhaust in underground mines. https://www.ontario.ca/page/testing-undiluted-exhaust-underground-mines

[12] SafeWork Australia. Psychosocial hazards. https://www.safeworkaustralia.gov.au/safety-topic/managing-health-and-safety/mental-health/psychosocial-hazards/traumatic-events-or-materials

[13] Institution of Occupational Safety and Health (IOSH). Website.

Chemical hazards: https://iosh.com/health-and-safety-professionals/improve-your-knowledge/occupational-health-toolkit/chemical-hazards/

Musculoskeletal disorders: https://iosh.com/health-and-safety-professionals/improve-your-knowledge/occupational-health-toolkit/musculoskeletal-disorders/

Noise: https://iosh.com/health-and-safety-professionals/improve-your-knowledge/occupational-health-toolkit/noise/

Vibration: https://iosh.com/health-and-safety-professionals/improve-your-knowledge/occupational-health-toolkit/vibration/

Psychosocial hazards: https://iosh.com/health-and-safety-professionals/improve-your-knowledge/occupational-health-toolkit/psychosocial-hazards-including-stress/

ANNEX 3.2-B: Principal Hazards Associated with Mineral Exploration, Mining and Mineral Processing

Hazard Type	Relevance
Ground control and physical stability[74]	Exploration, Mining
Electricity	Exploration, Mining, Mineral Processing
Chemicals and hazardous materials[75]	Exploration, Mining, Mineral Processing
Gases, including process and waste gases, and dust[76]	Exploration, Mining, Mineral Processing
Explosives[77]	Mining
Mobile (powered) equipment/vehicles	Exploration, Mining, Mineral Processing
Equipment, including hand tools, and machinery	Exploration, Mining, Mineral Processing
Pressurized systems or vessels	Exploration, Mining, Mineral Processing
Confined spaces	Mining, Mineral Processing
Inundation and inrush of water or other substances	Exploration, Mining, Mineral Processing
Working at heights	Exploration, Mining, Mineral Processing
Materials handling[78]	Exploration, Mining, Mineral Processing
Radiation[79]	Exploration, Mining, Mineral Processing
Furnaces[80]	Mineral Processing
Handling molten metal, dross or slag[81]	Mineral Processing
Specific OSH hazards associated with the processing of Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Magnesium, Manganese, Mercury, Nickel, Platinum and PGMs, Selenium, Tin, and Zinc[82]	Mineral Processing
Recycling of minerals[83]	Mineral Processing

[74] Management of physical stability is addressed in proposed Chapter 4.2. There may be some overlap, as some of the controls/mitigation measures applied there may help to protect worker health and safety. However, Section 3.2.5 entails much more work/task-specific measures to control hazards.

[75] These are required to be identified and characterized in Chapter 4.1.

[76] These are requirement to be identified in Chapter 4.3.

[77] These are required to be identified in Chapter 4.1.

[78] Procedures may have been developed for some materials handling in Chapter 4.1.

[79] IFC (2007) "Environmental, Health, and Safety Guidelines for Base Metal Smelting and Refining". https://www.ifc.org/content/dam/ifc/doc/2000/2007-metal-smelting-refining-ehs-guidelines-en.pdf

[80] ILO (2003) "Safety and health in the non-ferrous metals industries. ILO code of practice." https://www.ilo.org/media/270786/download

[81] ibid

[82] ibid

[83] ibid

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