

A HANDBOOK ON

OCCUPATIONAL HEALTH PRACTICE IN THE SOUTH AFRICAN MINING INDUSTRY

CHAPTER 1

Editors

The Safety in Mines Research Advisory Committee (SIMRAC)

Copyright © MHSC
First edition, first
impression 2001
Second edition
2026

© All rights reserved. Apart from any fair dealing for the purpose of research, criticism or review as permitted under the Copyright Act, no part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, without permission in writing from MHSC.

Chapter 1:

Introduction

The mining industry in South Africa contributes significantly to the economy, averaging 6–8% of the gross domestic product (GDP) between 2016 and 2023 (1). In terms of employment, over the last 10 years up to 2024, the mining industry contributed around 4–6% to the total employment in South Africa, despite adverse circumstances (2). Given that some of the deepest mines in the world are located in South Africa and considering the labour-intensive and challenging environmental conditions of the industry, occupational health and safety is a critical factor for sustainability.

This Handbook provides comprehensive guidance on occupational health and safety, supporting mining companies in complying with legislation, implementing best practices, and maintaining their operating licenses.

The Handbook is aligned to the vision of the Department of Mineral and Petroleum Resources (DMPR), which strives towards a safe and healthy mining industry through its Mine Health and Safety Inspectorate (MHSI) (3). This is achieved by reducing mining-related deaths, injuries, and disease through the formulation of national policies, legislation, the provision of advice, and the application of systems that monitor and enforce compliance with the law in the mining sector. The Inspectorate aims to protect the health and safety of employees and other persons in the South African mining industry, as per the Mine Health and Safety Act No.29 of 1996 (MHSA).

Additionally, the Handbook is aligned to international standards of occupational health and safety, such as the World Health Organization's (WHO's) healthy workplace framework and model, which includes an all-encompassing global action plan for promoting occupational health and safety (4).

The Handbook is also aligned to the International Labour Organization's (ILO's) Conventions, such as:

- C187 – Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187) (5)
- C176 – Safety and Health in Mines Convention, 1995 (No. 176) (6)
- C155 – Occupational Safety and Health Convention, 1981 (No. 155) (7)

The Handbook is also aligned to goals 3 and 8 of the United Nations (UN) Sustainable Development Goals, which are premised on ensuring healthy lives and promoting wellbeing for all, and promoting full and productive employment and decent work for all, respectively (8). The occupational health and safety principles of the International Council on Mining and Metals (ICMM) support safe and healthy work environments, foster continuous improvement in safety, health, and wellbeing (9), and should be adopted by workplaces.

The fundamental terms underpinning this Handbook are 'occupational health' and 'a mine', which are explained below:

The ILO and the WHO define occupational health as,

“The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological equipment, and to summarize: the adaptation of work to man and each man to his work” (4) (5).

A 'mine' (used as a noun) means any: (3)

- Borehole, or excavation, in any tailings or in the earth, including the portion of the earth that is under the sea or other water.
- Other place where a mineral deposit is being exploited, including the mining area and all buildings, structures, machinery, mine dumps, access roads, or objects situated on, or in, that area.

1.1 Objective of the Handbook

This edition of the Handbook is a revision of *Occupational Health Practice in the South African Mining Industry*, originally published by the Safety in Mines Research Advisory Committee (SIMRAC) in 2001 (10). Since the publication of this Handbook more than two decades ago, there have been changes and advancements in the field of occupational health and safety (OHS), regarding technological developments, emerging science, legislation amendments, best practices, and guidance notes, both nationally and globally. It was, therefore, necessary to update the Handbook to reflect the current OHS landscape in the South African mining industry (SAMI).

The Handbook comprises nineteen chapters, each summarized below¹:

• Chapter 1 – Introduction

Chapter 1 was added to explain the objectives of the Handbook, identify the target audience, provide information about each chapter, and indicate how the Handbook should be used. The Mine Health and Safety Council (MHSC), as the sponsor of this edition of the Handbook, is positioned as the institution that oversees OHS and the various initiatives undertaken to foster health and safety in the SAMI.

¹ Chapter 12 in the first edition of the Handbook on the hazard of offshore diving is excluded from this edition, due to its obsolescence in the context of the SAMI.

- **Chapter 2 – The Legal, Policy, and Ethical Framework of Occupational Health in the South African Mining Industry**

This chapter is a revision of Chapter 1 of the first edition of the Handbook, and provides a detailed context of the legal, policy, and ethical framework within which the practice of OHS occurs in the SAMI. The legislative history pertaining to the SAMI is presented, with a more detailed overview of the MHSA, in relation to the legal aspects of the duties of employers and employees regarding occupational hygiene and medical surveillance. The International Commission on Occupational Health (ICOH) International Code of Ethics for Occupational Health Professionals is introduced, and key ethical challenges experienced in the SAMI are expounded upon. In this chapter, the laws regulating disability in the workplace and medical testing are discussed, together with the intricacies of the Basic Conditions of Employment Act No. 75 of 1997 (BCEA), in the context of the SAMI.

- **Chapter 3 – Occupational Health**

Chapter 3 is a revision of Chapter 2 (Occupational Health Management) of the first edition of the Handbook, and provides a detailed perspective on occupational health in the SAMI. The definition of 'occupational health' is provided in terms of the ILO and WHO Standards, and then expanded within the context of the SAMI. Concepts of 'occupational hygiene' and 'occupational medicine' are discussed in detail, including aspects of risk assessment, surveillance, monitoring, and reporting in the SAMI.

- **Chapter 4 – Occupational Health Management in the Mining Environment**

Chapter 4 is an extension to Chapter 2 of the first edition of the Handbook, elaborating on the management of OHS in the mining environment. Detailed guidance is provided on occupational health governance and occupational health management, leveraging international system Standards of OHS management. Integrated management systems and information management of OHS are emphasised for monitoring, reporting, and auditing.

- **Chapter 5 – Hazard Identification and Risk Management**

Chapter 5 is a revision of Chapter 3 (Hazard Identification and Risk Assessment) of the first edition of the Handbook, in which a structured and systematic approach to the identification of hazards, evaluation of risks, and prioritisation of decisions required to reduce potential risks to a tolerable level is illustrated. In this chapter, the risk assessment process and the management of the identified risks is explained, emphasising the pertinence of risk data, which should be captured and managed accurately for efficient control of hazards in the SAMI.

- **Chapter 6 – Roles and Responsibilities**

This new chapter outlines individual roles and responsibilities required within mining operations to support compliance with the MHSA. It details the hierarchy of responsibilities and highlights the specific roles of the mine managers, health and safety representatives (HSRs), and committees (HSCs) in promoting and maintaining health and safety across all mining operations.

- **Chapter 7 – Airborne Pollutants**

This revised version of Chapter 4 of the first edition of the Handbook presents a detailed overview of airborne pollutants commonly found in the mining environment. For each pollutant, its classification, associated risks, sources and occurrence, sampling and monitoring methods, legal exposure limits, and control measures are covered.

- **Chapter 8 – Occupational Lung Diseases**

Chapter 8 combines and revises Chapters 5 (Occupational Lung Diseases) and 6 (Tuberculosis and Associated Diseases) of the first edition of the Handbook. In this revised chapter, the diseases applicable to the SAMI under the Occupational Diseases in Mines and Works Act No. 78 of 1973 (ODMWA) and the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 (COIDA) are described, with an emphasis on clinical features and the association between the exposure and adverse health outcome. In addition, surveillance, monitoring, reporting, the legal framework for compensation, and prevention of the diseases are discussed.

- **Chapter 9 – HIV/AIDS and the Mines**

This is a new chapter discussing the impact of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) on other diseases such as tuberculosis (TB), sexually transmitted infections, and hypertension. HIV testing, counselling, prevention, anti-retroviral therapy, and ethical considerations are also addressed.

- **Chapter 10 – Noise and Vibration**

This revised version of Chapter 7 of the first edition of the Handbook provides guidance and references on best practices for controlling noise and vibration in the mining industry. It identifies and profiles specific hazards, outlines the extent of the problem, and discusses risk assessment, surveillance, monitoring, and management strategies, all within the applicable legal framework for each hazard.

- **Chapter 11 – Thermal Environment Management**

Chapter 11 is a revised version of Chapter 8 (Heat) of the first edition of the Handbook. It highlights the synergy between occupational medicine and occupational hygiene in managing thermal environments. The chapter explores the consequences of prolonged exposure to both heat and cold stress, with a particular focus on heat-related disorders. It also examines the origins of thermal stress and the criteria for determining work in hot conditions. In addition to outlining relevant legislation and Standards, the chapter provides guidance on risk assessment and thermal stress management strategies to strengthen OHS practices.

- **Chapter 12 – Health Effects of Chemical Hazards**

This revised version of Chapter 9 (Chemical Hazards) of the first edition of the Handbook addresses the health effects of exposure to chemical hazards in the mining industry. It presents a generic classification of chemical hazards commonly encountered, in both surface

and underground mining operations. The chapter also covers the monitoring of chemical exposures, alongside medical surveillance and case management, with reference to a range of chemical control strategies.

- **Chapter 13 – Health Effects of Radiation**

Chapter 13 is a revised version of Chapter 10 (Ionising Radiation) in the first edition of the Handbook focuses on the effects of ionising radiation. In this chapter, the nature and extent of exposures to natural sources of both ionising and non-ionising radiation in the mining industry are discussed, as well as the health effects of radiation, international principles of radiation protection, and the legal framework. Best practice radiation protection guidelines are provided, including monitoring of exposures, health surveillance, and engineering and administrative controls.

- **Chapter 14 – Ergonomics**

This revised version of Chapter 11 in the first edition of the Handbook provides an overview of ergonomics and underscores its importance in the mining industry. It highlights the need to identify ergonomics-related hazards during risk assessments, and emphasises the critical role properly designed equipment and workspaces play in promoting worker health and safety. Work-related musculoskeletal disorders, manual handling, equipment, workplace design, shift work, computer work environments, and risk assessments are addressed briefly. Guidance is provided on how to set up an ergonomics programme, including a checklist that will assist the reader to identify potential problem areas.

- **Chapter 15 – Occupational Skin Disorders**

Chapter 15 is a revision of Chapter 13 of the first edition of the Handbook. It discusses the local and international information on skin diseases in the mining industry, accompanied by the relevant legal framework, clinical approach, risk assessment, personal protective equipment (PPE), and rehabilitation and accommodation of workers with skin disorders. Impairment and disability, allergies, and hypersensitivity dermatitis contexts are also discussed in this chapter.

- **Chapter 16 – Fitness to Work, Disability, and Compensation**

This chapter is a revision of Chapter 13 of the first edition of the Handbook. It covers an approach to assessing fitness for work and assessing and managing work disability in employees. The concepts of ‘minimum standards of fitness to perform work at a mine’, ‘unfitness for work’, ‘fatigue management’, ‘employee wellness’, and ‘temporary and permanent incapacity’, as well as the principles of impairment and disability assessments, are clearly defined. In addition, a structured and staged approach to fitness certification is presented, as well as a stepwise approach to handling the unfit employee. The procedures for conducting medical benefit examinations and submitting occupational disease claims, according to the ODMWA and COIDA, are discussed.

- **Chapter 17 – Personal Protective Equipment**

This revised version of Chapter 15 in the first edition of the Handbook covers PPE for the

respiratory system, ears, eyes, face, skin, feet, and legs. The principles of equipment selection are discussed, including identifying hazards, measuring their concentration, understanding the use and limitations of specific PPE, ensuring adequate personal fit, undertaking the necessary maintenance, and making sure that employees are adequately trained in the use of the PPE in regular working environments, as well as for emergency conditions.

- **Chapter 18 – Women in Mining**

This new chapter responds to the growing representation of women in mining (WiM), driven by legislation promoting gender inclusivity across all levels of the sector. It explores specific legal provisions related to the employment of WiM and addresses key issues such as occupational hygiene, PPE, workplace security with a focus on sexual harassment, and the assessment of work capacity of WiM.

- **Chapter 19 – Illumination**

Illumination is a newly introduced chapter, developed in recognition of the importance of an optimal visual environment, which is essential for enhanced safety. This chapter illustrates how maintaining visual health supports a productive work environment. In the context of OHS, it explores how proper lighting improves hazard visibility, enables early hazard detection by expanding the field of vision, enhances task performance, and promotes visual comfort to reduce fatigue. The human health impacts, recommended control measures, and methods for measuring and evaluating illumination are discussed.

1.2 How to Use this Handbook

This Handbook is arranged topically, with the Table of Contents and Glossary of Terms and Definitions in the front, and the Index at the back to assist in navigating the book. Where applicable, footnotes are used to provide additional information.

References are listed at the end of each chapter of the book.

The target audience for this Handbook is all those who need to understand health and safety in the mining industry, and those who can influence and implement safety practices and procedures at mining operations. This includes:

- Employers, employees and contractors at all levels
- Occupational health and safety professionals
- Tripartite alliance members
- Health and safety committee members
- Academia
- Other stakeholders

1.3 Overview of the Mine Health and Safety Council

The MHSA was enacted following the 1995 report of the Leon Commission (11), which was established to investigate health and safety in the mines. The MHSA was developed through a tripartite consultation process, involving representatives of Government, employers, organised labour, and mining industry professional Associations. As a result of this inclusive drafting process, the MHSA enjoys substantial legitimacy among employers and workers in the SAMI.

The MHSC was established in 1996, under the MHSA, to advise the Minister in the Department of Mineral and Petroleum Resources (DMPR) on OHS legislation and research outcomes, focused on improving and promoting OHS in the SAMI (12). The MHSC was built on the achievements of decades of research and is funded by the mining industry. The MHSC comprises a tripartite board represented by the state, employers, and organised labour, under the leadership of the Chief Inspector of Mines (CIM). The MHSC is supported by public funds and is accountable to Parliament (12), and is the sponsor of this second edition of the Handbook.

To deliver on its mandate, the MHSC comprises these committees:

- Audit and Risk Committee
- Culture and Transformation Advisory Committee
- Human Resources and Remuneration Advisory Committee
- Mining Industry HIV/AIDS and TB Advisory Committee
- Mining Occupational Health Advisory Committee (MOHAC)
- Mining Regulation Advisory Committee
- Safety in Mines Research Advisory Committee (SIMRAC)

1.4 Milestones – Mine Health and Safety Council Tripartite Summits

As per the mandate of the MHSA, the MHSC must arrange and coordinate a tripartite summit, at least biennially, to review the state of health and safety in the SAMI. At these summits, new milestones are set for delivery over specific periods, after reviewing the performance of the milestones for the previous period.

The milestones set during the 2014 MHSC Tripartite Summit included elimination of fatalities, injuries, occupational diseases caused by respirable dust, noise-induced hearing loss, reduction and prevention of TB, HIV/AIDS, and implementing a cultural transformation framework (13). While targets were not met in 2024, significant strides were made to improve health and safety in the SAMI. At the 2024 MHSC Tripartite Summit, the milestones to be achieved by 2034 are presented in **Table 1.1**.

Table 1.1. MHSC Tripartite Summit – 2034 Milestones

Type of Milestone	Milestone	Objective
Health Milestones	Elimination of occupational lung diseases	Reduction of overexposure to respirable crystalline silica, and coal and platinum mine dust, and elimination of pneumoconiosis
	Elimination of noise-induced hearing loss	Elimination of noise-induced hearing loss, through quietening of equipment
	Prevention and reduction of TB and HIV	Prevention and reduction of TB and HIV/AIDS in the SAMI
	Mental health awareness in the SAMI	Promotion and support of mental health of employees in the SAMI
	Non-communicable diseases awareness in the SAMI	Prevention and management of non-communicable diseases in the SAMI
Safety Milestones	Elimination of fatalities	Elimination of mining fatalities
	Elimination of reportable accidents	Elimination of falls of ground reportable accidents, and transportation and mining, machinery and conveyance, and general types of accidents
	Elimination of fatalities and reportable accidents	Reviewing the effectiveness of the initiatives
Culture Transformation Milestones	Implement Culture Transformation Framework pillars	Lead the zero-harm talk by example Eliminate risks at their source and investigate root causes of accidents Prioritise Zero Harm, ahead of production Eliminate racism, genderism, and any form of discrimination Take a common approach to identifying and facilitating the adoption of leading OHS practices and research outcomes Adopt mechanisation and technology as a key method of eliminating health and safety risks to mine employees
Women in Mining Milestones	Safety and security of women in mining	Eliminate gender-based violence and femicide incidents in the SAMI
	Personal hygiene of women in mining	Ensure that all women in mining have clean, well-maintained ablution and hygiene facilities at all mines (underground and opencast) Ensure nursing mothers have lactating facilities at all mines

AIDS: acquired immunodeficiency syndrome, HIV: human immunodeficiency virus, OHS: occupational health and safety, SAMI: South African mining industry, TB: tuberculosis

Source: Adapted from the 2024 MHSC Tripartite Summit (14)

Some of the outcomes of the previous summits included implementation of the Centre of Excellence (CoE) (15), the Culture Transformation Framework (CTF) (16), and the Mining Industry Occupational Safety and Health (MOSH) (17), which are discussed in more detail below.

1.5 Centre of Excellence

The MHSC and its tripartite stakeholders launched the CoE at the OHS Summit in 2014. Stakeholders realised that the MHSC had previously conducted research in various OHS thematic areas, but that there were inadequate implementation and adoption of research outcomes by mining companies (15).

The primary aim of the CoE is to actively drive the achievement of the industry-wide goal of Zero Harm, propelled by the four-pronged mission below:

- To facilitate the elimination of exposure to OHS risks of mine employees and communities affected by mining activities, by conducting high-impact research that is widely adopted, and ensuring that relevant, high-quality health and safety testing and monitoring facilities are available, nationally
- To improve the utilisation and sustainability of the MHSC and national research assets and facilities
- To create the potential for job opportunities through local content and local manufacturing
- To promote the CoE within the mining industry as a knowledge hub for OHS

The CoE is designed on the principles presented in **Figure 1.1**.

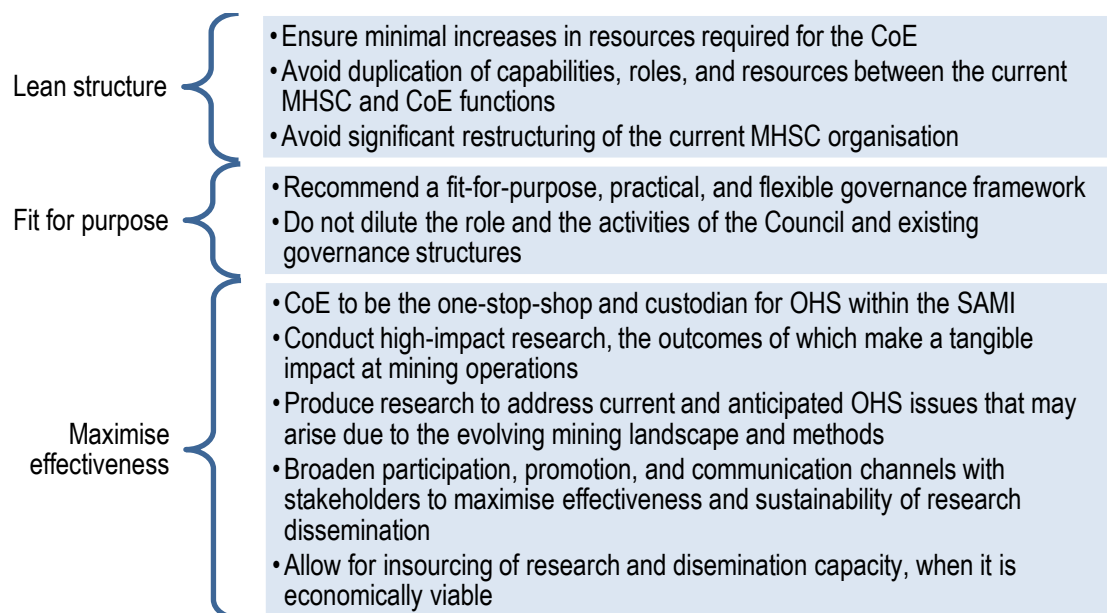


Figure 1.1. Centre of Excellence design principles

Source: Adapted from the MHSC (14)

The operationalisation of the CoE model involves two key components. The first focuses on expanding research capacity by identifying needs through broad stakeholder consultation,

addressing OHS challenges, and enhancing training and knowledge transfer to support the adoption of research outcomes. The second component is dedicated to training and upskilling mineworkers, in alignment with research findings and broader OHS priorities.

1.6 Culture Transformation Framework

Over the years, the MHSC has focused on improving workplace health and safety primarily through technical aspects in the design of systems and controls. However, research has shown that an organisation's culture has a significant impact on health and safety (18). The MHSC undertook the project 'Changing Minds, Changing Mines', aimed at developing a framework to guide the SAMI towards attaining zero harm in the sector (19). Subsequently, the Culture Transformation Framework (CTF) was launched in 2011, as a strategic response to persistent health and safety challenges in the SAMI. **Table 1.2** illustrates the eleven pillars of the CTF.

Table 1.2. The 11 pillars of the Culture Transformation Framework

Pillar No.	Pillar	Objective
Pillar 1	Integrated mining activities	Base mining activities on the recognition that health, safety, and production are not competing objectives. Safety and health are the outcomes of work well done.
Pillar 2	Risk management	Eliminate risks at their source and investigate the root causes of incidents.
Pillar 3	Technology	Adopt mechanisation and technology as a key method of eliminating health and safety risks to mine employees.
Pillar 4	Leading practice	Take a common approach to identifying and facilitating the adoption of leading OHS practices and research outcomes.
Pillar 5	Elimination of discrimination	Ensure there is no racism, genderism, and any form of unfair discrimination.
Pillar 6	Bonuses and performance incentives	Ensure that zero harm is prioritised, ahead of production.
Pillar 7	Tripartism	Ensure Government, labour, and employers regularly engage to pursue common objectives and goals for the mining industry
Pillar 8	Regulatory framework	Develop clear, concise, and understandable legislation that includes enforceable minimum standards.
Pillar 9	Inspectorate	Create an effective, well-resourced Inspectorate that can protect people at, and around, mines with integrity and job pride.
Pillar 10	Data	Establish a data system that allows effective and timely collection, capture, analysis, communication, dissemination, and use by the industry of mine health and safety information.
Pillar 11	Leadership	Lead by example in walking the Zero Harm talk.

Source: Adapted from the MHSC (16)

1.7 The Mining Industry Occupational Safety and Health and Learning Hub

The Mining Industry Occupational Safety and Health (MOSH) initiative was launched in June 2003 by the Chamber of Mines (now the Minerals Council South Africa, (MCSA)), in collaboration with Government and organised labour. This tripartite initiative aimed to identify pockets of excellence within the SAMI, demonstrate the effectiveness of those practices, and promote the adoption of leading practices to address health and safety concerns, thereby accelerating progress towards achieving Zero Harm objectives. The MOSH Learning Hub, established in 2009, further advanced this agenda by enhancing knowledge sharing, and intensifying efforts to embed the MOSH principles across the sector.

Leading practices were identified and adopted in each of these key areas:

- Falls of ground
- Transport and machinery (pertinent to the reduction of mine fatalities)
- Dust
- Noise
- Behaviour change

Adoption teams for each risk area continuously support mines in improving their reporting processes, by monitoring and evaluating portfolios of evidence, and by providing coaching during Community of Practice for Adoption (CoPA) meetings and peer-review site visits. The leading practices are detailed below:

1 Falls of ground

The leading practices identified and adopted to control falls of ground (FOGs) are those with the highest probability of reducing uncontrolled FOGs. The related leading practices include ledging planning, entry examination and making safe (EEMS), trigger action response programme (TARP), entry examination and making-safe procedures, nets with bolts, improved underground workforce visibility, and permanent workplace mesh area support.

• Transport and machinery

The main objectives of this focus area were to find people-centered leading practices that have the highest potential for reducing transport and machinery accidents, and to facilitate their adoption through modern technologies and innovative ways of working. The MOSH Transport and machinery team are focused on the following agencies: trackless mobile machinery (TMM), scraper winches, railbound equipment (RBE), conveyors and electricity. One of the leading practices is the traffic management leading practice for opencast/pit operations (TMLP), which is aimed to guide the SAMI to eliminate or significantly reduce the risk of accidents and fatalities involving trackless mobile machinery (TMM) on their surface operations. The MOSH Transport and machinery team have also published the MOSH Traffic Management Technical Guide for Underground (UG) Trackless Operations which is aimed to support the elimination or significant reduction of TMM related incidents, particularly collisions involving pedestrians and other vehicles in underground mining environments.

Lastly the MOSH Transport and machinery team have spearheaded the special project on the industry alignment on the TMM regulations. This project was aimed at assisting the

industry in taking a holistic, risk-phased approach to managing the risk of TMM collision on surface and underground. This initiative has resulted in the publication of the MOSH CPS Guideline which can be found on <https://www.mosh.co.za/transport-and-machinery/documents>.

- **Dust**

The MOSH dust team identified leading practices with the greatest potential for reducing diseases related to airborne pollutants, and to improve occupational health through a people-oriented process. These leading practices include airborne dust real-time continuous monitoring engineering controls, aimed at reducing exposure to dust during cutting operations, in-stope atomisation for dust suppression, conveyor belt automated transfer point fogging suppressant systems, fogger/mist-spray systems, footwall/sidewall treatment, multi-stage filtration systems, and winch covers.

- **Noise**

One initiative adopted by the MOSH noise team was continued facilitation of the Industry-wide Buy and Maintain Quiet Initiative (IBMQI). This is a noise-source elimination initiative for managing noise hazards at the machine design phase, using the collective demand from the industry to motivate original equipment manufacturers (OEMs) and suppliers to focus on noise reduction, as part of their product development. The initiative acknowledges that individual mining companies have established Buy Quiet Policies, albeit with limited success. Other leading practices include hearing protection device training, awareness, and selection tools, as well as tyre deflation noise reduction.

- **Behavioural change**

This leading practice focuses on influencing individual worker behaviour by shaping how decisions are made during operational tasks, using behaviour-based methods. Key components include ongoing leadership assessment and development, structured change management, and the promotion of a socio-technical² systems approach to health and safety.

² Socio-technical means designing work environments that balance:

- Social components: people, roles, culture, communication, behaviour
- Technical components: machinery, tools, procedures, software, work processes

1.8 References

1. Cowling N. Mining sector's value added to GDP in South Africa 2016-2023. Statista. [Online] June 25, 2024. [Cited: March 8, 2025.] <https://www.statista.com/statistics/1121214/mining-sectors-value-added-to-gdp-in-south-africa/>.
2. Statistica Research Department. South Africa's mining industry employment by commodity 2023. Statista. [Online] June 21, 2024. [Cited: March 8, 2025.] <https://www.statista.com/statistics/241420/south-african-mining-key-facts/>.
3. South Africa. Mine Health and Safety Act No. 29 of 1996. Government Printers, Pretoria.
4. Burton J. WHO healthy workplace framework and model: background and supporting literature and practices. In WHO healthy workplace framework and model: background and supporting literature and practices. 2010.
5. Ales E. ILO Convention 187 Promoting Framework for Occupational Safety, and Health Convention, 2006 (No. 187). In International and European Labour Law (pp. 1437-1454). Baden-Baden, Germany. Nomos Verlagsgesellschaft MBH & Co. KG., 2018.
6. International Labour Organisation. C176 Safety and Health in Mines Convention, 1995. Geneva ILO, 1995.
7. Wilson DJ, Takahashi K, Smith DR, Yoshino M, Tanaka C, Takala J. Recent trends in ILO conventions related to occupational safety and health. International Journal of Occupational Safety and Ergonomics, 2006, Vol. 12.
8. United Nations. Sustainable Development Goals. United Nations. [Online] Department of Economic and Social Affairs. [Cited: March 10, 2025.] <https://sdgs.un.org/goals>.
9. ICMM. Health and Safety. ICMM. [Online] ICMM. [Cited: March 10, 2025.] <https://www.icmm.com/en-gb/our-work/health-and-safety>.
10. Guild R, Ehrlich RI, Johnston JR & Ross MH. A Handbook on Occupational Health Practice in the South African Mining Industry. Johannesburg: The Safety in Mines Research Advisory Committee, 2001. ISBD 1-919853-02-2.
11. Lewis P, Jeebhay M. The Mines Health and Safety Bill 1996-a new era for health and safety in the mining industry. Indus. LJ., 1996. Vol. 17.
12. Mine Health and Safety Council. About the MHSC. Mine Health and Safety Council. [Online] 2021. [Cited: March 5, 2025.] <http://www.mhsc.org.za/>.
13. Mamphitha D. 2014 MHS Summit Milestones Reflection. Mine Health and Safety Council. [Online] October 16, 2024. [Cited: March 6, 2025.] <https://mhsc.org.za/wp-content/uploads/2024/10/11.-2024-MHS-Summit-Milestone-Performance-Presentation-16-Oct2024.pdf>.
14. Balfour T. New Mine Health and Safety Milestones for adoption beyond 2024. Mine Health and Safety Council. [Online] October 16, 2024. [Cited: March 5, 2025.] <https://www.mineralscouncil.org.za/component/jdownloads/?task=download.send&id=2342&catid=7&m=0>.
15. Lungu P, Mushi B, Khoza N, Zungu M, Moyo D, Chilaisha P, Mvula Z, Ngosa K. Report on the evaluation of the Regional Centre of Excellence in Occupational Health and Safety. Occupational Health Southern Africa, 2024. Vol. 30. PP. 47-53.
16. Mine Health and Safety Council. Culture Transformation Framework (CTF). Johannesburg: Mine Health and Safety Council, 2012.
17. MOSH. Mining Industry Occupational Safety & Health. Mining Industry Occupational Safety & Health. [Online] MOSH, 2025. [Cited: March 10, 2025.] <http://www.mosh.co.za>.
18. Shannon HS, Mayr J, Haines T. Overview of the relationship between organisational and workplace factors and injury rates. Safety Science, 1997, Vol. 26.
19. Shaw A, Schutte S, Cox S, Blewett V, Milanzi L, Moraba T, Formanowicz A, Mokoena A. Changing Minds, Changing Mines. Johannesburg: Mine Health and Safety Council, 2010.