



EAST, CENTRAL AND SOUTHERN AFRICA HEALTH COMMUNITY

Generic Mine Health Safety Standard Operating Procedures



**For control of Silica dust, TB, HIV, Silicosis
and other Occupational Lung Diseases in the
Mining Sector in Southern Africa**

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Lastly, we express our sincere appreciation to the Global Funds supported TIMS Project phase III for their generous support and funding, which made production of these Generic MHS SOPs possible.

Foreword

It is with great pleasure that I introduce the four Generic Mine Health and Safety Standard Operating Procedures for control of silica dust exposure, TB, HIV and other occupational lung diseases developed by the East, Central and Southern Africa Health Community (ECSA-HC) through the Global Funds supported Tuberculosis in the Mining Sector (TIMS) Project, Phase III. This project has made a significant contribution to addressing the pressing challenges faced by mineworkers and ex-mineworkers in southern Africa, who bear a high burden of tuberculosis (TB), HIV, silicosis, and other Occupational Lung Diseases.

The mining sector plays a crucial role in the economic development of our region. However, the health and safety of the men and women who toil beneath the earth's surface should always remain a top priority. The ECSA-HC recognizes that an effective and coordinated approach is required to tackle the complex health issues plaguing this industry. This includes implementing interventions for elimination and control of exposure to silica dust, TB, HIV, Silicosis and Occupational Lung Diseases.

The development of these four Generic Mine Health and Safety SOPs marks a significant milestone in our collective efforts to protect the well-being of mineworkers. By consolidating the expertise and experiences gained from the previous project phases, ECSA-HC, in collaboration with the Global Funds, has created a comprehensive set of guidelines to address the existing gaps and challenges in mine health and safety management in the region.

One of the key obstacles hindering progress in this area is the weak and fragmented legal framework on mine health and safety in southern African countries. These SOPs aims to provide a standardized and practical approach to overcome this challenge, by offering a framework for risk management, quality management, information dissemination, and monitoring and evaluation. By adopting and implementing these SOPs, mining stakeholders can enhance the protection of their workforce, promote safer working environments, and ensure compliance with regulatory requirements.

ECSA-HC would like to express deepest gratitude to all the individuals and organizations who have contributed their expertise, time, and resources to the development of these

SOPs. Special thanks go to the ECSA-HC and the Global Funds for their unwavering commitment to improving mine health and safety standards in the region. This collaborative effort demonstrates the power of partnership and the shared responsibility we have in safeguarding the lives and well-being of our mining communities.

ECSA-HC would like encourage all stakeholders, including governments, mining companies, labor unions, civil society organizations, and development partners, to actively engage in the implementation of these Generic Mine Health and Safety SOPs. By working together, we can create a future where mineworkers can perform their vital roles in a healthy and safe environment, free from the burden of preventable occupational lung diseases.



Professor Yoswa Dambisya

Director General

East, Central and Southern Africa Health Community (ECSA-HC)

Abbreviations and acronyms

AIDS:	Acquired Immunodeficiency Syndrome
ASMs:	Artisanal and Small Scale Miners
AU:	African Union Agenda
AUDA-NEPAD:	African Union Development Agency – New Partnership for African Development
BSC:	Balanced Scorecard
COP:	Code of Practice
DRC:	Democratic Republic of Congo
DRC:	Democratic Republic of Congo
ECSA HC:	East Central and Southern Africa Health Community
EJF:	Essential Job Functions
FFP:	Filtering Face Piece
GPES:	Global Program for the Elimination of Silicosis
HEGS:	Homogenous Exposure Groups
HIRA:	Hazard Identification and Risk Assessment
HIV:	Human Immunodeficiency Virus
HRA:	Health Risk Assessment
IEC:	Information, Education and Communication
ILO:	International Labor Organization
ISO:	International Standards Organization
M & E:	Monitoring and Evaluation
MHS:	Mine Health and Safety
N/A:	Not Applicable
OEL:	Occupational Exposure Limit
OH:	Occupational Health
OHS:	Occupational Health and Safety
OLDs:	Occupational Lung Diseases
OM:	Occupational Medicine
OREPs:	Occupational Risk Exposure Profiles
OSH:	Occupational Safety and Health

OSHMS:	Occupational Safety and Health Management System
PDCA:	Plan Do Check and Analyze
QA:	Quality Assurance
QC:	Quality Control
QI:	Quality Improvement
QIP:	Quality Improvement Program
QMP:	Quality Management Plan
QP:	Quality Planning
RBME:	Risk Based Medical Examinations
RBMS:	Risk Based Medical Surveillance
RM:	Risk management
SADC:	Southern African Development Community
SADC:	Southern African Development Community
SADCAS:	Southern African Development Community Accreditation System
SATBHSS:	Southern Africa Tuberculosis Health Systems Support
SEGs:	Similar Exposure Groups
SiO₂:	Silicon Dioxide
SMART:	Specific, Measurable, Achievable, Realistic and Time bound
SOP:	Standard Operating Procedure
SOP:	Standard Operating Procedure
TB	Tuberculosis
TB:	Tuberculosis
TBA:	To Be Announced
TWA:	Time Weighted Average
WHO:	World Health Organization

Glossary

Code of Practice: This refers to a guidance document of medical examination standards that should be used for determining fitness for duty.

Communication: The process by which information is transmitted and understood between two or more people.

Deming Cycle: It is a continuous quality improvement program that consists of four stages, namely; Plan Do Check and Act.

Evaluation: It is a process that systematically and objectively assesses all the elements of a program (e.g. design, implementation and results achieved) to determine its overall worth or significance.

Hazard Identification: It is the process of identifying all sources of harm in a work place.

Hazard: This refers to any condition or situation with a potential to cause harm.

Hierarchy of Controls: refers to feasible and effective control solutions for identified occupational hazards and their associated risks.

Impairment: Refers to a deviation in physiological function, psychological function, or anatomical structure of the body.

Media richness: The data carrying capacity of a communication medium including the volume and variety of information it can transmit.

Medical Surveillance: This is a continuous, systematic collection, analysis and interpretation of health-related data. It is a program of medical examinations and tests designed to detect and monitor potential health effects from exposure to hazardous substances or hazardous environments in workplaces to enable early detection and treatment or other steps to protect the health of employees.

Monitoring and Evaluation: It is the continuous and systematic assessment of project implementation based on targets set and activities planned during the planning phases of the work and the use of inputs, infrastructure, and services by project beneficiaries.

Monitoring: It is a continuous process of collecting and analyzing information about a program, and comparing actual against planned results in order to judge how well the intervention is being implemented(1)

Occupational Disease: It is any disease that arises as a result of exposure to work related risk factors in the course of one's employment.

Occupational Health: It is the promotion and maintenance of the highest level of physical, mental and social well-being of workers in all occupations.

Occupational Hygiene: It is the discipline of anticipating, recognizing, evaluating and controlling health hazards in the working environment with the objective of protecting workers' health and well-being and safeguarding the community at large.

Occupational Risk Exposure Profile: It is listing of workplace health and safety risks by priority levels.

Occupational Risk Exposure Profiling: Refers to the process of documenting risks for each and every occupation at a work place.

Quality Assurance: It is a process of steadily improving the activities and processes undertaken to achieve quality.

Quality Control: It is the process where each deliverable is measured and tested to determine if it conforms to the quality standards.

Quality Management System: It is a formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives. It helps coordinate and direct an organization's activities to meet customer and regulatory requirements and improve its effectiveness and efficiency on a continuous basis(2).

Quality: The degree to which a set of inherent characteristics fulfill requirements(1).

Risk Assessment: It is the processing of estimating the level of risk by assessing the likelihood or probability of a harm occurring and its associated consequences.

Risk: Refers to the likelihood of a hazard to cause harm.

Silicosis: It is an irreversible and permanent lung disease resulting from inhalation of silica-containing dust.

Similar Exposure Group: A group of workers performing similar tasks/activities for the same period, in similar work shifts, in the same workplace and exposed to similar risk agents.

Similar Exposure Groups: Refers to a group of employees with similar occupational exposures to hazards

Tripartite plus: It refers to situations where the traditional tripartite partners choose to open up the dialogue and engage with other civil society groups, to gain a wider perspective and consensus on issues in and beyond the world of work.

Executive Summary

These generic Standard Operating Procedures have been designed to address the high burden of tuberculosis (TB), silicosis, HIV, and other occupational lung diseases in the mining sector in southern Africa. They have been categorized into four parts which include the following:

1. Part I – Generic MHS SOP on Risk Management for Silica Dust Exposure, TB, Silicosis, HIV, and Other Occupational Lung Diseases: This SOP aims to outline guidelines and procedures for effectively managing the risks associated with silica dust exposure, TB, HIV and the related health hazards. It includes measures such as regular monitoring and assessment of silica dust levels, implementation of engineering controls and personal protective equipment, employee training on risk mitigation, and the establishment of a medical surveillance program for early detection and intervention.
2. Part II – Generic MHS SOP on Quality Management of Mine Health and Safety Systems: This SOP focuses on establishing robust quality management systems for mine health and safety, with specific emphasis on controlling silica dust, TB, HIV, silicosis, and other occupational lung diseases. It outlines procedures for the development and implementation of comprehensive health and safety policies, effective risk assessments, regular inspections and audits, incident reporting and investigation, corrective actions, and continuous improvement.
3. Part III- Generic MHS SOP on Information, Education, and Communication (IEC) on Silica dust exposure, TB, HIV, Silicosis, and other OLDs Silica: The IEC SOP addresses the critical need for disseminating accurate and relevant information on TB, HIV, silicosis, and dust exposure to mineworkers, ex-mineworkers, families and their communities. It provides guidelines for developing educational materials, conducting training sessions, raising awareness about the risks and preventive measures, promoting health-seeking behaviors, and fostering a culture of occupational health and safety among workers.
4. Part IV- Generic MHS SOP on Monitoring and Evaluation of Mine Health and Safety Systems: The SOP on monitoring and evaluation establishes a framework for

assessing the effectiveness and efficiency of mine health and safety systems in controlling TB, HIV, silicosis, and occupational lung diseases. It outlines procedures for data collection, analysis, and reporting, as well as regular reviews and audits to identify gaps, measure progress, and facilitate evidence-based decision-making for continual improvement.

These SOPs are essential tools for mining sector stakeholders in southern Africa to address the significant burden of TB, silicosis, HIV, and other occupational lung diseases. By implementing them, countries and enterprises can improve the protection of workers' health, enhance operational efficiencies, ensure compliance with regulatory requirements, and contribute to sustainable and responsible mining practices. These SOPs applies to ministries responsible for MHS and mining organizations including Artisanal and Small Scale Mining. Countries and enterprises can adopt and adapt specific operational and technical aspects of the SOPs for their internal purposes.

Background

Mining is regarded as one of the most hazardous working environments that is characterized by a multiplicity of occupational hazards. Consequently, the burden of occupational injuries and diseases is very high in these occupational settings. Tuberculosis, HIV, Silicosis and other Occupational lung diseases are some of the top occupational diseases that affects mineworkers and ex-mineworkers. In 2021, the whole African region contributed 24% of the global cases of TB and nine countries in southern Africa were among 30 high burden countries(1). The mining sector particularly contributes a significant proportion of TB cases due to several TB risk factors mineworkers are exposed to such as high prevalence of HIV, poorly ventilated work environments, congregate settings and exposure to silica dust. Mineworkers exposed to silica dust and those with silicosis have a three to four-fold risk of developing TB while HIV in the so exposed mineworkers increases the risk of TB infection to at least fifteen fold (2–4).

Reduction and elimination of TB in the mining sector requires countries to set up robust systems for occupational health and safety programs specifically focusing on Silica dust exposure, TB, HIV, Silicosis and other Occupational Lung Diseases. The World Health Organization (WHO) Global Program for the Elimination of Silicosis (GPES) provides a strategic and systematic approach to eliminating silicosis a major risk factor of TB infection.

A critical review of Mine Health and Safety (MHS) regulations and standard operating procedures (SOPs) carried out across nine countries; Angola, Botswana, DRC, Mozambique, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe revealed that the legal frameworks were fragmented and inadequate in all these countries. It further showed lack of frameworks for primary, secondary and tertiary preventive interventions for the control of Silica dust exposure, TB, HIV, Silicosis and other Occupational Lung Diseases in the mining sector.

The current state of MHS legal frameworks are not in tandem and not in sync with the SADC mining Ministers' approved framework of Harmonization of Mining Policies, Standards, Legislative and Regulatory Framework in Southern Africa and a Harmonization Implementation Plan that was adopted in 2009(6).

In recognizing and responding to this challenge, ECSA-HC through the Global Funds supported Tuberculosis in the Mining Sector (TIMS) Project Phase III, designed and developed four Generic Mine Health and Safety Standard Operating Procedures for the control of Silica dust exposure, TB, HIV, Silicosis and other Occupational Lung Diseases in the mining sector to be adopted and adapted in the SADC region. These SOPs include the following:

1. Part I – Generic MHS SOP on Risk Management, Early Detection and Surveillance for Tuberculosis, HIV, Silicosis and other Occupational Lung Diseases in the mining sector
2. Part II – Generic MHS SOP on Quality Management of MHS programs for prevention of Tuberculosis, HIV, Silicosis and other Occupational Lung Diseases in the mining sector
3. Part III – Generic MHS SOP on Information, Education and Communication on Tuberculosis, HIV and Occupational Lung Diseases in the mining sector
4. Part IV – Generic MHS SOP on Monitoring and Evaluation of MHS and Occupational Health and Safety programs in the mining sector.

Each of these four Generic MHS SOPs comprehensively addresses different key dimensions of MHS systems and programs aimed at contributing to elimination and control of Silica dust exposure, TB, HIV, Silicosis and other Occupational Lung Diseases in the mining setting.

Purpose of Generic MHS SOPs

The main purpose of these Generic Mine Health and Safety Standard Operating Procedures is to provide guidelines and procedures for ensuring the health and safety of mineworkers in order to contribute to the elimination and control of Silica dust, TB, HIV, Silicosis and other Occupational Lung Diseases in the mining sector in southern Africa. Though not the intended purpose, this SOP instinctively helps countries and mining firms to comply with key MHS international and SADC legal frameworks, minimum standards and best practice.

Scope

These Generic MHS SOPs systematically provide practical guidance at both national and enterprise levels on how to effectively establish, implement, and monitor and evaluate primary, secondary and tertiary occupational health and safety preventive interventions for control of Silica dust, TB, HIV, Silicosis and other Occupational Lung Diseases in the mining sector. Additionally, they provide guidance on how to develop and implement quality improvement systems for Mine Health and Safety. These SOPs applies to ministries responsible for MHS and mining organizations including Artisanal and Small Scale Mining. Countries and enterprises can adopt and adapt specific operational and technical aspects of the SOPs for their internal purposes.

PART I

Generic Mine Health and Safety Standard Operating Procedures

on

**Risk Management, Early Detection and Surveillance for Tuberculosis, HIV and
Occupational Lung Diseases in Mining**

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1. Introduction

This Generic MHS SOP provides guidance on establishing and implementing OHS and MHS systems and programs for the prevention and control of Silica dust exposure, TB, HIV, Silicosis, and other OLDs in the mining sector in Southern Africa. It provides step-by-step guidance on how to establish and effectively implement primary, secondary and tertiary preventive strategies in MHS programs.

2. Purpose and Scope of Application

The purpose of this SOP is to define the authority, roles, and procedures for countries and mining firms to use when establishing and implementing Silica dust, TB, HIV and other OLDs prevention programs and systems. This SOP provides general operational guidelines for the prevention, early detection, medical surveillance, rehabilitation, palliative care among others for Silica dust, TB, HIV, Silicosis and other OLDs in the mining context. The SOP applies to government ministries responsible for MHS and mining organizations including both formal and informal mining in Southern Africa. Countries can adopt and adapt specific operational and technical aspects of this SOP for their internal purposes.

3. Objectives

The objectives of this SOP are to:

- 3.1 Provide guidance in conducting HIRA in occupational settings for the prevention and control of Silica dust exposure, TB, HIV, Silicosis and other OLDs.
- 3.2 Describe the key occupational health surveillance principles for Silica dust exposure, TB, HIV, Silicosis and other OLDs in mining environments.
- 3.3 Provide guidance on the implementation of tertiary preventive interventions for Silica dust, TB, HIV, Silicosis and other OLDs in mining environments.

4. Procedure

4.1 National Context of MHS

At national policy levels, countries should develop legislation and national policies that specifically focus on and include the reduction and elimination of Silica dust exposure,

TB, HIV, Silicosis and other OLDs in occupational settings such as mining. In doing so, countries should be guided by:

- 4.1.1 An obligation to respect and promote the fundamental principles and rights at work which among other key issues are a healthy and safe working environments in occupational settings including mining.
- 4.1.2 The provisions and guidance of ILO Conventions 155 on OSH, 161 on Occupational Health Services, 176 on Mine Health and Safety and 187 the Promotional Framework on OSH.
- 4.1.3 Ratification of the ILO Conventions on health and safety and the corresponding ILO Regulations 171 on Occupational Health Services and ILO Convention 164 on Occupational Safety and Health.
- 4.1.4 Commitment of adequate resources and support to Occupational Health and Safety in mining. A programmatic approach to manage key occupational hazards associated with TB, HIV infection and reduction/elimination of silica dust exposures.

4.2 Consultative Arrangements

In all matters of occupational health and safety, consultative arrangements between workers, Workers Unions and employers is pivotal for program success. Countries should put in place mechanisms to ensure that:

- 4.2.1 Consultative arrangements for engaging and collaborating with workers and employers on matters of TB, HIV and OLDs prevention and elimination in mining among other fundamental OSH issues.
- 4.2.2 The ILO declaration on Fundamental Principles and Rights at Work is enforced across all workplaces and a negotiated settlement within the tripartite-plus.
- 4.2.3 Health and safety steering committees are established across the mining industry that should, among other functions, promote access, quality improvement and monitoring and evaluation of TB, HIV and OLDs services at workplaces.

4.2.4 Health and safety representatives are appointed and their duties should include, among other functions, dealing with matters of TB, HIV and OLDs services affecting employees.

4.2.5 Policies and procedures on matters of health and safety are agreed and signed off by both employers, employees and workers' representatives.

4.3 Surveillance of the Work Environment: Primary Prevention

On-going surveillance of the work environment in mining is critical for primary prevention of TB, HIV and OLDs. Countries should develop systems across mining areas to reduce and eliminate the risk of TB and/or HIV infection and the prevalent risk factor of silica dust exposure and silicosis. In doing so, countries should focus on key good practice standards of occupational health and safety in mining as stated below.

4.3.1 Hazard Identification

Hazard identification is a critical step in reducing and eliminating TB, HIV and OLDs in mines. This entails that all workplaces with risks of TB, HIV infection and silica dust exposures should be identified and assessed for the levels of risks. This should consider prevention of harmful dust exposures and defining and adopting the occupational exposure limit of silica dust of 0.05mg/m³. MHS systems should be designed to identify occupational hazards that can lead to the spread and transmission of TB, HIV and OLDs through considering the following:

4.3.1.1 Identification of all workplace activities and processes with potential exposure to silica dust exposures above 0.05mg/m³.

4.3.1.2 Developing methods for enumerating occupational hazards such as workplace walk through surveys, worker consultations and expert consultations.

4.3.1.3 Evaluating all work processes and activities with associated exposure to:

4.3.1.3.1 Ergonomic hazards. This refers to work design and layout that could lead to increased exposure to TB from infected persons at workplaces. This also refers to the organization and layout of work with respect to silica dust exposures.

4.3.1.3.2 Chemical hazards. This refers to exposure levels for silicon dioxide.

4.3.1.3.3 Biological hazards: All workplace areas should be evaluated for all possible sources of TB such as infected workers and those workers with a high

vulnerability to TB by virtue of their medical statuses such as immune-compromised workers or those with chronic debilitating illnesses.

- 4.3.1.4 Conducting a baseline HIRA for all workplaces in mining to enumerate all TB and OLDs hazards and develop risk profiles.
- 4.3.1.5 Issue based HIRA should be conducted for all work processes, tasks and activities with a potential for TB, HIV infection and development of OLDs. Such HIRA should have accompanying hierarchical controls in all mine settings.
- 4.3.1.6 Continuous hazard identification and risk assessment should be conducted for possible TB and OLDs risks due to poor ergonomics such as overcrowded workstations, high silica dust exposures, poorly ventilated work areas and workers infected with TB or have higher risk to TB and HIV infection.

4.3.2 Occupational Hygiene

The mining industry should adopt best practice OEL for crystalline silica dust of 0.05mg/m³ TWA. Occupational hygiene programs in mines should undertake mandatory industrial hygiene risk assessments that include the following:

- 4.3.2.1 Hazard identification for silica content quantification in rock formation including dust sampling and analysis methods and equipment.
- 4.3.2.2 Hazard quantification in breathing air of silica content in dust emissions from different operations including sampling and analysis methods and equipment.
- 4.3.2.3 Establishment of exposure risk profiles for Homogeneous Exposure Groups/ Similar Exposure Groups (HEGs/SEGs.).
- 4.3.2.4 Development of risk mitigation and exposure monitoring plans including dust sampling strategies and measuring equipment to be used.

4.3.3 Risk Assessment

Risk assessment is key in developing risk exposure profiles and risk control mechanisms in mining areas focused on silica dust, TB and HIV reduction and elimination. In developing risk assessment frameworks in mines, the following guidelines should be observed:

- 4.3.3.1 Designing of risk assessment matrices that are based on the frequency and duration of exposure and the associated consequences.

4.3.3.2 Figure 1 below illustrates a simple example of a Risk Assessment Matrix that can be improved and customized by each mining institution.

4.3.3.3 All identified processes, workplace activities and tasks with potential exposure to crystalline silica and/or TB and HIV should be assessed using the specific Risk Assessment matrix to establish occupational risk exposure profiles/ levels.

4.3.3.4 Organizational Risk Profiles should be developed from all the assessed risks and mining workplaces categorized into different HEGs/SEGs.

4.3.3.5 Conducting risk assessments should be led by a competent professional and should be multidisciplinary and involve mine workers.

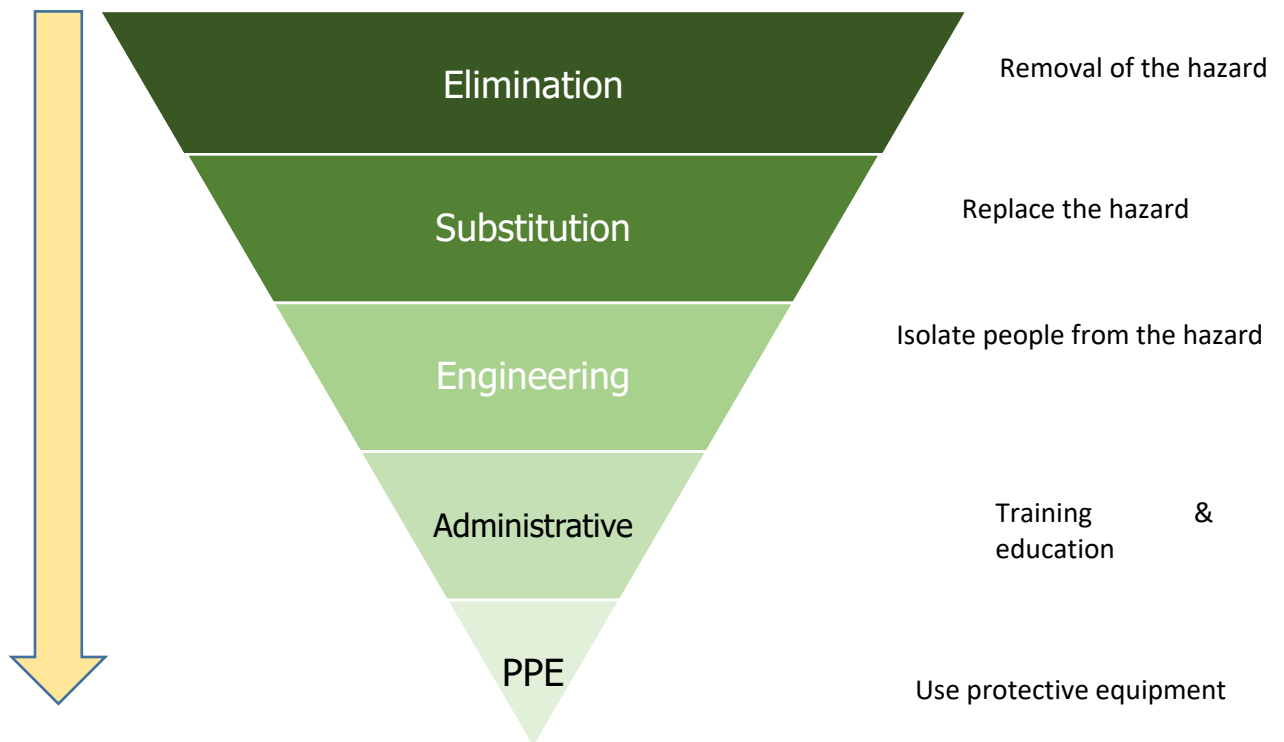
Figure 1. Example of a Risk Ranking Matrix

PROBABILITY	IMPACT					
		Insignificant	Minor	Significant	Major	Severe
	Very likely	Medium	High	High	Very High	Very High
	Likely	Medium	Medium	High	Very High	Very High
	Unlikely	Low	Medium	Medium	High	High
	Very unlikely	Low	Low	Medium	Medium	Medium

4.3.4 Risk Control

Risk control of all identified hazards and assessed risks as defined by the Occupational Risk Exposure Profiles (OREPs) and HEGs/SEGs is key in reducing and eliminating risks associated with crystalline silica and TB in mining. The mining industry should adopt risk control strategies that are based on the Hierarchy of Controls. Figure 2 below shows the hierarchy of controls starting at the top with Elimination being the most effective control measure to the bottom with Personal Protective Equipment (PPE) being the least effective control strategy.

Figure 2: Hierarchy of Controls



4.3.4.1 Elimination

Elimination is the most effective preventive strategy and where practicable, all risks associated with silica and TB exposures must be eliminated. Key considerations for the elimination of dust exposures should consider the following:

- 4.3.4.1.1 Adoption of key dust suppression methods using water, airborne dust dilution and capture at source with dust extraction methods.
- 4.3.4.1.2 Provisions for adequate main ventilation systems performance; exhaust air ventilation systems and air filtration systems.
- 4.3.4.1.3 There should be adequate auxiliary ventilation and maintenance systems.
- 4.3.4.1.4 Removal of workers from dust laden areas.
- 4.3.4.1.5 Removal of workers with potential to spread TB to other workers.

4.3.4.1.6 Improve ergonomic designs to reduce exposure to dust and TB infection spread from infected workers.

4.3.4.1.7 Elimination of TB risks must include the removal of infectious workers who have contracted TB.

4.3.4.2 Substitution

Where practicably possible, substitution of work processes and activities that generate high silica dust levels with less hazardous ones should be considered.

4.3.4.3 Engineering Controls

This entails placing barriers between workers and the dust laden areas to reduce exposures. Workplaces should conduct an inventory of the workplace and identify dust laden areas where barriers can be placed to reduce silica dust exposures to workers.

4.3.4.4 Administrative controls

Administrative controls entail changing the way people work. This includes education and training to increase awareness of workplace hazards and preventive strategies. It is therefore important for mines to focus on raising awareness on:

4.3.4.4.1 The health effects of silica dust exposures.

4.3.4.4.2 Information on silicosis, TB, HIV and OLDs.

4.3.4.4.3 Preventive strategies for reducing TB, HIV and silica dust exposures.

4.3.4.4.4 Importance of occupational hygiene and HIRA.

4.3.4.4.5 Role and importance of medical surveillance, occupational hygiene evaluations and equipment use and techniques for the responsible persons.

4.3.4.5 PPE

PPE is the least effective preventive strategy in the hierarchy of controls. Reduction of silica dust exposures should include provision and specification of PPE in high risk areas. Key considerations should be on the use of respirators and face masks. The use of N95 or FFP3 filtering face piece

should be considered where silica dust levels are less than ten times the dust limits.

4.4 Surveillance of Workers: Early Detection of OLDs, TB and HIV and Medical Surveillance

Occupational health surveillance of workers in mining for OLDs, TB and HIV is critical in the early detection and management of cases to prevent further infection of other workers or development of silicosis. A national program of workers' surveillance should make specific reference to TB, HIV and OLDs among other key provisions. Surveillance of workers in mines should be conducted at Pre-placement, Periodic, Out of Cycle, Exit and Post Employment and should be risk based incorporating TB, HIV and OLDs.

4.4.1 Risk Based Medical Surveillance

It is important that TB, HIV and OLDs surveillance is risk based. This should be developed along the lines of the OREPs and SEGs/HEGs. Screening for TB, HIV and OLDs should focus on all risk categories as identified in the HIRA process. The frequency of screening, scope and detail of examination should be premised on the OREPs to ensure cost effectiveness of resources and adherence to best practice.

4.4.2 Implementing health screening systems and programs for identification of vulnerable workers such as those with existing medical conditions or are immunosuppressed.

4.4.3 TB and HIV Screening

TB and HIV screening at workplaces should be integrated into occupational health services program in the mining organizations. The scope, frequency and all related technical details should be guided by the National TB and HIV Policies. Access to treatment and follow-up should be guided by the national referral systems.

4.4.4 Pre-Placement Medical Examinations

At pre-placement, all workers should undergo a routine medical examination that is based on the following principles:

- 4.4.4.1 Medical evaluations should include a comprehensive screening for TB, HIV and OLDs among other issues as determined by the OREPs and Essential Job Functions (EJFs).
- 4.4.4.2 Such screening for TB and HIV should be in line with the National TB and HIV Program protocols.
- 4.4.4.3 All workers, except those with contraindications should undergo a chest x- ray to screen for OLDs and TB.
- 4.4.4.4 Workers diagnosed with TB or OLDs at pre-placement medical evaluation should be managed appropriately to prevent spread of infection to other workers.
- 4.4.4.5 Workers diagnosed with silicosis should be started on TB preventive therapy as per the national TB guidelines.
- 4.4.4.6 Fitness for duty for all workers diagnosed with TB or OLDs should be guided by the medical surveillance standard guidelines.

4.4.5 Periodic Medical Surveillance

Periodic medical evaluations involve conducting medical examinations on miners at defined intervals to exclude any occupational and other diseases that could have been acquired during the course of employment. These evaluations are also important in the early detection of other non-occupational medical conditions that can affect the safe performance of work. In this regard:

- 4.4.5.1 All miners should undergo periodic TB screening with the frequency of such screening based on their risk profiles and the National TB program guidelines.

4.4.6 Out of Cycle Medical Examinations

- 4.4.6.1 Non-routine or out of cycle occupational health assessments shall be required anytime when a public health concern has been identified by the mine or by the affected miners.
- 4.4.6.2 Such public health concerns might include active transmission of TB or contact with infected persons, identified within a work process or a case of OLDs.

4.4.6.3 Persons developing symptoms of TB and/or OLDs or other diseases should undergo a medical evaluation that should include screening for TB and OLDs or other diseases. Return to work should be guided by the fitness for duty standards.

4.4.7 Exit Medical Examinations

TB and OLDs screening should be provided to all workers whose contracts have been terminated for any reason. This provides an opportunity to identify missing cases of TB. All workers at high risk for TB and OLDs should undergo a chest x ray examination among other medical evaluations.

4.4.8 Post-Employment Medical Surveillance

Silica dust exposure and silicosis confer a life-long risk of TB. Silicosis is a chronic condition which can progress even after cessation of exposure to dust. The risk of TB infection increases with the severity of silicosis. The progression to silicosis can also occur even after cessation of exposure. In this regard;

4.4.8.1 On-going surveillance for all exposed workers should be risk based.

4.4.8.2 Routine chest examination should be performed for all cases of silicosis.

4.4.8.3 The routine follow-ups of patients with silicosis should be done by health personnel with the requisite knowledge and skill in the diagnosis of OLDs and TB.

4.4.9 Return to Work

4.4.9.1 After diagnosis and treatment of TB workers should return to work after undergoing confirmatory tests to ensure that they are non- infectious.

4.4.9.2 Considerations should be made on the appropriate workstation as guided by the risk category profiles.

4.4.9.3 Workers suffering from silicosis should be redeployed to work in areas with no exposures to crystalline silica as determined by the OREPs.

4.4.10 Impairment Evaluation

As part of secondary prevention, impairment evaluation of workers diagnosed with OLDs and occupational TB is key. The mining industry should adopt best

practices in impairment evaluation. In assessing for impairment evaluation, the following key principles are essential:

- 4.4.10.1 Impairment evaluation and Disability assessments are two different bodies of knowledge.
- 4.4.10.2 Medical and Occupational Health practitioners should assess Impairment as opposed to disability.
- 4.4.10.3 Impairment evaluations form the basis for computing disability assessments by fund or compensation administrators.
- 4.4.10.4 Countries should make reference to and consider aligning impairment evaluation ratings to the Guide for Impairment Evaluation of the American Medical Association.
- 4.4.10.5 For decision purposes, impairment assessments should be conducted and finalized at Maximum Medical Improvement stages.
- 4.4.10.6 In countries where there are no established standards for Impairment evaluations, the medical assessors should take into consideration the following:
 - 4.4.10.6.1 The functional history.
 - 4.4.10.6.2 Physical examination findings
 - 4.4.10.6.3 Results of clinical studies.

4.4.11 Rehabilitation and Palliative Care

Rehabilitation and palliative care are critical stages of tertiary prevention of TB and OLDs. Silicosis is a permanent, irreversible and in some cases progressive. TB complicated by Silicosis; silicotuberculosis can lead to permanent incapacity. MHS services should include comprehensive arrangements for the rehabilitation and palliative care for cases of occupational diseases including TB and OLDs. The key elements and principles that should be considered across mining include:

- 4.4.11.1 Provision of appropriate counseling, rehabilitation and palliative care with observation of confidentiality standards at all times.

- 4.4.11.2 Prompt and appropriate referral to care by trained caregivers.
- 4.4.11.3 Appropriate completion of all documentation relating to occupational disease management and compensation.
- 4.4.11.4 Timely submission of possible compensation cases to the compensation system.

5. Implementation and Responsibilities

5.1 National Level

For the effective implementation of the MHS SOP, all levels of the responsible ministries of MHS at the national, provincial, district and institutional levels should carry out their responsibilities along the following principles. At the national level, the responsible Ministries for MHS should:

- 5.1.1 Facilitate the adoption and ratification of key ILO Conventions 155, 161, 176 and 187 and the associated ILO Regulations 171 on Occupational Health Services and 165 on Safety and Health.
- 5.1.2 Provide and promote policies across all mining areas including in artisanal and small scale mining that holistically address TB, HIV and OLDs.
- 5.1.3 Provide guidelines, standards and resources to support the implementation of MHS SOP across all mining areas including informal mining areas.
- 5.1.4 Enforce the implementation of the SOP across all the provinces in the country using monitoring and evaluation tools.
- 5.1.5 Ensure integration of this SOP to the national infection prevention and control Policy.
- 5.1.6 To monitor, evaluate and review the SOP implementation.

5.2 Mining Organizations Level

Mining organizations should provide for comprehensive occupational health and safety programs. Such programs should specifically include TB, HIV and OLDs among other important health and safety programs. In doing so, mining organizations should:

- 5.2.1 Implement comprehensive and holistic MHS systems that include TB, HIV and OLDs.

- 5.2.2 Develop supporting MHS policies and guidelines that provide for TB, HIV and OLDs as part of the critical risk profiles.
- 5.2.3 Integration of mine occupational health services into primary health care systems for free access to TB, HIV and OLD screening, diagnosis and management services.
- 5.2.4 Ensure that baseline, issue based and continuous HIRA for TB, HIV and OLDs have a monitoring and evaluation systems.
- 5.2.5 Provide resources for MHS services in matters of occupational health that incorporate TB, HIV and OLDs.
- 5.2.6 Provide for on-going training and education programs that include respiratory and occupational hazards.
- 5.2.7 Implement a Quality Improvement program that includes TB, HIV and OLDs.
- 5.2.8 Ensure that in every work process, the HIRA and hierarchy of controls include occupational respiratory conditions and TB.
- 5.2.9 Implement a performance management system that includes leading and trailing performance indicators for TB, HIV and OLDs.
- 5.2.10 Ensure that there is a documented plan that is implemented with respect to OREPs and SEGs, and Ergonomic evaluations and Occupational Hygiene surveys are conducted.

5.3 Workers Unions/representatives

Worker's unions/representatives in mines must actively advocate for decent work across the mining organizations. Workers Unions/representatives should:

- 5.3.1 Advocate for and demand the fundamental right to a healthy and safe working environment.
- 5.3.2 Participate and be part of the consultative arrangements for negotiating and advocating for health and safety issues that include TB, HIV and OLDs.
- 5.3.3 Be actively involved in the review of MHS programs and ensure that occupational respiratory conditions, TB, HIV and OLDs related diseases are part of the package for occupational health services.

5.3.4 Participate in the monitoring and review of workplace health and safety initiatives.

5.4 Employee level

5.4.1 Employees must demand the fundamental right to a safe workplace.

5.4.2 They should ensure compliance to set MHS policies, procedures and guidelines as set by mining organizations.

5.4.3 Employees should actively participate and avail themselves for screening for TB, HIV, OLDs and other health conditions in line with MHS programs.

5.4.4 Employees must participate in HIRA activities and Quality Improvement Programs (QIPs) as directed by the mining organizations.

6. Monitoring and Evaluation

Monitoring and evaluation plays a pivotal role in planning, measuring efficiency and effectiveness of the mining occupational TB, HIV and OLDs screening program. For monitoring and evaluation processes, consideration should be put on the following:

6.1 Development and gradual improvement of workplace TB, HIV and OLDs screening and management system.

6.2 Standard data gathering tools for workplace TB, HIV and OLDs screening at all levels of care.

6.3 Monthly reporting on mine TB, HIV and OLDs screening and management (with a reporting system) at all levels of care.

6.4 Implementation of quality assurance and quality improvement in all systems for MHS TB, HIV and OLDs screening and management.

6.5 Establishment of a national surveillance system with selected indicators for workplace TB, HIV and OLDs screening and management in mining.

6.6 Conduct of regular audits to improve quality of care and practices.

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PART II

Generic Mine Health and Safety Standard Operating Procedures on Quality Management in the Prevention of Tuberculosis, HIV and Occupational Lung Diseases in Mining

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1. Introduction

Quality improvement and monitoring and evaluation of mine health and safety services is an essential and integral part of occupational safety and health management systems.

This Generic MHS SOP was developed to provide guidance on objective and comprehensive quality improvement, and monitoring and evaluation of primary, secondary, and tertiary occupational health preventive interventions for Silica dust, TB, HIV, Silicosis, and other OLDs in the mining sector.

2. Purpose and Scope of Application

The purpose of this SOP is to give guidance to countries and mining firms on developing quality improvement systems for MHS. The SOP applies to government ministries responsible for MHS and mining organizations including both formal and informal mining. Countries can adopt and adapt specific operational and technical aspects of this SOP for their internal purposes.

2. Assumptions

The assumption of this SOP is that Silica dust, TB, HIV, Silicosis, and other OLDs in the mining sector will be managed as part of a comprehensive Occupational Safety and Health Management System (OSHMS) and is so emphasized here to ensure that these conditions are not excluded.

3. Objectives

The objectives of the Generic MHS SOP on Quality Improvement SOP are to:

- a. Describe the quality management process for the prevention and elimination of Silica dust exposure, TB, HIV, Silicosis and other OLDs in occupational mining environments.
- b. Provide guidance on quality improvement aspects on primary, secondary and tertiary occupational health preventive interventions for Silica dust, TB, HIV, Silicosis and other OLDs in the mining settings.

4. Procedure

The success of strategies for eliminating or reducing the risk of TB infection, HIV, silica dust exposure, Silicosis and other OLDs requires integration of quality management systems in their primary, secondary, and tertiary preventive measures. It is crucial to have quality, comprehensive and effective HIRAs with accompanying robust controls in

the primary preventive strategies. Similarly, Occupational health surveillance systems for the said occupational diseases as part of the secondary preventive measures, and tertiary preventive strategies such as for rehabilitation and palliative care programs should be of good quality to ensure effectiveness. Furthermore, comprehensive OSHMSs designed for prevention of occupational diseases in the mining setting should have a good and implementable monitoring and evaluation plan. This MHS SOP focuses on quality management and quality improvement of the work environment and workers' health and safety.

a. Quality Management

Comprehensive MHS requires governments and the mining industries to develop quality management systems for MHS that are premised on the seven principles of quality; the Deming Cycle and Quality Planning, Quality Assurance, and Quality Control and Deming's Quality Cycle of Quality Improvement and Principles.

i. Quality Planning

Quality planning for MHS refers to the process of establishing quality specifications for prevention and control of TB, HIV, silica dust exposure, Silicosis and other OLDs and how these specifications will be implemented. At both country and enterprise levels, focus should be directed on:

1. Defining quality by setting quality standards for:
 - Workplace surveillance
 - Hazard Identification and Risk Assessment (HIRA)
 - Occupational hygiene methods and techniques for silica dust measurements
 - Occupational Health Surveillance for workers
 - Risk Based Medical Examinations (RBME)
 - TB, HIV, Silicosis and other OLDs screening, diagnosis and management
 - Impairment evaluation etc.

2. Deciding on the type of key parameters to be measured across leading, current and trailing indicators of performance on primary, secondary and tertiary preventive interventions for TB, HIV, Silica dust exposure, Silicosis and other OLDs among other parameters of MHS services.
3. Selection of an inventory of national and enterprise quality measurement tools, the environment and interfaces; i.e. BSC, checklists, templates, registers, audits, survey tools, etc.

Table 2.1 below shows some of the elements of planning and tools

Item	Knowledge Domains	Quality Specifications	Methods to meet the Quality Specifications	Tools
1	Primary Prevention	Standard Hazard Identification and Risk Assessments (HIRA), Control, and M & E Define SEGs	<ul style="list-style-type: none"> Develop Templates for Baseline, Issue Based and Periodic HIRA and master templates for SEGs. Develop training manuals Define sampling methods and sampling techniques for silica dust Develop a specific hierarchy of controls for TB, HIV and OLDs. 	<ul style="list-style-type: none"> Checklists Templates for HIRA Balanced Scorecard Cause and Effect diagrams (Ishikawa & Fishbone), Run Charts, Pareto charts, Inspection templates, Scatter diagrams etc.
		Occupational Hygiene Survey and sampling Techniques for silica dust	<ul style="list-style-type: none"> Develop a Master Template, SOP for sampling, and sampling techniques Conduct training on SEGs 	<ul style="list-style-type: none"> As above
		Compliance to Workplace Inspections and inspection standards	<ul style="list-style-type: none"> SOP for inspections Train inspectors Develop inspection checklists Develop an audit tool for all inspections done Develop a tool for customers to give feedback 	<ul style="list-style-type: none"> Workplace inspection check lists Training Registers Customer Satisfaction Tool
2	Secondary Prevention	Risk Based Medical Surveillance	<ul style="list-style-type: none"> Develop SOPs for RBMEs Capacity building 	<ul style="list-style-type: none"> Training registers SOP register
		TB, HIV, Silicosis and other OLDs Risk based surveillance, diagnosis and management	<ul style="list-style-type: none"> SOPs and COP for Medical surveillance Training manuals TB and Silicosis screening and Diagnostic algorithms OREPs Link OREPs to COP 	<ul style="list-style-type: none"> Occupational Hygiene surveys Registers
3.	Tertiary Prevention	Rehabilitation for TB, HIV, Silicosis and other OLDs	<ul style="list-style-type: none"> Develop SOPs and guidelines Define Impairment evaluation methods Capacity building on impairment assessments Perform audits on impairment assessments Define referral systems 	<ul style="list-style-type: none"> Code of Practice of Medical Surveillance OREPs
		Palliative Care for TB, HIV, Silicosis and other OLDs	<ul style="list-style-type: none"> Define criteria for palliative care Management protocols of all forms of TB and OLDs 	<ul style="list-style-type: none"> Registers

ii. Quality Assurance

Quality assurance of initiatives and programs set to reduce and eliminate TB, HIV and OLDs should be premised on the following principles and understandings:

1. Quality assurance should primarily be concerned with overall process improvement of TB, HIV and OLDs preventive services at national and mining organizational levels.
2. Focus should be on improving the quality of the process and activities of MHS services.
3. Quality assurance should focus on steadily improving the activities and processes undertaken to achieve quality across the domains of workplace surveillance including HIRA, early detection and surveillance of workers' health in mines and tertiary preventive measures for TB, HIV and OLDs.
4. The process should consist of reviewing the quality metrics developed during the planning stage.
5. Quality Assurance of MHS services including TB, HIV and OLDs should check actual implementation of MHS services and programs against the set quality specifications using tools developed in the planning stage.
6. Analysis of MHS services should focus on the performance of implemented change requests.
7. At both national and operational levels at the mining sites, provision should be made for performing quality assurance.

iii. Quality Control

At both national and organizational level provisions should be made for quality control to evaluate conformity of results against defined quality standards on MHS including TB, HIV and OLDs.

1. Quality control should be designed to focus at specific results of MHS services to determine if they conform to the specified quality standards for TB, HIV and OLDs prevention.

2. Each deliverable, e.g. HIRA, Occupational Hygiene services, medical surveillance, should be inspected, measured and tested for conformity to the set quality criteria.
3. For quality control purposes, statistical sampling methods should be used to avoid evaluating each and every output.
4. Quality control should be done on a continuous basis and each organization should stipulate the relevant schedules.
5. The quality control process should be based on the quality management plan, quality metrics, quality checklists, work performance information among other key elements developed during the planning phase aimed at reducing and eliminating TB, HIV and OLDs.
6. The quality control tools should include but not limited to any of the following:
 - Cause and effect (Ishikawa or Fishbone) diagrams.
 - Control charts,
 - Flow charts
 - Histograms
 - Pareto Charts
 - Inspection

iv. Principles of Quality

Countries and the mining industry should adopt the seven key principles of Quality Improvement (QI) in line with ISO 9001 quality standard to improve preventive strategies for reducing and eliminating OLDs, TB and HIV. The provisions of regional quality standards such as SADCAS should be incorporated in developing quality improvement strategies. These include:

1. Customer focus

The key customers in mining environments are the employees including management and contractors. Surveillance of the work environment and workers should focus on their health and safety. MHS services should integrate TB, HIV and OLD prevention and elimination. Quality management requires that

MHS services focus on preserving the health and safety of workers and contractors.

2. Evidence based approaches

Improvements in MHS should be premised on and driven by evidence based practice. This applies to HIRA, Medical surveillance and Impairment evaluation for TB, HIV and OLDs which should be based on current evidence. National level and organizational level practices should be guided and be based on acceptable evidence that is internationally acceptable standards.

3. Continuous Improvement

Countries should strive for continuous improvements in MHS in line with best practice standards for managing TB, HIV and OLDs. Such improvements must aim to provide contextually relevant preventive measures and programs to reduce and eliminate occupational respiratory conditions including TB, HIV and OLDs in mining environments.

4. Teamwork

OHS requires a collaborative and participatory approach of both management and employees. Countries should make provisions for consultative arrangements between management and employees to be expressly provided in MHS programs and should specifically include TB, HIV and OLDs among other important elements.

5. Process Based Approach

Mining organization should adopt a process-based approach in quality management.

6. Leadership

Authorities responsible for MHS should demonstrate leadership and commitment to the health and safety of workers and their communities. Policies at both national and organizational levels focusing on the integration of TB, HIV and OLDs into the overall national and organizational OSH strategies. Commitment of resource. such as human resources, budget, time, etc. for occupational health and safety services should be prioritized at both strategic and operational levels.

7. Relationship management

In the management of MHS quality services, it is critical to manage the relationships amongst employers and workers.

v. The Deming Cycle (PDCA)

Implementation of MHS services for TB, HIV and OLDs should be based on the Deming Cycle. Countries and mining organizations are encouraged to adapt the Plan, Do, Check and Act (PDCA) cycle to ensure quality management is an integral part of the overall MHS services.

The following principles are key, both countries and the mining industry should integrate them in the routine OSHMS to ensure quality service provision with respect to TB, HIV and OLDs.

1. **Plan:** Planning for HIRA, occupational hygiene evaluations, and occupational Health surveillance and impairment evaluations for compensation should always be done as part of the routine processes of implementation of MHS services.
2. **Do:** Execution of the developed plans, e.g. conduction HIRA, occupational Hygiene assessments, occupational health surveillance etc should be done as per plan and set specifications and scheduled.
3. **Check:** Continuous data analysis for leading, current and trailing indicators of performance of activities targeted for primary, secondary and tertiary prevention should be done. This will involve analysis of performance across all key preventive activities for TB, HIV and OLDs to ascertain the quality of activities.
4. **Act:** Through scheduled review sessions and Balanced Score Card (BSC) meetings, corrective actions should be taken to address non performing areas or activities on MHS services with a special focus on TB, HIV and OLDs prevention. Corrective actions should be taken on workplace and worker health surveillance activities.

The PDCA Cycle is shown diagrammatically below in Figure 2.1 and Table 2.2.

Figure 2.1: PDCA Cycle

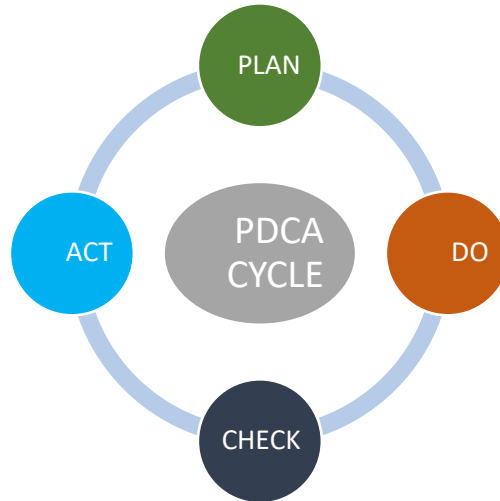


Table 2.2 PDCA Cycle

<p>PLAN</p> <ul style="list-style-type: none"> • Quality management system • Methods for HIRA, M & E, TB, HIV and OLD diagnostics • Develop the quality metrics for TB & OLDs screening and testing • Define the hierarchy of controls • Develop parameters for QA and QC 	<p>DO</p> <ul style="list-style-type: none"> • Carry out HIRA and Occupational Hygiene. • Perform medical surveillance, screening and diagnosis for TB and OLDs. • Offer Rehabilitation and palliative care • Capacity building
<p>CHECK</p> <ul style="list-style-type: none"> • Conduct QA and QC for TB, HIV and OLDs. • Data analysis using evaluation tools such as Ishikawa and Fishbone diagrams • Inspections and internal audits • Review performance against set targets 	<p>ACT</p> <ul style="list-style-type: none"> • Corrective actions • Management review • Review meetings

Implementation and Responsibilities

Implementation of the Quality Improvement SOP requires a systematic accountability at both national and organization levels. A comprehensive implementation plan with clear responsibilities and accountabilities is a requirement for a successful QMS for TB, HIV and OLDs in mining environments:

b. National Level

At the National level, governments should:

- i. Develop policies that support the delivery of quality OSH services across mining areas.
- ii. Develop generic guidelines for ensuring quality management on all MHS services provision.
- iii. Provide for systems to periodically inspect and verify that workers receive quality OSH health services including for TB, HIV and OLDs.
- iv. Provide for the integration of quality OSH services across all mining activities.

c. Mining Organizations level

Mining organizations have a key role to play with regards to supporting and providing for quality in all OSH systems and activities across mining.

Mining companies should:

- i. Develop Quality policies and procedures that support the integration of quality processes across all workplace health and safety activities.
- ii. Develop a QMP for MHS covering all aspects of employee health and safety issues. Special focus should also be directed to TB, HIV and OLDs
- iii. Define the quality metrics for HIRA, Occupational hygiene, occupational health surveillance, rehabilitation and impairment evaluation of affected workers.
- iv. Provision of processes, tools and techniques for QC and QA.

- v. Provide resources to support quality across all primary, secondary and tertiary prevention levels.
- vi. Develop training programs that focus on quality with respect to MHS and such trainings should also specifically focus on quality in TB, HIV and OLDs provision.
- vii. Promote quality across all workplace areas in formal and informal settings.

5. Monitoring and Evaluation

Quality management in MHS requires on-going monitoring and evaluation to ensure that the QMP is implemented. At national and organizational levels, M &E should be systematically monitored and evaluated. Key considerations on M & E should include the following considerations with regards to TB, HIV and OLDs management in mining settings.

- a. Countries should develop M & E programs at national levels with clearly defined indicators.
- b. Indicators should include the three core processes of Quality planning, QA and QC.
- c. Mining companies should establish monitoring and evaluation programs that are holistic and include TB, HIV and OLDs.
- d. Resources should be availed by mining organization for purposes of M & E across all occupational settings
- e. Dissemination of results of the performance of the QMP should be availed across all worksites.
- f. Management should include consultative arrangements for workers to participate and contribute in the M & E of the QMP.
- g. Mining organizations should comply to the M &E indicators 7at national levels for the purposes of compliance to the QMP.

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PART III

Generic Mine Health and Safety Standard Operating Procedures on Information, Education and Communication on Tuberculosis, Silicosis, Silica dust exposure and other Occupational Lung Diseases in in the mining sector

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1. Introduction

Occupational and environmental respiratory hazards require a systematic process of managing them to reduce the risk. A fundamental understanding and knowledge of Silica dust, TB, HIV, silicosis and other OLDs in mining requires a clear understanding of the fundamentals of these diseases and their associated risk factors in mining environments. This Generic MHS SOP provides guidance on relevant information, education and communication (IEC) on TB, HIV, Silicosis, Silica dust and other OLDs in the mining sector.

2. Purpose and Scope of Application

The purpose of the SOP is to give guidance on information, education and communication on TB, HIV and OLDs in mining. This SOP applies to ministries responsible for MHS, mining organizations including ASM (both formal and informal) and ex-miners. Countries can adopt and adapt specific operational and technical aspects of this SOP for their internal purposes.

3. Objectives

The objectives of TIMS/IMHS SOP 1C are to:

- 3.1 Describe the key information and knowledge domains of TB, HIV Silica dust and other OLDs that are vital in their prevention and control. of TB, HIV infection and silicosis in mining settings.
- 3.2 Highlight the key information communication processes for purposes of prevention of TB, HIV and OLDs.
- 3.3 Integrate TB, HIV and OLDs information and training into MHS systems and processes.
- 3.4 Describe responsibilities of key stakeholders for successful implementation of IEC programs in mining.

4. Procedure

4.1 Information

Countries should develop national policies and programs in mining settings that focus on improving and expanding access to IEC on TB, HIV and OLDs, and associated risk factors in occupational environments. Such information should be integrated into MHS systems and programs. The key information that should be communicated to mining populations includes:

Primary Prevention

- 4.1.1 Information on the transmission of TB and HIV, their symptoms and signs, and management.
- 4.1.2 Strategies for the prevention of TB and HIV infection and OLDs.
- 4.1.3 Risk factors for TB and HIV infection including OLDs.
- 4.1.4 Access to health services for screening and early diagnosis of TB, HIV and OLDs.
- 4.1.5 Workplace surveillance programs to include TB, HIV and OLDs screening.
- 4.1.6 Signs and symptom screening.
- 4.1.7 The relationship of TB, HIV and silicosis.
- 4.1.8 TB preventive therapy.
- 4.1.9 Silica dust exposures and the associated three to four-fold risk of TB infection
- 4.1.10 The multiplicative risk of silica dust/silicosis and HIV.
- 4.1.11 Life-long risk in silica-dust exposed workers and communities.
- 4.1.12 Implementation of the hierarchy of controls for TB and HIV infection and silica dust exposures that includes:
 - 4.1.12.1 Elimination
 - 4.1.12.2 Substitution
 - 4.1.12.3 Engineering
 - 4.1.12.4 Administrative
 - 4.1.12.5 PPE
- 4.1.13 Principles of hazard Identification and Risk Assessment for TB, HIV, silica dust and silicosis.

4.1.14 Principles of conducting a mini-risk assessment with respect to silica dust exposures and TB and HIV infection.

4.2 Training and Education

Countries should conduct capacity building at various levels from national to operational levels in mining. Training and education should be provided to both management and employees including health personnel. This should include both formal and informal, in-house and external training. In this regard, countries should take into account the following:

4.2.1 Policy Levels

Governments should develop and implement policies and legal instruments that support promotion of awareness on occupational hazards, TB and HIV in workplaces. Such policies should focus on mandatory requirements for organizations to promote and increase awareness, training and communication of occupational hazards including respiratory conditions. Key requirements at policy levels should mandate the need for:

4.2.1.1 Mining organizations to conduct training needs assessments that will inform specific training areas from national to local mining levels.

4.2.1.2 MHS trainings on occupational diseases, TB and HIV to be conducted across all levels.

4.2.1.3 Stipulation of a mandatory quota of workers trained on health and safety critical/sensitive work in specific mining settings. Such training should include silica dust exposures, TB and HIV.

4.2.1.4 All workers to be briefed and trained on the MHS policies and procedures including those specific to TB, HIV and OLDs.

4.2.2 Primary Prevention

Training and education on primary prevention is key. Such training should be provided across all levels in MHS. Education and training should focus on key preventive mechanisms for TB, HIV and OLDs and should include:

- 4.2.2.1 Principles and processes of HIRA including baseline, issue based, continuous HIRA with respect to TB, HIV and OLDs among other key activities.
- 4.2.2.2 Training on the OREPs and SEGs and application of the hierarchy of controls in mining to reduce TB, HIV and OLDs.
- 4.2.2.3 Workplace ergonomic designs for TB, HIV and OLDs prevention.
- 4.2.2.4 Risk control, monitoring and evaluation programs for key occupational hazards in mining.

4.2.3 **Secondary Prevention**

Education and training sessions on secondary prevention of TB, HIV and OLDs should focus on the early detection and on-going surveillance of workers. Health workers involved in the early detection and occupational health surveillance should be trained on evaluations of employees for fitness for duty, return to work and integration of occupational health services into primary health care. Education for secondary prevention should include the following, among other important elements of MHS programs and services.

- 4.2.3.1 TB, HIV and OLDs screening.
- 4.2.3.2 Occupational health surveillance standards for clinicians.
- 4.2.3.3 Conduct of RBMEs.
- 4.2.3.4 Diagnostic procedures for TB, HIV, silico-tuberculosis and occupational diseases in mining settings.
- 4.2.3.5 Management and follow-up of workers diagnosed with TB, HIV and OLDs.
- 4.2.3.6 Fundamentals of Occupational hygiene for those involved in occupational hygiene measurements.
- 4.2.3.7 Dust sampling techniques in MHS.
- 4.2.3.8 Development of OREPs and SEGs.
- 4.2.3.9 Occupational health program quality improvement initiatives.
- 4.2.3.10 Evaluations for fitness for duty and return to work assessments.
- 4.2.3.11 Impairment evaluations of affected workers and community members.

4.2.4 **Tertiary Prevention**

Education and training in MHS should focus on tertiary prevention of TB, HIV and OLDs and should include the following:

- 4.2.4.1 Evaluation, referral and management of workers diagnosed with occupational diseases for rehabilitation and compensation.
- 4.2.4.2 Rehabilitation principles for workers and mining community members suffering from TB, HIV and OLDs.
- 4.2.4.3 Compensation principles and impairment evaluations of affected persons in mining and labor sending communities.
- 4.2.4.4 Referral systems and mechanisms for rehabilitation and compensation of affected workers.

4.3 Communication

Effective communication coordinates employees, fulfills employee needs, supports knowledge management and improves decision making(1). Communication of occupational risk factors for TB, HIV and OLDs plays a very important role in preventive efforts in MHS. The communication should start at national policy levels to operational levels. Such communication should focus on policy, strategic and operational levels. Abundant clarity on TB, HIV and OLDs at all levels requires clear and comprehensive communication channels that are appropriate and adapted to working environments, literacy levels and language variety. In this regard, countries should develop information communication channels and criteria for choosing the best communication channels that are appropriate for everyone that include:

4.3.1 Verbal Communication

Verbal communication includes any written or oral means of transmitting meaning through words.

- 4.3.1.1 Face to face interaction is better than written words and should be utilized for communicating TB, HIV and OLDs information in different circumstances such as:

- 4.3.1.1.1 SHE steering meetings.
- 4.3.1.1.2 Safety and health briefs.

- 4.3.1.1.3 Health and safety campaigns.
 - 4.3.1.1.4 Wellness activities.
 - 4.3.1.1.5 Tool box talks in the mines.
 - 4.3.1.1.6 Mass Media (i.e. Television and radio)
- 4.3.1.2 Written methods should be utilized for communicating health and safety information. Such methods include the following:
- 4.3.1.2.1 Notice boards
 - 4.3.1.2.2 Print media such as posters, pamphlets, books and information cards.
- 4.3.1.3 Print and online information and educational materials on occupational health and safety should include TB, HIV and OLDs and should be available to all workers.
- 4.3.1.4 Such information should be written and translated in simple language including vernacular to cover all levels of people
- 4.3.1.5 Communication of occupational safety and health information should utilize a variety of media appropriate for everyone in mining settings.

4.3.2 Electronic Mail and social media

- 4.3.2.1 Where appropriate, electronic mail should be utilized to communicate health and safety information in mining workplaces.
- 4.3.2.2 Social media platforms such as WhatsApp, Telegram, Instagram and short message services should be used where appropriate in line with organizational policies.

4.3.3 Nonverbal Communication

Nonverbal communication includes facial gestures, voice intonations, physical distance and silence. This form of communication should be used where noise or physical distance prevents effective verbal exchanges and where immediate exchange is necessary. Mining settings are characterized by such environments that may include excessive respiratory hazards such as silica dust in the face of high noise levels.

4.3.3.1 Guidelines should be provided for nonverbal communication in situations where two people lack a common verbal language in mining settings.

4.3.3.2 Particular attention should be given for handicapped persons, e.g for deaf and those who cannot speak in special mine settings.

4.3.4 **Criteria for Choosing the best communication channels**

The choice of the most effective communication channels for OSH information in mining should be based on:

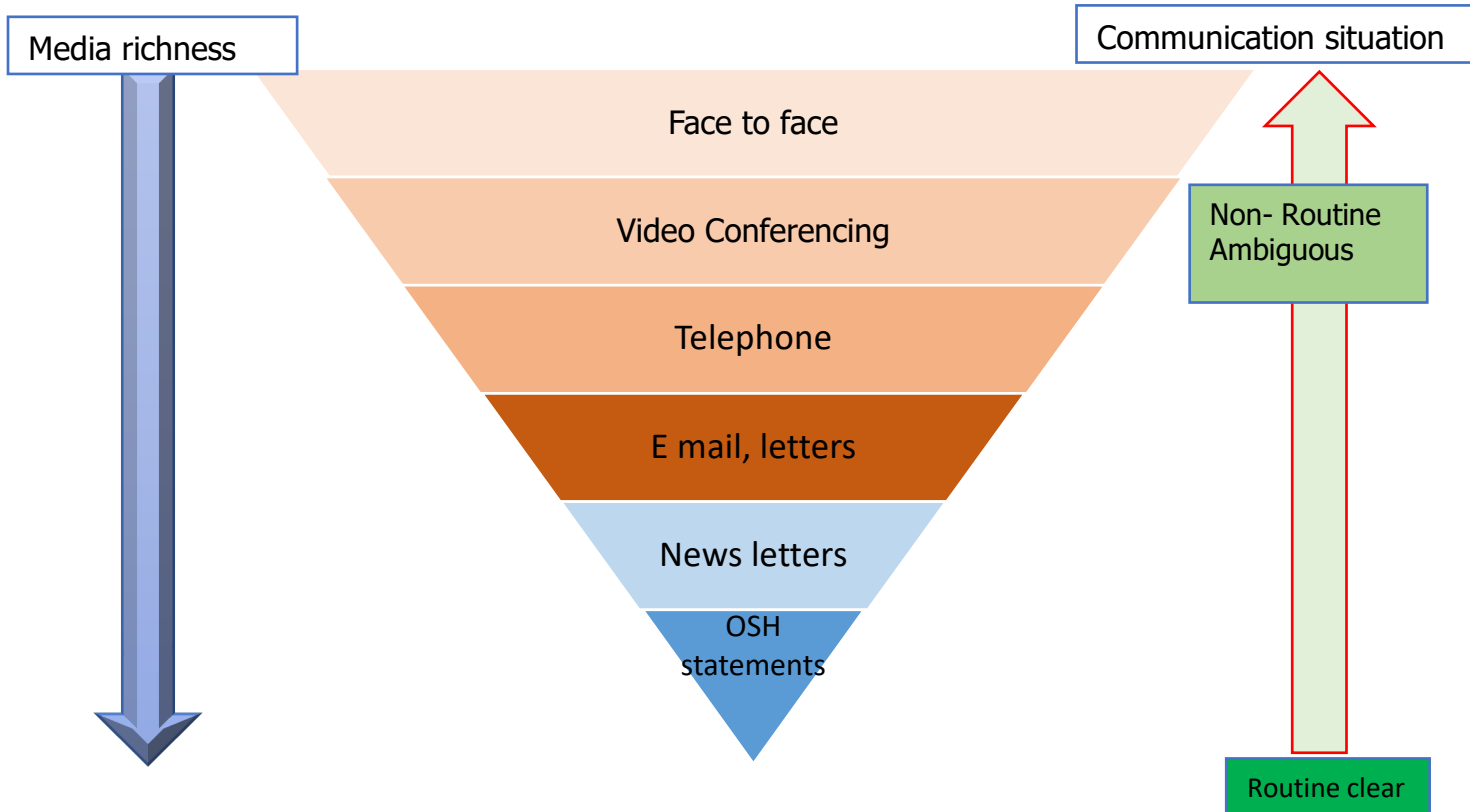
4.3.4.1 Media richness and symbolic meaning.

4.3.4.2 Preference should be given to face to face communication which has the most media richness.

4.3.4.3 The hierarchy of media richness from the most effective communication to the least effective is depicted on Figure 1 below:

4.3.4.4 Non-routine situations require rich media while routine situations require lean media communication channels. The hierarchy of non-routine to routine communication situations is as depicted on Figure 1 below.

Figure 3.1: Hierarchy of Media Richness of Communication Channels.



Adapted from McShane, S.L and Von Glinow, M. A (1)

5. Implementation and Responsibilities

Successful implementation of the SOP will depend on the collaboration of the key stakeholders and performance of their roles and responsibilities. The implementation of this SOP describes the roles and responsibilities from the national levels to operational levels in mining.

5.1 National Level

Governments should play an active role in providing overall guidance at national policy levels on MHS with specific attention to IEC. At national levels, governments should provide for all health and safety legislation in mining to ensure the following:

- 5.1.1 Governments should mandate the provision of free IEC services to all workers in mining areas and ex-mineworkers.

- 5.1.2 That policies and legislation on MHS provide for free access to OSH information.
- 5.1.3 Communication of hazards and risks in mining is done to all workers regardless of the size of the mine or numbers of employed persons.
- 5.1.4 Establishment of robust training programs on OSH in the mining industry to include all workers and communities living in and around mining areas.
- 5.1.5 There is provision for adequate inspections to ensure all mining organizations provide for IEC in MHS that includes TB, HIV and OLDs across all mines.
- 5.1.6 Provision and mobilization of resources through national and international partnerships to support programs addressing TB, HIV and OLDs in the mining sector.
- 5.1.7 Encourage mining companies to adhere to the hierarchy of media richness of communication channels and the use of the various communication channels to cater for different nationalities, languages and literacy levels across all mining settings.

5.2 Mining Company Levels

Mining companies should establish comprehensive systems that are specific to IEC on TB, HIV, OLDs and other occupational hazards, risks and hierarchy of control mechanisms. Mining companies should make provisions for IEC information in all position. Such systems and provisions should be guided by the following principles:

- 5.2.1 Mining companies should ensure provision of free access and free training in OSH issues for all workers.
- 5.2.2 Internal arrangements should be made for mandatory induction training on OSH issues including TB, HIV and OLDs.
- 5.2.3 Strict adherence to government policies and legal frameworks pertaining to IEC of OSH related issues including occupational respiratory disorders.
- 5.2.4 Develop consultative arrangements to allow for workers to participate and contribute to the choice of appropriate information and training in MHS.
- 5.2.5 Provision for mandatory reporting on trainings and information dissemination on OSH issues specific to mining areas.

5.2.6 Such IEC should be provided to both permanent and temporary employees and contractors across all mining organizations.

5.2.7 Provide for the conduct of regular workers' opinion surveys on IEC.

5.2.8 Accommodate for gender sensitivity differences in communication

5.3 Roles and Responsibilities of Workers' Unions and OSH representatives

Workers unions and OSH representatives should demand health and safety as fundamental rights in the workplace. With respect to IEC on TB, HIV and OLDs, representatives of workers should:

5.3.1 Make demands for employers to raise awareness on all workplace hazards including respiratory hazards.

5.3.2 Participate and approve organizational arrangements to improve access to information and training on OSH issues.

5.3.3 Monitor the provision of information and training of workers on OSH and respiratory matters.

5.3.4 Advocate for governments and employers to provide for resources for implementing IEC programs specific to TB, HIV and OLDs in mining environments.

5.3.5 Create advocacy at national and operational levels on the need for mandatory awareness and education in MHS.

5.4 Roles and Responsibilities of employees

Employees should take responsibility for their health and safety and ensure adherence and participation in all organizational activities concerned with IEC on TB, HIV and OLDs. Employees should ensure that they:

5.4.1 Fully participate and contribute in all activities aimed at raising awareness and knowledge on OSH as provided for by employers.

5.4.2 Observe and comply to all arrangements that require application of knowledge acquired through IEC initiatives.

5.4.3 Preserve and optimize all company resources and materials on IEC.

5.4.4 Provide feedback to management on the relevance or appropriateness of company, departmental or unit IEC arrangements.

6. Monitoring and Evaluation

Implementation of the SOP should be monitored in order to objectively assess the attainment of the set objectives. Monitoring of the SOP should be holistic focusing on both the performing and non-performing areas. Early identification of suboptimal or poor progress in specific aspects of the SOP should assist to seek timely solutions for those areas where implementation is slow. Implementation of the SOP should be both at national and operational levels of mining organizations as detailed in the Monitoring and Evaluation Plan, Addendum 1 (M&E SOP).

- 6.1 At national level, responsible ministries should facilitate the development of core indicators that measure progress towards the attainment of objectives.
- 6.2 The array of core indicators that ministries should adopt, modify or adapt are as detailed in Addendum 1, Monitoring and Evaluation Plan.
- 6.3 At national level, the responsible ministries shall stipulate the reporting frequency and schedules of specific indicators by mining organizations.
- 6.4 Ministries should develop a national monitoring and evaluation tool for defined specific indicators.
- 6.5 Mining organizations should develop a documented monitoring and evaluation plan.
- 6.6 Mining organizations should establish well-resourced Monitoring and evaluation programs based on:
 - 6.6.1 Specific indicators on IEC
 - 6.6.2 Clear objectives for monitoring and evaluation.
 - 6.6.3 Defined data collection and analysis tools.
 - 6.6.4 Evaluation plan for the implementation;

7. References

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PART IV

**Monitoring and Evaluation Framework
for
Mine Health and Safety SOPs
of programs for Control of TB, Silica dust exposure, Silicosis and other
Occupational Lung Diseases in the Mining Sector**

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1. Introduction

Effective implementation of the three SOPs on Risk management, Quality Management, and on Information, Education and Communication requires an on-going assessment of the progress and identification of gaps between the planned and actual results at both national and enterprise levels. Therefore, this Generic MHS SOP on Monitoring and Evaluation was developed to provide a framework for monitoring and evaluation the performance of MHS programs. The SOP provides means of objectively accessing the impact of implementing the other three SOPs on MHS programs and informs the needed remedial measures for continuous improvement in the process of controlling Silica dust, TB, HIV, Silicosis and other OLDs in mining setting.

2.0 Purpose

The main purpose of this SOP is to describe the process to support implementation of the three MHS SOPs through monitoring and evaluation. The SOP describes the key inputs, activities, outputs and outcomes of the monitoring and evaluation process for Tuberculosis (TB), Silicosis, Silica dust exposure, and other Occupational Lung Diseases prevention and elimination.

3.0 Objectives

The key objectives of the Generic MHS SOP on Monitoring and Evaluation are to:

1. Describe the M&E process to be followed in the prevention and elimination of TB, HIV and OLDs in the context of MHS.
2. Provide guidance on the required inputs, outputs and key outcomes for the prevention of TB, HIV and OLDs in mining as part of M&E.
3. Describe the generic indicators, tools and processes for monitoring and evaluation of TB, HIV and OLDs prevention in mining.

3.0 Scope of Application

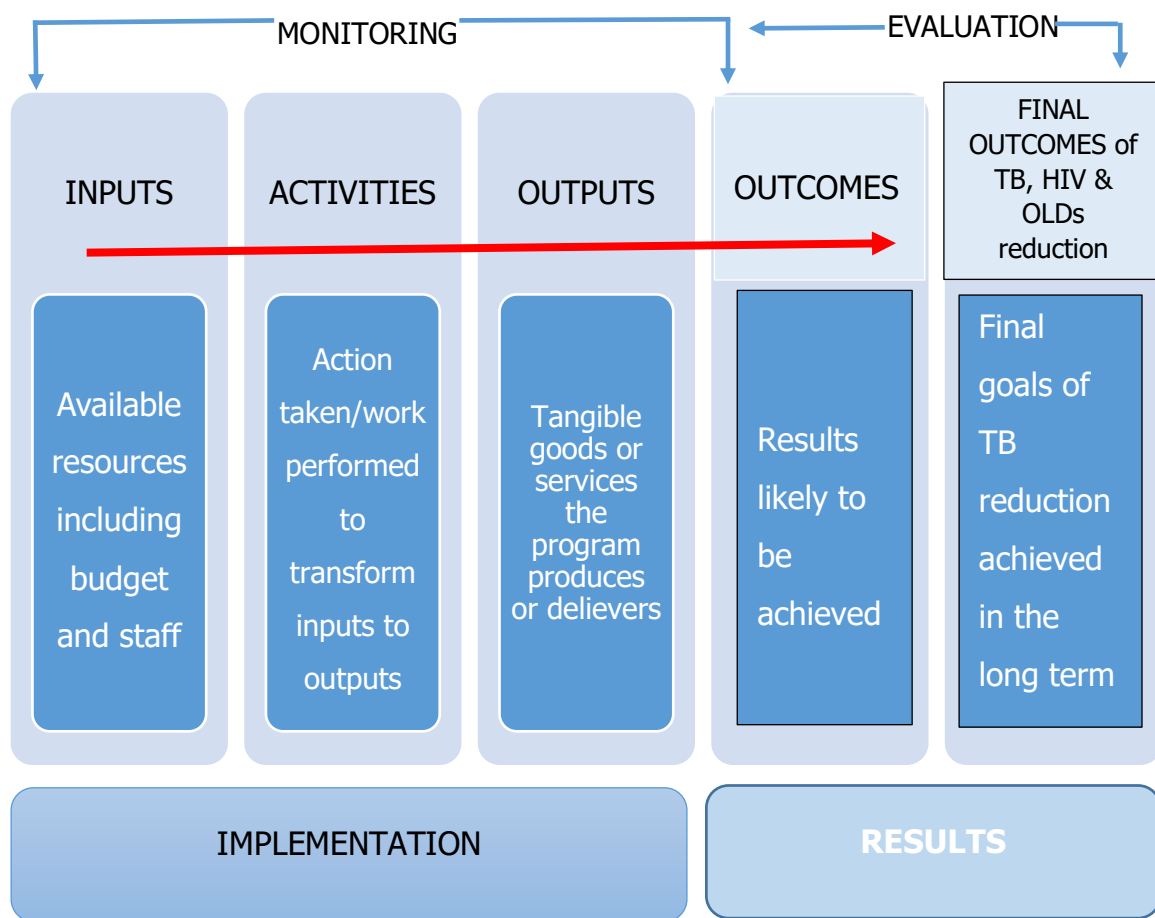
This SOP applies to ministries responsible for MHS and mining organizations including Artisanal and Small Scale Mining.

Principles of Monitoring and Evaluation

The M&E plan should focus on the provisions of the three SOPs focusing on: Hazard Identification and Risk Assessment (HIRA), early detection and management of TB, HIV and OLDs, IEC on TB, HIV and OLDs, and the Quality Management Plan (QMP).

The process of developing the M&E plans for the prevention of TB, HIV and OLDs in mining in line with the three MHS SOPs, should be based on the process represented diagrammatically below on Figure 1. Monitoring should consist of four distinct stages beginning with a description of inputs, activities, outputs and finally the outcomes of TB, HIV and OLDs prevention.

Figure 4.1: Monitoring and Evaluation Flow



Adapted from: ILO, Monitoring and Evaluation

2. Monitoring

Monitoring the implementation plan for preventing and eliminating TB, HIV and OLDs should focus on the following elements.

- 5.1 Defining the key inputs for each of the three key areas on:
 - 5.1.1 HIRA and early detection and management of TB, HIV and OLDs
 - 5.1.2 IEC on TB, HIV and OLDs.
 - 5.1.3 Quality management process of TB, HIV and OLD prevention.
- 5.2 Describing the available resources including funds and human resources needed to perform the activities such as
 - 5.2.1 Budgets to conduct of HIRA and occupational hygiene assessments, IEC materials, occupational health surveillance programs, rehabilitation and compensation, and quality management plan implementation.
 - 5.2.2 Required human resources such as occupational hygienists, occupational health practitioners, safety officers, ergonomists, laboratory personnel, and quality officers etc.
- 5.3 Describing the activities that will be performed under each of the three MHS SOPs such as: -
 - 5.3.1 The action taken/work performed to transform inputs into outputs in terms of: -
 - 5.3.1.1 Performing HIRA to develop risk profiles for TB, HIV and OLDs among other occupational conditions.
 - 5.3.1.2 Conducting occupational hygiene assessments for silica dust measurements.
 - 5.3.1.3 Carrying out ergonomic assessments and controls to reduce the risk of TB, HIV and OLDs in mining settings.
 - 5.3.1.4 Development of IEC materials and training programs specific to TB, HIV and OLDs.
 - 5.3.1.5 Performing quality management activities such as Quality Control (QC) and Quality Planning (QP).
 - 5.3.2 Conducting Risk Based Medical Examinations (RBMEs) across mining areas.

- 5.3.3 Development of Occupational Risk Exposure Profiles (OREPs) and definition of Similar Exposure Groups (SEGs).
- 5.3.4 Training and education on HIRA, occupational hygiene, RBMEs, Quality Assurance (QA), TB, HIV and OLDs among many other important activities.
- 5.3.5 Detailing the key outputs from each activity such as: -
 - 5.3.5.1 Completed HIRA profiles.
 - 5.3.5.2 Occupational hygiene reports for silica dust measurements.
 - 5.3.5.3 Completed QP, tools and techniques.
 - 5.3.5.4 IEC materials developed.
 - 5.3.5.5 Number of people trained on TB, HIV and OLDs completed.
 - 5.3.5.6 Completed RBMS plans and examinations.
- 5.3.6 The M&E Plan should detail the expected key outcomes following on the envisaged outputs.
- 5.3.7 Key outcomes or results likely to be achieved when beneficiaries use the outputs should be detailed with respect to reduction of TB, HIV and OLDs actions. Such key outcomes may include:
 - 5.3.7.1 Silica dust elimination or reduction.
 - 5.3.7.2 Reduction in the incidence and prevalence of OLDs.
 - 5.3.7.3 Reduced transmission and incidence of TB and HIV.
 - 5.3.7.4 Improved ergonomic designs at mining workplaces.
- 5.3.8 Provision should be made for the impact stemming from the identified outcomes.

3. Evaluation

A systematic and objective assessment of all the elements of the three MHS SOPs to determine their overall worth or significance should be carried out. In doing so, mining organizations should provide for performance evaluations and impact evaluations noting the following:

- 6.1 Performance evaluations should focus on the quality of service delivery and the outcomes achieved by implementation of the three MHS SOPs. These should typically cover short-term and medium-term outcomes such as

HIRA conducted, Occupational hygiene measurements done, TB, HIV and OLDs cases diagnosed among many others.

- 6.2 Performance evaluations should attempt to determine whether the progress achieved is the result of the intervention (attribution), or whether another explanation is responsible for the observed changes. This includes the reduction in TB and silicosis cases in mining areas.
- 6.3 Impact evaluations should look for long term changes in outcomes that can be attributed to the program being evaluated while considering other programs that may have played a role to contribute to the impact. This includes attribution, for example, of reduction of TB, HIV and OLD cases being linked to implementation of HIRA, QMS etc. or increase of cases being attributed to improved occupational health surveillance.

4. Setting M&E Objectives

Specific objectives should be set in line with the MHS SOPs at both national and organizational levels. These will define the outcomes of the M&E processes at national levels and at mining organization levels with respect to TB, HIV and OLDs issues. The M&E objectives should be SMART and focused on reducing and eliminating TB, HIV and OLDs in mining organizations. Objectives should be set for each of the three domains of the MHS SOPs.

5. Key Indicators

Countries should derive specific indicators in their context with reference to the generic indicators set as examples in Addendums 1-3. In the development of these, it is important for ministries and mining organizations to consider the following:

8.1 Process Indicators

- 8.1.1 Performance indicators should be concise quantitative and qualitative measures that can be easily tracked on a regular basis.
- 8.1.2 Indicators should be developed for all levels of the results chain, i.e. for all the MHS SOPs.
- 8.1.3 Indicators should be directly related to the output, outcome or goal of reducing or eliminating TB, HIV and OLDs in mines.
- 8.1.4 TB, HIV and OLDs data should be disaggregated to allow for comparisons across individuals, programs and geographical locations.

8.1.5 Indicators should have a definition on how they are calculated to reflect performance.

8.2 Targets

For each indicator, targets should be defined specifying the expected level of results to be achieved by specific dates, which will be used to judge performance. The following four steps should be followed when setting targets for the identified indicators at both national and organizational levels:

8.2.1 A baseline should be set for each indicator through the initial data collection to determine a specific level of performance. Such data collection for the baseline could use secondary data or require primary data.

8.2.2 Identification of TB, HIV and OLDs trends across and within mining organizations is important for developing targets.

8.2.3 Review of research findings is important when setting targets since it is important in setting realistic targets.

8.2.4 Benchmarking with similar organizations can assist in setting realistic targets.

8.3 Data Sources

Data sources should be defined, detailed and specified for each performance indicator. Such data sources should include TB, occupational diseases, medical surveillance, HIRA assessment registers to mention but just a few.

6. Data Management

9.1 Analysis

Countries and mining organizations should ensure that continuous data analysis is performed during implementation, by using the electronic information and data processing systems. Data can be analysed upon entry into the system at the primary level. On going in-depth analysis of data to establish overall performance and trends at national and organizational levels will be invaluable.

9.2 Dissemination and Privacy

Data should be disseminated to the workers and other key stakeholders to promote awareness and control of TB, HIV and OLDs in workplaces. Privacy and confidentiality of selected data should be maintained at all times at both national

and organizational levels. Data storage should be accompanied by back-up mechanisms that are robust and reliable.

7. Implementation and Responsibilities

Implementation of the Monitoring and Evaluation on MHS SOPs implementation strongly depends on the commitment at both national and organizational levels. Implementation of this SOP should happen at national and organizational levels.

10.1 National Level

10.1.1 Countries should develop National M&E policies that support the assessment and reporting of the implementation of MHS SOPs.

10.1.2 National level M&E policies should include TB, HIV and OLDs in mining environments.

10.2 Organizational levels

10.2.1 Mining organizations must develop health and safety policies and SOPs on M& E that are aligned to this MHS SOP.

10.2.2 Mining organizations should align their policies to support TB, HIV and OLDs monitoring and evaluation.

10.2.3 Mining organizations should review and update their M&E systems at defined intervals.

8. Addendums

11.1 Addendum 1: HIRA and Medical Surveillance SOP M&E Plan Generic MHS SOP (Selected activities)

Activity	Indicator	Purpose	Output/ Outcome	Baseline	Target	Data Collection/ Source	Tools	Frequency	Responsible Persons
Conducting HIRA	Number of risk assessments conducted.	To reduce risk of exposure to TB, HIV and silica dust in the workplace and compliance	Number of assessments held	TBD	TBD	Assessment reports	RA templates / Data Proforma	quarterly	Inspectorate department
Developing risk based medical profiles	Number of Risk based medical profiles developed	Surveillance and early detection of TB, HIV and OLDs	Number of risk profiles developed	TBD	TBD	Risk assessment reports	Risk assessment tools	quarterly	Risk department/ OHS Dept.
Complete RBMS SOPs	Completed medical surveillance Standard Number of SOPs developed	Guidance standards for detection and medical surveillance for TB, HIV and OLDs	Number of Medical Surveillance standards developed	Nil	TBD	Compliance Register	MHS SOP	Biannually	OHS Department
Occupational Hygiene Evaluations	Proportion of workplace with silica dust measurements	Reduction of TB, HIV and silica dust exposures	Silica dust profiles	TBD	TBD	Occupational Hygiene data	Occupational hygiene reports	Annually	Occupational Hygiene
Rehabilitation of TB, HIV and OLD patients	Number of patients enrolled on the program	Reduction of severity of silicosis Reduction of the TB risk	Successful rehabilitation	TBD	TBD	Occupational disease registers	Referral letters	Continuous	Occupational Health Dept.

TBD: To be determined.

11.1 Addendum 2: Quality Management Plan SOP M&E Plan

Generic MHS SOP (Selected activities)

Activity	Indicator	Purpose	Output/ Outcome	Baseline	Target	Data Collection/ Source	Tools	Frequency	Responsible Persons
Quality Management Policy	Implementation of QMP at National & organizational levels	Compliance to Plan	Quality Prevention of TB and OLDs	TBD	TBD		Audit Reports Inspection Reports	Annually	Quality Officer
Managing Quality	Good quality Plan	Integration of quality aspects across all activities for TB, HIV and OLDs prevention	Reduction of TB, HIV and OLDs Cost effectiveness of programs	TBD	TBD	QMP	Data Proforma Quality Reports	Monthly	Quality Officer
	Compliance to Quality Control	To improve outcomes of the implementation of the SOPs	Improve TB, HIV and OLD prevention and elimination	TBD	TBD	QMP	Inspection tools Quality Control Reports Assurance Data Tools	Continuous	Quality Officer
	Compliance to Quality Assurance	To improve the outcomes of implementation of SOPs	Improve TB, HIV and OLD prevention and elimination	TBD	TBD	QMP	Inspection Tools QA Data Tools Quality Assurance Report	Continuous	Quality Officer

Addendum 3: Information, Education and Communication SOP

Activity	Indicator	Purpose	Output/ Outcome	Baseline	Target	Data Collection/ Source	Tools	Frequency	Responsible Persons
Establish TB, HIV and OLD Information Bank	Develop TB, HIV & OLDs Information materials (Posters, flyers, T Shirts)	Increase awareness on TB, HIV & OLDs	Improved prevention of silica & TB Reduced TB & OLDs	TBD	TBD	IEC Registers	Data Proforma	Quarterly	Communications Officer
Education and Training on OLDs and TB in mining workplaces	Capacity building sessions completed	Improve knowledge on TB, HIV & OLD preventive mechanisms Improve skills in conducting quality RBMEs, Occupational hygiene assessments etc.	Reduction in TB, HIV & OLDs Improved diagnostic skills Improved competency in conducting HIRAs	TBD	TBD	Training registers Capacity Development Records Registers	Registers	Quarterly	Training Department Training coordinator for ASMs
	Proportion of successful candidates	Improve skills in conducting quality RBMEs, Occupational hygiene assessments etc.	Improved diagnostic skills Improved competency in conducting HIRAs	TBD	TBD	Training Registers	Registers Reports	Quarterly	Training Department Training coordinator for ASMs
Communication of TB and OLDs information and data	Proportion of workers reached or briefed	Improve coverage of workers with information on ODs, TB and HIV	Improved literacy and awareness on TB and OLDs	TBD	TBD	IEC	Data Proforma	On-going	Communications Officer
	Media Rich Communication	Improve reach and content of TB, HIV and OLDs information	Literate and awareness of TB, HIV and OLDs prevention	TBD	TBD			On-going	Communications Officer

9. References

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