MINING INDUSTRY
OCCUPATIONAL
SAFETY & HEALTH

MINERALS COUNCIL
SOUTH AFRICA

SECTION 11 (5) DUST OVEREXPOSURE INVESTIGATION

GUIDELINE

BACKGROUND

The Collieries Dust Working Group was established as a MOSH Dust initiative. The committee comprises of the MOSH Dust team members and VOHE Specialists from the various coal mining groups such as Exxaro Matla, Glencore, Overlooked, Sasol Mining, Seriti, and Thungela Resources to address airborne pollutants and dust challenges within the coal sector through collaborative interventions and facilitation of new research. One of the objectives of this forum is "to promote inter-company learnings on effective dust and airborne pollutants risk mitigating strategies, systems, controls, learning from incidents or initiatives. Extensive work in dust management, such as the compilation of an Underground and Opencast Dust Risk Bowties, has been conducted by this committee in previous years. In the Collieries Dust Working Group Strategy session for 2024, the team identified Learning from incidents as one of the areas which needs to be prioritised for 2024.

PROBLEM STATEMENT

The prevention of incidents/accidents and overall improvement of health and safety forms the core obligations mandated by the Mine Health and Safety Act [MHSA No. 29 of 1996]. Significant resources are made available to ensure that systems are in place to eliminate or manage risk at mines. The occurrence of an incident/accident is indicative of a failure within these systems i.e., if a safe and effective expectation was derived in planning the activity and an incident/accident occurs, then there was either a problem with adherence to the expectation or a gap with the quality of the expectation itself.

Investigation of unwanted events following an incident/accident is one of the methods of identifying such gaps in the risk management process. The Mine Health and Safety Act is specific on the requirement to investigate all incidents/accidents and even provides guidance on what the investigation should aim to achieve. However, the Act does not necessarily give guidance on the specific items which must be covered in the investigation report. In order to close this gap, Collieries Dust Working Group hosted a workshop with VOHE Specialists industry members to develop a guideline on dust overexposure investigation.

MINE HEALTH AND SAFETY ACT INVESTIGATION REQUIREMENTS [SECTION 11(5)]

The purpose of the Mine Health and Safety Act [MHSA 1996] is to provide for protection of the health and safety of employees and other persons at mine, one of the objectives of the Act is to provide for effective monitoring systems, inspections, investigations and inquiries to improve health and safety. Section 11 of the MHSA contains several provisions which address risk assessment, however for the purpose of this guideline, the provisions of Section 11(5) will be outlined:

Section 11

(5) Every employer must

A Conduct an investigation into every:

I. Accident that must be reported in terms of this Act
II. Serious illness; and
III. Health-threatening occurrence

B Consult the health and safety committee on investigations in terms of this section

C Conduct an investigation in co-operation with the health and safety representative responsible for the working place in which the investigation takes place

D On completions of each investigation, prepare a report that

I. Identifies the causes and the underlying causes of the accident, serious illness or health-threatening occurrence
II. Identifies any unsafe conditions, acts or procedures that contributed in any manner to the accident, serious illness or health-threatening occurrence; and
III. Makes recommendations to prevent a similar accident, serious illness or health-threatening occurrence; and

E Deliver a copy of the report referred to in paragraph (d) within 30 days from the date of the accident, serious illness or health threatening occurrence being investigated to the Principal Inspector of Mines and the health and safety committee. If there is no health and safety committee the employer must deliver a copy of the report to the health and safety representative responsible for the working place.

METHODOLOGY

Mining houses within the coal sector in the Mpumalanga Region were requested to submit dust overexposure investigation report templates which they are currently utilising to conduct their dust overexposure investigations. This information was then scrutinised to assist the MOSH Dust team with the facilitation of the MHSA Section 11(5) Dust Overexposure Investigation Workshop which was hosted online and attended by Ventilation and Occupational Hygiene professionals representing the major mining houses within the coal sector. Careful consideration was also taken to ensure that Section 11(5) Dust Overexposure Investigation Report templates are obtained from both surface and underground operations. The workshop afforded the VOHE Specialist team the opportunity to confirm the MHSA Section 11(5) investigation requirements. The various dust overexposure investigation report templates were then reviewed to ensure that the basic information required for a dust investigation is covered.

DUST OVEREXPOSURE INVESTIGATION REPORT TEMPLATE

This is the report cover page

Mining Area:	
Occupational Hygiene Stressor Investigated:	
Date of Investigation:	
Investigation Lead:	

REPORT ROUTING

No	Position	Name & Surname	Date		Signature
			Received	Dispatched	
1	Assistant VOHE Officer				
2	12.1 Appointee [Head, Ventilation or Specialist, Occupational Hygienist]				
3	Shaft Manager/Area Manager				
4	Shaft Engineer/Area Engineer				
5	Full Time SHE Rep				
6	Engineering Manager				
7	General Manager				

PERSONAL MONITORING INCIDENT INVESTIGATION REPORT

A. LOCATION DETAILS

The company's details are required in this section

Business Unit	
Site/Colliery	
Discipline (Mining, Engineering, etc.)	
DMRE Mine Code	
DMRE Sub Mine Code [if applicable]	

B. EMPLOYEE DETAILS

Employee personal information and Occupation Risk Profile required in this section

Name & Surname	**COY Number**		**ID Number**			
Age	**Occupation**		**Date Engaged**			
Company	**Section**		**Duration Employed in the Position**			
HEG No.:		**HEG Classification:**	**A**	**B**	**C**	**D**
HEG Description:						

C. INCIDENT DETAILS

This section details the reason for the investigation, information to be obtained from the personal sampling report by VOHE.

Date of Incident:			**Shift Worked**			
Incident Description:						
Coal Dust [OEL – 1.5mg/m³]		**Repeat Incident:**	**Yes:**		**No:**	
Crystalline Silica [OEL – 0.05mg/m³]		**Repeat Incident:**	**Yes:**		**No:**	
PNOC [OEL – 3.0mg/m³]		**Repeat Incident:**	**Yes:**		**No:**	
Air Quality Index [(AQI) [Limit – 1]		**Repeat Incident:**	**Yes:**		**No:**	
Real Time Dust Monitoring [if applicable]		**In Place?**	**Yes:**		**No:**	
Pump Motion % [if applicable]		**Pump Motion Comment:**				

D. DAY OF SAMPLING DETAILS

VOHE to populate this section using the employee's sampling sheet.

Instrument Name, Type and No.:		**Filter Number:**		
Pre-Calibration Flowrate:		**Post-Calibration Flowrate:**		
Instrument Calibration Date:		**Next Calibration Date:**		
Task(s) Performed:				
Was a Mini RA [SLAM] Conducted?	**Yes (Type):**		**No:**	
Was Respiratory Protection used?	**Yes (Type):**		**No:**	

E. TRAINING DETAILS

The responsible Section Head to obtain training information from HR, the rest of the info to be derived from employee during the investigation.

Has the Employee received Training for this task(s)?	**Yes [Specify]**		**No:**	
Does the employee know the dust controls of this task(s)?	**Yes [Specify]**		**No:**	
Can the Employee demonstrate how to don their dust [PPE]?	**Yes [Partial/Full]**		**No:**	
Does the Employee understand the dangers of Dust?	**Yes [Partial/Full]**		**No:**	

F. SUB-STANDARD CONDITIONS DETAILS

Derive information from the employee and Safety Representation during the investigation

Did the employee identify any sub-standard conditions that may have contributed to the incident? (Specify):

G. CURRENT ENVIRONMENTAL CONDITIONS:

This section must be completed by VOHE based on the latest available survey inspection of the area.

	During the Activity	**Without Activity**
Temperature [ºC]		
Air Velocity [m/s]		
Dust Levels [mg/m³]		

PICTURE (IF APPLICABLE):

Add a picture or sketch of the working area if applicable.

H. NOTES FROM THE INVESTIGATION TEAM – IDENTIFY BASIC AND ROOT CAUSES

This section refers to the conclusions of the investigation team on what were the root causes for the overexposure.

I. ANY UNSAFE ACT OR CONDITION THAT CONTRIBUTED TO THIS DUST OVER EXPOSURE? *This section refers to the conclusions of the investigation team on what unsafe act or conditions resulted in the overexposure.*			
No	**Unsafe Act or condition**	**Remedial Action**	**Responsible Person**
1			
2			
3			
4			

J. RECOMMENDATIONS / ACTIONS: *This section refers to the agreed recommendations by the investigation team.*				
No	**Recommendations/Action**	**Responsible Person**	**Completion Date**	**Signature**
1				
2				
3				
4				

J. ATTACHMENTS *Attach copies of the relevant documentation if applicable*				
Dust Pump Calibration Certificate	**Flowmeter [TSI] Calibration Certificate**	**Partial Supervisor Document**	**Real Time Monitoring Download**	**Pump Motion Download**

INVESTIGATION TEAM: *This section is to be completed by each member of the investigation team*				
Name and Surname	**Coy No.**	**Designation**	**Experience [Years]**	**Signature**

GENERAL NOTES:

1. The Health and Safety Committee has been consulted on this Investigation Form.
2. The Shaft Manager/ Area Manager must lead this investigation.
3. The Health and Safety Representative responsible for the Work Area must be part of this investigation.
4. This investigation form must be delivered to the Principal Inspector of Mines and the Health and Safety Committee within 30 days from the date of the over exposure incident.