

Black Mountain Mining

BMM-HSE-VOH-SOP-0024 Management of blood lead levels and over exposure to Airbourne lead

VZI Doc #	SBU Doc #	Document Type	Review Status
BMM-HSE-VOH-SOP-0014	BMM-HSE-VOH-SOP-0024	Standard Operating Procedure	Approved
Version	Confidentiality Level	Audit Standard	HOD
4.0	Internal (C3)	ISO 45001:2018	Catharina Kotze

Effective Date	Review Date	Review Cycle	Next Review Date
1 November 2002	11-14-2024	2 Years	11-14-2026

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CHANGE HISTORY

Modified Date	Version	Modified by	Description of change
2002/11/01	1.0		New Document
2020/11/18	2.0	C. Klopper	Review
2022/11/18	3.0	C. Klopper	Review
2024/06/24	4.0	L. Magerman	Review and new document

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DEFINITIONS AND ABBREVIATIONS

Word / Phrase / Abbreviation	Definition
PEME	PEME is an acronym used in Black Mountain Mining and has the following meaning: - People, - Equipment, - Materials, - Environment, The use of this in written documentation helps to comply with Resources Clause 7 – ISO 9001, ISO 14001 and ISO 45001. It is advisable to include in all written documentation.
BMM	Black Mountain Mining
STD	Standard
HR	Human Resources
OMP	Occupational Medical Practitioner
SOP	Standard Operating Procedure
SS	Specification Sheet
µg/dl	Micrograms per decilitre
VOH	Ventilation & Occupational Hygiene

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1. PURPOSE

The purpose of the Standard is to:

- Give clear and concise instructions on the procedure to be followed when a person's blood lead level is more than the Black Mountain Mining (BMM) withdraw from work limits and when a person is over exposed to high airborne lead concentrations.
- The standards are applied in the same manner for Black Mountain and Contractor employees.

2. RELATED AND SUPPORTING DOCUMENTATION

- BMM-HSE-VOH-COP-0005 Minimum Standard of Fitness to Perform Work at a Mine
- BMM-HSE-VOH-SOP-005A Occupational Medical Surveillance
- BMM-HSE-VOH-COP-0006 Airborne Pollutants
- BMF 144 Blood Lead Questionnaire A-Form A and B
- SS0003 B Guideline for Job Placement Evaluation

3. DOCUMENTS REPEALED BY THIS DOCUMENT

BMS 105 Blood Lead Procedure for coaching and or withdrawal of Employees

4. CONTENT

4.1. Blood and Airborne lead monitoring

Blood lead monitoring is included in the Black Mountain Mining occupational medical surveillance programme. Black Mountain Mining has adopted more stringent standards than specified in the Occupational Health and Safety Act as amended (Lead Regulations (2001)), which is used as a guideline for lead exposure and monitoring purposes. Table 1.1 specifies the monitoring frequencies.

Table 1.1: Blood Lead Monitoring Frequency

	BLOOD LEAD MONITORING	
FREQUENCY		FUNCTION
Annual	All employees	• Part of periodic medical surveillance
	Males:	• Below the action limit (30µg/dl)
	Females:	• Females not capable of procreation

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3 monthly	Females:	Capable of procreation below the action limit (10µg/dl)
	All newly appointed employees during the first year of employment (even if blood lead levels are below the BMM standards)	
Monthly	Males:	At or above the action limit (30µg/dl)
	Females:	- At or above the action limit (10 µg/dl) - Pregnant and breastfeeding
Discretion of OMP	Males:	At or above the withdrawal limit (35µg/dl)
	Females:	At or above the withdrawal limit (15µg/dl)
Note: Blood lead monitoring will also be done during pre-employment medical and exit medical		

Biological monitoring procedure

- Biological monitoring is conducted by taking a venous blood sample from a person.
- This sample is then analysed in house by blood lead analysing equipment.
- In the event the result is at or above the BMM action limit or when lead test kits are not available onsite, a blood sample is submitted to an external laboratory for confirmation analysis and quality control purposes.
- Results from the BMM clinic are immediately available and those from the external laboratory are normally available within five to seven workdays, reported to the Occupational Medical Practitioner/Medical Staff.

Table 1.2 Venous Blood Lead Sampling Procedure

BLOOD LEAD MONITORING			
	Venous (normal)	Venous (action)	Laboratory results
Males	< 30 µg/dl	≥30 to <35 µg/dl	≥35 µg/dl withdrawal
Females	< 10 µg/dl	≥ 10 to <15 µg/dl	≥15 µg/dl withdrawal
Pregnant females	Withdrawn on notification of pregnancy		
Note: All biological samples of pregnant females are sent to the laboratory for conformation testing.			

Personal Dust sampling

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Personal dust sampling is done as part of Black Mountain Mining's Occupational Hygiene Monitoring programme. Personal exposure monitoring is conducted on an annual cycle period in compliance with regulation 9.2(7).

5. BMM ACTION AND WITHDRAWAL LIMITS

5.1. Blood lead limits

Black Mountain Mine has adopted more stringent withdrawal limits as is prescribed in the Lead Regulations (2001, as amended) in order to prevent employees exceeding these limits. The BMM action and withdrawal from work/workplace limits as per blood lead is specified in the table below:

Table 1.3: Black Mountain Blood Lead Limits

	Action Limits	Withdrawal Limits
Males and Females not capable of procreation	30 µg/dl	35 µg/dl
Females: capable of procreation	10 µg/dl	15 µg/dl
Note: All pregnant and breastfeeding females are to remain withdrawn		

5.2. Occupational Exposure Limit of Lead

At BMM the Occupational Exposure Limit (OEL) for Lead in the workplace as per Airborne Dust Sampling is as follows: 0.1mg/m³

5.3. Action Limits

The purpose of the action limits is to minimize the amount of health effects on the employee for both acute and chronic health effects/exposure, to investigate possible causes for the increase in blood lead levels and to institute measures to reduce this level, thus preventing it reaching the Withdrawal from Occupation/Workplace Limits.

5.4. Withdrawal from Occupation/Workplace Limits

The purpose of the withdrawal limits is to temporarily remove people from a work area when blood lead levels reach the withdrawal limit, to minimize any adverse health effects and to prevent further increase in the blood lead levels. A full investigation is conducted to determine the causes, implement preventative actions and discuss alternative temporary relocation of the employee.

6. EXCEEDING OF ACTION LIMITS

The following actions are initiated in the event that a person's blood lead level exceeds the action limit:

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6.1. Notification of result

- The occupational medical department will inform the VOH department when a result more than the action limit is received. The VOH department will formally inform the following persons:
- BMM Line Management/Contract Site Manager/Direct Supervisor of the employee involved
- In the case of a Business Partner, the BMM Contract Manager for the specific contract or the Direct Supervisor of the employee
- The employee is informed by Supervisor

6.2. Investigation and consultation

A VOH official will chair the investigation. The following persons to be involved in the investigation:

- VOH Official
- Line Supervisor of the employee
- Employee: The employee has a choice to arrange for representation if he/she sees the need.

The objectives of the investigation and consultation session are to:

- Complete BMF 144 Blood Lead Questionnaire Form A
- Determine the root causes for the exceeding of the action limit.
- Assign responsibilities and initiate corrective actions to prevent a similar incident or a possible exceeding of the withdrawal limit.
- Explain the requirements of the BMF 144 Blood Lead Questionnaire Form B to Line Management. Requirements for this report are as follows:
 - o The affected employee's Line Supervisor must observe the health/hygiene habits of the employee as well as the physical conditions in the workplace.
 - o This observation must run over two consecutive work weeks.
 - o At the end of each week, a BMF 144 Blood Lead Questionnaire Form B must be completed, and findings discussed with the Line Manager
 - o The signed-off report must be returned to the VOH department for review and record keeping.

7. EXCEEDING OF WITHDRAWAL LIMITS

The following actions are initiated if a person's blood lead result exceeds the withdrawal limit:

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7.1. Notification of results

The occupational medical department will inform the VOH department when a result more than the withdrawal limit is received. The VOH department will formally inform the following persons:

- BMM Human Resources department (for both BMM employees and Business Partners)
 - o The BMM Human Resources department will arrange the investigation date into the incident with all persons involved.
- BMM Line Management / Contract Site Manager of the employee involved.
- In the case of a Business Partner, the BMM Contract Manager for the specific contract.
- The employee

7.2. Investigation, consultation and withdrawal

The investigation will be chaired by a VOH official/Line Supervisor of employee. The following persons to be involved in the investigation:

- VOH Official
- Line Supervisor of the employee
- HR Official
- Employee: The employee has a choice to arrange for representation if he/she sees the need.

The objectives of the investigation and consultation are to:

- Complete the BMF 144 Blood Lead Questionnaire Form A
- Determine the root causes for the exceeding of the withdrawal limit.
- Assign responsibilities and initiate corrective actions to prevent a similar incident.
- Determine alternative temporary placing (withdrawal from current occupation and/or workplace) for the employee. "SS0003 B Guideline for Job Placement Evaluation" must be consulted and consideration should be given to the following:
 - o Alternative placing should preferably be in the same department where the employee is normally employed. However, as the aim is to reduce the employee's blood lead level to below the withdrawal limits, the lead dust load of alternative work areas and/or occupations must be taken into account.
 - o The transferable skills of the employee.

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- In the event that alternative temporary placing is not within the same department where the employee is normally employed, the line management of the alternative occupation and/or workplace must be consulted before the placing of the employee is finalised. The temporary line supervisor must also complete the BMF 144 Blood Lead Questionnaire Form B as required below.
- Explain the requirements of the BMF 144 Blood Lead Questionnaire Form B to Line Management. Requirements for this report is as follows:
 - o The affected employee's Line Supervisor must observe the health habits of the employee in the workplace.
 - o This observation must run over two consecutive work weeks.
 - o At the end of each week, a BMF 144 Blood Lead Questionnaire Form B must be completed and findings discussed with the Line Manager.
 - o The signed-off report must be returned to the VOH department for review and record keeping.

8. RETURN TO NORMAL OCCUPATION AND/OR WORKPLACE

The affected employee will be allowed to return to his/her normal position as soon as his/her blood lead level has reduced to below the BMM action standard. Thereafter the frequency of testing will continue as per Table 1.1 Notification will be as follows:

- The Occupational Medical Practitioner/Medical Staff will inform the VOH department, who will inform:
 - o BMM Human Resources department (for both BMM employees and Contractor employees)
 - o Line management of the employee involved.
 - o In the case of Business Partner employees, the BMM Contract Manager for the specific contract as well as the Site Manager of the Business Partner are informed.

RETURN TO WORK BLOOD LEAD LEVELS	
Males and females not capable of procreation	<30 µg/dl
Females capable of procreation	<10 µg/dl
Pregnant females	Remain withdrawn
Breast feeding females	When breastfeeding has stopped
<i>Note: Breastfeeding period - Period of 6 months after the birth of a child</i>	

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9. WITHDRAWAL DUE TO PREGNANCY

Pregnant females are withdrawn immediately from lead areas and placed as per “SS0003 B Guideline for Job Placement Evaluation”. Blood lead level monitoring frequency will be conducted as specified in table 1.1 for the affected pregnant employee. The Occupational Medical Practitioner/Medical Staff will inform the VOH department, who will inform:

- BMM Human Resources department (for both BMM employees and Business Partner employees)
- Line management of the employee involved.
- In the case of Business Partner employees, the BMM Contract Manager for the specific contract as well as the Site Manager of the Business Partner are informed.

10. INVESTIGATION DUE TO PERSONAL DUST EXPOSURE OVER THE OCCUPATIONAL EXPOSURE LIMIT FOR INORGANIC LEAD

When a personal monitoring result is above the Occupational Exposure Limit (OEL) for Inorganic Lead, the following procedure will be followed:

- An investigation form will be sent to the immediate Supervisor of such an employee.
- The root causes will be identified and investigated.
- Corrective action will be taken to prevent a similar incident.

The form will be completed by the employee and the supervisor, and the completed form will be sent to the VOH Department for record keeping purposes.

11. RESPONSIBILITIES

- The designated Owner shall implement and maintain this Document.
- Department Heads shall ensure that this Standard is applied with due diligence.
- Deviations from this Standard shall be affected via approved “Deviations from Standard” documentation.
- Should additionally precautions, due to special circumstances unique to that Department/Section, over-and-above the requirements of the Standard be necessary, then the Department Head shall ensure that, in consultation with the relevant specialists, such requirements are specified in writing, conveyed over to the end users, and recorded as such.

12. VALIDITY AND DOCUMENT MANAGEMENT

12.1. Document Validity

This SOP is effective from 2002/11/01 and was last reviewed on 14-11-2024.
This SOP will be reviewed every 2 Years.

12.2. Document Management

- 12.2.1. This SOP replaces any other SOP issued earlier by BMM to the extent specifically covered here. This SOP should be followed in letter and spirit.
- 12.2.2. BMM is committed to continuously reviewing and updating policies and procedures, based on the Entity's risk assessment and shall incorporate for any regulatory requirement which is required to do so.
- 12.2.3. Any amendment to this SOP or issue of any guidance or circular etc. under this procedure must be approved in writing by the approving authority as listed in this document.
- 12.2.4. BMM reserves the right to withdraw, modify or revise the SOP as a whole / partial without providing any justification for the same. On revision, it should be duly communicated to the personnel involved.
- 12.2.5. If compliance with this SOP ever conflicts with the applicable law, regulation, directives issued by the statutory and or regulatory authority, then compliance must be ensured with the law.
- 12.2.6. In order to ensure compliance or to address any known conflicts with the law or to address any specific local requirements, BMM may adopt local sub-procedures which shall be by way of addendum to this SOP and which shall be approved by the approver of this SOP. Proposing of such addendum shall be the responsibility of the respective Entity's competent authority who is at an equivalent level with the SOP owner as set out in this document.

12.3. Violation of Sop

- 12.3.1. BMM follow a "Zero Tolerance Policy" with respect to non-compliance with this SOP and/or any other SOP / guidance issued by BMM and its constituent Entities.
- 12.3.2. Violation of this SOP is subject to appropriate disciplinary actions which may include but not limited to termination of employment. This determination will be based on the facts and circumstances of each situation. Any accused of violation of this SOP will be given an opportunity to present their case prior to any determination of

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appropriate disciplinary actions. Violation of this SOP may also be subject to substantial civil damages, criminal fines and prison terms.

- 12.3.3. Each employee is responsible for ensuring that their conduct and the conduct of anyone reporting to them shall fully comply with this SOP. Compliances, both personal and by subordinates, will be a factor in periodic performance appraisals.

12.4. Disclaimer

- 12.4.1. This SOP issued by BMM is for internal compliance and does not create, nor shall it be construed to create, directly or implicitly, any rights, duties or obligations of BMM to any person, body or legal Entity.
- 12.4.2. This document and its contents are the copyright property of BMM. The release of this document to any third party outside BMM is strictly prohibited without prior consent.

13. REVIEW AND APPROVAL

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8:48:53 AM ||

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9:22:02 AM ||

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3:49:52 PM ||

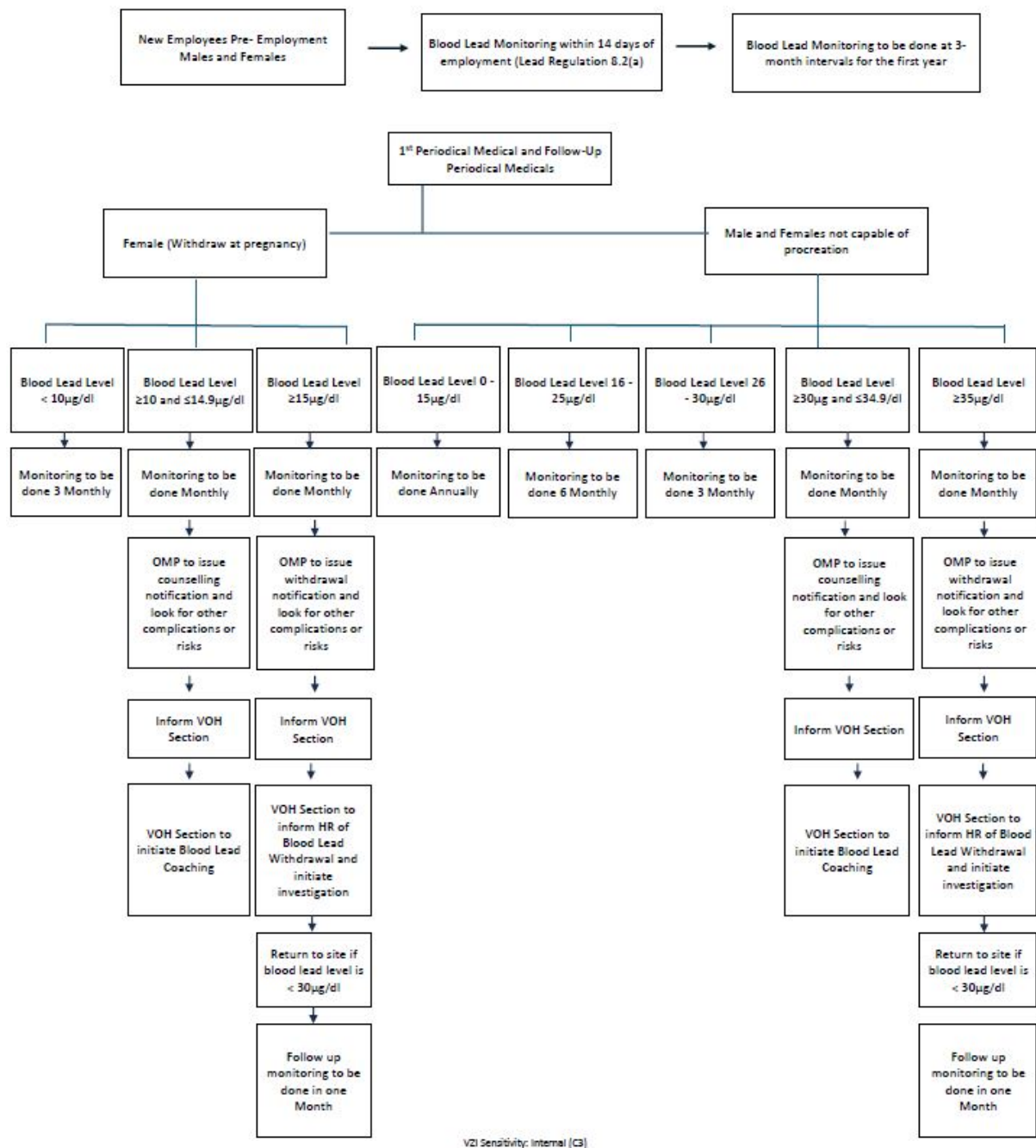
**This document was approved (in sequence) by the individuals above
using electronic approval in our Document Control System.**

Final approval status: Approved

Approvals were done electronically.

❖ ANNEXURES / APPENDIX

Blood Lead Monitoring Process Flow for persons working in Lead Environment



VZI Sensitivity: Internal (C3)

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