

MINE ENVIRONMENTAL CONTROL

PAPER 6 OCTOBER 2017

MEMORANDUM

QUESTION 1

(MHSA S.102 (definitions))

- 1.1 "Labour relations Act". means the Labour Relations Act, 1995 (Act No. 66 of 1995).
- 1.2 "Medical Inspector" means a Medical Inspector appointed in terms of section 49(1) (b).
- 1.3 "Fiery mine" means a mine which is for the time being a fiery mine in terms of a declaration made under these regulations by the Principal Inspector of Mines.
- 1.4 "flammable gas warning device" means a device designed to give a clearly audible or a clearly visible warning, or both a clearly audible and a clearly visible warning, should it be placed in an atmosphere containing more than one comma four parts per hundred by volume of flammable gas, and which complies with the South African Bureau of Standards specification SABS 1515.
- 1.5 "Ventilating district" means such part of a mine as has an independent intake commencing from a main intake air-course and an independent return air-way terminating at a main return air-course.

QUESTION 2

(MHSA S.12.1-3)

2.1

- The employer must engage the part-time or full-time services of a person qualified in occupational hygiene techniques to measure levels of exposure to hazards at the mine:
 - If required to do so by regulation or a notice in the Gazette, or
 - If after assessing risks in terms of section 11(1), it is necessary to do so.

- Every system of occupational hygiene measurements must:
 - Be appropriate, considering the hazards to which the employees are or may be exposed and.
 - Be designed so that it provides information that the employer can use in determining measures to eliminate, control and minimise the health risk and hazards to which employees are or may be exposed.
- The employer must keep a record of all occupational hygiene measurements in terms of subsection (1) in a manner that can be linked as far as practicable to each employee's record of medical surveillance.

MHSA Reg.9.2 (3), (7)

2.2

2.2.1 The competent person engaged by the employer in terms of section 12 (1) must, as part of the compliance with section 12 (2) (b), report to the employer on:

- The occupational hygiene risk assessment, with specific reference to planning, design, implementation and management of occupational hygiene at the mine.
- The occupational hygiene hazards that may cause illness or adverse health effects to persons, assess the results in terms of the implementation of control systems and management thereof, and recommend remedial action to the employer.

2.2.2 The employer must submit to the regional Principal Inspector of Mines, on forms 21.9(2) (a), 21.9(2) (b), 21.9(2) (c), 21.9(2) (d), 21.9(2) (e) and 21.9(2) (f), prescribed in chapter 21, and within 60 days from the end of the relevant reporting period as indicated on each form, reports which contain information on airborne pollutant, thermal stress and noise aspects of the system of occupational hygiene measurements, established and maintained in terms of regulation 9.2(2).

QUESTION 3

(MHSA S.10.1-5)

(1) As far as reasonably practicable, every employer must –

(a) Provide employees with any information, instruction, training or supervision that is necessary to enable them to perform their work safely and without risk to health; and

(b) Ensure that every employee becomes familiar with work-related hazards and risks and the measures that must be taken to eliminate, control and minimise those hazards and risks.

(2) As far as reasonably practicable, every employer must ensure that every employee is properly trained -

(a) To deal with every risk to the employee's health or safety that -

(i) is associated with any work that the employee has to perform; and

(ii) Has been recorded in terms of section 11;

(b) In the measures necessary to eliminate, control and minimise those risks to health or safety;

(c) In the procedures to be followed to perform that employee's work; and

(d) In relevant emergency procedures.

(3) In respect of every employee, the provisions of subsection (2) must be complied with -

(a) Before that employee first starts work;

(b) At intervals determined by the employer after consulting the health and safety committee;

(c) Before significant changes are introduced to procedures, mining and ventilation layouts, mining methods, plant or equipment and material; and

(d) Before significant changes are made to the nature of that employee's occupation or work.

(4) The employer must keep a record of all formal training provided in respect of each employee in terms of subsection (2).

[Subs. (4) added by s. 3 of Act 74/2008]

(5) All mines must submit a workplace skills plan and the annual training reports to the Mining Qualifications Authority.

[Subs. (5) added by s. 3 of Act 74/2008]

QUESTION 4

(MHSA S.13 (1, 2, 3 and 4A))

4.1 The employer must establish and maintain a system of medical surveillance of employees exposed to

health hazards -

- (a) If required to do so by regulation or a notice in the Gazette; or
- (b) If, after assessing risks in terms of section 11 (1), it is necessary to do so.

4.2 Every system of medical surveillance must -

(a) Be appropriate, considering the health hazards to which the employees are or may be exposed;

(b) Be designed so that it provides information that the employer can use in determining measures

to -

- (i) Eliminate, control and minimise the health risk and hazards to which employees are or may be exposed; or
- (ii) Prevent, detect and treat occupational diseases; and
- (c) Consist of an initial medical examination and other medical examinations at appropriate intervals.

4.3 Every employer who establishes or maintains a system of medical surveillance must -

(a) Engage the part-time or full-time services of -

- (i) An occupational medical practitioner.
- (ii)

[Subpara. (ii) deleted by s. 5 of Act 74/2008]

- (b) Supply the practitioners with the means to perform their functions; and
- (c) Keep a record of medical surveillance for each employee exposed to a health hazard.
- (4)

[Subs. (4) deleted by s. 5 of Act 74/2008]

4.4 (4A) The employer must inform the Principal Inspector of Mines, in writing, within seven days of the appointment of the occupational medical practitioner.

[Subs. (4A) inserted by s. 5 of Act 74/2008]

4.5 The information submitted in terms of subsection (4A) must include-

- (a) The name of an occupational medical practitioner.
- (b) His or her practice number; and
- (c) Whether the occupational medical practitioner is engaged full time or part time.

QUESTION 5

MHSA Reg.9.1 (1-4), 9.2 (1-2)

5.1 Use of Compressed Air

9.1 Environmental Engineering

- 9.1 (1) No person may use, or permit any person to use, compressed air:
- (a) In such a manner that it might endanger the *health* or *safety* of any person; or
 - (b) To clean the body of any person or clothes being worn by any person.

5.2 Early Warning Systems

- 9.1 (2) Where the *risk* assessment at the *mine* indicates a significant *risk* of a fire and/or explosion and/or toxic release, that could lead to an irrespirable atmosphere or an atmosphere immediately dangerous to life or *health*, the *employer* must provide an early warning system or systems at all *working places*.

5.3 Ventilation Control Devices

9.1 (3) The *employer* must ensure that polymer underground ventilation control devices or appliances, which have the potential for electrical static discharge:

- (a) Comply with the SABS standard specifications 1287: Part I and Part II
- (b) Are of anti-static characteristics when used in *working places* where there is a *risk* of igniting gas, dust or vapour.

(Subreg. (3) with effect from: 1 September 2002)

5.4 Working places where work has ceased

9.1 (4) The *employer* must take *reasonably practicable* measures to ensure that no *employee* is exposed to any *health hazard* at, or emanating from, any *working place* where work has ceased, either temporarily or permanently.

5.5 Occupational exposure to health hazards

9.2 Occupational Hygiene

9.2 (1) The *employer* must ensure that the occupational exposure to *health hazards* of *employees* is maintained below the limits set out in Schedule 22.9(2)(a) and (b).

5.6 System of Occupational Hygiene Measurements

9.2 (2) The *employer* must establish and maintain a system of *occupational hygiene* measurements, as contemplated in section 12, of all *working places* where the following *hazard* limits prevail:

- (a) airborne pollutants
 - particulates $\geq \frac{1}{10}$ of the occupational exposure limit;
 - gases and vapours $\geq \frac{1}{2}$ of the occupational exposure limit;
- (b) thermal stress
 - heat $>25,0$ °C wet bulb and/or $>32,0$ °C dry bulb and/or $>32,0$ °C mean radiant temperature;
 - cold <10 °C equivalent chill temperature; and
- (c) noise
 - $\geq 82\text{dBL}_{\text{Aeq,8h}}$

Reference is made to the following Guidelines issued by the Chief Inspector of Mines in terms of section 9(2) of this Act

(i) Guideline for the Compilation of a Mandatory Code of Practice for an Occupational Health Programme on Personal Exposure to Airborne Pollutants: Ref. No. DME 16/3/24-A1

(ii) Guideline for the Compilation of a Mandatory Code of Practice for an Occupational Health Programme on Personal Exposure to Thermal Stress Ref. No. DME 16/3/2/4-A2

QUESTION 6

DMR Guideline for the compilation of a Mandatory Code of Practice for the prevention of flammable gas explosions in mines other than coal mines: (Ref DME 16/3/2/1-A2 Feb. 2002):

Part A

6.1 Objective of the guideline

The objective of this guideline is to assist the employer of every mine, other than a coal

mine, to compile a code of practice, which, if properly implemented and complied with,

would considerably reduce the risk of an ignition of flammable gas.

6.2 Definitions and acronyms

In this guideline for a COP or any amendment thereof, unless the context otherwise indicates: -

6.2.1 Containment wall means a seal which is designed to withstand a static pressure of 140kpa.

6.2.2 Controlled recirculation means air from a working face or place which returns to the same working face or place under pre-determined conditions.

6.2.3 Hazardous location means any location on surface or underground at any mine, other than a coal mine, where there may be a risk of igniting gas, dust, vapour or any other explosive substance.

Part C

6.3 Aspects to be addressed in the COP

6.3.1 Detection of flammable gas

The COP must set out a procedure to detect flammable gas, which must deal with the following aspects:

1. Selection of appropriate flammable gas detection instruments for the typical operational conditions.
2. Availability for allocations, at any time, of a sufficient number of the flammable gas detection instruments referred to above.
3. Issuing of flammable gas detection instruments to employees on the mine.
4. Testing for and dealing with the presence of flammable gas.
5. Maintenance and calibration of flammable gas instruments.
6. Training and presence of competent persons for performing flammable gas detection measurements, inclusive of the correct selection, use and care of flammable gas detection instruments.

6.3.2 Clearing accumulation of flammable gas, including roof layers

The COP must set out procedures to be taken to ensure the clearing of gas accumulations, including from roof layers. These procedures should cover at least the following:

1. Isolating electricity and
2. Withdrawing of people from the return.

6.3.3 Frictional ignition

The COP must set out measures to be taken to identify potential sources of frictional ignition and detail the relevant prevention and control measures.

6.4 *Approaching* and holing into stopped areas:

The COP must set out the safety precautions to be taken when approaching or holing into abandoned ends, covering at least the following: -

1. Warning notes from the surveyor;
2. Stopping distances of workings approaching abandoned areas;
3. Maximum excavation sizes;
4. Methods to probe for water and gas accumulations; and
5. Ways of re-establishing ventilation before and after holing.