

CTMM POLICY ON THERMAL STRESS

A. POLICY

To provide for a safe and healthy workplace to all CTMM employees.

1. SCOPE

This policy is applicable to all divisions within the CTMM.

2. OBJECTIVES

- 2.1 To prevent employee overexposure to temperature extremes that could negatively effect their health, productivity or well being and to ensure legal compliance.

3. REFERENCES

- 3.1 Occupational Health & Safety Act, 85 of 1993, Environmental Regulation 2
- 3.2 Mine Health and Safety Act, 29 of 1996, Regulation 9.2
- 3.3 SABS 0400 Part O: The application of the National Building Regulations
- 3.4 ISO 7243

4. DOCUMENTATION

- 5.1 Occupational Hygiene Report on Thermal Stress Surveys.

5. DEFINITIONS

Acclimatised: physiologically adapted to a particular thermal environment and work rate.

Health & Safety Representative: A departmental representative elected in terms of section 17 or appointed in terms of section 19 in the Occupational Health & Safety Act, 85 of 1993.

Heatstroke: a pathological condition arising from thermoregulatory failure of the human body.

Medical Surveillance: A planned program or periodic examination (which may include clinical examinations, biological monitoring, or medical tests) of employees by an Occupational Medical Practitioner or an Occupational Nursing Practitioner.

Occupational Safety Officer: A person employed in the Occupational Health & Safety Section of the CTMM, sub-section Occupational Safety.

WBGT Index: a number which characterises the thermal conditions in the environment to which that number applies; it is calculated by adding seven tenths of the reading in degrees Celsius obtained with a naturally ventilated wet-bulb thermometer to one fifth of the reading in degrees Celsius obtained with a globe thermometer and adding that sum to one tenth of the reading in degrees Celsius obtained with a dry-bulb thermometer; the index may also be obtained by using an electronically integrating direct-reading instrument which has been designed, built and calibrated for that particular purpose.

6. **RESPONSIBILITY**

Prime: Head of Division (General Manager)

Secondary: Head of Occupational Health and Hygiene
Head of Occupational Safety

It is the responsibility of the Head of the Division to ensure compliance with this policy which is in line with his obligations to provide and maintain a safe and healthy work environment as per the CTMM Health & Safety Policy.

The Head of Occupational Health and Hygiene shall provide an advisory service in line with this policy which may in some instances include the rendering of Occupational Hygiene measurements. Any costs incurred through the appointment of external consultants or analysis fees on samples taken will be for the specific department.

Any delegations made in respect of this policy by the Head of the Division to subordinates must be done in writing.

7. **EXECUTION**

7.1 **New Processes**

- a) The CTMM Project Manager shall during the design of new installations identify maximum thermal exposure requirements and ensure the facility complies therewith.

7.2 **Existing Installations**

- a) It is the responsibility of the Head of the Division to ensure that no person enter any workplace under his or her control where such person will be exposed to thermal conditions at or above the levels listed in this policy.
- b) The Head of the Division responsible for conducting a task risk assessment in collaboration with the Departmental Health & Safety Committee shall forward the outcome thereof to the Head of Occupational Health and Hygiene, who shall then draw up an Occupational Hygiene Survey Schedule which shall contain the frequency for thermal surveys for each department.
- c) Such thermal surveys will be conducted by an Approved Inspection Authority which will be appointed by the Department on recommendation of the Head of Occupational Health and Hygiene.
- d) The Head of the Division shall, after consultation with the Health And Safety Committee establish a training programme for all employees who may be exposed to thermal extremes (as per the levels in this policy) that incorporates the following:

- The content and scope of this policy.
- The potential sources of exposure to thermal stress.
- The potential risks to health and safety caused by exposure to thermal conditions in excess of levels listed in this policy.

- The measures taken by the employer to protect an employee against the detrimental effects of exposure to thermal stress.
 - The precautions to be taken by the employees to protect themselves against the health risks associated with the exposure, including the wearing and use of personal protective equipment.
 - The necessity, correct use, maintenance and limitations of personal protective equipment and engineering control measures provided.
 - The assessment of exposure, the purpose of thermal stress monitoring; the necessity for medical surveillance and the long-term benefits and limitations of undergoing such surveillance.
 - The limits for thermal stress and their meaning.
 - The procedures for reporting, correcting and replacing defective personal protective equipment and for engineering noise control measures.
- e) The training shall be conducted prior to the placement of the relevant employee.
- f) Refresher training shall be conducted annually or at intervals that may be recommended by the health and safety committee.
- g) The training shall be provided by a person who is competent to do so and who has adequate personal practical experience and theoretical knowledge of all aspects of the work carried out by the employee.
- h) An employer shall ensure as far as is reasonably practicable that his or her mandatories or persons other than employees who may be affected by thermal stress at the workplace are given adequate information, instruction and training.
- i) The employer shall keep a record of any training that is given to an employee.

7.3 Cold Stress

- 7.3.1 No employee may be permitted to work in an environment in which the time weighted average dry-bulb temperature taken over a period of four hours is less than 6 °C. Should such a condition exist, the Head of Division must take reasonable measures to protect employees against the cold and also take all precautions necessary for the safety of such employee.
- 7.3.2 Where outdoor work is performed, an employee may not be exposed to a actual dry-bulb temperature of less than 6 °C at any time unless suitable insulated clothing is provided.
- 7.3.3 No Head of the Division shall require or permit an employee to work in a refrigerated environment in which the actual dry-bulb temperature is below 0°C unless:
- a) The maximum exposure of the employee does not exceed the periods as indicated in the following table:

Temperature °C	Maximum exposure
0° to -18°	No limit.
Lower than -18° but not lower than -34° degrees	Maximum continuous exposure during each hour = 50 minutes. After every exposure in a low-temperature area at least 10 minutes must be spent, under supervisions, in a comfortably warm environment.
Lower than -34° but not lower than -57°	Two periods of 30 minutes each, at least 4 hours apart. Total low- temperature exposure: 1 hour per day.
Lower than -57°	Maximum permissible exposure = 5 minutes during any 8-hour period.

b) The employee is provided with the following protective clothing:

- i. A nylon freezer suit or equivalent and, where the said temperature is below -34°C, such suit or equivalent shall be of double layer;
- ii. A woollen Balaclava or equivalent;
- iii. Fur-lined leather gloves or equivalent;
- iv. Waterproof outer gloves with knitted woollen or equivalent inners as well as a waterproof apron where wet or thawing substances are handled;
- v. Woollen socks; and
- vi. Waterproof industrial boots or equivalent;

Provided that an employee who works in a low-temperature area in which the temperature is not lower than - 18°C for periods not exceeding five minutes in every hour need only be provided with an ordinary overall, gloves, shoes or equivalent.

- c) The employee is placed on a medical surveillance program whereby he / she must be certified fit to work in such environment by the Occupational Medical Practitioner (OMP) or Occupational Nursing Practitioner (ONP) according to a protocol prescribed by the Head of Occupational Health, before placement and thereafter, at intervals not exceeding one year, and such employee is issued with a certificate to that effect.
- d) The requirements of the CTMM Policy on pregnant and breastfeeding employees must be adhered to by the Head of Division for all employees exposed to extreme thermal conditions, i.e. cold.
- e) All the clothing worn by the employee is dry prior to entering the low-temperature area.

7.1.5 Where hand-held tools which vibrate at a frequency of vibration of less than 1 000 Hz are used at an actual dry-bulb temperature below 6°C, the employer shall provide an employee operating such tools with lined gloves and ensure that he wears them.

7.4 Heat Stress

- 7.4.1 No employee may be permitted to work in an environment where the time-weighted average WBGT index, determined over a period of one hour, exceeds 30. Should such a condition arise in the environment in which an employee works, the manager of such employee shall –
- a. If practicable, take steps to reduce the said index to below 30; or
 - b. Where it is not practicable to reduce the said index to below 30 and where hard manual labour is performed-
 - i. The employee is placed on a medical surveillance program whereby he / she must be certified fit to work in such environment by the OMP or ONP according to a protocol prescribed by the Head of Occupational Health, before placement and thereafter, at intervals not exceeding one year, and such employee is issued with a certificate to that effect.
 - ii. Ensure that every such employee is acclimatised to such working environment before he / she is required or permitted to work in such environment in accordance with the acclimatisation procedure.
 - iii. Inform every such employee of the need to partake of at least 600 millilitres of water every hour. The manager shall ensure that water or any other recommended liquid be readily available to such employee.
 - iv. Train every such employee in the precautions to be taken to avoid heatstroke; and
 - iv. Provide the means whereby every such employee can receive prompt first-aid treatment in the event of heatstroke:

Provided that, where the question arises as to whether any particular type of work does in fact constitute hard manual labour, the decision of an inspector from the Department of Labour shall be decisive.

8. RECORDS

All records other than personal medical records must be kept by the Head of the Division for a minimum period of 2 years.

9. APPENDICES

Nil