



Work instruction for SH&E requirements for physical stressors

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Purpose

The purpose of this document is to describe the SH&E requirements for managing physical stressors Sasol Synfuels.

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Appendices

None

References

Occupational Health and Safety Act, Act no 85 of 1993

SANS 10083 – 2004: *The measurement and assessment of occupational noise for hearing conservation*
SANS 10389 - 2003: *Code of Practice for Exterior Lighting, Part 1: Artificial lighting of exterior areas for work and safety*
SANS 10114 - 2005: *For Interior Lighting, Part 1: Artificial lighting of interiors*

SP-60-1: *Emergency lighting is handled as part of the design philosophy (SP-60-1).*

National Building Regulations and Building Standards Act, Act no 103

Amendment record

Revision number	Page	Status/Change
02	2, 3, 4 & 6	In the document indicate the changes italics.

1 Abbreviations and definitions

1.1 Abbreviations

AIA	Approved Inspection Authority
IMS	Integrated Management System
SH&E	Safety Health and Environment
SSSS	Sasol Secunda Shared Services
WBGT	Wet-bulb globe temperature index

1.2 Definitions

Definitions and abbreviations used in this document are subscribed and explained in the terminology page of the Integrated SH&E Management System (IMS).

2 SH&E requirements for physical stressors

2.1 Introduction

This document addresses physical stressors, which include noise and hearing conservation, illumination, ventilation, temperature extremes and vibration.

2.2 Requirements for noise and hearing conservation

2.2.1 Area leaders are responsible to ensure that:

- a) All noise zones are identified according to SANS, code of practice 10083 by an approved inspection authority.
- b) Noise to be reassessed every two years and after modification (i.e. change in production process, machinery, etc.) that could result in a change of noise levels.
- c) To obtain area specific noise levels and recommendation on hearing conservation, refer to MyIMS.
- d) Noise control measures should be implemented in order of priority (Regulation 10.2) to reduce exposure to noise.
- e) All areas where the noise level are *equal to or above* 85 dB (A), be demarcated as a noise zone by adequate symbolic safety signs (MV4). All employees exposed to noise levels *equal to or above* 100 dB (A) must wear a combination of both earplugs and earmuffs. The approved hearing protection is obtained from Sasol Synfuels Main stores.
- f) All employees exposed to noise levels above 85 dB (A), where actions in point (d) were not successful, be issued with approved hearing protectors. The wearing of hearing protectors by all personnel exposed to noise levels *equal to or above* 85 dB (A) is mandatory.
- g) All employees exposed to noise levels exceeding 85 dB (A) be trained in the use, maintenance and storage of hearing protectors (SAS-183 form to be used for this purpose).
- h) The supervisor carries out a monthly inspection on all types of hearing protectors issued to personnel, and the findings recorded on the personal safety equipment checklist (SAS-066), which is part of the supervisor's logbook. Each user must also inspect their own hearing protection before use.
- i) All employees of Sasol Synfuels must undergo audiometric testing as part of their pre-employment medical examination.
- j) Audiometric testing of the hearing status of exposed employees should be conducted on an annual basis and / or at intervals as stipulated in SANS code of practice 10083.
- k) All employees of Sasol Synfuels must undergo an exit hearing test upon resignation or transfer from the company.

- l) All newly appointed employees of Sasol Synfuels must undergo a baseline hearing test.
- m) Records of all audiometric tests must be kept at SSSS Occupational Health for a period of 40 years.

2.3 Requirements for illumination: natural and artificial

2.3.1 Area leaders are responsible to ensure that:

- a) Every workplace in his / her area of responsibility is illuminated in accordance with the *illuminance* values specified in the schedule to the Environmental regulation for workplaces of the OHSAct (act 85 of 1993).
- b) Lights are *kept clean* and maintained in a good state of repair. *An illumination maintenance program that will include the replacement of defective and old tubes, and cleaning of dirty lamp covers should be implemented in order to ensure that areas are adequately illuminated and within the acceptable standard at all times.*
- c) Light intensities are evaluated by the Occupational Hygiene group as once off and after any new installation and / or change that may affect the illumination of an area.

Emergency lighting is handled as part of the design philosophy (SP-60-1).

2.4 Requirements for workplace air quality / ventilation and temperature extremes

Temperature extreme measurements will be based on the outcome of the Health Risk Assessment

2.4.1 General ventilation requirements

Area leaders are responsible to ensure that:

- a) Whenever a new building / plant or structure is to be erected, consideration should be given to potential ventilation and temperature problems. The Occupational Hygiene group will assist with such studies and make recommendations. After erection of a new building / plant or structure the Occupational Hygiene group will *conduct a survey and report* their findings.
- b) The air quality inside buildings and work areas must be such to ensure a safe and healthy working atmosphere for employees, according to the environmental regulations for workplaces and hazardous chemical substances regulations (OHSAct - 85 of 1993).

2.4.2 Requirements for working under cold conditions

Employees who are required to work in areas for longer than 30 minutes at a time where the ambient temperature is lower than 6°C must be supplied with the necessary protective clothing.

- a) Employees who are required to work under conditions mentioned in table A must be supplied with the necessary protective clothing and their exposure to these conditions must also comply with the requirements of maximum exposure periods.

The following requirements must be met:

Table A: The maximum exposure of personnel shall not exceed the following:

Temperature (°C)	Maximum exposure
0° to -18°	No limit.
Lower than -18° but not lower than -34°.	Maximum continuous exposure during each hour: 50 minutes. After every exposure in a low-temperature area at least 10 minutes must be spent, under supervision, 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 total exposure: 5 minutes during any eight-hour period.

All personnel working in an artificially cooled area, must be certified fit to be able to work under such conditions by the medical practitioner before commencing duty and annually thereafter.

All clothing worn by employees working in an artificially cooled area must be dry before the employee enters a low-temperature area.

2.4.3 Protective clothing

Under conditions mentioned in table A, the employee must be provided with the following protective clothing:

- a) A nylon freezer suit or equivalent and, where the said temperature is below -34°C, such suit or equivalent shall be of double layer.
- b) A woollen balaclava or equivalent.
- c) Fur-lined leather gloves or equivalent.
- d) Waterproof outer gloves with knitted or equivalent inners as well as a waterproof apron where wet or thawing substances are handled.
- e) Woollen socks.
- f) 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 and shoes, or equivalent.

Where hand-held tools, which vibrate at a frequency of vibration of less than 1000 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.

2.4.4 Requirements for working under *hot* conditions

Where the time-weighted mean WBGT index, as defined in the environmental regulations of the Occupational Health and Safety act, determined over a period of one hour, exceeds 30 in the area where a person is to perform work, the following must be complied with:

- a) Where it is practically feasible, steps should be taken to reduce the index to less than 30.
- b) Where it is not practically feasible to reduce the index to less than 30 and physically hard work has to be performed, the following must be complied with:
 - i) The medical practitioner must certify the person fit to perform work in such an area before commencing work and annually thereafter to a protocol prescribed by such practitioner.
 - ii) Ensure that every such employee is acclimatised to such working environment before he / she is required or permitted to work in such environment.
 - iii) Such a person must be aware of the necessity to consume at least 600 millilitres of water during each hour of his working shift.
 - iv) Such a person must be familiarised with the measures to avoid heat stroke.
 - v) The following work is classified as physically hard work
 - Constant work where physical body strain is required for instance handling of heavy equipment or material.
 - vi) Where the question arises as to whether a specific type of work is physically hard work the opinion of an inspector of Labour will be decisive.

2.5 Vibration

The health risk assessment conducted by the Occupational Hygiene Department will determine if vibration monitoring is necessary.

2.5.1 Area leaders are responsible to ensure that:

- a) Vibration is controlled as far as reasonable practicable through engineering and administrative control.
- b) The tools or processes are designed to minimise the exposure of the hands, fingers and body to vibration.
- c) All tools used are designed according to good ergonomic practice.
- d) There is good guidance on the proper use and maintenance of the tool, machine or vehicle and any anti-vibration or other relevant safety device.
- e) Machines should incorporate a suitable suspension and type of seating which provide the maximum effective attenuation of vibration.
- f) The tool, vehicle, machine or process with the lowest level of vibration should be used whenever practicable.
- g) Equipment and vehicles should be maintained in accordance with good practice and the guidance given by the manufacturer.
- h) The condition of the driving surfaces is as smooth as possible.

2.6 General requirements

2.6.1 Records of all Occupational Hygiene surveys will be kept in *My IMS* and at Occupational Hygiene.

2.6.2 Sasol Synfuels Occupational Hygiene, as an AIA (reference no CI 031 OH), conducts all physical stressor surveys.

3 Record management

Record matrix

Record nr.	Record description	Responsibility	Medium	Storage location	File	Retention period	Disposal method
None	None	None	None	None	None	None	None
Note: Files with hard copies are kept in the document store while the product/customer is active - thereafter it is archived. Electronic data is stored on the server and is backed up as per the IT procedures.							