The University of Cape Town

Hazardous Chemical Substances

Policy Document

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Draft Document: **Policy Document – Hazardous Chemical Substances**

1 Introduction

Hazardous Substances comprise one of the most important matters requiring risk control at the University. They are widely distributed throughout the university campus. The University is legally obligated to ensure a healthy and safe working environment in compliance with all relevant legislative acts.

The Occupational Health and Safety Act and Regulations 85 of 1993 places a duty on employers (in this case the University of Cape Town) to '*provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of its employees*'.

This is extended within the same act that '*every employer shall conduct his undertaking in such a manner as to ensure, as far as reasonably practicable, that persons other than those in his employment who may be directly affected by his activities are not thereby exposed to hazards to their health or safety*'.

To do this, formal procedures need to be in place for health risk assessment, risk control, training and education and other measures that aim to reduce the risks of exposure. Exposure of employees to substances hazardous to health should be prevented or, where this is not reasonably practicable, adequately controlled.

2 Acronyms

PPE: Personal Protective Equipment

RPE: Respiratory Protective Equipment

SHE Rep: Safety Health and Environment Representative

OHS Act/ OHSA: Occupational Health and Safety Act No83 of 1993

HCS: Hazardous Chemical Substances

HS: Hazardous Substances

UCT: University of Cape Town

HSE: Health and Safety Executive (UK)

OEL: Occupational Exposure Limit -CL (Control Limit) and –RL (Recommended Limit)

3 Definitions

Employer: As defined by the Occupational Health and Safety Act the 'employer' shall be The University of Cape Town.

Employee: The employee shall mean a member of the University (including Staff, Students, contract workers, visiting scholars).

Hazard: any source of (or situation with) potential to cause harm or damage.

Hazardous Chemical Substances. In this policy document we refer to Hazardous Chemical Substances as HCS and Hazardous Substances. The definition for Hazardous chemical substance is laid down in the HCS Regulations (GNR.1179 0f August 1995) as follows;

Hazardous chemical substance or HCS means any toxic, harmful, corrosive, irritant or asphyxiant substance or a mixture of such substances for which-

A) an occupational exposure limit is prescribed; or
B) an occupational exposure limit is not prescribed, but which creates a hazard to health.

We can add that a Hazardous Chemical Substance can in the form of a solid, liquid, gas, vapour, dust, fume which possesses the potential to cause harm if inhaled, ingested or absorbed through the skin and/or possesses the potential to cause fire or explosions.

The substance may be a sensitizer, carcinogen, and mutagen or is toxic to reproduction. It can be a dust; any flammable substance including gases, explosive or an oxidizer.

Hazardous Waste: controlled waste which has one or more of the following characteristics: explosive, oxidizing; highly flammable and flammable; irritant; harmful; toxic; carcinogenic; corrosive; infectious; toxic to reproduction; teratogenic; mutagenic; substances and preparation which release toxic or very toxic gases; substances and preparations which after disposal can produce a hazardous characteristic; and ecotoxic.

Medical Surveillance means a planned programme or periodic examination (which may include clinical examinations, biological monitoring or medical tests) of employees by an occupational health nurse practitioner or, in prescribed cases, by an occupational medicine practitioner;

Occupational medicine practitioner: a medical practitioner as defined in the Health Professions Act 56 of 1974 who holds a qualification in occupational medicine or an equivalent qualification, which qualification or equivalent is recognised as such by the Health Professions Council of South Africa.

Occupational health nurse practitioner: a registered nurse holding an additional qualification in occupational health nursing recognized as such by the South African Nursing Council as referred to in the Nursing Act 33 of 2005.

Inhalable dust means airborne material which is capable of entering the nose and mouth during breathing and is thereby available for deposition in the respiratory tract. [HSE]

Respirable dust means airborne material which is capable of penetrating to the gas exchange region of the lung. [HSE]

Risk: the likelihood and consequences (in terms of severity) of a hazardous event (accident or incident).

University Member: Staff, Students, contract workers, visiting scholars

4 Purpose of this Policy

To reduce the risks to health for employees potentially exposed to hazardous chemical substances, by:

- Application of appropriate risk reduction strategies.
- Monitoring personnel involved in the handling of hazardous chemical substances, for
  - Excessive exposure to the product during the manufacturing and testing process;
  - Possible effects on their health as a result of any such exposure.
- Monitoring workplaces where exposure to hazardous chemical substances may take place for excessive exposure to the product during different process.
- To insure compliance with the requirements of South African law, notably
  - Integrated Pollution and Waste Management Act.
  - Occupational Health and Safety Act 85 of 1993.
  - National Environmental Management Act
  - Hazardous Chemical Substances regulations, 1995
  - Hazardous Substances Act

5 Objectives of this Policy

This policy and associated guidelines covers the handling, use, storage and waste disposal of Hazardous substances. The objective of this policy is to set appropriate minimum standards to prevent, or where that is not reasonably practicable or even possible, to minimize the risk of harm or adverse effects arising from work with hazardous chemical substances.

This policy does not cover substances that are hazardous such as asbestos and machine-made mineral fibres. Hazardous Biological Agents, radiation hazards, and substances that are carcinogenic, mutagenic or toxic to reproduction are hazardous substances. However, these have their own specific guidelines.

Carcinogenic, mutagenic substances or substances toxic to reproduction:- University Management Guide:*The Categorization and Control of Carcinogens, Mutagens, and Substances Toxic to Reproduction.*

Hazardous Biological Agents:- University Policy: *Hazardous Biological Agents*

Radiation hazards: University Policies: Working with Ionising Radiation (Group III and Group IV Hazardous Substances) and *Group IV Hazardous Substances, Pregnant and Breastfeeding Members of the University*

This Policy will be reviewed by the Hazardous Chemical Substance Committee, annually from the date of implementation or when deemed necessary.

6 Scope and Standards

This Policy will apply to ALL Faculties; Departments; Centres; Units as well as to ALL members of the University of Cape Town.

The UCT Hazardous Chemical Substances Policy has been prepared according to the standards set in SA Law. However, best practice is the aim. The policy is to be used as a minimum guide to Faculties and Departments when setting their own local rules.

7 Faculty Hazardous Chemical Substance Committees

Each Faculty that within it has a Department; Group; Unit etc whose operations involve hazardous chemicals are required to form a Faculty Hazardous Chemicals Committee with the following terms of reference

7.1 Terms of Reference:

The committee serves in an advisory capacity to the Dean in order for the Dean to comply with the Occupational Health and Safety Act (85 of 1993) – i.e., the Hazardous Chemical Substances regulations - for all spaces of the Faculty (including those of outside bodies). The areas the committee will advise the Dean on are:

- Developing and implementing a structure at the Faculty for managing hazardous chemicals
- How to best conduct a Chemical Audit;
- How to implement and maintain a database of hazardous chemicals in the Faculty;
- How to implement a hazard survey and determine the level of risk for each laboratory.
- How to conduct biological monitoring as prescribed for certain substances
- How to implement measures for the storage and handling of HCS
- How departments can establish what precautionary measures are in place and the steps that need to be taken with respect of these hazards.

The Health and Safety Committee representative serving on this committee will make regular reports from this committee's meetings to the Faculty Health and Safety Committee.

The committee will have the mandate to act in respect of the following:

• Advise Dean on compliance with the HCS Regulations and Safety Standards: The committee may randomly and without notice inspect any laboratory in the Faculty and request to inspect all departmental HCS audits
• Make recommendations to the Dean and the Senior Management of the Faculty: This encompasses all matters related to compliance with HCS safety regulations and safety standards, this could include the recommendation to close areas that fail to comply with regulations.
• Institute new measures for regulating purchase of Hazardous Chemical Substances: Heads of Department (or persons delegated by the Head of Department) to control the purchase of HCS in compliance with up to date laboratory HCS audits
• To advise on enlisting specialized services (at cost to Faculty), e.g., Industrial hygienist The legal mandate to ensure compliance with the Occupational Health and Safety Act (85 of 1993) is held by the Dean of Faculty. The HCS Committee therefore cannot be held legally responsible for non-compliance with the OHSA.

8 Hazardous Chemical Substance Co-ordinator

Each Faculty that within it has a Department; Group; Unit etc whose operations involve hazardous chemicals are required to appoint Hazardous Chemical Substance Co-ordinators representing such Department; Group; Unit etc (the number dependant on Faculty structure) with the following terms of reference:

Delegation of Duties as per the Occupational Health and Safety Act (85 of 1993)

Compile and maintain the hazardous chemical substances inventory as described in *UCT Policy Document: Hazardous Substances Section 9. 2 Toxicity Evaluation* 9.2.1 *Inventory of Hazardous Substances*

1. Compile and maintain an inventory of hazardous chemical substances held in the area named on the letter of appointment.

2. Ensure that University members working in the area named above are adequately informed and trained on the hazards; safe use and handling of chemicals; correct use of Personal Protective Equipment (PPE); and safety precautions.

3. Monitor, evaluate, and exercise control over safe storing, labelling, issue and handling of all hazardous chemical substances in your area of responsibility on a quarterly basis.

4. Co-ordination of the disposal of all hazardous chemical waste in your area of responsibility.

5. Ensure occupational health, hygiene and hazardous chemical substance risk assessments are completed timeously, updated and results communicated.

6. Material Safety Data Sheets (MSDS) of all chemicals in your area of responsibility are kept available and updated along with a copy of the Occupational Health and Safety Act (85 of 1993).

9 HS Health Risk Assessment Strategy

The Hazardous Chemical Substances Regulations require that a suitable and sufficient chemical hazard risk assessments must be carried out in advance of work commencing and that the significant findings of the assessment must be recorded. This assessment must be repeated at intervals not exceeding two years. The person planning to carry out the work should inform the relevant health and safety representative or relevant health and safety committee / Faculty Hazardous Chemical Substance Committee in writing of the arrangements made for the assessment.

9.1 Qualitative Evaluation of Risk

9.1.1 Probability Evaluation - The qualitative exposure assessment will be performed by observing various tasks and estimating potential exposure on a relative scale using a scoring method. This method is described in the HS

Risk Assessment Procedure. When making the assessment a record shall be kept of the assessment and every use of a substance that is hazardous to health or dangerous, i.e. the process/procedure, must be assessed, should be noted and as such should take into account such matters as:

- the duration of the process,
- volume of material used,
- the volatility of the substances,
- the physical form of the material,
- the frequency of use,
- the predicted frequency with which the incident is expected to occur
- any engineering controls that are in place.

9.1.2 If the assessment made in accordance with subsection 9.1 indicates that any employee may be exposed, the University shall ensure that monitoring is carried out in accordance with the provisions of sections 10.1 and 10.2 and that the exposure shall be controlled as contemplated in section 11

9.1.3 The assessment should be constantly reviewed if any changes have occurred, such as in procedure; equipment; personnel; location; individuals' physical health - as in the case of female workers who are actively trying to conceive, expectant women and nursing mothers.

Any changes identified by the review must be noted and the significant findings recorded.

9.2 Toxicity Evaluation

9.2.1 Inventory of Hazardous Substances

All Departments, Divisions, Research Groups etc. within the University of Cape Town **must** keep an inventory of Hazardous Substances held within the Department.

The Inventory will be a record of Chemical Information (IUPAC and/or Common Chemical Name; Concentration/Percentage; CAS number and/or Formula weight; Hazard Category; Physical Form; Route of Entry to the body) , location of Chemical, and quantity of chemical present in each defined area.

This inventory will be a part of the overall Departmental risk exposure profile and should be kept up to date.

9.2.2 The chemicals are assigned a toxicity index value based on a toxicity index classification, as described in the HCS Risk Assessment Procedure.

9.3 Risk Characterisation

The risk can then be characterised by combining all the information obtained in the hazard and exposure assessment in order to estimate some measure of the risk to employee health.

Should immediate remedial actions to reduce workplace exposure be possible, these may be implemented at this point. Once these controls have been applied, the exposure scores are re-considered, and reduced accordingly.

10 Quantitative Evaluation of Risk (measured exposure)

10.1 Air Monitoring

Where the inhalation of an HCS (defined by completing the Risk Assessment procedure) is concerned, Inhalation exposure monitoring should be directed to those substances where there is a high potential for exposure, and for those for which there are known OELs. The University will ensure that the measurement programme of the airborne

concentrations of the HCS to which an employee is exposed is carried out in accordance with the provisions of the Hazardous Chemical Substances regulations,1995 and OHS Act provided that:-

- air sampling is conducted at least every 12 months for a substance with an OEL-CL and every 24 months for a substance with an OEL-RL, or if product is manufactured at greater intervals on each occasion, by an approved inspection authority or an employee certified competent by an approved inspection authority to do so.
- exposure measurements are conducted by a certified laboratory.
- the results of the exposure monitoring are reported to management and the individual employees, and or personnel working in the environment.
- any changes to current air monitoring practices must be based on standards developed by recognised local and international authorities, and documented in detail in the final report.

10.2 Medical Surveillance

- Prior to a person being offered employment at UCT (new applicant), or an employee being transferred to another position, an appraisal should be made of the risks associated with the position, and whether or not there are minimum medical standards associated with the position. The standard mechanism by which this is performed is with a device known as an "Occupational Risk Exposure profile" (OREP). Should there be uncertainty regarding the appraisal, the advice of the Occupational Health Unit should be sought.
- Should the job appraisal (OREP) indicate the need for medical surveillance, or if the substance(s) requires it by definition in the OHS Act, following sections apply.
- In order to comply with the above, the University shall, as far as is reasonably practicable, ensure:

a. that an initial health evaluation is carried out by an occupational health nurse practitioner immediately before or within 14 days after a person commences employment, where any exposure exists or may exist, which comprises:

i. an evaluation of the employee's medical and occupational history;
ii. a physical examination; and
iii. any other essential examination which in the opinion of the occupational medicine practitioner is desirable in order to enable the practitioner to do a proper evaluation.

b. that subsequent to the initial health evaluation contemplated in paragraph (a) the relevant employee undergoes examinations as contemplated in paragraph (a) (ii) and (iii), at intervals not exceeding two years, or at intervals specified by an occupational medicine practitioner.

- The University shall not permit a person who has been certified unfit for work by an occupational medicine practitioner to work in a workplace or part of a workplace in which s/he would be exposed: Provided that the relevant person may be permitted to return to work which will expose him or her if he or she is certified fit for that work beforehand by an occupational medicine practitioner.
- The University will record and investigate incident and occupational diseases in compliance with Regulation 8 of the General Administrative Regulations (Occupational Health and Safety Act).

11 HCS Health Risk Control Strategy

11.1 Control Measures to Limit Exposure to Hazardous Substances and to Prevent Occupational Diseases

Exposure to a hazardous substance should be either prevented or, where this is not reasonably practicable, adequately controlled: Provided that it complies with the OHS act, this comprises the application of a **hierarchy of controls**:

a. by limiting the amount of an HCS used which may contaminate the working environment;

b. by limiting the number of employees who will be exposed or may be exposed;

c. by limiting the period during which an employee will be exposed or may be exposed;

d. by using a substitute for an HCS;

e. by introducing engineering control measures for the control of exposure which must be maintained in an efficient state, in efficient working order, in good repair and in a clean condition. All engineering/mechanical controls must be tested at intervals not exceeding 24 months (by an approved inspection authority or by a person whose ability to do such measurements and tests is verified by an approved inspection authority) or earlier if stated on the risk assessment to ensure efficient and safe operation. A record of these examinations, tests and corresponding results must be kept for a period of at least three years* from the date on which it was made including a record of any repairs made as a result of the examinations and tests. Prompt remedial action must be undertaken where the control measures are found to be defective or are improperly applied.

The engineering control measures may include the following:

i. process separation, automation or enclosure;

ii. installation of local extraction ventilation systems to processes, equipment and tools for the control of emissions of an airborne HCS;

iii use of wet methods; and

iv separate workplaces for different processes;

11.2 Appropriate work procedures must be introduced which all persons must follow. Where materials are used or processes are carried out which could give rise to exposure, these processes shall include written Safe Operating Procedures (SOP's):

11.3 All persons working with hazardous substances must be given appropriate information, instruction and training in the proper use of the control measures and make full and proper use of any said control measures provided. They must report any defects discovered in any control measure, device or facility to their supervisor and/or Departmental Safety Officer where appropriate.

11.4 Where there are systems of work, safe/standard operating procedures or protocols in place, these must also be reviewed on a regular basis and in any case, every three years, to establish whether they are still viable for the activities taking place in the workplace, and if appropriate, these must be revised and dated.

11.5 The University has to ensure that the emission of an HCS into the atmosphere complies with the provisions of the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965).

11.6 As a minimum, for work involving hazardous substances, good laboratory practice as defined under University Policy: *Basic Laboratory Code of Practice* must be adhered to.

12 Personal Protective Equipment (PPE) and facilities

12.1 All Personal Protective Equipment (PPE) must be examined routinely and in the case of respiratory protective equipment (RPE), other than single use disposable respirators, thorough examination and, where appropriate, tests made at least once every month. When necessary, protective clothing contaminated by hazardous substances should be cleaned before next use and in any case, regularly laundered where appropriate.

12.2 If it is not reasonably practicable to ensure that the exposure of an employee is adequately controlled as contemplated in section 11, the University shall:

a. in the case of an airborne HCS, ensure the employee is provided with suitable respiratory protective equipment and protective clothing; and

b. in the case of an HCS which can be absorbed through the skin, ensure the employee is provided with suitable HCS impermeable protective equipment.

* 12.1e this is not the same as air monitoring records. Air monitoring records should be kept for a minimum of 30 years, see section*16 Records, Data Analysis, and Reporting* point *e*

12.3 Where respiratory protective equipment is provided, the University shall ensure:

a. that the relevant equipment is capable of controlling the exposure to below the OEL for the relevant HCS;

b. that the relevant equipment is correctly selected and properly used;

c. that information, instructions, training and supervision which are necessary with regard to the use of the equipment is known to the employees; and

d. that the equipment is kept in good condition and efficient working order.

12.4 The University shall, as far as is reasonably practicable:

a. not issue used personal protective equipment to an employee, unless the relevant protection equipment is decontaminated and sterilized;

b. provide separate containers or storage facilities for personal protective equipment when not in use; and

c. ensure that all personal protective equipment not in use is stored only in the place provided there for.

12.5 The University shall as far as is reasonably practicable, ensure that all contaminated personal protective equipment is cleaned and handled in accordance with the OHS Act.

12.6 The University shall ensure that no person removes dirty or contaminated personal protective equipment from the premises, unless this is performed by an accredited contractor, or that where contaminated personal protective equipment has to be disposed of, it shall be treated as HCS waste as contemplated in Section 19

12.7 Subject to the provisions of the Facilities Regulations, the University shall, where reasonably practicable, ensure employees using personal protective equipment as contemplated in subsection 12.2, are provided with:

a. adequate washing facilities which are readily accessible and located in an area where the facilities will not become contaminated, in order to enable the employees to meet a standard of personal hygiene consistent with the adequate control of exposure, and to avoid the spread of an HCS;

b. two separate lockers separately labeled 'protective clothing' and 'personal clothing', and ensure that the clothing is kept separately in the locker concerned;

c. separate 'clean' and 'dirty' change rooms if the employer uses or processes an HCS to the extent that the HCS could endanger the health of persons outside of the workplace.

13 Information, Training and Competence

Persons working with hazardous substances **must** be competent to do so without undue risks to themselves, others or the environment and as such **must** be provided with suitable and sufficient information, instruction and training, where appropriate. Records must be kept of any training undertaken. Before any University member is exposed or may be exposed, they should be adequately and comprehensively informed and trained, as well as thereafter informed and trained at intervals as may be recommended by the University or department health and safety committee.

14 Planning, Commissioning of New, or Alterations to, Existing Facilities

For any new facilities or changes to existing facilities that involve the use of hazardous substances, or subsequently will involve hazardous substances when commissioned, will need to be hazard and compliance assessed and approved by the Faculty Hazardous Chemical Substance Committee (Section 7.1), UCT Environmental Risk Officer , and Properties and Services Projects and Engineering Department before any building works takes place. This will be facilitated by the Safety Health and Environment Department.

15 Procedures in the event of Accidents, Incidents and Emergencies

Local procedures including instructions and equipment, must be in place at every facility, for dealing with reasonably foreseeable accident incident or emergency, including spillages, etc. These include the provision of:

• appropriate first aid facilities including emergency eye wash stations

• washing facilities

• appropriate chemical spill kits

• fire-fighting equipment

• escape facilities (if required by the risk assessment)

• visual or audible warning alarms e.g. gas detection systems

• suitable PPE

The Safety Health and Environment Representative (SHE Rep) for the area in question should check to ensure that these are in place. The emergency procedures need to take into account the intrinsic hazard of any substances involved.

16 Records, Data Analysis, and Reporting

The objective is to identify critical findings in the Hazardous Substances Programme as a whole, including:

- Progress of all components of the programme
- Patterns or tends, such as problem (high risk) areas
- Effectiveness of intervention measures (exposure reduction, exposure protection, etc.).

These components should be highlighted in the reports, and appropriate recommendations issued.

The University, namely the Occupational Health Unit shall:

1. keep records of the results of all assessments, air monitoring, and medical surveillance reports required in sections 9 and 10: Provided that personal medical records shall only be made available to the occupational health practitioner;
2. subject to the provisions of subsection 16.3, make the records contemplated in subsection 16.1 excluding personal medical records, available for inspection by an inspector (Department of Labour).

3. allow any person subject to personal written consent of an employee, to peruse the records with respect to that particular employee;
4. make the records of all assessments and air monitoring available for perusal by the relevant health and safety representatives or relevant health and safety committee;
5. keeps all records of assessments and air monitoring for a minimum period of 30 years;
6. keep all medical surveillance records for a minimum period of 30 years and if the employer ceases activities, all those records shall be handed over or forwarded by registered post to the relevant regional director; and
7. keep a record of the investigations and tests carried out in terms Section 11.1 e) and of any repairs resulting from these investigations and tests, and the records shall be kept for at least three years.

17 Corrective Measures and Closure

The identified problem areas are drawn from the reports and appropriate Action Plans established, with appropriate time deadlines and accountabilities. These corrective actions should consider the "Hierarchy of controls as mentioned in Section 11.1:

- Best - Exposure elimination through engineering controls.
- Next best - Exposure reduction through engineering and administrative controls.
- Last resort - Exposure protection through protective equipment.

This cycle of assessment – correction – re-assessment should occur at least every two years as prescribed by the Hazardous Chemical Substances Regulations.

18 Storage

All hazardous chemical substances should be stored safely and securely with due regard to the appropriate separation and segregation of incompatibles. Please refer to the UCT Management Guide - *The Safe Storage of Chemicals.*

19 Waste

All hazardous substances must be disposed of promptly and in accordance with the UCT Policy Document – *Hazardous Waste, Management Guide – The Control of Hazardous Waste*.

20 Labelling, packaging, transportation and storage

The University shall, in order to avoid the spread of contamination of an HCS, take steps, as far as is reasonably practicable, to ensure that the HCS (or its container) in storage, to be distributed or transported are property identified, classified and handled in accordance with SABS 072, SABS 0228, and SABS 0229

21 Responsibilities

For the University and its member's responsibilities with regard to Hazardous Substances, the UCT Policy Document – *Responsibilities with Regard to Hazardous Substances* must be followed.

22 References

22.1 University References

1 The University of Cape Town Control Medical Surveillance Programme.

2 The University of Cape Town Control Health Risk Assessment Policy

3 The University of Cape Town Control Health Risk Assessment Guideline and Procedures.

4 University of Cape Town Control of Hazardous Chemicals – draft document: *Lillian Nsomi-Campbell UCT Physical Planning Unit, June 2004.*

5 Policy Document - Basic Laboratory code of Practice – *Brett Roden, Environmental Risk Officer, University of Cape Town, August 2005*.

(for documents contact UCT Env. Risk Officer)

22.2 South African National References

1 Occupational Health and Safety Act and Regulations 85 of 1993: Hazardous Chemical Substances Regulations (GNR. 1179 of 25 August 1995). *Statutes of the Republic of South Africa, 1993*

(http://www.labour.gov.za/legislation/acts/occupational-health-and-safety/occupational-health-and-safety-act-and-amendments)

2 Occupational Health and Safety Act and Regulations 85 of 1993: *Statutes of the Republic of South Africa, 2001*

(http://www.labour.gov.za/legislation/acts/occupational-health-and-safety/occupational-health-and-safety-act-and-amendments)

3 Occupational Health and Safety Act and Regulations 85 of 1993: Regulations for Hazardous Biological Agents (GNR. 1390 0f 27 December 2001). *Statutes of the Republic of South Africa, 2001*

(http://www.labour.gov.za/legislation/acts/occupational-health-and-safety/occupational-health-and-safety-act-and-amendments)

4 Compensation for Occupational Injuries and Disease Act (1994), specifically Internal Instructions on occupational asthma (176, 177 and 184).

(http://www.labour.gov.za/legislation/acts/compensation-for-occupational-injuries-and-diseases/compensation-for-occupational-injuries-and-diseases-act)

5 SANS 10228:2003. The Identification and classification of dangerous goods for transport (Edition 3): *Standards South Africa, 2003*

6 SABS 0229. Packaging of dangerous goods for road and rail transportation in South Africa (Edition 2): *South African Bureau of Standards, 1996*

7 SABS 072. Safe Handling of Pesticides (Edition 2): *South African Bureau of Standards, 1993*

8 The Environmental Conservation Act, 1989 (Act No. 73 of 1989): *Statutes of the Republic of South Africa, 1989*

9 Hazardous Substances Act, 1973 (ACT No. 15 of 1973): Statutes of the Republic of South Africa-Public Health, March 1973

(http://www.doh.gov.za/docs/legislation/acts/1973/act15.html)

Hazardous Substances Amendment Act, No. 16 of 1976
Hazardous Substances Amendment Act, No. 31 of 1981
Transfer of Powers and Duties of the State President Act, No. 97 of 1986

[With effect from 3 October, 1986-see title CONSTITUTIONAL LAW]
Hazardous Substances Amendment Act, No. 53 of 1992

(for SABS standards contact South Africa Bureau of Standards www.sabs.co.za or contact UCT Env. Risk Officer)

22.3 International References

1. The ILO Encyclopaedia for Occupational Health and Safety.

2. Laboratory biosafety manual III edition: *World Health Organisation, Geneva, 2004*

3. Safe Biological Practice (SBP) for Prevention and Control of Exposure to Biological Agents in the Laboratory: *University of Cambridge Health and Safety Division, July 2004*

4. Hazardous Substances Policy, Policy and Guidance: *University of Cambridge Health and Safety Division, March 2004*

5. Working Safely with carcinogens, Mutagens and Substances Toxic to Reproduction, Code of Practice and Guidance: *University of Cambridge Health and Safety Division, April 2004*