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## **EAST AFRICAN STANDARD**

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**Management of healthcare waste — Part 2: Management of healthcare risk waste for healthcare facilities and healthcare providers in rural and remote settings**

**EAST AFRICAN COMMUNITY**

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## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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## Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

SANS 10248-2:2009, *Management of healthcare waste — Part 2: Management of healthcare risk waste for healthcare facilities and healthcare providers in rural and remote settings*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

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**SANS 10248-2:2009**

Edition 1

Standard

## **SOUTH AFRICAN NATIONAL STANDARD**

### **Management of healthcare waste**

### **Part 2: Management of healthcare risk waste for healthcare facilities and healthcare providers in rural and remote settings**

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**Table of changes**

Change No.	Date	Scope

**Foreword**

This South African standard was approved by National Committee SABS TC 1087, *Disposal of healthcare waste*, in accordance with procedures of the SABS Standards Division, in compliance with annex 3 of the WTO/TBT agreement.

This document was published in November 2009.

This document supersedes SANS 10248:2004 (edition 2) in part.

Annex B forms an integral part of this document. Annexes A and C are for information only.

**Introduction**

This document was developed as a result of the difficulties that rural and remote settings encounter in the management of healthcare waste (see annex A). Certain sections in SANS 10248-1 are repeated in this part to indicate the differences. This document gives guidance and help for alternative ways in which healthcare risk waste can be managed effectively as an interim measure. Guidance is also given for emergency situations, taking into account the constraints under which some of the healthcare facilities operate. The document can be used as a step in the process of continuous improvement in the management of healthcare waste in rural and remote settings.

Exposure to healthcare risk waste can result in health risks to the public, patients, healthcare workers, waste workers and the environment. Waste management measures can reduce such risks substantially.

Effective containment of waste and safe handling measures can provide significant protection, for example,

- a) segregation can reduce the amount of healthcare waste instead of accumulating large quantities of waste;
- b) good stock management of chemicals and pharmaceuticals not only reduces waste quantities but also saves purchase costs;
- c) proper identification of healthcare risk waste packages warns healthcare personnel and waste handlers about its contents; and
- d) segregation of healthcare risk waste makes it easier to decide on the method of disposal and treatment.

Where there is a lack of infrastructure, this standard should not be used to contravene any legislative requirements or allow for any circumstances that can expose the healthcare workers, patients or the general public to the hazards of healthcare risk waste.

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## **Management of healthcare waste**

### **Part 2:**

**Management of healthcare risk waste for healthcare facilities and healthcare providers in rural and remote settings**

## **1 Scope**

This standard specifies provisions and requirements for the safe management of healthcare risk waste for healthcare facilities and healthcare providers operating in rural and remote settings.

## **2 Normative references**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. Information on currently valid national and international standards can be obtained from the SABS Standards Division.

SANS 1518, *Transport of dangerous goods – Design, construction, testing, approval and maintenance of road vehicles and portable tanks.*

SANS 10228, *The identification and classification of dangerous goods for transport.*

SANS 10229-1, *Transport of dangerous goods – Packaging and large packaging for road and rail transport – Part 1: Packaging.*

SANS 10231, *Transportation of dangerous goods – Operational requirements for road vehicles.*

SANS 10232-1, *Transportation of dangerous goods – Emergency information systems – Part 1: Emergency information system for road transport.*

SANS 10232-3, *Transportation of dangerous goods – Emergency information systems – Part 3: Emergency response guides.*

SANS 10248-1, *Management of healthcare waste – Part 1: Management of healthcare risk waste from a healthcare facility.*

VC 8054, *Disinfectants and detergent-disinfectants.*

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### **3 Definitions**

For the purposes of this document, the definitions in SANS 10248-1 and the following apply.

#### **3.1**

##### **alternative**

usable or available as another possibility

#### **3.2**

##### **alternative technology**

approved method, technique or process for microbial inactivation or for otherwise altering the biological, chemical or physical characteristics of healthcare risk waste to sterilize such healthcare risk waste by means of technology which do not constitute controlled combustion treatment

#### **3.3**

##### **anatomical waste**

pathological waste

waste that contains tissues, organs, body parts, blood and body fluids from patients, foetuses and animal carcasses, but excludes teeth and hair

NOTE 1 Anatomical waste is considered as a subcategory of infectious waste even though it can also include healthy body parts.

NOTE 2 Blood and body fluids from healthy individuals do not fall under this category.

NOTE 3 Animal carcasses generated by the public are not covered by this definition.

#### **3.4**

##### **emergency situation**

situation where, for example, a supply of new sharps containers is delayed or not available, plastics bags for general healthcare waste are not available, or general healthcare waste or healthcare risk waste cannot be collected due to stormy weather, a strike or any other situation

#### **3.5**

##### **formal homecare**

provision of healthcare to, for example, terminally ill patients, or assistance with childbirth, within a private dwelling by a qualified person that represents an organization

#### **3.6**

##### **healthcare facility**

place or site where professional health services are dispensed to human or animal patients or where biological research is carried out, for example, laboratories, and includes, *inter alia*, hospitals, clinics, laboratories, rehabilitation centres, sick bays, old age homes, free-standing operating theatres, day units, mobile and stationary clinics, and field stations where biomedical samples are taken

#### **3.7**

##### **healthcare general waste**

portion of waste that poses a minimum degree of risk to human health and the environment, i.e. from administrative and housekeeping activities, for example, paper, pens, flowers, food packaging, plastics cooldrink bottles, old mops, builders' rubble and garden waste, within the healthcare facility

#### **3.8**

##### **healthcare provider**

individual, or an organization, that provides a level of primary healthcare to the community, and includes general practitioners, formal homecare and informal homecare, midwives and birth helpers

### **3.9**

#### **healthcare risk waste**

human and animal anatomical waste, infectious human and animal waste, sharps, chemical waste, pharmaceutical waste and radioactive waste generated by healthcare professionals, healthcare facilities and other non-healthcare professionals, for example, tattooists and taxidermists

NOTE Healthcare risk waste is a subcategory of hazardous waste.

### **3.10**

#### **healthcare waste**

all the waste generated by a healthcare facility and waste originating from healthcare undertaken at home

### **3.11**

#### **informal homecare**

provision of healthcare to, for example, ill patients, or assistance with childbirth or any other assistance required by ill patients, within a private dwelling by family or community members

### **3.12**

#### **rural and remote setting**

formal or informal healthcare facilities in areas that are permanently or periodically difficult to access by road or rail, and where there are limited private or public services, for example, waste removal, electricity, water and telecommunication

### **3.13**

#### **sharps**

items such as needles, syringes, blades or clinical glass, that are capable of causing cuts, abrasions or puncture wounds

### **3.14**

#### **transfer station**

authorized storage facility situated close to the main routes of waste management contractors for the temporary storage of healthcare risk waste and to facilitate its transfer and removal for treatment and disposal at an authorized treatment facility

## **4 Requirements**

### **4.1 General**

NOTE The types of healthcare facilities and providers, as well as the typical problems experienced in rural and remote settings are given in annex A.

The manager, or the person in charge of the day-to-day running of a healthcare facility, or a healthcare provider, shall:

- a) retain overall responsibility for the management of healthcare risk waste in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B);
- b) ensure that there is a budget for the management of healthcare risk waste; and
- c) be trained in the identification, classification, segregation, containerization and storage of healthcare risk waste (see clause 5).

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### **4.2 Documentation requirements**

The minimum documentation to be used in a healthcare facility operating in a rural and remote setting shall be:

- a) work instructions and work procedures that are documented, implemented and maintained;
- b) work instructions and work procedures for training that are developed in a comprehensible format (see 4.4);
- c) safety instructions and precautions for the handling and storage of all healthcare risk waste;
- d) an emergency response policy and strategy to deal with spills of infectious waste and chemical waste;
- e) emergency procedures in the event of a breakdown of basic facilities, for example, electricity, water, communications, or road access;
- f) procedures for recording all injuries in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B); and
- g) a policy that describes record keeping for waste management.

### **4.3 Contractual commitments**

**4.3.1** Where a healthcare facility in a rural and remote setting agrees to a contract with a waste management contractor, the healthcare facility shall ensure that the waste management contractor has a license or permit authorized by the relevant authority for the treatment or disposal (or both) of each category of healthcare risk waste in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**4.3.2** A healthcare facility in a rural and remote setting can have an agreement with a regional hospital for the removal and transportation of the healthcare risk waste. Such an agreement shall be a written agreement.

**4.3.3** The healthcare facility shall be responsible for the healthcare risk waste from generation to its final disposal in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B), even when a contract has been agreed to with a waste management contractor for the treatment and disposal of this waste.

**4.3.4** The agreement between the healthcare facility and the waste management contractor can include requirements such as the different categories of waste for disposal, approximate volume of waste, schedule for collection (where applicable), and documented evidence of the treatment and disposal of the waste.

### **4.4 Work procedures and work instructions**

**4.4.1** The work procedures and work instructions for the management of healthcare risk waste shall be in a format that is easy to read and that is comprehensible to operators. They shall also be in a language that is common in the area of the healthcare facility. Work instructions can be in the form of a picture or a drawing. An example is given in figure 1.



Figure 1 — Work instruction in the form of a drawing

4.4.2 The work procedures and work instructions shall cover at least the following:

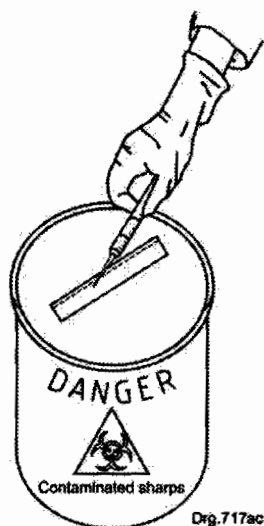
- a) the identification of the healthcare risk waste category in accordance with 5.1 and table 1;
- b) the segregation of the healthcare risk waste into the correct colour-coded container (see 5.3 and table 1);
- c) cleaning and disinfection;
- d) the correct use of equipment and personal protective equipment;
- e) the storage of the healthcare risk waste at the point of generation until its collection;
- f) the storage of healthcare risk waste in the waste store;
- g) the on-site treatment of the healthcare risk waste, were relevant;
- h) visual warnings (see figures 2(a) and (b)); and
- i) details on hazardous healthcare material, dangerous areas and technical facilities that can create hazards.



Figure 2(a) — Fire and open flames prohibited

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**Figure 2(b) — Contaminated sharps**

**Figure 2 — Examples of visual warnings**

### 4.5 Training

**4.5.1** The senior nursing manager or nursing supervisor of a healthcare facility in a rural and remote setting shall ensure that all nursing staff and assistants are trained in the correct procedures for the identification, classification, segregation, containerization, storage and internal transport of healthcare waste.

**4.5.2** Local residents that are working in the healthcare facility or that assist a healthcare provider shall be properly trained in the identification, classification, segregation and containerization of the healthcare waste.

**4.5.3** Training shall also be provided for:

- a) the safe handling of healthcare risk waste;
- b) the safe use, cleaning, disinfection and care of personal protective equipment;
- c) the safe use of packaging material; and
- d) disposal procedures.

### 4.6 Workplace hygiene

**4.6.1** Employees shall not eat, drink or smoke in areas where healthcare risk waste is handled and stored. "No smoking" signs shall be displayed and obeyed at all times.

**4.6.2** All injuries, including minor traumas, shall receive medical attention as soon as is reasonably possible and shall be reported to the senior manager, or the person in charge when there is no health and safety representative, in accordance with the relevant requirements and regulations of the current national legislation (see annex B).

**4.6.3** Records shall be kept of all injuries in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

NOTE Annex C gives an example of a form used for the recording and investigation of incidents.

**4.6.4** Wherever possible, work clothing and reusable personal protective equipment shall be regularly washed.

**4.6.5** Wherever possible, handwashing facilities with soap and running water, and paper towel should be provided. Alternatively, if running water is not available, water in a hand-wash basin and soap may be used, provided that the basin is emptied and refilled with clean water after every use. Waterless liquid hand disinfectant, disinfectant hand gel, or a disinfectant hand spray may be used between hand washes.

NOTE The use of a hand gel, liquid or spray disinfectant should not replace the washing of the hands with soap and water.

## **4.7 Health and safety**

**4.7.1** All employees working in a healthcare facility, and those assisting a healthcare provider, shall be informed about the risks associated with the handling of healthcare risk waste in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**4.7.2** It is recommended that all employees in a healthcare facility in contact with, or handling, healthcare risk waste undergo a medical examination or check-up at annual intervals and after occupational exposure to diseases, for example, hepatitis B.

**4.7.3** It is recommended that employees be offered pre-test counselling, post-test counselling and appropriate immunization for certain diseases, for example, hepatitis B and tetanus. Counselling and treatment should also be offered to employees after occupational exposure to HIV and AIDS.

**4.7.4** It is recommended that employees who decline immunization, or who do not seroconvert, be advised in writing about the occupational risk associated with the work environment.

**4.7.5** Personal protective equipment, for example, gloves, aprons, and masks shall be provided to employees who come into contact with and handle healthcare risk waste. Healthcare providers shall also ensure that personal protective equipment is provided to volunteers and assistants.

## **5 Identification, classification, segregation and collection of healthcare waste**

### **5.1 Identification**

**5.1.1** The management of healthcare waste shall start with the correct identification of the waste, followed by classification, segregation and collection.

**5.1.2** Healthcare waste is grouped into healthcare risk waste and healthcare general waste and categorized as follows:

- a) **healthcare risk waste categories:** infectious waste, anatomical (pathological) waste, sharps, chemical and pharmaceutical waste, heavy metals, pressurized containers and radioactive waste; and

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b) **healthcare general waste categories:** packaging material, kitchen waste (domestic waste), office waste and building demolition waste, waste from patients (e.g. fruit juice bottles and magazines), non-clinical glass, non-infectious non-anatomical waste (e.g. paper tissues), disposable curtains, extracted teeth, nail clippings, hair and decontaminated waste, and garden and park waste.

**5.1.3** For traceability and treatment purposes, the healthcare waste shall be identified in accordance with 5.1.2 and shall be correctly labelled.

## **5.2 Classification**

### **5.2.1 General**

All healthcare risk waste (see 5.1.2(a)) shall be classified in accordance with 5.2.2 to 5.2.10 (inclusive), as expanded on in the relevant requirements and regulations of the current relevant national legislation (see annex B). The healthcare risk waste shall also be classified in accordance with the hazard and risk involved.

### **5.2.2 Class 1: Explosives**

**NOTE** Class 1 is included for the sake of completeness since it is considered unlikely that class 1 waste will arise as part of healthcare risk waste in rural and remote settings.

Explosives of class 1 are regulated by the relevant requirements and regulations of the current relevant national legislation (see annex B). The classification, transportation and disposal of explosives shall be approved by the relevant competent authority.

### **5.2.3 Class 2: Gases**

This class is subdivided as follows:

- a) **division 2.1:** flammable gases;
- b) **division 2.2:** non-flammable non-toxic gases; and
- c) **division 2.3:** toxic gases.

### **5.2.4 Class 3: Flammable liquids**

This class comprises liquids with a closed-cup flash point not exceeding 60,5 °C.

### **5.2.5 Class 4: Flammable solids; substances liable to spontaneous combustion; substances that, on contact with water, emit flammable gases**

This class is subdivided as follows:

- a) **division 4.1:** flammable solids;
- b) **division 4.2:** substances liable to spontaneous combustion; and
- c) **division 4.3:** substances that, on contact with water, emit flammable gases.

#### **5.2.6 Class 5: Oxidizing substances and organic peroxides**

This class is subdivided as follows:

- a) **division 5.1:** oxidizing substances; and
- b) **division 5.2:** organic peroxides.

#### **5.2.7 Class 6: Toxic and infectious substances**

This class is subdivided as follows:

- a) **division 6.1:** toxic substances; and
- b) **division 6.2:** infectious substances.

#### **5.2.8 Class 7: Radioactive material**

This class comprises materials that spontaneously emit ionizing radiation.

#### **5.2.9 Class 8: Corrosives**

This class comprises substances that, by chemical action, cause damage to living tissue, to commonly used metals or to other packaging.

#### **5.2.10 Class 9: Miscellaneous dangerous substances**

This class comprises any substance not covered by all the other classes, but that has been or could be shown by experience to be of such dangerous character that the provisions of this class should apply to it.

NOTE Detailed information of all dangerous goods is given in SANS 10228.

### **5.3 Waste segregation**

**5.3.1** After identification and classification, the waste shall be segregated at the point of generation and shall be containerized to minimize the risk of contamination or pollution to the environment and humans.

**5.3.2** Employees shall be trained in the segregation of the waste into the correct colour-coded packaging (see table 1).

### **5.4 Collection**

The healthcare risk waste shall be collected at the point of generation (where applicable) and this shall be the first step in the removal of the waste to its final disposal point.

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**Table 1 — Healthcare waste categories, colour coding and international hazard labels**

1	2	3
Waste	Waste sub-category	Colour coding and international hazard label
Human or animal anatomical waste	Infectious human anatomical	<b>RED</b> and the appropriate international infectious hazard label (see figure 3)
	Infectious animal anatomical	<b>ORANGE</b> and the appropriate international infectious hazard label (see figure 3)
	Non-infectious animal anatomical	<b>BLUE</b>
Infectious non-anatomical waste	None	<b>RED</b> and the appropriate international infectious hazard label (see figure 3)
Sharps	None	<b>YELLOW</b> , the words " <b>DANGER CONTAMINATED SHARPS</b> " and the appropriate international infectious hazard label (see figure 3)
Chemical waste including pharmaceutical waste	Chemical or pharmaceutical	<b>DARK GREEN</b> and the appropriate international hazard label (see figure 4)
	Cytotoxic pharmaceutical	<b>DARK GREEN</b> and the cytotoxic hazard label (see figure 6)
Radioactive waste	None	<b>No colour coding</b> – only the appropriate international radiation hazard label
General waste		No hazard label
NOTE 1 Radioactive waste is included to complete the list, but should not normally be generated in rural and remote settings.		
NOTE 2 Healthcare general waste can be packed into black, beige, white or transparent packaging.		

## 6 Packaging requirements for healthcare waste

### 6.1 Packaging for healthcare general waste

**6.1.1** Where possible, solid healthcare general waste shall be placed into a colour-coded waste container in accordance with table 1.

**6.1.2** A plastics bag used for the collection of healthcare general waste shall not tear easily during handling and transportation.

NOTE The plastics bag can be packed into a firm disposable container or a reusable container during transportation, for example, a cardboard container.

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**6.1.3** A container for healthcare general waste shall not be filled to more than three-quarters of its capacity and shall be securely closed to prevent spillage of the contents and access by scavengers or vermin.

## **6.2 Packaging for infectious healthcare risk waste**

**6.2.1** A plastics bag used for the packaging of infectious healthcare risk waste, and used as a stand-alone intermediate container, shall have a thickness of not less than 80 µm. The plastics bag shall be placed into a rigid container for transportation purposes in accordance with the requirements and regulations of the current relevant national legislation (see annex B).

**6.2.2** When transported, all infectious healthcare risk waste shall be packed and labelled in accordance with SANS 10229-1.

NOTE Packaging group P621 (see SANS 10229-1) is used for the transportation of dangerous goods listed under the United Nations (UN) No. 3291. Infectious healthcare risk waste is transported under UN No. 3291.

**6.2.3** A plastics bag used as a liner in a disposable container or a reusable container shall have a thickness of not less than 60 µm.

**6.2.4** The packaging used for anatomical waste and infectious waste shall be leakproof.

**6.2.5** All packaging shall be filled to three quarters of its capacity, or as otherwise indicated on the container.

**6.2.6** A plastics bag containing infectious healthcare risk waste can be closed by means of non-PVC plastic ties, non-PVC plastic sealing tags of the self-locking type, or heat sealers purpose-made for healthcare waste. **Bags shall not be closed by stapling.**

**6.2.7** Alternative methods may be used to close the plastics bags, provided that they are securely closed to prevent leakage. The alternative methods shall not cause injury or skin abrasion to waste handlers, cause adverse impact on the environment or puncture the plastics bags.

**6.2.8** All packaging shall be clearly labelled and marked with the infectious hazard label (see figure 3), where possible. If a plastics bag is placed into another container the outer container shall be clearly labelled.



**Figure 3 — Infectious hazard label**

**6.2.9** Transparent plastics bags shall **only** be used for healthcare risk waste in an emergency situation when delivery of the correct colour-coded bags has been delayed and the healthcare facility does not have the correct colour-coded bags.

**This concession shall not be used as an excuse for not supplying healthcare facilities in rural and remote settings with the correct colour-coded bags.**

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**6.2.10** The transparent plastics bags shall be labelled and marked with the correct colour-coded hazard label (see figure 3) in accordance with table 1, for example, a transparent bag shall be labelled in red if it contains infectious non-anatomical waste. The regional hospital or district office shall ensure that the healthcare facility is provided with a supply of the correct hazard labels for emergency situations.

**6.2.11** In an emergency situation, when rigid containers for anatomical waste are not available, the following procedure shall be used:

- a) Use two or three heavy-duty plastics bags with a minimum thickness of 80  $\mu\text{m}$ .
- b) Put one bag into another, making a double or triple layered bag.
- c) Fill the inner-most bag to three-quarters.
- d) Close each bag individually (see 6.2.6), starting with the inner-most bag first and then the second bag.
- e) Place the sealed double or triple layered bag in a cardboard box for safety and ease of handling.
- f) Label the cardboard box clearly "**INFECTIOUS WASTE – ANATOMICAL – FOR INCINERATION ONLY**".

### **6.3 Packaging for sharps**

**6.3.1** A sharps container shall be used for the collection of all sharps, even if the sharps are not contaminated.

**6.3.2** Sharps shall not be disposed of in a plastics bag.

**NOTE** It is recommended that a nurse, general practitioner or other healthcare provider travelling to a remote hut or village be supplied with at least a small sharps container for the collection of sharps waste and a small red plastics bag, 80  $\mu\text{m}$  thick, for the collection of infectious waste, for example, gloves, blood-soaked bandages, and swabs.

**6.3.3** All sharps containers shall:

- a) be rigid, punctureproof, tamperproof and clearly labelled in accordance with table 1. The label shall be clearly visible and legible; and
- b) be constructed from a material and in a manner that safely retains the sharps and any residual liquids from syringes (for example, high-density polypropylene).

**6.3.4** An alternative container for the disposal of sharps shall **only** be used in an emergency situation, for example, when the delivery of sharps containers has been delayed. The following are examples of alternative containers:

- a) a thick-walled rigid household container;
- b) an empty metal container; or
- c) a large glass jar.

**6.3.5** The alternative containers shall:

- a) be placed on a secure surface to prevent them from being knocked over;
- b) be cleared of all product labels;

- c) be defaced where labels are printed onto the container; and
- d) be clearly labelled with a non-erasable marker in accordance with column 3 of table 1.

**6.3.6** During transportation, the alternative container shall be placed into a rigid plastics container to prevent it from being knocked over and breaking.

**The practice of using alternative containers shall be permitted only until the new stock of sharps containers is delivered.**

**6.3.7** Needle destructors (incinerators) can be installed as an alternative where sharps waste disposal facilities are not optimal. Battery-operated needle destructors can be used in rural and remote settings where electricity is not available or where there is a problem with the supply of electricity. The needle destructor shall be maintained and used efficiently.

**6.3.8** The residue from the needle destructor shall be placed into a sharps container or a rigid container. The full containers shall be stored as healthcare risk waste until they can be safely disposed of via the healthcare facility's waste management contractor. The residue shall not be disposed of with healthcare general waste or burned in a pit.

## **6.4 Packaging for chemical waste**

### **6.4.1 General**

**6.4.1.1** Packaging for chemical waste shall be dark green colour-coded packaging (see table 1) and shall be clearly labelled. The lettering on the label shall be of a size, layout and style that shall be clearly visible and legible.

**6.4.1.2** Chemical waste may be placed in empty containers that originally contained the same type of chemical, provided that the original label is removed or clearly defaced if the label is printed on the container. The container shall be clearly marked "**CHEMICAL WASTE**".

**6.4.1.3** Droplets of spilled mercury can be recovered by using a spoon or a paper scoop. The mercury shall be stored in a plastic container with a screw cap and shall be clearly marked "**DANGER – MERCURY WASTE**". A vacuum cleaner shall not be used to recover spilled mercury since the use thereof will lead to mercury vapour being released and contaminating the environment.

### **6.4.2 Packaging for waste aerosol dispensers**

**6.4.2.1** Waste aerosol dispensers shall be placed in black plastics bags that are clearly marked "**WASTE AEROSOL DISPENSERS**" to be easily identified from healthcare general waste.

**6.4.2.2** The plastics bag shall be kept separately for disposal via a landfill or a recovery facility and shall **not** be disposed of by incineration, treatment in an alternative treatment facility, or by being burnt in a pit.

### **6.4.3 Packaging for pharmaceutical waste**

**WARNING: SPECIAL PRECAUTIONS SHALL BE TAKEN TO PREVENT THE THEFT AND ILLEGAL DISTRIBUTION OF PHARMACEUTICAL WASTE.**

**6.4.3.1** Liquid pharmaceutical waste shall be collected in metal or high-density plastics containers that are sealed with a screw cap lid or a tamperproof lid.

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**6.4.3.2** The containers shall be clearly marked "**PHARMACEUTICAL WASTE – LIQUID**", be colour-coded dark green (see table 1) and shall bear the international hazard label for toxic substances (see figure 4) of division 6.1, where possible.



**Figure 4 — Hazard label for toxic substances**

**6.4.3.3** When the liquid pharmaceutical waste has a risk of flammability, the international hazard label for flammable liquids (see figure 5) of class 3 shall be affixed to the waste container, where possible.



**Figure 5 — Flammable liquid hazard label**

**6.4.3.4** Solid pharmaceutical waste shall be collected in double layer dark green colour-coded plastics bags or a rigid colour-coded container, and shall be labelled "**PHARMACEUTICAL WASTE – SOLID**". The plastics bags shall be closed by means of non-PVC plastic ties, non-PVC plastic sealing tags of the self-locking type, or heat sealers purpose-made for healthcare waste. The rigid container shall be fitted with a sealable lid.

**6.4.4 Packaging for cytotoxic and genotoxic waste**

**6.4.4.1** The packaging for cytotoxic waste shall bear the hazard label as depicted in figure 6. The triangle shall be printed in red on a black background and the text shall be in white.



Figure 6 — Cytotoxic hazard label

6.4.4.2 Cytotoxic waste can be generated from several sources that include the following:

- a) contaminated material from drug preparation and administration (for example, needles, gauges, vials and packaging);
- b) expired drugs, excess solutions (leftover) and drugs returned from the wards; and
- c) urine, faeces and vomit from patients, which can contain hazardous amounts of the administered cytotoxic drugs or their metabolites, which should be considered as genotoxic for at least 48 h and sometimes up to one week after drug administration.

## 7 Healthcare risk waste store

### 7.1 General

7.1.1 An area shall be clearly demarcated for the storage of healthcare risk waste and shall be clearly marked "**STORAGE AREA**". The storage area shall be large enough to accommodate the quantities of waste likely to be stored before collection.

7.1.2 The waste shall not be stored near patients or the food preparation area.

7.1.3 The different categories of waste (see table 1) shall be stored separate to prevent the categories being mixed.

7.1.4 The storage area shall

- a) have a hard-standing floor;
- b) be easy to clean;
- c) be well lit;
- d) have good ventilation;
- e) be protected from the weather;
- f) be secured to prevent theft and entry by unauthorized personnel, animals and birds; and
- g) be equipped with a fire extinguisher to deal with fire and, where possible, a spill kit for spillages.

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**7.1.5** It is recommended that freezers be provided in rural and remote settings where electricity is available for the storage of anatomical waste. Where electricity is not available, or there is a problem in the supply of electricity, it is recommended that propane or kerosene freezers be provided.

**7.1.6** The storage times for healthcare risk waste shall be in accordance with table 2.

**Table 2 — Time limits for the storage of healthcare risk waste**

1	2
Waste	Time limits
Anatomical waste <sup>a</sup>	–
Infectious waste	–
Sharps containers	90 d
Pharmaceutical waste	90 d
<sup>a</sup> The waste shall be stored at –2 °C for 90 d.	

**7.2 Storage of infectious waste**

**7.2.1** A section in the waste storage area shall be marked for the storage of the following:

- a) human and animal anatomical infectious waste;
- b) non-anatomical infectious waste; and
- c) sharps.

**7.2.2** Anatomical waste shall be stored in a freezer at –2 °C or at a low temperature of 0 °C ± 3 °C. The anatomical waste shall be packed into red colour-coded packaging (see table 1) for storage in the freezer.

**7.2.3** To prevent theft, all anatomical waste shall be recorded, marked, tracked and signed of when it is removed from the site for disposal.

**NOTE** Where possible, security tags can be used on the packaging to track anatomical waste.

**7.2.4** Destruction certificates of all anatomical waste shall be kept for record-keeping purposes (see 9.2.4).

**7.2.5** Placentae shall be stored in a lockable refrigerator or in a secure part of the storage area that has a low temperature. The following may be used where refrigeration has not been provided or the store cannot be cooled to a low temperature:

- a) place the placenta in an airtight container with a chemical disinfectant (for example, sodium hypochlorite), and store away from the sun; or

**NOTE 1** Care should be taken to avoid splashing when liquid disinfectant is used.

**NOTE 2** The dilution recommended by the manufacturer (on the label) should be used.

- b) place the placenta in an airtight container and keep the container cool by placing cloths that are regularly moistened on the containers, and exposed to a breeze.

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**7.2.6** Placentae should be given for traditional home burial **only** when the mothers are guided on the size of the burial hole. It is recommended that the burial hole be dug at least 40 cm deep and 15 cm wide to prevent access by animals. The hole should not be close to wells and to open water to prevent contamination of the water, and it shall comply with the relevant requirements and regulations of the current relevant national legislation (see annex B). It is recommended that the hole be at least 50 m from any water source.

**7.2.7** Placentae that are given to families for traditional home burial shall be recorded. Records shall include the name and address (or the location of the home) of the person that receives the placenta and guidance on its burial (see 7.2.6).

NOTE This standard does not cover the storage of human bodies in refrigerators and freezers, or other means of preserving the body for a post-mortem or before burial.

### **7.3 Provisions for pharmaceutical waste**

**7.3.1** Pharmaceutical waste shall be kept locked to prevent theft and unauthorized distribution (see 6.4.3 for packaging requirements).

**7.3.2** All pharmaceutical waste shall be returned to the pharmacist in the regional hospital or in the district office, or to the manufacturer for disposal.

### **7.4 Provisions for chemical waste**

Chemical waste (for example, outdated disinfectants and ethanol) shall be stored in a demarcated section of the storage area, separate from other waste categories.

## **8 Transport of healthcare risk waste**

### **8.1 General**

**8.1.1** Employees and assistants shall be trained in the correct handling and transport of filled containers to prevent injuries.

**8.1.2** Manual lifting and carrying of heavy containers shall be avoided in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**8.1.3** The healthcare risk waste can be transported by trolleys, wheeled containers or carts inside the healthcare facility.

**8.1.4** The transport equipment shall be easy to load, unload, clean and disinfect.

### **8.2 Transport of healthcare risk waste off-site**

**8.2.1** A vehicle used for the off-site transportation of healthcare risk waste shall comply with the requirements in SANS 1518, SANS 10231, SANS 10232-1, SANS 10232-3 and the relevant requirements and regulations of the current relevant national legislation (see annex B).

**8.2.2** Trailers or modified trailers used for the transport of healthcare risk waste shall comply with the requirements in 8.2.1.

**8.2.3** Trailers used for the transportation of healthcare risk waste shall not be used for the transportation of food, water and medicines.

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**8.2.4** A separate area in the trailer can be demarcated for the transportation of clean containers or plastics bags.

**8.2.5** Trailers shall be washed with detergent after each delivery of the healthcare risk waste for treatment and shall be properly drained. It is recommended that a disinfectant that complies with VC 8054 be used weekly to decontaminate the trailer.

**8.2.6** Employees shall wear personal protective equipment when trailers are cleaned and decontaminated.

**8.2.7** The towing vehicle shall be equipped with a spill kit in the event of a spill.

**8.2.8** The transporter of the healthcare risk waste shall be registered in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

## **9 Treatment and disposal methods**

### **9.1 On-site treatment and disposal**

**9.1.1** Healthcare general waste and healthcare risk waste shall not be treated and disposed of by open burning in a pit or a trench.

**9.1.2** Healthcare general waste shall be disposed of at an authorized local landfill site.

**9.1.3** If a landfill site or collection service for healthcare general waste is not provided, or in the case of an emergency situation, the healthcare general waste may be disposed of in a pit. A drum may be used in areas where pits are frequently washed open during the rainy season or the topographical layout is not favourable for a pit, for example, in sandy or rocky areas.

**9.1.4** The unauthorized dumping or burial of healthcare risk waste shall not be permitted.

**9.1.5** The stools of patients shall be temporarily collected in a plastics container with a tight-fitting lid before disposal into a septic tank, the sewer, or a pit latrine if there is no sewage system.

**9.1.6** Stools from cholera patients may be collected in a red colour-coded rigid plastics container with a tight-fitting lid for disposal via a waste management contractor. When rigid containers are not available, red colour-coded plastics bags with a minimum thickness of 100 µm may be used and shall be handled in accordance with 6.2.10 for disposal via a waste management contractor. In areas where a waste management contractor is not available, the stools of cholera patients shall be collected in a rigid plastics container and treated with lime before disposal to a pit latrine.

**9.1.7** Blood shall be disposed of in the sewer or a septic tank.

**9.1.8** Blood and stools from patients with formidable diseases, for example, viral haemorrhagic fevers, shall be collected in a red colour-coded rigid container and sealed for disposal via a waste management contractor. In areas where a waste management contractor is not available, the blood and stools from patients with formidable diseases shall be collected in a red colour-coded rigid container and shall be covered with hypochlorite before it is tightly sealed. The rigid container shall be buried in a pit which shall be 6 m deep and lined with lime. The pit shall not be close to any water source and dwelling.

**9.1.9** Pharmaceutical waste shall not be discharged to a sewer or a septic tank. Expired pharmaceuticals shall be returned to the pharmacists at the regional hospital or district offices.

**9.1.10** A healthcare facility shall use an on-site incinerator only if authorized by the relevant authority for the treatment of healthcare risk waste and in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**9.1.11** Alternative technologies can be used for the treatment or disposal (or both) of healthcare risk waste in rural and remote settings. The alternative technology shall be authorized by the relevant approving authority in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**NOTE** The use of alternative technologies in rural and remote settings can be problematic since the operation of the equipment requires specialized training. Therefore, it is recommended that a dedicated person be identified and trained to operate the equipment. The unreliable supply of electricity could also affect the operational requirements of the equipment.

## **9.2 Off-site treatment and disposal**

**9.2.1** The off-site treatment and disposal of healthcare risk waste shall be done by an authorized waste management contractor in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**9.2.2** The method of treatment shall be authorized by the relevant authority in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**9.2.3** The residue from the alternative treatment method shall be disposed of at an approved landfill site in accordance with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**9.2.4** The healthcare facility shall retain documented evidence from the waste management contractor of the method used for the treatment and disposal of the waste. The healthcare facility shall ensure that destruction documents are completed and correctly signed off for record keeping purposes (see 4.2(g)).

**NOTE** Annex C.2 gives an example of a receipt issued by a waste management contractor for the collection and disposal of healthcare waste.

## **9.3 Transfer stations**

**9.3.1** Due to the distance travelled to and from some rural and remote settings, the collection of healthcare risk waste from a healthcare facility, or the healthcare provider, might not be viable for the waste management contractors. This problem can be alleviated by the use of centrally located transfer stations.

**9.3.2** A transfer station shall comply with the relevant requirements and regulations of the current relevant national legislation (see annex B).

**9.3.3** It is recommended that a regional hospital or clinic be identified and designated to facilitate the transfer station.

**9.3.4** The transfer station should be equipped with transport vehicles for the transportation of the waste from the healthcare facility in the rural and remote settings.

**NOTE** The transfer station can also be sited at an authorized establishment that is located more conveniently for a waste management contractor.

**9.3.5** A transfer station used for the storage of healthcare risk waste shall comply with all the requirements for a healthcare risk waste store indicated in clause 7.

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## **Annex A** (informative)

### **Healthcare facilities and providers, and types of problems typically experienced in rural and remote settings**

#### **A.1 Types of healthcare facilities and providers**

The following are the typical healthcare facilities and healthcare providers situated in rural and remote settings:

- a) community hospitals;
- b) community health centres, with or without a maternity ward;
- c) clinics and mobile clinics;
- d) general practitioners and specialists;
- e) midwives and birth helpers;
- f) traditional healers and herbalists; and
- g) formal homecare, informal homecare and homenuising.

#### **A.2 Problems typically experienced**

##### **A.2.1 Personnel**

**A.2.1.1** The healthcare facilities and healthcare providers in rural and remote settings are often under-staffed and the medical personnel are often overburdened with work.

**A.2.1.2** The healthcare clinics in rural and remote settings receive limited assistance and support when the staff are sent for training at regional or provincial centres.

##### **A.2.2 Public services**

###### **A.2.2.1 Electricity supply**

The electricity supply in rural and remote settings can be non-existent or unreliable due to power cuts, fires, breaks in the transmission lines, etc.

###### **A.2.2.2 Access to remote settings**

Access to some rural and remote settings can be difficult due to the poor quality of the roads caused by erosion, periodical flooding, or poor infrastructure.

###### **A.2.2.3 Water supply**

The rural and remote settings obtain water from boreholes, surface water, a system that collects rainwater or via a municipal tanker once a week. This water is frequently of poor quality.

#### **A.2.2.4 Communication**

The rural and remote settings experience problems with communication systems due to the lack of telephone, cellularphone, facsimile, internet, electronic mail or postal services. These settings rely on telecommunication and post boxes located in the nearest district centre, or a process whereby a person travelling to the district centre passes on messages.

#### **A.2.2.5 Waste collection**

The small volume of waste generated, the difficult access, and the long distances to healthcare facilities in rural and remote settings has resulted in an unreliable waste collection service. This in turn results in on-site dumping, pit burning, or similar, of domestic waste and healthcare waste. Many healthcare facilities and healthcare providers that operate in rural and remote settings have basic services only such as skips located in the centre of the village or settlement, informal communal landfills or dumping grounds.

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**Annex B**  
(normative)

**National legislation and other publications**

References are made in the document to compliance with the “relevant requirements and regulations of the current relevant national legislation”. Table B.1 gives the Acts and Regulations, as well as other publications applicable to South Africa. Column 2 gives the subclause and a description of the relevant part of the Act and Regulations.

**Table B.1 — National legislation and other publications**

1	2
Act, Regulation and other publications	Subclause and description
Environment Conservation Act, 1989 (Act No. 73 of 1989)	<p>4.3.1 – The Act states that no person shall undertake waste and sewage disposal unless they receive authorization from the competent authority (Dept. of Water and Environmental Affairs).</p> <p>4.3.3 – The Act states that every institution shall accept full accountability for the consequences that its activities might have on the environment.</p> <p>9.1.11 and 9.2.2 – The Act states that no person shall discard waste or dispose of it in any other manner, except in a manner or by means of a facility or method and subject to conditions as the minister may prescribe.</p> <p>9.2.1 – The Act states that no person may establish, provide or operate a disposal site without a permit.</p>
Explosives Act, 1956 (Act No. 26 of 1956)	5.2.2 – The Act states that no person shall carry explosives or carry out any activity relating to explosives unless they are authorized by the competent authority.
National Environmental Management Act, 1998 (Act No. 107 of 1998)	4.3.3 – The Act states that every person who causes or might cause significant pollution or degradation of the environment shall take measures to prevent such pollution or degradation. This includes an owner of land or premises, or a person in control of land or premises.
National Road Traffic Act, 1996 (Act No. 93 of 1996)	<p>5.2.1 – The Act states that dangerous goods shall be classified in accordance with SANS 10228, which lists the ten classes for dangerous goods.</p> <p>6.2.1 – The Act states that dangerous goods shall be transported in accordance with SANS 10229-1, which gives the packaging requirements for dangerous goods.</p> <p>8.2.1 – SANS 10228 and SANS 10229-1 are referenced in the Act, which means that all vehicles transporting dangerous goods shall comply with the requirements in these SANS documents.</p>
National Water Act, 1998 (Act No. 36 of 1998)	7.2.6 – The Act states that the owner of land or the person in control of land or occupies or uses land on which any activity is performed which causes or is likely to cause the pollution of a water source shall take measures to prevent pollution of that water source.

**Table B.1 (concluded)**

1	2
Act, Regulation and other publications	Subclause and description
<p>Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)</p>	<p>4.1(a) – The Act states that the CEO is the person responsible for the management and control of an enterprise conducted by the State. Thus the manager or person in charge is the CEO.</p> <p>4.2(f) and 4.6.2 – The Act states that if an incident occurs in which any person at work is injured, then the incident shall be reported to the person in charge. The responsible person shall report the incident to an inspector appointed in terms of the Act (health and safety inspector).</p> <p>4.6.3 – The Act states that the person in charge shall keep a record of incidents and investigations.</p> <p>4.7.1 – The Act states that the person in charge has a duty to inform every employee of the hazards attached to any work to be performed, substance produced, process, handle, transport or machinery used.</p>
<p>Gauteng healthcare waste management regulations, 2004</p>	<p>8.1.2 – The Regulation states that no person may manually lift a container in excess of 15 kg.</p> <p>8.2.8 – The Regulation states that a transporter shall apply for authorization before commencing operations.</p> <p>9.1.10 – The Regulation states that a treatment facility shall apply for authorization before commencing operations.</p> <p>9.3.2 – The Regulation states that a transfer station (facility) shall apply for authorization before commencing operations.</p>
<p>Department of Water Affairs and Forestry, <i>Minimum requirements for the handling, classification and disposal of hazardous waste</i> (third edition 2005).</p>	<p>9.2.3 – The Regulation states that all infectious waste that is not incinerated shall be pre-treated by sterilization, or any other approved alternative method, before disposal at an approved landfill site. The minimum requirements are enforceable under section 20 of the said Environment Conservation Act.</p>

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**Annex C**  
(informative)

**Examples of forms**

**C.1 Recording and investigation of incidents**

A – RECORDING OF INCIDENT					
1	Name of employer .....				
2	Name of affected person .....				
3	Identity number of affected person .....				
4	Date of incident .....				
5	Time of incident .....				
6	Part of body affected				
	Head or neck	Eye	Trunk	Finger	Hand
	Arm	Foot	Leg	Internal	Multiple
7	Effect on person				
	Sprains or strains	Contusion or wounds	Fractures	Burns	Amputation
	Electric shock	Asphyxiation	Unconsciousness	Poisoning	Occupational disease
8	Expected period of disablement				
	0 – 13 days	2 – 4 weeks	>4 – 16 weeks	>16 – 52 weeks	>52 weeks or permanent disablement
	Killed				
9	Description of occupational disease .....				
10	Machine/process involved/type of work performed/exposure** .....				
11	Was the incident reported to the Compensation Commissioner and Provincial Director?				
	Yes	No			
12	Was the incident reported to the police?				
	Yes	No			
13	SAPS office and reference .....				
	(to be completed in case of a fatal incident)				
	** in case of a hazardous chemical substance, indicate substance exposed to				

Standard

**B – INVESTIGATION OF THE INCIDENT BY A PERSON DESIGNATED THERETO**

- 1 Name of investigator .....
- 2 Date of investigation .....
- 3 Designation of investigator .....
- 4 Short description of incident  
.....  
.....
- 5 Suspected cause of incident  
.....  
.....
- 6 Recommended steps to prevent a recurrence  
.....  
.....

.....  
Signature of investigator

.....  
Date

**C – ACTIONS TAKEN BY EMPLOYER TO PREVENT THE RECURRENCE OF A SIMILAR INCIDENT**

.....  
.....

.....  
Signature of employer

.....  
Date

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Standard

**C.2 Example of a receipt issued by a waste management contractor for the collection and disposal of healthcare waste**

<b>Waste Collection</b>				
Waste management contractor's letterhead and details				
Address:				
Telephone number:				
Fax number:				
Generator's name:			Generator's address:	
Telephone number:				
Fax number:				
Cell number:				
Date:		Driver's name:		Order number:
<b>Shipping name</b>	<b>UN No.</b>	<b>Hazard Class</b>	<b>Packing Group</b>	<b>Vehicle Registration Number</b>
Medical waste	3291	6.2	II	MWC 531 yyy
<b>SPECIAL INSTRUCTIONS:</b>				
Page 1 of 2				

Draft for

C.2 (concluded)

COLLECTION:					DISPOSAL:				
ITEM	VOLUME	TYPE OF PACKAGING	QTY	TOTAL WEIGHT	ITEM	VOLUME	TYPE OF PACKAGING	QTY	TOTAL WEIGHT
<b>GENERATOR'S CERTIFICATE</b>					<b>WARNING</b>				
I hereby declare that the contents are properly described, packaged, marked and labelled before transportation in accordance with all relevant legislation.					Failure to comply in all respects with the regulations on the transportation of dangerous goods promulgated in terms of the National Road Traffic Act, 1996 (Act No. 93 of 1996), will constitute a criminal offence.				
NAME:					<b>TRANSPORTERS ACKNOWLEDGMENT OF RECEIPT OF MATERIALS</b>				
SIGNED:					NAME:				
					SIGNED:				
<b>DESTINATION VERIFICATION</b>					<b>DISPOSAL</b>				
Received:					Disposed by:				
Signature:									
Date:					Date:				

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