



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DEVELOPMENT OF A REVISED WASTE CLASSIFICATION SYSTEM FOR SOUTH AFRICA

DRAFT REGULATIONS AND STANDARDS FOR WASTE CLASSIFICATION & MANAGEMENT

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**DRAFT WASTE CLASSIFICATION AND
MANAGEMENT REGULATIONS**

GENERAL NOTICE

NOTICE.....OF 2010

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

**NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT
NO. 59 of 2008)**

DRAFT WASTE CLASSIFICATION AND MANAGEMENT REGULATIONS

I, Buyelwa Sonjica, Minister of Water and Environmental Affairs, intend making national Waste Classification and Management Regulations under Section 69(1)(a), (b), (g), (h), (m), (q), (s), (dd) and (ee), read with Section 71(1) and 71(2) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as set out in the Schedule hereto.

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BUYELWA SONJICA

MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

SCHEDULE
NATIONAL WASTE CLASSIFICATION AND MANAGEMENT
REGULATIONS

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PART 1: INTERPRETATION AND PURPOSE OF THE REGULATIONS

1. Interpretation

(1) In these Regulations any word or expression to which a meaning has been assigned in the Act has that same meaning, and unless the context requires otherwise –

“pre-classified waste” means a waste listed in Schedule 1 of these Regulations that through experience, common knowledge or other means, is specifically and clearly identified and needs no further sampling, analysis or assessment for classification, and accordingly does not require classification in terms of SANS 10234;

“SANS 10234” means the latest edition of the South African National Standard Globally Harmonized System of Classification and Labelling of Chemicals (GHS), and supplementary List of Classification and Labelling of Chemicals in accordance with the Globally Harmonized System (GHS);

“the Act” means the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008);

“waste categorisation” means the grouping of waste into categories of major and specific general and hazardous waste types and the assignment of a corresponding category code in terms of the National Waste Information Regulations, 2010;

“waste classification” means establishing, in terms of SANS 10234, whether (i) a waste is hazardous based on the nature of its physical, health and environmental hazardous properties (hazard classes), as well as (ii) the degree or severity of hazard posed (hazard categories);

“waste generator” means any person whose actions, production processes or waste management activities creates or results in waste;

“waste manager” means any person that re-uses, recycles, recovers, co-processes, treats or disposes of waste, including the waste generator itself or a person acting on the waste generator’s behalf;

“waste manifest system” means a system of control documentation, maintained by the waste generator, waste transporter and waste

manager, which accompanies a load of hazardous waste from the point of generation to final management;

“waste transporter” means any person who moves waste from the point of generation to a facility for a waste management activity;

“waste risk profile” means the level or degree of potential risk associated with the application to land or disposal to landfill of a particular waste, based on the leachable concentration and total concentration of particular contaminants in the waste.

(2) The term waste as defined by the Act is used universally in these Regulations, and any reference to waste in these Regulations is deemed to include both general waste and hazardous waste.

(3) General waste and hazardous waste as defined by the Act are referred to as such in these Regulations where specific provisions are only applicable to either general or hazardous waste.

2. Purpose of the Regulations

(1) The purposes of these Regulations are to:

(a) Regulate the classification and management of waste in a manner that is efficient and consistent, and which supports and implements the provisions of the Act;

(b) Promote and enhance the consideration higher order management options for waste in line with the waste management hierarchy;

(c) Establish a mechanism and procedure for the efficient approval of waste management activities to facilitate waste minimisation and diversion of waste from landfill;

(d) Prescribe requirements for waste classification, waste categorisation and the assessment of the risk associated with waste disposal;

(e) Prescribe requirements for the transport, handling and storage of waste, including requirements for the tracking of waste; and

(f) Prescribe requirements for the management of waste, including landfill acceptance criteria and waste disposal restrictions.

3. Application of the Regulations

- (1) These Regulations apply uniformly in all Provinces of the Republic of South Africa.
- (2) Subject to the provisions of subregulation (3), these Regulations apply to all waste generators, waste transporters and waste managers as relevant.
- (3) These Regulations do not apply to:
 - (a) Generators of domestic waste; or
 - (b) Wastes and waste management activities identified in Section 4(1) of the Act.

PART 2: WASTE CLASSIFICATION AND CATEGORISATION

4. Waste Classification

- (1) Subject to subregulation (2), all waste generators must ensure that the wastes they generate are correctly classified in accordance with SANS 10234.
- (2) Pre-classified wastes that are listed in Schedule 1 of these Regulations do not require classification in terms of SANS 10234.
- (3) The Minister may require a waste generator to have any waste classification that has been done in terms of subregulation (1) peer reviewed to confirm that the classification has been done correctly.

5. Waste Categorisation

- (1) All waste generators must ensure that the types of waste they generate are correctly identified and categorised in terms of the National Waste Information Regulations, 2010.

6. Safety Data Sheets

- (1) All generators of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must provide the waste transporter or waste manager, as the case may be, free of charge, with a safety data sheet prepared in accordance with SANS 10234 for the waste.
- (2) Every generator, transporter and manager of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must be in possession of a

relevant safety data sheet referred to in subregulation (1) for the waste they are in possession of or under their control.

(3) Every generator, transporter and manager of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must make relevant safety data sheets as referred to in subregulation (1) available in the workplace where the waste is generated, transported or managed.

7. Labelling of Hazardous Waste

(1) Any container into which a waste classified as hazardous in terms of Regulation 4(1) or 4(2) is decanted, stored or transported in must be dated and clearly and correctly labelled with regard to the contents thereof.

PART 3: WASTE MANAGEMENT

8. General

(1) No waste transporter or waste manager may accept any waste that has not been classified and categorised in terms of Regulations 4 and 5 respectively.

(2) All waste generators must ensure that the waste they generate are managed in accordance with any Norms and/or Standards in terms of Sections 7(1) and/or 7(2) of the Act relating to a particular waste management activity, or the management of any particular classification or categorisation of waste.

(3) Waste managers must store, re-use, recycle, recover, treat and dispose of wastes in accordance with any Norms and/or Standards in terms of Sections 7(1) and/or 7(2) of the Act relating to a particular waste management activity, or the management of any particular classification or categorisation of waste.

(4) All waste generators must ensure that different options for the management of the waste they generate are appropriately assessed in terms of Regulations 9, 10, 11 and 12 prior to avoidance, reduction, re-use, recycling, recovery, treatment or disposal thereof.

9. Waste Avoidance or Reduction

(1) Waste generators must assess processes undertaken or proposed to be undertaken at the generator's premises, which generate or have the potential to generate waste, against the following criteria to determine the potential for avoidance or reduction of the waste:

- (a) the provisions of Section 17(1) of the Act; and
- (b) the availability of technology and facilities that are feasible and practicably accessible for altering or augmenting the processes or proposed processes to avoid the generation, or if that is not possible, to reduce the generation or potential generation of waste.

(2) Where an avoidance or reduction opportunity for the waste is not available in terms of subregulation (1), the management of the waste must be assessed in accordance with Regulation 10.

10. Waste Re-use, Recycling or Recovery

(1) Waste generators must assess the management of the waste they generate against the following to determine the potential for re-use, recycling or recovery of the waste:

- (a) the provisions of Section 17(1) of the Act;
- (b) the potential for the environmentally sound re-use, recycling or recovery of the waste; and
- (c) the availability of technology and facilities that are feasible and practicably accessible for re-use, recycling or recovery of the waste.

(2) Where re-use, recycling or recovery options for the waste are not available in terms of subregulation (1), the management of the waste must be assessed in accordance with Regulation 11.

11. Waste Treatment

(1) Waste generators must assess the waste they generate against the following to determine the potential for treatment of the waste:

- (a) whether the waste can be treated; and
- (b) the availability of technology and facilities that are feasible and practicably accessible for the treatment of the waste.

(2) Where a treatment option for the waste is available in terms of subregulation (1), the waste must be treated and then assessed in accordance with Regulation 10, provided that waste may not be diluted by any means as a form of treatment, and may not be mixed or otherwise treated where this would:

- (a) reduce the potential for re-use, recycling or recovery; or
 - (b) temporarily mask any characteristics of the waste related to the classification and risk profile of the waste;
- unless the treatment is necessary to obtain a better environmental outcome.

(3) Where a treatment option for the waste is not available in terms of subregulation 1, the waste may be disposed of to landfill subject to the provisions of Regulation 12.

12. Waste Disposal

(1) Generators of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must ensure that the waste risk profile of the waste is correctly determined in accordance with the *Standard for Leach Tests and Risk Profiling of Hazardous Waste* set in terms of Section 7(1)(a) and 7(1)(c) of the Act, prior to the disposal thereof.

(2) Waste generators must ensure that their waste is disposed of in accordance with the *Standard for Disposal of Waste to Landfill* set in terms of Section 7(1)(a) and 7(1)(c) of the Act.

(3) Waste managers may only dispose of waste in accordance with the *Standard for Disposal of Waste to Landfill* set in terms of Section 7(1)(a) and 7(1)(c) of the Act.

PART 4: BENEFICIAL WASTE RESOURCE UTILISATION AND WASTE MANAGEMENT ACTIVITIES

13. Motivation for Listing of Beneficial Waste Management Activities

(1) Any person that wants to conduct a waste management activity listed in terms of Section 19(1) of the Act, which would promote or support the minimisation or beneficial re-use, recycling, recovery or treatment of waste,

may submit a motivation to the Minister to list the specific activity in terms of Section 19(1) and 19(3)(a) of the Act as an activity that does not require a waste management licence, and that can be commenced with, undertaken or conducted in terms of Section 20(a) of the Act, in accordance with the requirements or standards determined for the activity in terms of Section 19(3)(a) of the Act.

(2) A motivation to the Minister in terms of Regulation 13(1) must demonstrate that the proposed waste management activity can be implemented and conducted consistently in a controlled manner without unacceptable impact on, or risk to, the environment or health.

(3) In accordance with Regulation 13(2), a motivation to the Minister in terms of Regulation 13(1) must contain the following information, as relevant to the specific waste management activity:

(a) grounds for motivation to list the activity as one that does not require a waste management licence, as opposed to obtaining a waste management licence to conduct the activity in terms of Section 20(b) of the Act;

(b) a description of the need and desirability of the activity, including advantages and disadvantages;

(c) an assessment of higher order waste management options in line with the waste management hierarchy in terms of Regulations 9 and 10;

(d) details on the particular waste or wastes to be managed, including quantities, sources and processes generating the waste and current management thereof, classification, categorisation and waste risk profile, physical characteristics and chemical composition and comparison with virgin raw materials or comparable products;

(e) a detailed description of the proposed waste management activity, including the waste utilisers and existing or potential market, waste management processes, including storage and handling, technology, infrastructure, pre-processing requirements, and other input or raw materials required;

(f) details of any waste, by-product or product, or other material resulting from the waste management activity, and the proposed management thereof;

- (g) a review of existing implementation of the proposed waste management activity, or similar activities, locally and internationally, specifically the success and acceptability thereof;
- (h) a comparative assessment of commonly available or best available alternative technologies, methods or processes for the management of the waste benchmarked against international best practice;
- (i) a review of recognised local and international specifications or standards related to the waste, any products if applicable, and the waste management activity itself;
- (j) a legal assessment of all applicable national, provincial and local environmental policy and legislation, as well as any applicable waste minimisation plans or waste management plans;
- (k) a description of the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- (l) an assessment of relevant environmental aspects, which could be affected by the waste management activity, specifically as it relates to the varying characteristics and status quo of these aspects between the different, known or unknown sites where the activity might be implemented, and how these aspects may constrain the wide or general implementation of the activity;
- (m) a detailed assessment of the potential impacts on and risks to health and the environment that could result from the proposed activity, assuming a worst-case scenario in accordance with the different characteristics of the known or unknown sites for implementation of the activity;
- (n) proposed requirements or standards specific to the waste management activity that would ensure that the activity can be implemented and conducted consistently and in a controlled manner without unacceptable impact on or risk to the environment or health, which should include as relevant, but not be limited to:
 - (i) roles and responsibilities of different parties involved, i.e. waste generator, transporter and manager;
 - (ii) management, monitoring and reporting procedures;

- (iii) quality assurance and control measures, including sampling, analysis, and chemical limits or thresholds for waste composition;
 - (iv) standard operating procedures;
 - (v) technology or design specifications and standards; and
 - (vi) standard environmental management plan.
- (o) a description of any assumptions made and any uncertainties or gaps in knowledge;
- (p) an independent review of all information submitted and declaration from an independent suitably qualified professional that the information is, to the best of the person's knowledge, correct; and
- (q) any other specific information that may be required by the Minister.

14. Listing of Beneficial Waste Management Activities

- (1) Based on the review and consideration of the information supplied in support of a motivation in terms of Regulation 13(1), the Minister may, subject to Section 19(10)(a) of the Act, list a specific waste management activity in terms of Section 19(1) and 19(3)(a) of the Act as an activity that does not require a waste management licence, and state the requirements or standards that must be adhered to when conducting the activity.
- (2) When considering a motivation in terms of Regulation 13(1), the Minister must take into account all relevant matters, including:
- (a) the information submitted in terms of Regulation 13(3);
 - (b) whether the waste management activity, including associated storage, handling and transport, can be implemented and conducted consistently and in a controlled manner without unacceptable impact on, or risk to, the environment or health, if specified requirements or standards are complied with; and
 - (c) the ability of persons who would conduct the waste management activity to effectively implement the requirements or standards that the activity would be subject to.
- (3) The requirements or standards specified in terms of Section 19(3)(a) of the Act may include but not necessarily be limited to:
- (a) the person or persons that may conduct the activity;

- (b) the specific classification, categorisation and risk profile of the waste that the activity applies to, including physical form, quantity to be dealt with over a specified time period, and concentration limits or thresholds of any permissible contaminants;
- (c) specifications related to any products or recovered material produced by the activity;
- (d) the waste generator, premises, industries or processes from which the waste may originate;
- (e) the person, premises or processes allowed to receive the waste;
- (f) the premises, locality or geographic area where the activity may take place;
- (g) the design or other specifications related to the particular waste management technology, process or method;
- (h) any sampling, analysis, monitoring, auditing, record-keeping and reporting requirements;
- (i) duties of waste generators, transporters and managers;
- (j) operational procedures and management requirements;
- (k) requirements related to any wastes, effluent or emissions resulting from the waste management activity; and
- (l) management or mitigation of any potential impact on or risk to the environment or health.

PART 5: RECORD KEEPING AND MANIFEST SYSTEM

15. Records of Waste Generation and Management

- (1) Waste generators must keep accurate and up to date records of the management of the waste they generate, which records must reflect:
 - (a) the specific types of waste generated, categorised in terms of Regulation 5(1);
 - (b) the quantity of each type of waste generated, expressed in tons per month; and
 - (c) the quantities of each type of waste that has either been re-used, recycled, recovered, treated or disposed of.

(2) Waste managers must keep accurate and up to date records of the types of waste, categorised in terms of Regulation 5(1), and quantities of waste, expressed in tons per month, that has been re-used, recycled, recovered, treated or disposed of at their facility for a waste management activity.

16. Waste Manifest System

(1) Every generator, transporter and manager of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must be in possession of a waste manifest document containing the information specified in Schedule 2 of these Regulations for the waste they are in possession of or under their control.

(2) All generators of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must complete a waste manifest document setting out the information specified in Schedule 2 for each consignment of waste transported from the premises of that waste generator.

(3) Waste transporters may not accept waste classified as hazardous in terms of Regulation 4(1) or 4(2) from a waste generator unless the waste manifest document is provided by the generator.

(4) All transporters of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must:

(a) complete a waste manifest document setting out the information specified in Schedule 2 for each consignment of waste transported by that waste transporter;

(b) provide the information to the generator before the waste is transported from the premises of the generator; and

(c) provide the information to the waste manager at the time of delivery of the waste to the facility for a waste management activity.

(5) Waste managers may not accept waste classified as hazardous in terms of Regulation 4(1) or 4(2) from a waste transporter unless the waste manifest document is provided by the transporter.

(6) All managers of waste classified as hazardous in terms of Regulation 4(1) or 4(2) must return a completed copy of the waste manifest document to the waste generator confirming that the waste load has been accepted, and

that the waste manager is authorised to manage and has managed the waste appropriately in an environmentally sound manner.

PART 6: GENERAL MATTERS

17. Offences and Penalties

(1) A person is guilty of an offence if that person fails to comply with any provision of these Regulations.

(2) A person who commits an offence under subregulation (1) is liable on conviction to:

- (a) Imprisonment not exceeding 15 years;
- (b) An appropriate fine; or
- (c) both a fine and imprisonment.

18. Commencement and Transitional Arrangements

(1) These Regulations take effect on the date of publication thereof **[Estimate December 2010]**, subject to the following transitional provisions:

(a) The requirements of Regulation 4 (*Waste Classification*) may be implemented simultaneously with the waste classification system contained in the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2nd Edition; DWAF Waste Management Series, 1998) for a period not exceeding one (1) year from the date of publication of these Regulations.

(b) The requirements of Regulation 5 (*Waste Categorisation*) take effect after six (6) months from the date of publication of the National Waste Information Regulations, 2010;

(c) The requirements of Regulation 6 (*Safety Data Sheets*), Regulation 7 (*Labelling of Hazardous Waste*) and Regulation 8(1) (*Waste to be classified and categorised prior to acceptance by waste transporter and manager*) all take effect after one (1) year from the date of publication of these Regulations.

(d) The requirements of Regulation 12 (*Waste Disposal*) may be implemented simultaneously with the waste disposal and landfill design requirements contained in the Minimum Requirements for Waste

Disposal by Landfill (2nd Edition; DWAF Waste Management Series, 1998) for a period not exceeding eighteen (18) months for hazardous waste, and three (3) years for general waste, subject to specific requirements and timeframes in the *Standard for Leach Tests and Risk Profiling of Hazardous Waste* and *Standard for Disposal of Waste to Landfill* that require compliance with certain provisions in the standards at earlier dates.

(e) The requirements of Regulation 15 (*Records of Waste Generation and Management*) take effect after six (6) months of the date of publication of the National Waste Information Regulations, 2010.

(f) The requirements of Regulation 16 (*Waste Manifest System*) take effect after one (1) year from the date of publication of these Regulations

19. Short Title

These Regulations are called the National Waste Classification and Management Regulations, 2010.

PART 7: SCHEDULES TO THE REGULATIONS

Schedule 1: Pre-classified Waste

(1) In terms of Regulation 4(2), the types of waste specified in Section 2 of this Schedule are pre-classified and do not require classification in terms of Regulation 4(1).

(2)(a) General waste:

- (i) Domestic waste;
- (ii) Building and Demolition Waste;
- (iii) Inert waste;
- (iv) Waste tyres.

(2)(b) Hazardous waste:

- (i) Health Care Risk Waste (HCRW);
- (ii) Waste Electrical and Electronic Equipment (WEEE);
- (iii) Waste batteries;
- (iv) Asbestos Waste.

Schedule 2: Waste Manifest System

(1) The information specified in Section 2 of this Schedule must be reflected in the hazardous waste manifest document required in terms of Regulation 16.

(2)(a) Information to be supplied by the Waste Generator:

- Unique consignment identification number (bar code);
- Generator's contact details (contact person, physical & postal address, phone, fax, email);
- Physical address of the site where the waste was generated (if different);
- Emergency contact number;
- Origin / source of the waste (process / activity);

- Description of the waste (waste classification and waste category; waste risk profile if relevant - for disposal);
- Chemical composition of the waste;
- Physical nature / consistency of the waste (liquid, solid, sludge; pumpable, non-pumpable);
- Quantity of waste;
- Packaging (bulk, small containers, tank);
- Transport type (tanker, truck, container);
- Special handling instructions;
- Date of collection / dispatch;
- Intended receiver (waste manager);
- Declaration (content of the consignment is fully and accurately described, classified, packed, marked and labelled, and in all respects in proper condition for transportation in accordance with the applicable laws and regulations).

(2)(b) Information to be supplied by the Waste Transporter:

- Name of transporter;
- Address of transporter;
- Vehicle registration number;
- Transport permit number;
- Declaration acknowledging receipt of the waste.

(2)(c) Information to be supplied by the Waste Manager:

- Name, address and contact details;
- Receiving waste management facility name, address and contact details (where different);
- Waste management facility licence number;
- Date of receipt;
- Quantity of waste;
- Type of waste management applied (re-use, recycling, recovery, treatment, disposal);
- Any discrepancies in information (related to waste quantity, type, classification, physical and chemical properties);

- Waste management reporting description and code in terms of the National Waste Information Regulations, 2010.
- Details on any waste diverted to another waste management facility, and details of the facility.
- Certification and declaration of receipt and final management of the waste.

**DRAFT STANDARD FOR LEACH TESTS
AND RISK PROFILING OF HAZARDOUS
WASTE**

GENERAL NOTICE

NOTICE.....OF 2010

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

**NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT
NO. 59 of 2008)**

**DRAFT STANDARD FOR LEACH TESTS AND RISK PROFILING OF
HAZARDOUS WASTE**

I, Buyelwa Sonjica, Minister of Water and Environmental Affairs, intend setting a national Standard for Leach Tests and Risk Profiling of Hazardous Waste under Section 7(1)(a) and 7(1)(c) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as set out in the Schedule hereto.

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BUYELWA SONJICA

MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

SCHEDULE
**NATIONAL STANDARD FOR LEACH TESTS AND RISK PROFILING OF
HAZARDOUS WASTE**

CONTENTS

1. ASSESMENT
2. LEACH TESTS
3. SASLP AND SASTC THRESHOLD VALUES
4. WASTE RISK PROFILING

1. ASSESSMENT

(1) In terms of Regulation 12(1) of the National Waste Classification and Management Regulations, 2010, the potential level of risk associated with disposal of hazardous wastes must be determined by analysing the total- and leachable concentrations of contaminants in a waste, and the results assessed against three levels of threshold limits for Leachable- and Total Concentrations, which in combination, determines the Risk Profile of the waste.

(2) In terms of this Standard:

(a) Leachable concentration thresholds = South African Standard Leaching Procedure (SASLP) values = SASLP0, SASLP1 and SASLP2.

(b) Total concentration thresholds = South African Standard Total Concentration (SASTC) values = SASTC0, SASTC1 and SASTC2.

(c) LC = Leachable concentration (mg/l) of a specific contaminant in the waste, which is compared with SASLP threshold values.

(d) TC = Total concentration (mg/kg) of a specific contaminant in the waste, which is compared with SASTC threshold values.

(3) Waste Risk Profiling will involve the identification of contaminants likely to be present in the waste, as well as sampling and analysis for each of the contaminants specified in Section 3 of this Standard. Appropriate methods must be used to determine the TC of contaminants, and the LC of contaminants must be determined as specified in Section 2.

2. LEACH TESTS

(1) The leachable concentration (LC) of contaminants specified in Section 3 that are present in the waste must be determined using the Australian Standard Leaching Procedure (ASLP). The leaching solution that is selected will depend on the nature of the waste:

(a) Putrescible wastes or waste to be disposed of with putrescible waste: A 0.1M acetic acid pH 5.0 or pH 2.9 solution depending on the acid neutralisation capacity of the waste must be used.

(b) Waste to be co-disposed with non-putrescible material: A basic 0.1M sodium tetraborate decahydrate solution of pH 9.2 ± 0.1 must be used (alkaline test identifies contaminants that are leached at higher concentrations at high pH).

(c) Waste that is to be left undisturbed on-site, or to be dispersed over land without confinement, or non-putrescible material, e.g. a mono-disposal scenario: Reagent water must be used (also relate to contaminated land assessment; in-situ).

(2) If the total concentration (TC) of a contaminant is less than twenty (20) times the lowest leachable concentration threshold specified in Section 3 of this Standard (i.e. $TC < 20 \times SASLP0$), the LC of the contaminant does not have to be determined.

(3) Any existing data on leachable concentrations for contaminants in wastes, which have been determined through the leach test criteria in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2nd Edition; DWAF Waste Management Series, 1998), may be utilised for Waste Risk Profiling for a period not exceeding one (1) year from the date of publication of this Standard.

3. SASLP AND SASTC THRESHOLD VALUES

(1) South African Standard Leaching Procedure (SASLP) and Total Concentration (SASTC) Threshold Values for Waste Risk Profiling and Assessment of Hazardous Waste Disposal to Landfill.

Contaminants	SASLP0 ¹ mg/l	SASTC0 mg/kg	SASLP1 mg/l	SASTC1 mg/kg	SASLP2 mg/l	SASTC2 ² , mg/kg
Metal Ion Contaminants						
As, Arsenic ³	0.5	500	1	500	4	2000
B, Boron ⁴	25	15000	50	15000	200	60000
Ba, Barium ⁴	35	6250	70	6250	280	25000
Cd, Cadmium	0.25	260	0.5	260	2	1040
Co, Cobalt	25	5000	50	5000	200	20000
Cr _{Total} , Chromium Total ⁵	5.0	800000	10	800000	40	N/A
Cr(VI), Chromium (VI) ⁶	2.5	500	5	500	20	2000
Cu, Copper	50	19500	100	19500	400	78000
Hg, Mercury	0.05	160	0.1	160	0.4	640
Mn, Manganese	20	12750	40	12750	160	51000
Mo, Molybdenum ⁴	3.5	1000	7	1000	28	4000
Ni, Nickel	3.5	10600	7	10600	28	42400
Pb, Lead	0.5	1900	1	1900	4	7600
Sb, Antimony ⁴	0.5	75	1	75	4	300
Se, Selenium ⁴	0.5	50	1	50	4	200
V, Vanadium	5.0	2680	10	2680	40	10720
Zn, Zinc	160	160000	320	160000	1280	640000
Inorganic Anions						
Chloride ⁷	5000	N/A	10000	N/A	40000	N/A
Sulphate ⁷	10000	N/A	20000	N/A	80000	N/A
NO ₃ as N, Nitrate-N ⁷	300	N/A	600	N/A	2400	N/A
F, Fluoride ⁸	50	10000	100	10000	400	40000
CN ⁻ (total), Cyanide Total	2.5	10500	5	10500	20	42000
Organics						
Benzene	0.01	10	0.02	10	0.08	40
Benzo(a)pyrene	0.035	1.7	0.07	1.7	0.28	6.8
Carbon tetrachloride	0.20	4	0.40	4	1.6	16
Chlorobenzene	5.0	8800	10	8800	40	35200
Chloroform ⁹	15	700	30	700	120	2800
2-Chlorophenol	525	2100	30	2100	120	8400
Di (2 ethylhexyl) phthalate ⁴	0.50	40	1	40	4	160
1,2-Dichlorobenzene	50	31900	10	31900	40	127600
1,4-Dichlorobenzene	15	18400	30	18400	120	73600
1,2-Dichloroethane	1.5	3.7	3	3.7	12	14.8
1,1-Dichloroethylene	0.35	150	0.7	150	2.8	600
1-2-Dichloroethylene	2.5	3750	5	3750	20	15000
Dichloromethane ⁴	0.25	16	0.5	16	2	64
2,4-Dichlorophenol ⁴	10	800	20	800	80	3200
2,4-Dinitrotoluene ⁴	0.065	5.2	0.13	5.2	0.52	20.8
Ethylbenzene	3.5	540	7	540	28	2160
Ethylenediamine tetra acetic	30	1000	60	1000	240	4000

Contaminants	SASLP0 ¹ mg/l	SASTC0 mg/kg	SASLP1 mg/l	SASTC1 mg/kg	SASLP2 mg/l	SASTC2 ² , mg/kg
acid (EDTA) ⁴						
Formaldehyde ⁴	25	2000	50	2000	200	8000
Hexachlorobutadiene ⁴	0.03	2.8	0.06	2.8	0.24	5.4
Methyl ethyl ketone ⁴	100	8000	200	8000	800	32000
MTBE (Methyl t-butyl ether) ¹⁰	2.5	1435	5.0	1435	20.0	5740
Nitrobenzene	1	45	2	45	8	180
PAHs (total) ^{4, 11}	N/A	50	N/A	50	N/A	200
Petroleum H/Cs, C6 to C9 ¹²	N/A	325	N/A	650	N/A	2600
Petroleum H/Cs, C10 to C36 ¹²	N/A	5000	N/A	10000	N/A	40000
Phenols (total, non-halogenated) ^{4, 13}	7	560	14	560	56	2240
Polychlorinated biphenyls	0.025	3	0.05	3	0.2	12
Styrene ⁴	1.0	120	2	120	8	480
1,1,1,2-Tetrachloroethane ⁴	5	400	10	400	40	1600
1,1,2,2-Tetrachloroethane	0.65	5.0	1.3	5.0	5.3	20
Tetrachloroethylene ⁴	0.25	200	0.5	200	2	800
Toluene	35	1150	70	1150	280	4600
Trichlorobenzenes (total)	3.5	3300	7	3300	28	13200
1,1,1-Trichloroethane ⁴	15	1200	30	1200	120	4800
1,1,2-Trichloroethane ⁴	0.6	48	1	48	4	192
Trichloroethylene	0.25	11600	2	11600	8	46400
2,4,6-Trichlorophenol	10.0	1770	20	1770	80	7080
Vinyl chloride	0.015	1.5	0.03	1.5	0.12	6.0
Xylenes (total)	25	890	50	890	200	3560
Pesticides⁴						
Aldrin + Dieldrin	0.015	1.2	0.03	1.2	0.03	4.8
DDT + DDD + DDE	1	50	2	50	2	200
2,4-D	1.5	120	3	120	3	480
Chlordane	0.05	4	0.1	4	0.1	16
Heptachlor	0.015	1.2	0.03	1.2	0.03	4.8

Notes (included for information purposes to support updated SASLP & SASTC values; to be omitted from final Standard):

1. SASLP0 values have, where possible, been derived from the *lowest value* of the standard for *human health effect* listed for drinking water in South Africa (DWAf, SANS) by multiplying with a Dilution Attenuation Factor (DAF) of 50 as proposed by the Australian State of Victoria, "Industrial Waste Resource Guidelines: Solid Industrial Waste Hazard Categorisation and Management", June 2009: www.epa.vic.gov.au. If no standard was available in South Africa then the values given by the WHO or other appropriate drinking water standard, such as those published in the California Regulations have been used.
2. SASTC0 values (=SASTC1), where appropriate, have been derived from the Soil Screening Values for commercial/industrial land determined by the Department of Environmental Affairs contaminated land remediation project ("*Framework for the Management of Contaminated Land*", March 2010. The values of SASTC2 have been derived by multiplying SASTC0 by a factor of 4, as used by the Environmental Protection Agency, Australian State of Victoria. Where South African values for SATC0 were unavailable, in general, the values published by the Environmental Protection Agency, Australian State of Victoria have been used. Some TC values have been adjusted by the team because of various attenuation factors that are observed in landfills: the reasons for an adjustment of a particular value or values are given in the notes below for the specific contaminants.

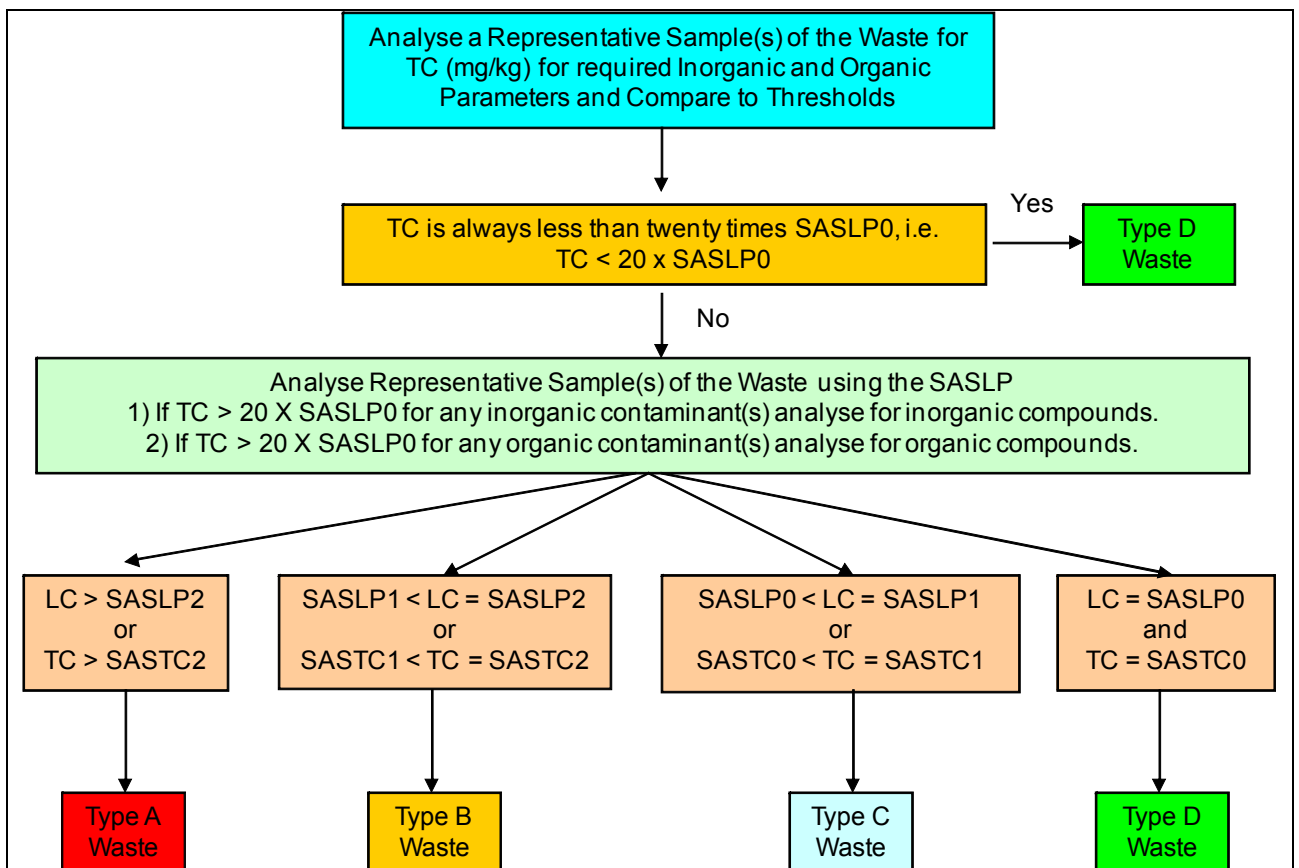
3. The SASTC0/1/2 values for inorganic As have been selected from the those given by the Environmental Protection Agency, Australian State of Victoria rather than the much lower values that have been derived by the SA contaminated land remediation project. Inorganic arsenic is represented by the element itself, As, arsenic trioxide, arsenic acid, arsenic pentoxide, and the insoluble arsenates that are formed with cations such as Ca and Fe(III). Arsenates/arsenates, in particular, are attenuated in a co-disposal or mono-disposal landfill by the presence of even moderate amounts of Ca^{2+} and $\text{Fe}^{2+/3+}$ ions, e.g. in the waste, in cover materials, such as ash and soil, and in the soil below the landfill. The higher values are therefore warranted due to landfill specific factors.
4. No specific Soil Screening Values for these species have been proposed by the SA contaminated land remediation project. However, because of their importance for landfilling in South Africa, the SASTC0/1/2 values used by the Environmental Protection Agency, Australian State of Victoria, have been used.
5. The proposed SA Soil Screening Value for Cr for commercial/industrial land is relatively high, i.e. 800000mg/kg or 80%, which indicates that Cr(III) is considered of little risk to human health and the environment. This figure has been adopted for SASTC0/1 thresholds, but note that materials such as chromium (III) oxide, Cr_2O_3 contain only 68.4% and chromite ore, $(\text{Fe}, \text{Mg})\text{Cr}_2\text{O}_4$, between 35 and 45% of Cr(III). Thus, provided these compounds leach less than 5mg/l of Cr(III) using the SASLP, they would be considered Very Low Risk (inert) wastes.
6. The proposed SA Soil Screening Value for Cr(VI) for commercial/industrial land is relatively low, i.e. 40mg/kg, and does not reflect the attenuation of the species that occurs in the landfill environment, where Cr(VI) is reduced to Cr(III) in an anaerobic co-disposal landfill and by Fe(II), Mn(II) and other species both in the anaerobic and mono-disposal situation. The values for SASTC0/1/2 given in the table are those proposed by the Environmental Protection Agency, Australian State of Victoria.
7. SA Soil Screening Values were only proposed as 'investigation levels' for chlorides, fluorides, sulphates, nitrates-nitrites and sulphates, recognising that commonly occurring anions are rarely encountered at concentrations that may impact on human health by direct exposure pathways, but they do however have an important influence on soil quality from an ecological and agricultural perspective. The approach used by the Environmental Protection Agency, Australian State of Victoria has been adopted, i.e. no SASTC0/1/2 values for chloride, sulphate and nitrate are listed. In the landfill situation, where the anion, if mobilised, will be captured in the landfill leachate, it is clearly the leachable concentration that is of key importance and the management of the leachate, i.e. by evaporation, ion exchange, reverse osmosis or other technique, will be expected to recover the anion before it enters the environment. Most simple chloride and nitrate salts are very soluble in water, whereas many sulphate wastes, such as gypsum, CaSO_4 , and phosphogypsum are relatively insoluble.
8. The proposed SA Soil Screening Value for fluoride, F^- , for commercial/industrial land is relatively low at 30mg/kg and this does not reflect the attenuation that occurs in a landfill situation. Landfills inevitably contain significant amounts of Ca salts and aluminosilicates that attenuate fluoride. Fluoride concentrations in landfill leachates in SA are usually well below the SASLP0 value of 50mg/l. The SASTC0/1/2 values adopted in the table are those used by the Environmental Protection Agency, Australian State of Victoria.
9. The very low SA Soil Screening Value of 1.7mg/l for commercial industrial land is because the species is carcinogenic. Note that this low value is not aligned with the proposed SASLP0 value and chloroform does biodegrade to some extent in the landfill situation. In addition, the Minimum Requirements used a value of 10000mg/l or mg/kg (1%) as the limit to landfill for carcinogens. The values proposed by the Environmental Protection Agency, Australian State of Victoria have therefore been adopted.
10. Methyl t-butyl ether, MTBE, was included in the SA Soil Screening Values as a contaminant of concern, and the SASTC0/1/2 values have been included here. However, no drinking water limit is available in South Africa, so the SASLP0 value was obtained using the human health limit of 50ppb given in the California Regulations, which was multiplied by the DAF of 50 to give an SASLP0 of 2.5mg/l.
11. Total sum of naphthalene, acenaphthylene, acenaphthene, anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene and pyrene.

12. The values SASTC0/1/2 for C6 to C9 and C10 to C36 hydrocarbons published by the Environmental Protection Agency, Australian State of Victoria, which are based on the NSW Waste Classification Guidelines, have been adopted rather than the proposed SA Soil Screening Values. The latter gave the following SASTC0 values for C7 to C9, C10 to C14, and, C15 to C36 hydrocarbons of 23000mg/kg, 4400mg/kg and 700000mg/kg (70%), respectively. In the landfill environment the lower hydrocarbons, C6 to C9, in particular, are mobilised due to the fairly high temperatures that can be found during biodegradation, e.g. up to 55°C. In addition, allowing extremely high concentrations of the higher hydrocarbons, C15 to C36 to be disposed at concentrations as high as 700000mg/kg, i.e. 70%, goes against a principle objective of the waste project, i.e. preventing the disposal of organic compounds to landfill and encouraging the recovery and/or utilisation of wastes, such as solvents and petroleum hydrocarbons, for generation of energy.
13. Total sum of phenol, 2-methylphenol (o-cresol), 3-methylphenol (m-cresol), 4-methylphenol (p-cresol), 2,4- dimethylphenol, 2,4-dinitrophenol, 2-methyl-4,6-dinitrophenol, 2-nitrophenol, 4-nitrophenol and 2-cyclohexyl-4,6- dinitrophenol.

4. WASTE RISK PROFILING

- (1) Hazardous waste must be assessed against the thresholds specified in Section 3 of this Standard for total concentration (SASTC0, SASTC1 and SASTC2) and leachable concentration (SASLP0, SASLP1 and ASLP2). The assessment must be done for all chemical substances known and reasonably expected to be present in the waste.
- (2) Based on the assessment, the Waste Risk Profile must be determined in terms of the following criteria:
 - (a) Hazardous wastes with any contaminant level above the SASLP2 or SASTC2 thresholds are wastes considered to pose an extreme risk.
 - (b) Hazardous wastes with any contaminant level greater than SASLP1 but below SASLP2, or greater than SASTC1 but below SASTC2 are high risk wastes.
 - (c) Hazardous wastes with any contaminant level greater than SASLP0 but below the SASLP1 and SASTC1 thresholds are moderate risk wastes.
 - (d) Hazardous wastes with all contaminant levels below both the SASLP0 and SASTC0 thresholds pose a very low risk, and are considered to be essentially inert.

Contaminant Concentration Criteria	Waste Risk Profile	Description
LC > SASLP2, or TC > SASTC2	A: Extreme Risk	Considered very high risk waste with a very high potential for contaminant release. Requires very high level of control and ongoing management to protect health and the environment.
SASLP1 < LC ≤ SASLP2, or SASTC1 < TC ≤ SASTC2	B: High Risk	Considered high risk waste with high potential for contaminant release. Requires high level of control and ongoing management to protect health and the environment.
SASLP0 < LC ≤ SASLP1, or SASTC0 < TC ≤ SASTC1	C: Moderate Risk	Considered low risk waste with some potential for contaminant release. Requires proper control and ongoing management to protect health and the environment.
TC < 20 x SASLP0, or LC ≤ SASLP0 and TC ≤ SASTC0	D: Very Low Risk	Very low risk waste with low potential for contaminant release. Requires some level of control and ongoing management to protect health and the environment.



(3) The dilution of a waste by any means to reduce the TC of any contaminant, so that it can meet the SASTC threshold criteria of a particular Waste Risk Profile, is prohibited.

(4) If the TC of a metal or inorganic contaminant(s) is >SASTC2, and the concentration cannot be reduced by waste avoidance or by recycling/recovery, or it is not economically feasible e.g. due to very small quantities, the waste must be stabilised to a minimum of LC < SASLP2 and disposed of as required in terms of the *Standard for Disposal of Waste to Landfill*.

(5) If the TC of an organic contaminant is >SASTC2 and the concentration cannot be reduced by waste avoidance or by recycling/recovery, the waste should be used for an approved process for energy recovery or utilisation, incinerated or otherwise reduced or treated, and any residual inorganic waste disposed to landfill in terms of the *Standard for Disposal of Waste to Landfill*.

**DRAFT STANDARD FOR DISPOSAL OF
WASTE TO LANDFILL**

GENERAL NOTICE

NOTICE.....OF 2010

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

**NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT
NO. 59 of 2008)**

DRAFT STANDARD FOR DISPOSAL OF WASTE TO LANDFILL

I, Buyelwa Sonjica, Minister of Water and Environmental Affairs, intend setting a national Standard for Disposal of Waste to Landfill under Section 7(1)(a) and 7(1)(c) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as set out in the Schedule hereto.

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BUYELWA SONJICA

MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

SCHEDULE

NATIONAL STANDARD FOR DISPOSAL OF WASTE TO LANDFILL

CONTENTS

1. LANDFILL ACCEPTANCE CRITERIA
2. WASTE DISPOSAL RESTRICTIONS

1. LANDFILL ACCEPTANCE CRITERIA

(1) Hazardous waste may only be accepted and disposed of at an appropriately designed and operated landfill as stipulated in Section 1(3) of this Standard, in terms of the waste's Waste Risk Profile as determined in terms of the *Standard for Leach Tests and Risk Profiling of Hazardous Waste*.

(2) General waste may only be accepted and disposed of at appropriately designed and operated landfills as stipulated in Section 1(4) of this Standard.

(3) The disposal requirements for Hazardous Wastes are as follows:

Waste Risk Profile	Disposal Requirements <i>(note that these requirements are currently still under review and development)</i>
A: Extreme Risk	Disposal not allowed . The waste must be treated first and then re-tested to determine Waste Risk Profile for disposal.
B: High Risk	Disposal only allowed at a hazardous waste landfill site designed and operated in accordance with the requirements for a HH¹ landfill as specified in the Minimum Requirements Waste Disposal by Landfill (2 nd Ed., DWAF, 1998).
C: Moderate Risk	Disposal only allowed at a site designed and operated in accordance with the requirements for a GLB+ landfill as specified in the Minimum Requirements Waste Disposal by Landfill (2 nd Ed., DWAF, 1998).
D: Very Low Risk	Disposal allowed at a site designed and operated in accordance with the requirements for a GSB- landfill as specified in the Minimum Requirements Waste Disposal by Landfill (2 nd Ed., DWAF, 1998).

¹ Permitted Hh landfills may accept High Risk wastes in any currently operating cells, but the design and operation of future cells must be upgraded to the HH design.

(4) The disposal requirements for General Wastes are as follows:

General Waste	Disposal Requirement <i>(note that these requirements are currently still under review and development)</i>
Domestic waste, Building & demolition waste	Disposal only allowed at a site designed and operated in accordance with the requirements for a GLB- or GLB+ landfill site (depending on site water-balance) as specified in the Minimum Requirements Waste Disposal by Landfill (2 nd Ed., DWAF, 1998).
Inert Waste	Disposal allowed at a site designed and operated in accordance with the requirements for a GSB- landfill as specified in the Minimum Requirements Waste Disposal by Landfill (2 nd Ed., DWAF, 1998).

2. WASTE DISPOSAL RESTRICTIONS

(1) The disposal of the following wastes to landfill is prohibited, effective within the timeframe specified, which indicates the period after publication of this Standard *[Estimate December 2010]* that the prohibition takes effect:

Waste Prohibited from Disposal	Timeframe
(a) Waste which, in the conditions of a landfill, is explosive, corrosive, oxidizing, or flammable (according to SANS 10234).	Immediate
(b) Waste with a pH value of <6 or >12.	Immediate
(c) Reactive waste that may react with water, air, acids or components of the waste, or that could generate unacceptable amounts of toxic gases within the landfill.	Immediate
(d) Waste compressed gases (according to SANS 10234).	Immediate
(e) Untreated Healthcare Risk Waste (HCRW).	Immediate
(f) Pesticides.	Immediate
(g) Lead acid batteries.	Immediate
(h) Other batteries	Eight (8) years
(i) Used oil.	Two (2) years
(j) Used/spent solvents.	Four (4) years
(k) PCB wastes (>50 mg/kg / 50 ppm).	Five (5) years
(l) Waste Electric and Electronic Equipment (WEEE) – Lights.	Three (3) years
(m) Waste Electric and Electronic Equipment (WEEE) – Other.	Eight (8) years
(n) Waste tyres – Whole.	Immediate
(o) Waste tyres – Quartered.	Five (5) years
(p) Liquid waste – Waste which (i) has an angle of repose of less than 5 degrees, or (ii) becomes free-flowing at or below 60 °C or when it is transported, or (iii) is not generally capable of being picked up by a spade or shovel, or (iv) has a moisture content of >40% or (v) liberates moisture under pressure in landfill conditions (field capacity test).	Three (3) years

Waste Prohibited from Disposal	Timeframe
(q) (Non-halogenated) Hazardous waste with a calorific value of: (i) > 25 MJ/kg. (ii) > 20 MJ/kg. (iii) > 10 MJ/kg. (iv) > 6% TOC.	Three (3) years Five (5) years Eight (8) years Ten (10) years
(r) Brine / Waste with a high salt content – TDS > 5%.	Eight (8) years
(s) Green waste diversion from landfill: (i) 25% diversion from baseline. (ii) 50% diversion from baseline.	Three (3) years Eight (8) years
(t) Any waste that does not fulfil the acceptance criteria for disposal to specific landfills in accordance with Section 1 of this Standard: (i) Hazardous waste. (ii) General waste.	Eighteen (18) months Three (3) years

(2) The following activities related to the disposal of waste to landfill is prohibited, effective within the timeframe specified, which indicates the period after publication of this Standard *[Estimate December 2010]* that the prohibition takes effect:

Prohibited Waste Disposal Activities	Timeframe
(a) Co-disposal of waste that has been treated (A: Extreme Risk Waste Profile), or co-disposal of hazardous and general waste.	Three (3) years
(b) Macro encapsulation of waste.	Eight (8) years
(c) Blending of waste (e.g. with ash) to reduce the moisture content thereof.	Three (3) years