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## GENERAL NOTICE

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### NOTICE 433 OF 2011

#### DEPARTMENT OF ENVIRONMENTAL AFFAIRS

#### NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO.59 OF 2008)

#### DRAFT STANDARD FOR ASSESSMENT OF WASTE FOR LANDFILL DISPOSAL

I, Bomo Edith Edna Molewa, Minister of Water and Environmental Affairs, hereby give notice of my intention, under section 7(1)(c) read with section 73 of the National Environmental Management: Waste Act, 2008 (Act No. 58 of 2008), set national standards for assessment of waste for landfill disposal as set out in the Schedule hereto.

Members of the public are invited to submit to the Minister, within 30 days of publication of this notice in the *Gazette*, written comments or objections to the following addresses:

By post to:     The Director-General: Department of Environmental Affairs  
                  Attention: Ms Nomphele Daniel  
                  Private Bag X447  
                  Pretoria, 0001

By fax to: (012) 320 0024, and by e-mail to: [ndaniel@environment.gov.za](mailto:ndaniel@environment.gov.za)

Hand delivered at: 315 Pretorius Street, Pretoria, Fedsure Forum Building, North Tower, 2<sup>nd</sup> Floor (Reception).

The full document can also be accessed at [www.sawic.org.za](http://www.sawic.org.za).

Any inquiries in connection with the draft regulations can be directed to Ms Nomphele Daniel at (012) 310 3904.

Comments received after the closing date may not be considered.



**BOMO EDITH EDNA MOLEWA**  
**MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS**

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**PART 1: INTERPRETATION AND PURPOSE****1. Definitions**

- (1) In this Notice any word or expression to which a meaning has been assigned in the Act has that same meaning, and unless the context indicates otherwise—

“**LC**” means the leachable concentration of a particular contaminant in a waste, expressed as mg/l;

“**LCT**” means the leachable concentration threshold limits for particular chemical substances in a waste, prescribed in paragraph 6 of this Notice;

**LCT<sub>i</sub> or LCT<sub>0</sub>** means the leachable concentration threshold limits for particular chemical substances in a waste, prescribed in paragraph 6 of this Notice;

**“putrescible waste”** means waste that contains organic matter capable of being decomposed by microorganisms, or readily decay under normal conditions, giving rise to offensive odours, or which is capable of providing food for birds and animals, thereby attracting vermin or disease-causing vectors such as flies and rodents;

**“TC”** means the total concentration of a particular contaminant in a waste, expressed as mg/kg;

**“TCT”** means the total concentration thresholds limits for particular chemical substances in a waste, prescribed in Section 6 of this Standard;

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

**“the Regulations”** means the Waste Classification and Management Regulations, 2011, in terms of Section 69(1)(a), (b), (g), (h), (m), (q), (s), (dd) and (ee) of the Act.

## **2. Purpose and Application**

- (1) This Notice prescribes the requirements for the assessment of the level of risk associated with the disposal of waste to landfill in terms of Regulation 8(1)(a) of the Regulations.

## **PART 2: STANDARD ASSESSMENT METHODOLOGY**

### **3. Approach**

- (1) To determine the level of risk associated with the disposal of waste to landfill, the following are required—
  - (a) identification of chemical substances present in the waste; and

- (b) sampling and analysis to determine the total concentrations (TC) and leachable concentrations (LC) for the chemical substances specified in paragraph 6 of this Notice that are present in the waste.
- (2) The TC and LC values of the chemical substances in the waste must be compared to the four levels of threshold limits specified in paragraph 6 of this Notice for total concentrations (TCT values) and leachable concentrations (LCT values) of specific chemical substances.
- (3) Based on the TC and LC values of the chemical substances in the waste exceeding the corresponding TCT and LCT values respectively, the level of risk associated with the disposal of the waste to landfill must be assigned to the waste in terms of paragraph 7 of this Notice.

#### **4. Total Concentration (TC) Analysis**

- (1) The TC of all the chemical substances specified in paragraph 6 of this Notice that are known to occur, likely to occur or can reasonably be expected to occur in the waste must be determined.
- (2) The TC of chemical substances in waste must be determined using suitable national or international standard extraction techniques and analysis methods that will provide an accurate and precise result of the TC of chemical substances specified in paragraph 6 of this Notice.
- (3) The analysis of the TC of chemical substances in waste may only be conducted by laboratories accredited to conduct the particular extraction techniques and analysis methods required.
- (4) If the TC of a particular chemical substance in the waste is less than twenty (20) times the lowest leachable concentration thresholds (LCT<sub>i</sub> or LCT<sub>0</sub> value) specified for the substance in paragraph 6 of this Notice, the LC of this particular substance does not have to be determined.

- (5) If the TC of all chemical substances are less than twenty (20) times the corresponding LCTi or LCT0 values specified in paragraph 6 of this Notice, no further analysis to determine the LC of the chemical substances are required, and the level of risk associated with the disposal of the waste to landfill may be assigned to the waste in terms of paragraph 7 of this Notice based on the TC of the chemical substances.

#### **5. Leachable Concentration (LC) Analysis**

- (1) If the TC of a contaminant is more than twenty (20) times the lowest leachable concentration thresholds (LCTi or LCT0 value) specified for the particular contaminant in paragraph 6 of this Notice, the LC of the contaminant must be determined.
- (2) The LC of chemical substances must be determined using the Australian Standard Leaching Procedure (AS 4439.1, 4439.2 and 4439.3).
- (3) The analysis of the LC of chemical substances in waste may only be conducted by laboratories accredited to conduct the particular extraction techniques and analysis methods required.
- (4) The type of leaching solution used in the procedure will depend on the nature of the waste and/or the particular disposal practice, and must accordingly be determined as follows—
- (a) Waste to be disposed of with or waste that contains putrescible wastes: Use 0.1M acetic acid solution with altered pH 5.0 or pH 2.9 depending on the acid neutralisation capacity of waste;
- (b) Waste to be disposed of with non-putrescible waste: Use a basic 0.1M sodium tetraborate decahydrate solution of pH  $9.2 \pm 0.1$ , as well as an acetic acid solution (pH 5.0 or 2.9); or
- (c) Non-putrescible waste to be disposed of without any other wastes (mono-disposal): Use reagent water.

- (5) Existing LC results for chemical substances in wastes, which have been determined in terms of the Toxicity Characteristic Leaching Procedure (TCLP) leach test criteria of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2<sup>nd</sup> Edition, 1998; Department of Water Affairs and Forestry) prior to the Regulations taking effect, may be utilised for comparison with the LCT values in paragraph 6 of this Notice to determine the level of risk associated with the disposal of the waste to landfill, for a period not exceeding two (2) years from the date of publication of this Notice.

#### 6. LCTi, LCTO, LCT and TCT Threshold Values

Chemical Substances in Waste	LCTi mg/l	TCTi mg/kg	LCTO mg/l	TCTO mg/kg	LCT1 mg/l	TCT1 mg/kg	LCT2 mg/l	TCT2 mg/kg
<b>Metal Ions</b>								
As, Arsenic	0.01	5.8	0.5	500	1	500	4	2000
B, Boron	0.5	150	25	15000	50	15000	200	60000
Ba, Barium	0.7	62.5	35	6250	70	6250	280	25000
Cd, Cadmium	0.005	7.5	0.25	260	0.5	260	2	1040
Co, Cobalt	0.5	50	25	5000	50	5000	200	20000
Cr <sub>Total</sub> , Chromium Total	0.1	46000	5.0	800000	10	800000	40	N/A
Cr(VI), Chromium (VI)	0.05	6.5	2.5	500	5	500	20	2000
Cu, Copper	1.0	16	50	19500	100	19500	400	78000
Hg, Mercury	0.001	0.93	0.05	160	0.1	160	0.4	640
Mn, Manganese	0.4	1000	20	25000	40	25000	160	100000
Mo, Molybdenum	0.07	40	3.5	1000	7	1000	28	4000
Ni, Nickel	0.07	91	3.5	10600	7	10600	28	42400
Pb, Lead	0.01	20	0.5	1900	1	1900	4	7600
Sb, Antimony	0.01	10	0.5	75	1	75	4	300
Se, Selenium	0.01	10	0.5	50	1	50	4	200
V, Vanadium	0.1	150	5.0	2680	10	2680	40	10720
Zn, Zinc	3.0	240	150	160000	300	160000	1200	640000
<b>Inorganic Anions</b>								
TDS	250	N/A	12500	N/A	25000	N/A	100000	N/A

Chemical Substances in Waste	LCTi mg/l	TCTi mg/kg	LCT0 mg/l	TCT0 mg/kg	LCT1 mg/l	TCT1 mg/kg	LCT2 mg/l	TCT2 mg/kg
Chloride	100	N/A	5000	N/A	10000	N/A	50000	N/A
Sulphate	200	N/A	10000	N/A	20000	N/A	80000	N/A
NO <sub>3</sub> as N, Nitrate-N	6.0	N/A	300	N/A	600	N/A	2400	N/A
F, Fluoride	1.0	100	50	10000	100	10000	400	40000
CN <sup>-</sup> (total), Cyanide Total	0.05	14	2.5	10500	5	10500	20	42000
<b>Organics</b>								
Benzene	N/A	0.05	0.01	10	0.02	10	0.08	40
Benzo(a)pyrene	N/A	0.05	0.035	1.7	0.07	1.7	0.28	6.8
Carbon tetrachloride	N/A	0.05	0.20	4	0.40	4	1.6	16
Chlorobenzene	N/A	0.05	5.0	8800	10	8800	40	35200
Chloroform	N/A	0.05	15	700	30	700	120	2800
2-Chlorophenol	N/A	0.05	15	2100	30	2100	120	8400
Di (2 ethylhexyl) phthalate	N/A	0.05	0.50	40	1	40	4	160
1,2-Dichlorobenzene	N/A	0.05	50	31900	10	31900	40	127600
1,4-Dichlorobenzene	N/A	0.05	15	18400	30	18400	120	73600
1,2-Dichloroethane	N/A	0.05	1.5	3.7	3	3.7	12	14.8
1,1-Dichloroethylene	N/A	0.05	0.35	150	0.7	150	2.8	600
1-2-Dichloroethylene	N/A	0.05	2.5	3750	5	3750	20	15000
Dichloromethane	N/A	0.05	0.25	16	0.5	16	2	64
2,4-Dichlorophenol	N/A	0.05	10	800	20	800	80	3200
2,4-	N/A	0.05	0.065	5.2	0.13	5.2	0.52	20.8

Chemical Substances in Waste	LCTi mg/l	TCTi mg/kg	LCT0 mg/l	TCT0 mg/kg	LCT1 mg/l	TCT1 mg/kg	LCT2 mg/l	TCT2 mg/kg
Dinitrotoluene								
Ethylbenzene	N/A	0.05	3.5	540	7	540	28	2160
Formaldehyde	N/A	0.05	25	2000	50	2000	200	8000
Hexachlorobutadiene	N/A	0.05	0.03	2.8	0.06	2.8	0.24	5.4
Methyl ethyl ketone	N/A	0.05	100	8000	200	8000	800	32000
MTBE (Methyl t-butyl ether)	N/A	0.05	2.5	1435	5.0	1435	20.0	5740
Nitrobenzene	N/A	0.05	1	45	2	45	8	180
PAHs (total)	N/A	0.05	N/A	50	N/A	50	N/A	200
Petroleum H/Cs, C6 to C9	N/A	0.05	N/A	325	N/A	650	N/A	2600
Petroleum H/Cs, C10 to C36	N/A	0.05	N/A	5000	N/A	10000	N/A	40000
Phenols (total, non-halogenated)	N/A	0.05	7	560	14	560	56	2240
Polychlorinated biphenyls	N/A	0.05	0.025	12	0.05	12	0.2	48
Styrene	N/A	0.05	1.0	120	2	120	8	480
1,1,1,2-Tetrachloroethane	N/A	0.05	5	400	10	400	40	1600
1,1,2,2-Tetrachloroethane	N/A	0.05	0.65	5.0	1.3	5.0	5.3	20
Tetrachloroethylene	N/A	0.05	0.25	200	0.5	200	2	800
Toluene	N/A	0.05	35	1150	70	1150	280	4600
Trichlorobenzenes (total)	N/A	0.05	3.5	3300	7	3300	28	13200
1,1,1-Trichloroethane	N/A	0.05	15	1200	30	1200	120	4800
1,1,2-Trichloroethane	N/A	0.05	0.6	48	1	48	4	192

Chemical Substances in Waste	LCTi mg/l	TCTi mg/kg	LCT0 mg/l	TCT0 mg/kg	LCT1 mg/l	TCT1 mg/kg	LCT2 mg/l	TCT2 mg/kg
Trichloroethylene	N/A	0.05	0.25	11600	2	11600	8	46400
2,4,6-Trichlorophenol	N/A	0.05	10.0	1770	20	1770	80	7080
Vinyl chloride	N/A	0.05	0.015	1.5	0.03	1.5	0.12	6.0
Xylenes (total)	N/A	0.05	25	890	50	890	200	3560
<b>Pesticides</b>								
Aldrin + Dieldrin	N/A	0.05	0.015	1.2	0.03	1.2	0.03	4.8
DDT + DDD + DDE	N/A	0.05	1	50	2	50	2	200
2,4-D	N/A	0.05	1.5	120	3	120	3	480
Chlordane	N/A	0.05	0.05	4	0.1	4	0.1	16
Heptachlor	N/A	0.05	0.015	1.2	0.03	1.2	0.03	4.8

## 7. Waste Disposal Risk Rating

- (1) The risk associated with the disposal of a particular waste to landfill must be assessed by comparing the TC and LC of the chemical substances in the waste with the TCT and LCT values specified in paragraph 6 of this Notice.
- (2) Based on the assessment, the level of risk associated with the disposal of the waste to landfill must be assigned to the waste as follows—
  - (a) Wastes with any chemical substance concentration above the LCT2 or TCT2 values ( $LC > LCT2$  or  $TC > TCT2$ ) are Type 0: Very High Risk Wastes;
  - (b) Wastes with any chemical substance concentration above the LCT1 but below LCT2 values ( $LCT1 < LC \leq LCT2$ ), or above the TCT1 but below TCT2 values ( $TCT1 < TC \leq TCT2$ ), are Type 1: High Risk Wastes;
  - (c) Wastes with any chemical substance concentration above the LCT0 but below the LCT1 and TCT1 values ( $LCT0 < LC \leq LCT1$  and  $TC \leq TCT1$ ) are Type 2: Moderate Risk Wastes;

- (d) Wastes with any chemical substance concentration above the  $LCT_i$  but below  $LCT_0$  values and  $TCT_0$  values ( $LCT_i < LC \leq LCT_0$  and  $TC \leq TCT_0$ ) are Type 3: Low Risk Wastes;
- (e) Wastes with all  $TC$  values less than twenty (20) times the  $TCT_i$  value ( $TC < 20 \times TCT_i$ ) or wastes with all chemical substance concentration levels below the  $LCT_i$  and  $TCT_i$  values ( $LC \leq LCT_i$  and  $TC \leq TCT_i$ ) are Type 4: Inert Wastes.
- (3) The level of risk associated with the disposal of each type of waste to landfill is as follows—

Criteria	Waste Disposal Risk Rating	Description of Risk associated with Disposal to Landfill
$LC > LCT_2$ , or $TC > TCT_2$	<b>Type 0: Very High Risk</b>	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.
$LCT_1 < LC \leq LCT_2$ , or $TCT_1 < TC \leq TCT_2$	<b>Type 1: High Risk</b>	Considered high risk waste with high potential for contaminant release. Requires high level of control and ongoing management to protect health and the environment.
$LCT_0 < LC \leq LCT_1$ and $TC \leq TCT_1$	<b>Type 2: Moderate Risk</b>	Considered moderate risk waste with some potential for contaminant release. Requires proper control and ongoing management to protect health and the environment.
$LCT_i < LC \leq LCT_0$ and $TC \leq TCT_0$	<b>Type 3: Low Risk</b>	Low risk waste with low potential for contaminant release. Requires some level of control and ongoing management to protect health and the environment.
$TC < 20 \times LCT_i$ , or  $LC \leq LCT_i$ and $TC \leq TCT_i$	<b>Type 4: Inert Waste</b>	Very low risk waste that— (a) does not undergo any significant physical, chemical or biological transformation; (b) does not burn, react physically or chemically or otherwise affect any other matter with which it may come into contact; and (c) does not impact negatively on the environment because of its very low pollutant content and because the toxicity of its leachate is insignificant.  Only basic control and management required.

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- (4) If a particular contaminant in a waste is not listed with corresponding LCT and TCT thresholds in paragraph 6 of this Notice, and the waste has been classified as hazardous in terms of SANS 10234 health or environmental hazards due to the hazard characteristics of the particular contaminant, the waste is considered to be Type 1: High Risk Waste.
- (5) If a representative sample of a hazardous waste cannot be taken or obtained for accurate LC and TC analyses due to the nature of the waste, the waste is considered to be Type 1: High Risk Waste.
- (6) If the TC of a contaminant is  $> TCT_2$ , and the concentration cannot be reduced by waste avoidance, re-use, recycling or recovery, or it is not economically feasible e.g. due to very small quantities, the waste must be stabilised to a minimum of  $LC < LCT_2$ , and will then be considered Type 1: High Risk Waste.
- (7) Laboratory wastes listed in item (2)(b) of Annexure 1 to the Regulations are considered to be Type 1: High Risk Waste.
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