

2007 No. 258

ENVIRONMENTAL PROTECTION

**The Landfill (Amendment No.2) Regulations (Northern Ireland)
2007**

Made - - - - - *24th April 2007*

Coming into operation - - - - - *4th June 2007*

The Department of the Environment makes the following Regulations in exercise of the power conferred by Article 4 of the Environment (Northern Ireland) Order 2002(a).

In accordance with Article 4(4) of that Order, the Department has consulted district councils and such bodies or persons appearing to it to be representative of the interests of district councils as it considers appropriate; such bodies and persons appearing to it to be representative of the interests of industry, agriculture and business as it considers appropriate; and such other bodies or persons as it considers appropriate.

Citation, commencement and interpretation

1.—(1) These Regulations may be cited as the Landfill (Amendment No.2) Regulations (Northern Ireland) 2007 and shall come into operation on 4th June 2007.

(2) In these Regulations “the Landfill Regulations” means the Landfill Regulations (Northern Ireland) 2003(b).

Amendment of the Landfill Regulations

2. The Landfill Regulations are amended in accordance with the following regulations.

3. In regulation 2 (interpretation), at the appropriate place insert—

““L/S = 10 l/kg” means a liquid to solid ratio of 10 litres to one kilogram;”.

4. In regulation 4 (cases where regulations do not apply), for paragraph (c)(i) substitute—

“(i) non-hazardous dredging sludges alongside small waterways from where they have been dredged out;”.

5. In regulation 10 (waste which may be accepted in the different classes of landfill), delete paragraph (2).

(a) S.I.2002/3153 (N.I.7)

(b) S.R. 2003 No.496 as amended by S.R.2004 No. 297, S.R.2005 No.300, S.R.2006 No.280 and S.R.2007 No.179

Amendment of Schedule 1 (Criteria and Procedures for the acceptance of waste at landfills)

6. In paragraph 5 of Schedule 1 (basic characterisation) at the end of sub-paragraph (4)(c)(i) for “or” substitute “and”.

7. In paragraph 8 of Schedule 1 (interpretation of Part III), at the end insert—

“(c) “PAHs (Polycyclic Aromatic Hydrocarbons)” shall mean Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.”.

8. In paragraph 11 of Schedule 1 (limit values for waste acceptable at landfills for inert waste), at the foot of the columns in Table 3 headed “Parameter” and “Value” insert “PAHs (Polycyclic aromatic hydrocarbons) (total of 17)” and “100” respectively.

9. In paragraph 12 of Schedule 1 (criteria for landfills for non-hazardous waste), in sub-paragraph (a) delete “granular”.

10. For paragraph 14 of Schedule 1 (criteria for granular stable non-reactive hazardous waste and non-hazardous waste deposited in the same cell with such waste) substitute—

“Criteria for stable non-reactive hazardous waste and non-hazardous waste deposited in the same cell with such waste

14. Stable, non-reactive hazardous waste and non-hazardous waste which is to be landfilled in the same cell with such waste shall only be accepted if—

- (a) in the case of granular waste—
 - (i) it meets the limit values for leaching set out in Table 4;
 - (ii) it meets the additional criteria set out in Table 5; and
 - (iii) it will have either—
 - (aa) if it is cohesive waste, a mean in situ shear strength of at least 50kPa; or
 - (bb) if it is non-cohesive waste, an in situ bearing ratio of at least 5%;
- (b) in the case of monolithic waste—
 - (i) it meets either—
 - (aa) the limit values for leaching set out in Table 4; or
 - (bb) the limit values for leaching set out in Table 5A;
 - (ii) it meets the additional criteria set out in Table 5B;
 - (iii) it has a mean unconfined compressive strength of at least 1MPa after 28 days curing;
 - (iv) it has either—
 - (aa) dimensions of greater than 40cm along each side; or
 - (bb) a depth and fracture spacing when hardened of greater than 40cm; and
 - (v) where the waste was subjected to treatment to render it monolithic, prior to such treatment it met the following limit values—
 - (aa) Loss on Ignition of 10%; or
 - (bb) Total Organic Carbon of 6%.

Table 4

<i>Component</i>	<i>Symbol</i>	<i>L/S = 10 l/kg^(a)</i>
		<i>mg/kg dry substance</i>
Arsenic	As	2
Barium	Ba	100
Cadmium	Cd	1
Total Chromium	Cr _{total}	10
Copper	Cu	50
Mercury	Hg	0.2
Molybdenum	Mo	10
Nickel	Ni	10
Lead	Pb	10
Antimony	Sb	0.7
Selenium	Se	0.5
Zinc	Zn	50
Chloride	Cl ⁻	15,000
Fluoride	F ⁻	150
Sulphate	SO ₄ ²⁻	20,000
Dissolved Organic Carbon	DOC	800 ^(b)
Total Dissolved Solids	TDS	60,000 ^(c)

^(a) These values must be determined using EN 12457/1 to 3 (applied, in the case of monolithic waste, to a sample which has been crushed).

^(b) If the waste does not meet this value for Dissolved Organic Carbon (DOC) at its own pH, it may alternatively be tested at L/S = 10 l/kg and a pH of between 7.5 and 8.0. The waste shall be considered as complying with the acceptance criterion for DOC if the result of this determination does not exceed 800 mg/kg.

^(c) The value for Total Dissolved Solids can be used alternatively to the values for Sulphate and Chloride.

Table 5

<i>Parameter</i>	<i>Value</i>
Total Organic Carbon (TOC)	5% ^(a)
pH	Minimum 6
Acid Neutralisation Capacity (ANC)	Must be evaluated

^(a) If this value is not achieved, a higher limit value may be permitted by the Chief Inspector, provided that the Dissolved Organic Carbon value of 800 mg/kg is achieved at L/S=10l/kg, either at the material's own pH or at a pH value between 7.5 and 8.0.

Table 5A

<i>Component</i>	<i>Symbol</i>	<i>mg/m^{2(a)}</i>
Arsenic	As	1.3
Barium	Ba	45
Cadmium	Cd	0.2
Total Chromium	Cr _{total}	5
Copper	Cu	45
Mercury	Hg	0.1
Molybdenum	Mo	7
Nickel	Ni	6
Lead	Pb	6
Antimony	Sb	0.3
Selenium	Se	0.4
Zinc	Zn	30

<i>Component</i>	<i>Symbol</i>	<i>mg/m^{2(a)}</i>
Chloride	Cl ⁻	10,000
Fluoride	F ⁻	60
Sulphate	SO ₄ ²⁻	10,000
Dissolved Organic Carbon	DOC	Must be evaluated

^(a) These values must be determined using EA NEN 7375:2004. Where it is appropriate for compliance testing, the Chief Inspector may specify use of a shortened version of the 64-day tank test provided for in EA NEN 7375:2004 comprising only the first four steps, and in such cases, the limit values shall be a quarter of the values in the table.

Table 5B

<i>Parameter</i>	<i>Value</i>
pH of the eluate from the monolith or crushed monolith	Must be evaluated
Electrical conductivity ($\mu\text{S}\cdot\text{cm}^{-1}\cdot\text{m}^{-2}$) of the eluate from the monolith or crushed monolith	Must be evaluated
Acid Neutralisation Capacity (ANC) of the crushed monolith	Must be evaluated.”

11. For paragraph 17 of Schedule 1 (criteria for waste acceptable at landfills for hazardous waste) substitute—

“Criteria for waste acceptable at landfills for hazardous waste

17. Waste shall only be accepted at a landfill for hazardous waste if—

- (a) in the case of granular waste—
 - (i) it meets the limit values for leaching set out in Table 6;
 - (ii) it meets the additional criteria set out in Table 7; and
 - (iii) it will have either—
 - (aa) if it is cohesive waste, a mean in situ shear strength of at least 50kPa; or
 - (bb) if it is non-cohesive waste, an in situ bearing ratio of at least 5%;
- (b) in the case of monolithic waste—
 - (i) it meets either—
 - (aa) the limit values for leaching set out in Table 6; or
 - (bb) the limit values for leaching set out in Table 8;
 - (ii) it meets the additional criteria set out in Table 5B;
 - (iii) it has a mean unconfined compressive strength of at least 1MPa after 28 days curing;
 - (iv) it has either—
 - (aa) dimensions of greater than 40cm along each side; or
 - (bb) a depth and fracture spacing when hardened of greater than 40cm; and
 - (v) where the waste was subjected to treatment to render it monolithic, prior to such treatment it met the following limit values—
 - (aa) Loss on Ignition of 10%; or
 - (bb) Total Organic Carbon of 6%.

Table 6

<i>Components</i>	<i>Symbol</i>	<i>L/S = 10 l/kg^{(a) (b)}</i>
		<i>mg/kg dry substance</i>
Arsenic	As	25
Barium	Ba	300
Cadmium	Cd	5
Total Chromium	Cr _{total}	70
Copper	Cu	100
Mercury	Hg	2
Molybdenum	Mo	30
Nickel	Ni	40
Lead	Pb	50
Antimony	Sb	5
Selenium	Se	7
Zinc	Zn	200
Chloride	Cl ⁻	25,000
Fluoride	F ⁻	500
Sulphate	SO ₄ ²⁻	50,000
Dissolved Organic Carbon ^(c)	DOC	1,000
Total Dissolved Solids ^(d)	TDS	100,000

^(a) These values must be determined using EN 12457/1 to 3 (applied, in the case of monolithic waste, to a sample which has been crushed).

^(b) The Chief Inspector may include conditions in a permit authorising limit values for specific parameters (other than Dissolved Organic Carbon (DOC)) up to three times higher for specified wastes accepted in a landfill, taking into account the characteristics of the landfill and its surroundings and provided a risk assessment demonstrates that emissions (including leachate) from the landfill will present no additional risk to the environment.

^(c) If the waste does not meet this value for DOC at its own pH, it may alternatively be tested at L/S = 10 l/kg and a pH of between 7.5 and 8.0. The waste shall be considered as complying with the acceptance criterion for DOC, if the result of this determination does not exceed 1,000 mg/kg.

^(d) The value for Total Dissolved Solids can be used alternatively to the values for Sulphate and Chloride.

Table 7

<i>Parameter</i>	<i>Values</i>
Loss On Ignition (LOI) ^(a)	10 %
Total Organic Carbon (TOC) ^(b)	6 %
Acid Neutralisation Capacity (ANC)	Must be evaluated

^(a) Either Loss on Ignition or Total Organic Carbon must be used

^(b) If this value for Total Organic Carbon is not achieved, a higher limit value may be permitted by the Chief Inspector, provided that the DOC value of 1,000 mg/kg is achieved at L/S = 10 l/kg at its own pH or a pH value of between 7.5 and 8.0.

Table 8

<i>Components</i>	<i>Symbol</i>	<i>mg/m^{2(a) (b)}</i>
Arsenic	As	20
Barium	Ba	150
Cadmium	Cd	1
Total Chromium	Cr _{total}	25

<i>Components</i>	<i>Symbol</i>	<i>mg/m^{2(a) (b)}</i>
Copper	Cu	60
Mercury	Hg	0.4
Molybdenum	Mo	20
Nickel	Ni	15
Lead	Pb	20
Antimony	Sb	2.5
Selenium	Se	5
Zinc	Zn	100
Chloride	Cl ⁻	20,000
Fluoride	F ⁻	200
Sulphate	SO ₄ ²⁻	20,000
Dissolved Organic Carbon	DOC	Must be evaluated.

^(a) These values must be determined using EA NEN 7375:2004. Where it is appropriate for compliance testing, the Chief Inspector may specify use of a shortened version of the 64-day tank test provided for in EA NEN 7375:2004 comprising only the first four steps, and in such cases, the limit values shall be a quarter of the values in the table.

^(b) The Chief Inspector may include conditions in a permit authorising limit values for specific parameters (other than DOC) up to three times higher for specified wastes accepted in a landfill, taking into account the characteristics of the landfill and its surroundings and provided a risk assessment demonstrates that emissions (including leachate) from the landfill will present no additional risk to the environment.”

12. For paragraph 19 of Schedule 1 (interpretation of Part IV) substitute—

“Interpretation

19. In this Schedule—

“BS 1924-2:1990” means the British Standard entitled “Stabilized materials for civil engineering purposes – Part 2: Methods of test for cement-stabilized and lime-stabilized materials”, which came into effect in October 1990;

“BS 1377-9:1990” means the standard described in the British Standard entitled “Methods of test for Soils for Civil Engineering Purposes. Part 9: in-situ tests”, which came into effect on 31st August 1990;

“DD CEN/TS 14405:2004” means the standard described in the draft document entitled “Characterisation of waste - Leaching behaviour test - Up-flow percolation test”, which was published by the British Standards Institute on 13th July 2004;

“EA NEN 7375:2004” means the Environment Agency document based on a translation of the Netherlands Normalisation Institute Standard NEN 73745:2004 entitled “Leaching characteristics of soil and stony building and waste materials. Leaching tests. Determination of leaching of inorganic components from building and monolithic waste materials with the diffusion test”, published by the Environment Agency on its website on 14th April 2005;

“EA NEN 7371:2004” means the Environment Agency document based on a translation of the Netherlands Normalisation Institute Standard NEN 73741:2004 entitled “Leaching characteristics of solid (earth and stony) building and waste material. Leaching tests. Determination of the availability of inorganic components for leaching”, published by the Environment Agency on its website on 14th April 2005;

“EN 12457/1” means the standard described in the British Standard entitled “Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. One stage batch test at a liquid to solid ratio of 2 l/kg for materials with high solid content and with particle size below 4 mm (without or with

size reduction)”, published under the numbers BS EN 12457-1:2002 which came into effect on 15th October 2002;

“EN 12457/2” means the standard described in the British Standard entitled “Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 4 mm (without or with size reduction)”, published under the numbers BS EN 12457-2:2002 which came into effect on 15th October 2002;

“EN 12457/3” means the standard described in the British Standard entitled “Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. Two stage batch test at a liquid to solid ratio of 2 l/kg and 8 l/kg for materials with a high solid content and with a particle size below 4 mm (without or with size reduction)”, published under the numbers BS EN 12457-3:2002 which came into effect on 15th October 2002;

“EN 12506” means the standard described in the British Standard entitled “Characterisation of waste. Analysis of eluates. Determination of pH, As, Ba, Cd, Cl⁻, Co, Cr, Cr VI, Cu, Mo, Ni, NO₂⁻, Pb, total S, SO₄²⁻, V and Zn”, published under the numbers BS EN 12506:2003 which came into effect on 11th June 2003;

“EN 12879” means the standard described in the British Standard entitled “Characterisation of sludges. Determination of the loss on ignition of dry mass”, published under the numbers BS EN 12879:2000 which came into effect on 15th October 2000;

“EN 13137” means the standard described in the British Standard entitled “Characterisation of waste. Determination of total organic carbon (TOC) in waste, sludges and sediments”, published under the numbers BS EN 13137:2001 which came into effect on 28th September 2001;

“EN 13370” means the standard described in the British Standard entitled “Characterisation of waste. Analysis of eluates. Determination of Ammonium, AOX, conductivity, Hg, phenol index, TOC, easily liberatable CN⁻, F⁻”, published under the numbers BS EN 13370:2003 which came into effect on 11th June 2003;

“EN 13656” means the standard described in the British Standard entitled “Characterisation of waste. Microwave assisted digestion with hydrofluoric (HF), nitric (HNO₃), and hydrochloric (HCl) acid mixture for subsequent determination of elements”, published under the numbers BS EN 13656:2002 which came into effect on 22nd October 2002;

“EN 13657” means the standard described in the British Standard entitled “Characterisation of waste. Digestion for subsequent determination of aqua regia soluble portion of elements”, published under the numbers BS EN 13657:2002 which came into effect on 22nd October 2002;

“EN 14039” means the standard described in the British Standard entitled “Characterisation of waste - Determination of hydrocarbon content in the range of C10 - C40 by gas chromatography”, published under the numbers BS EN 14039:2004 which came into effect on 29th October 2004;

“PrCEN/TS 14429” means the standard described in the draft document entitled “Characterisation of waste - Leaching behaviour test - Influence of pH on leaching with initial acid/base addition”, which came into effect in February 2004;

“PrEN 14346” means the standard described in the draft document entitled “Characterisation of waste - Calculation of dry matter by determination of dry residue or water content”, which came into effect in July 2004; and

“PrEN 14899” means the standard described in the draft document entitled “Characterisation of waste - Sampling of waste materials: Framework for the preparation and application of a sampling plan”, which came into effect in March 2004.

13. For paragraph 20 of Schedule 1 (sampling and testing) substitute—

“Sampling and testing

20.—(1) All sampling and testing required by this Schedule shall be carried out in accordance with this paragraph.

(2) Subject to sub-paragraph (3), sampling and testing shall be carried out by independent and qualified persons and institutions and only laboratories which have proven experience in waste testing and analysis and an efficient quality assurance system shall be used.

(3) Sampling and testing may be carried out by producers of waste or operators where—

- (a) there is sufficient supervision by independent and qualified persons to ensure that the requirements of this Schedule are met; and
- (b) it is carried out in accordance with an appropriate quality assurance system which includes periodic independent checking.

(4) All sampling shall be carried out using a sampling plan developed in accordance with PrEN 14899.

(5) The following standards shall be used for the sampling and testing of general waste properties—

- (a) EN 13137 for the determination of TOC in waste, sludge and sediments;
- (b) PrEN 14346 for the calculation of dry matter by determination of dry residue or water content;
- (c) EN 12879 for the determination of loss on ignition of dry mass.

(6) The following standards shall be used for strength and stability tests—

- (a) for cohesive granular waste, BS 1377-9:1990 (section 4.4: determination of in situ vane shear strength of weak intact cohesive soils);
- (b) for non-cohesive granular waste, BS 1377-9:1990 (section 4.3: determination of in situ California Bearing Ratio);
- (c) for monolithic waste, BS 1924-2:1990.

(7) The following standards shall be used for leaching tests—

- (a) for granular waste—
 - (i) DD CEN/TS 14405:2004 for leaching behaviour using the up-flow percolation test;
 - (ii) PrCEN/TS 14429 for leaching behaviour using the test for the influence of pH on leaching with initial acid/base addition;
 - (iii) EN 12457/1 to 3 for leaching of granular waste materials and sludges;
- (b) for monolithic waste—
 - (i) EA NEN 7371:2004 for leaching behaviour of crushed monolith using the test for the determination of availability of inorganic components;
 - (ii) PrCEN/TS 14429 for leaching behaviour of crushed monolith using the test for the influence of pH on leaching with initial acid/base addition;
 - (iii) either—
 - (aa) EN 12457/1 to 3 for the leaching behaviour of crushed monolith using the batch leaching test for granular waste materials and sludges; or
 - (bb) EA NEN 7375:2004 for leaching behaviour of monolithic waste using the diffusion tank test.

(8) The following standards shall be used for the digestion of raw waste—

- (a) EN 13657 for the digestion for subsequent determination of aqua regia portion of elements;
- (b) EN 13656 for the microwave-assisted digestion of specified acid mixtures for subsequent determination of elements.

- (9) The following standards shall be used for analyses—
- (a) EN 12506 and EN 13370 for analysis of eluates;
 - (b) EN 14039 for determination of certain hydrocarbon contents.
- (10) For tests and analysis for which CEN standards are not available, the methods used must be approved by the Chief Inspector.”.

Amendment of Schedule 2 (General requirements for landfills)

14. In paragraph 3(7) of Schedule 2, in the table under “landfill category” delete the last two categories and substitute “Drainage layer > 0.5 metres” and “Top soil cover > 1 metre” respectively.

Amendment of Schedule 4 (Transitional Provisions)

- 15.—(1) In paragraph 1 of Schedule 4, after sub-paragraph (11) insert—
- “(11A) From 30th October 2007 any relevant authorisation shall be read as containing the additional condition that waste of the types listed in regulation 9(1)(a) to (f) and waste which does not comply with the requirement for prior treatment in regulation 10(1) shall not be accepted.”
- (2) in paragraph 3, in sub-paragraph (3)(b) delete “and (2)”.

Amendment of the Waste Management Licensing Regulations (Northern Ireland) 2003

16. The Waste Management Licensing Regulations (Northern Ireland) 2003(a) shall be amended as follows.

(1) In regulation 9(1) (Particulars to be entered in public registers) for sub-paragraph (n) substitute—

“(n) all particulars of any conditioning plan submitted to the Department under paragraph 1(3) of Schedule 4 to the 2003 Landfill Regulations or notice given under paragraph 1(5) of Schedule 4 to the 2003 Landfill Regulations;”.

(2) In paragraph 2 of Schedule 1 (certificates of technical competence), for the definition of “closed landfill site” substitute—

““closed landfill site” means a landfill site—

- (a) which finally ceased to accept waste before the relevant date as specified in the 2003 Landfill Regulations; or
- (b) in relation to which the Chief Inspector has, pursuant to regulation 15(4)(b)(iii) of the 2003 Landfill Regulations, notified the operator by notice in writing that he approves the closure

and in relation to a landfill site where sub-paragraph (a) or (b) applies to only part of the site, means that part of the site only.””

Sealed with the Official Seal of the Department of the Environment on 24th April 2007.



Wesley Shannon
A Senior Officer of the Department of the Environment

(a) S.R.2003 No.493 as amended by S.R.2003 No.496, S.R. 2004 No.297, S.R.2005 No.300 and S.R.2006 No.280

EXPLANATORY NOTE

(This note is not part of the Regulations)

The Regulations amend the Landfill Regulations (Northern Ireland) 2003 ('the 2003 Regulations') and the Waste Management Licensing Regulations (Northern Ireland) 2003.

These Regulations make further amendments to the regulatory regime governing landfills in Northern Ireland for the purpose of implementing Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC ('the Landfill Directive'). They also make provision in respect of the implementation of the Landfill Directive.

Regulation 3 defines a technical term, while regulation 4 amends the exemption concerning the deposit of non-hazardous dredging sludges alongside small waterways so as to reflect the exact wording of that part of Article 3(2) of the Landfill Directive which this provision implements.

The main amendments to the 2003 Regulations re-enact, with amendments, the waste acceptance criteria to be met by granular waste and set new waste acceptance criteria for monolithic waste, both in respect of stable non-reactive waste and non-hazardous waste deposited in the same cell with such waste (regulation 10) and waste acceptable at landfills for hazardous waste (regulation 11). Regulations 12 and 13 make provision for the sampling and testing of those wastes.

The Regulations set the limit value for waste acceptable at landfills for inert waste in respect of polycyclic aromatic hydrocarbons (regulations 7 and 8).

The transitional provisions are amended to impose additional conditions in the landfill permits or waste management licences of existing landfills prohibiting the acceptance of certain types of waste at those landfills from a specified date (regulation 15). The additional conditions prohibit the acceptance by such landfills of whole and shredded used tyres and the acceptance of other specified types of waste from 30th October 2007.

Regulation 16 makes minor amendments to the Waste Management Licensing Regulations (Northern Ireland) 2003.

Copies of the publications referred to in the provisions substituted in the 2003 Regulations by regulations 12 and 13 of these Regulations may be obtained from any of the outlets operated by the British Standards Institution, or from The Stationery Office (TSO) at 16 Arthur Street, Belfast, BT1 4GD (telephone 02890 238 451).