

## **Interim SEPA Technical Guidance Note**

### ***The Disposal in Landfills for Non-Hazardous Waste Of Stable, Non-Reactive Hazardous Wastes***

---

#### **1.0 Background**

The Landfill (Scotland) Regulations 2003, (Landfill Regulations), set out those wastes which may be accepted in the different classes of landfill. Landfills will be classified as **Hazardous**, **Non-hazardous** or **Inert**. Regulation 12 (3) and (4), set out below, details the wastes that may be accepted in a landfill for non-hazardous waste:

12. (3) The operator of a landfill for non-hazardous waste shall ensure the landfill is only used for landfilling –

(a) municipal waste;

(b) non-hazardous waste of any other origin which fulfils the waste acceptance criteria in paragraphs 1 and 3(b) of Schedule 2; and

(c) stable, non-reactive hazardous waste (such as that which is solidified with leaching behaviour equivalent to that of non-hazardous waste referred to in sub-paragraph (b) and which fulfils the waste acceptance criteria in paragraphs 1 and 3(a) of Schedule 2.

(4) Where hazardous waste of the type described in paragraph (3)(c) is disposed of at a landfill for non-hazardous waste, the operator shall ensure it is not deposited in cells used or intended to be used for the disposal of biodegradable non-hazardous waste.

This document provides guidance on –

- the types of waste that can be accepted in the separate cells; and,
- the principles and degrees of separation required between cells accepting stable, non-hazardous wastes and biodegradable wastes.

#### **2.0 Stable, Non-Reactive Hazardous Wastes**

Stable, non-reactive hazardous wastes could potentially include a range of monolithic solidified wastes (wastes in large blocky forms such as those that have been mixed with cement or PFA) or granular solid wastes produced by a variety of treatment plants (such as filter cakes and treated fly ash), however, blanket classification of such waste types and the processes through which they have been treated is not possible and each waste stream will require to be individually assessed and a risk assessment conducted in light of the assessment and the intended landfill destination.

The criteria detailed in Appendix 1 of this paper will be used as the reference upon which determinations may be made and conclusions reached on determining whether wastes are stable and non reactive hazardous wastes and whether they may be accepted at non hazardous landfills.

In the Annex to the Decision, limit values are laid down for hazardous and non-hazardous waste, which is landfilled in the same cell with stable, non-reactive hazardous waste. See Appendix 1 at the end of this document.

## 2.1 Separate Cell Requirements

Regulation 12 (4) of the Landfill (Scotland) Regulations 2003 states:

“ (4) Where hazardous waste of the type described in paragraph (3)(c) is disposed of at a landfill for non-hazardous waste, the operator shall ensure it is not deposited in cells used or intended to be used for the disposal of biodegradable non-hazardous waste.”

SEPA considers there should be no interaction between the wastes in the separate cells and their respective management systems according to the following principles:

- no direct physical contact between stable, non-reactive hazardous wastes and biodegradable non-hazardous waste;
- there should be no contact between waste products within the landfill cells (including leachate or gas);
- separate leachate collection and extraction systems (but not necessarily separate treatment and discharge systems);
- where landfill gas collection and extraction systems are required they should be separate (but not necessarily separate utilization or flaring);
- operation of cells for stable, non-reactive hazardous wastes must not compromise the continuing management of cells for biodegradable non-hazardous wastes.

The design and operation of the landfill and the means of cell separation should account for these principles for the long-term and should meet the requirements of the Landfill and Groundwater Directives.

SEPA considers that separation of cells should be achieved by construction of dedicated separating structures.

## 2.2 Conclusions

All proposals by operators to operate a landfill under the classification of non-hazardous while intending to be able to simultaneously, within a separate cell, accept stable non-reactive hazardous waste will require close scrutiny.

The proposed waste types and the choice of engineered separation will require to be justified on a site specific basis. The design and specification requirements may be different for the differing waste types and should be determined on the basis of a site and waste specific risk assessment.

For sites proposing to take, as yet unknown, stable non-reactive hazardous wastes into the separate cell, leachability concerns are such that an engineered solution must be sought, detailed in application to SEPA and involving a lining element in conjunction with leachate collection.

## **Appendix 1**

Criteria for hazardous waste acceptable at landfills for non-hazardous waste pursuant to Article 6(c)(iii):

Stable, non-reactive means that the leaching behaviour of the waste will not change adversely in the long-term, under landfill design conditions or foreseeable accidents:

- in the waste alone (for example, by biodegradation),
- under the impact of long-term ambient conditions (for example, water, air, temperature, mechanical constraints),
- by the impact of other wastes (including waste products such as leachate and gas).

The full waste acceptance criteria for stable non-reactive hazardous wastes set out leaching and other limit values that will render these wastes acceptable for disposal at landfills for non-hazardous waste. Tables 1 and 2 below, set the limit values applicable to granular stable, non-reactive hazardous waste and to the granular non-hazardous wastes disposed with them. They are taken from Council Decision 2003/33/EC. The values in Table 1 apply to a liquid to solid ratio of 10 litres/kilogram using the 2 stage CEN leaching test EN 12457/3. Granular wastes include all wastes that are not monolithic.

**Table 1: Leaching Limit Values for Granular, Stable, Non-reactive Hazardous Wastes (may be subject to change)**

Components	Liquid/Solid = 10 l/kg mg/kg dry substance
As	2
Ba	100
Cd	1.0
Cr (total)	10
Cu	50
Hg	0.2
Mo	10
Ni	10
Pb	10
Sb	0.7
Se	0.5
Zn	50
Chloride	15,000
Fluoride	150
Sulphate	20,000
Dissolved Organic Carbon*	800
Total Dissolved Solids**	60,000

\* If the waste does not meet these values for dissolved organic carbon (DOC) at its own pH, it may be tested at L/S = 10 l/kg and pH of 7.5 to 8.0. If the result of this

determination does not exceed 800 mg/kg , the waste may be considered as complying with the acceptance criteria for DOC.

\*\* The values for total dissolved solids can be used as an alternative criterion to the individual values for chloride and sulphate.

**Table 2: Other Criteria for Granular, Stable, Non-reactive Hazardous Wastes**

<b>Parameter</b>	<b>Value</b>
Total Organic Carbon	5%*
PH	Minimum 6
Acid Neutralisation Capacity	Must be evaluated
Physical stability	**

\* If this value is not achieved, a higher value may be admitted by SEPA, provided that the dissolved organic carbon (DOC) value of 800 mg/kg is achieved at L/S 10 at its own pH or at a pH of 7.5 to 8.0

\*\* The wastes must have sufficient inherent strength and be placed in such a manner to ensure no threat to the stability or integrity of the landfill or management systems (e.g. separation barriers, structures, etc.)