

## ANNEX I

## GENERAL REQUIREMENTS FOR ALL CLASSES OF LANDFILLS

## 3. Protection of soil and water

- 3.1. A landfill must be situated and designed so as to meet the necessary conditions for preventing pollution of the soil, groundwater or surface water and ensuring efficient collection of leachate as and when required according to Section 2. Protection of soil, groundwater and surface water is to be achieved by the combination of a geological barrier and a bottom liner during the operational/active phase and by the combination of a geological barrier and a bottom liner during the operational/active phase and by the combination of a geological barrier and a top liner during the passive phase/post closure.
- 3.2. The geological barrier is determined by geological and hydrogeological conditions below and in the vicinity of a landfill site providing sufficient attenuation capacity to prevent a potential risk to soil and groundwater.

The landfill base and sides shall consist of a mineral layer which satisfies permeability and thickness requirements with a combined effect in terms of protection of soil, groundwater and surface water at least equivalent to the one resulting from the following requirements:

- landfill for hazardous waste:  $K \leq 1,0 \times 10^{-9}$  m/s; thickness  $\geq 5$  m,
- landfill for non-hazardous waste:  $K \leq 1,0 \times 10^{-9}$  m/s; thickness  $\geq 1$  m,
- landfill for inert waste:  $K \leq 1,0 \times 10^{-7}$  m/s; thickness  $\geq 1$  m,

m/s: meter/second.

Where the geological barrier does not naturally meet the above conditions it can be completed artificially and reinforced by other means giving equivalent protection. An artificially established geological barrier should be no less than 0,5 metres thick.

- 3.3. In addition to the geological barrier described above a leachate collection and sealing system must be added in accordance with the following principles so as to ensure that leachate accumulation at the base of the landfill is kept to a minimum:

## LEACHATE COLLECTION AND BOTTOM SEALING

Landfill category	non hazardous	hazardous
Artificial sealing liner	required	required
Drainage layer $\geq 0,5$ m	required	required

Member States may set general or specific requirements for inert waste landfills and for the characteristics of the abovementioned technical means.

If the competent authority after a consideration of the potential hazards to the environment finds that the prevention of leachate formation is necessary, a surface sealing may be prescribed. Recommendations for the surface sealing are as follows:

Landfill category	non hazardous	hazardous
Gas drainage layer	required	not required
Artificial sealing liner	not required	required

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Impermeable mineral layer	required	required
Drainage layer > 0,5 m	required	required
Top soil cover > 1 m	required	required.

3.4. If, on the basis of an assessment of environmental risks taking into account, in particular, Directive 80/68/EEC<sup>(1)</sup>, the competent authority has decided, in accordance with Section 2 ('Water control and leachate management'), that collection and treatment of leachate is not necessary or it has been established that the landfill poses no potential hazard to soil, groundwater or surface water, the requirements in paragraphs 3.2 and 3.3 above may be reduced accordingly. In the case of landfills for inert waste these requirements may be adapted by national legislation.

<sup>F1</sup>3.5. ....

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**Textual Amendments**

**F1** Deleted by Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste (Text with EEA relevance).

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- (1) [OJ L 20, 26.1.1980, p. 43](#). Directive as last amended by Directive 91/692/EEC ([OJ L 377, 31.12.1991, p. 48](#)).