**Section 724.351 Design and Operating Requirements**

a) A waste pile (except for an existing portion of a waste pile) must have the following:

1) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the pile into the adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the waste pile. The liner may be constructed of materials that may allow waste to migrate into the liner itself (but not into the adjacent subsurface soil or groundwater or surface water) during the active life of the facility. The liner must be as follows:

A) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

B) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

C) Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and

2) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the pile. The Agency must specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must be as follows:

A) Constructed of materials that are as follows:

i) Chemically resistant to the waste managed in the pile and the leachate expected to be generated; and

ii) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials and by any equipment used at the pile; and

B) Designed and operated to function without clogging through the scheduled closure of the waste pile.

b) The owner or operator will be exempted from the requirements of subsection (a) if the Board grants an adjusted standard pursuant to Section 28.1 of the Act and 35 Ill. Adm. Code 101 and 104. The level of justification is a demonstration by the owner or operator that alternative design or operating practices, together with location characteristics, will prevent the migration of any hazardous constituents (see Section 724.193) into the groundwater or surface water at any future time. In deciding whether to grant an adjusted standard, the Board will consider the following:

1) The nature and quantity of the wastes;

2) The proposed alternative design and operation;

3) The hydrogeologic setting of the facility, including attenuative capacity and thickness of the liners and soils present between the pile and groundwater or surface water; and

4) All other factors that influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

c) The owner or operator of each new waste pile unit, each lateral expansion of a waste pile unit, and each replacement of an existing waste pile unit must install two or more liners and a leachate collection and removal system above and between such liners.

1) Liners

A) The liner system must include the following:

i) A top liner designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and

ii) A composite bottom liner, consisting of at least two components. The upper component must be designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component must be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component must be constructed of at least 3 feet (91 cm) of compacted soil material with a hydraulic conductivity of no more than 1 x 10-7 cm/sec.

B) The liners must comply with subsections (a)(1)(A), (a)(1)(B), and (a)(1)(C).

2) The leachate collection and removal system immediately above the top liner must be designed, constructed, operated, and maintained to collect and remove leachate from the waste pile during the active life and post-closure care period. The Agency must specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must comply with subsections (c)(3)(C) and (c)(3)(D).

3) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system (LDS). This LDS must be capable of detecting, collecting and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a LDS in this subsection (c) are satisfied by installation of a system that is, at a minimum, as follows:

A) Constructed with a bottom slope of one percent or more;

B) Constructed of granular drainage materials with a hydraulic conductivity of 1x10-2 cm/sec or more and a thickness of 12 inches (30.5 cm) or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3x10-5 m2/sec or more;

C) Constructed of materials that are chemically resistant to the waste managed in the waste pile and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the waste pile;

D) Designed and operated to minimize clogging during the active life and post-closure care period; and

E) Constructed with sumps and liquid removal methods (e.g., pumps) of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit must have its own sumps. The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

4) The owner or operator must collect and remove pumpable liquids in the LDS sumps to minimize the head on the bottom liner.

5) The owner or operator of a LDS that is not located completely above the seasonal high water table must demonstrate that the operation of the LDS will not be adversely affected by the presence of groundwater.

d) The Agency must approve alternative design or operating practices to those specified in subsection (c) if the owner or operator demonstrates to the Agency, by way of permit or permit modification application, that such design or operating practices, together with location characteristics, will do the following:

1) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal systems specified in subsection (c); and

2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

e) Subsection (c) does not apply to monofills that are granted a waiver by the Agency in accordance with Section 724.321(e).

f) The owner or operator of any replacement waste pile unit is exempt from subsection (c) if the following are true:

1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act (42 USC 6924(o)(1)(A)(i) and (o)(5)); and

 BOARD NOTE: The cited provisions required the installation of two or more liners and a leachate collection system above (in the case of a landfill) and between such liners, including a top liner designed, operated and constructed of materials to prevent the migration of any constituent into such liner during the period the facility remained in operation (including any post-closure monitoring period), and a lower liner to prevent the migration of any constituent through the liner during such period. The lower liner was deemed to satisfy the requirement if it was constructed of at least a 3-foot thick layer of recompacted clay or other natural material with a permeability of no more than 1x10-7 cm/sec.

2) There is no reason to believe that the liner is not functioning as designed.

g) The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm.

h) The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

i) Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

j) If the pile contains any particulate matter that may be subject to wind dispersal, the owner or operator must cover or otherwise manage the pile to control wind dispersal.

k) The Agency must specify in the permit all design and operating practices that are necessary to ensure that the requirements of this Section are satisfied.

(Source: Amended at 42 Ill. Reg. 22614, effective November 19, 2018)