

Chapter NR 504

LANDFILL LOCATION, PERFORMANCE AND DESIGN  
CRITERIA

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**NR 504.01 Purpose.** The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to provide information on locational criteria, performance standards and the minimum design requirements for solid waste disposal facilities. This chapter is adopted under ss. 144.43 to 144.47 and 227.11, Stats.

History: Cr. Register, January, 1988, No. 385, eff. 2-6-88.

**NR 504.02 Applicability.** (1) Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 144.43 (5), Stats., except landspreading facilities regulated under ch. NR 518, hazardous waste facilities as defined in s. 144.61 (5m), Stats., and regulated under ch. NR 181 and metallic mining operations as defined in s. 144.81 (5), Stats., and regulated under ch. NR 182.

(2) This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 144.04, Stats., or permitted under ch. 147, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastes which have been approved under s. 144.04, Stats., or permitted under ch. 147, Stats., except for facilities used for the disposal of solid waste.

History: Cr. Register, January, 1988, No. 385, eff. 2-6-88.

**NR 504.03 Definitions.** The terms in this chapter are defined in s. NR 500.03.

History: Cr. Register, January, 1988, No. 385, eff. 2-6-88.

**NR 504.04 Landfill location and performance standards.** (1) **GENERAL.** As part of the feasibility report required under ch. NR 512 an applicant shall demonstrate to the department that the proposed facility will comply with all of the location and performance standards of this section unless an exemption is granted.

(2) **EXEMPTIONS.** (a) Exemptions from compliance with subs. (3) (a), (b), (d), (e) and (4) (b), (e) and (f) may be granted only upon demonstration by the applicant of circumstances which warrant such an exemption. Exemptions from compliance with sub. (4) (a) may be granted only in accordance with the standards set forth in s. NR 1.95. Exemptions from compliance with subs. (3) (c) and (4) (c) will not be granted. Exemptions from compliance with sub. (4) (d) may be granted only according to the procedures set forth in chs. NR 508 and 140. Exemptions from

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compliance with sub. (3) (f) will be based on an evaluation of the information contained in par. (b). However, no exemptions from sub. (3) (f) may be granted unless information on the well location, former and present well owner, well driller, well log and construction details and the general hydrogeologic setting is submitted to the department.

(b) Additional factors which may be considered by the department in determining whether or not to grant exemptions under this section include waste types, characteristics and quantities; the geology and hydrogeology of the facility; the proposed facility design and operation; the availability of other environmentally suitable alternatives; compliance with other state and federal regulations and the health, safety and welfare of the public. Requests for exemptions and information needed to demonstrate the circumstances that warrant such exemptions shall be addressed by the applicant in the feasibility report.

(3) LOCATION STANDARDS. No person may establish, construct, operate, maintain or permit the use of property for a solid waste land disposal facility where the limits of filling are or would be within the following areas:

(a) Within 1,000 feet of any navigable lake, pond or flowage not including facility drainage or sedimentation control structures.

(b) Within 300 feet of any navigable river or stream.

(c) Within a floodplain.

(d) Within 1,000 feet of the nearest edge of the right-of-way of any state trunk highway, interstate or federal aid primary highway or the boundary of any public park, unless the facility is screened by natural objects, plantings, fences or other appropriate means so that it is not visible from the highway or park.

(e) Within 10,000 feet of any airport runway used or planned to be used by turbojet aircraft or within 5,000 feet of any airport runway used only by piston type aircraft or within other areas where a substantial bird hazard to aircraft would be created. This criterion applies only when the facility will be used for disposing of putrescible waste.

(f) Within 1,200 feet of any public or private water supply well.

(4) PERFORMANCE STANDARDS. No person may establish, construct, operate, maintain or permit the use of property for a solid waste land disposal facility within an area where there is a reasonable probability that the facility will cause:

(a) A significant adverse impact on wetlands.

(b) A significant adverse impact on critical habitat areas.

(c) A detrimental effect on any surface water.

(d) A detrimental effect on groundwater quality or will cause or exacerbate an attainment or exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140. For the purposes of design the point of standards application is defined by s. NR 140.22 (1).

(e) The migration and concentration of explosive gases in any facility structures, excluding the leachate collection system or gas control or re-

signed with a final cover system meeting the requirements in subs. (2) to (6) unless it is established to the satisfaction of the department that portions of the cap system are not necessary based on the proposed waste types and the proposed design.

(2) **GRADING LAYER.** A minimum 6 inch thick grading layer shall be designed over the final elevation of facilities proposing to accept municipal solid waste materials to attain the required slope and provide for a stable base for subsequent system components. Daily and intermediate cover may be used for this purpose.

(3) **GAS VENTING SYSTEM.** Facilities designed to accept wastes which have the potential to generate gas shall have a final cover system capable of allowing removal of the generated gas. Facilities designed solely to accept coal ash are exempt from this requirement.

(4) **CLAY CAPPING LAYER.** A minimum 2 foot thick clay cap shall be designed to provide a low hydraulic conductivity barrier to percolation. Clay soil shall be used for this layer and shall meet the following specifications. The department may approve alternative materials such as geomembranes based on facility specific information.

(a) A minimum of 50% by weight which passes the 200 sieve.

(b) A saturated hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec or less.

(c) Constructed in maximum 6 inch lift heights after compaction to at least 90% modified or 95% standard Proctor density.

(d) The department may require that the material meet specifications for liquid limit and plasticity index.

(5) **COVER LAYER.** A minimum 1.5 to 2.5 foot thick soil cover layer shall be designed above the clay capping layer to provide additional rooting depth for vegetation and to protect the clay capping layer from damage due to freeze-thaw and desiccation. Soils available on or near the proposed facility property may be proposed for this material. This layer shall not be densely compacted. The thickness of this layer shall be based on:

(a) The freeze-thaw susceptibility and moisture holding capacity of the proposed material,

(b) The geographic location of the facility, and

(c) The type and thickness of the capping layer.

(6) **TOPSOIL.** A minimum of 6 inches of topsoil shall be designed over the cover layer to support the proposed vegetation. A testing program of the proposed topsoil sources shall be designed which will document nutrient content and pH adjustments. Fertilizer and lime shall be added as indicated by the testing.

(7) **REVEGETATION.** The seed type and amount of fertilizer applied shall be proposed depending on the type and quality of topsoil and compatibility with both native vegetation and the final use. Unless otherwise approved by the department in writing, seed mixtures and application rates shall be in accordance with section 630, Wisconsin department of transportation standard specifications for road and bridge construction. Application rates for fertilizer and mulch shall also be specified.

(8) **FINAL USE.** The proposed final use shall be compatible with the final cover system. The following activities are prohibited at closed solid waste disposal facilities unless specifically approved by the department in writing.

- (a) Use of the facility for agricultural purposes.
- (b) Establishment or construction of any buildings.
- (c) Excavation of the final cover or any waste materials.

History: Cr. Register, January, 1988, No. 385, eff. 2-6-88.

**NR 504.08 Disposal of residue produced by burning municipal solid waste.** (1) **APPLICABILITY.** This section applies to landfills designed for residue produced by the burning of municipal solid waste as approved by the department. This section applies to all new facilities and existing facilities.

(2) **LANDFILL DESIGN CRITERIA FOR RESIDUE PRODUCED BY BURNING MUNICIPAL SOLID WASTE.** (a) All municipal solid waste combustor residue disposal areas which are not substantially constructed prior to January 1, 1992 shall be designed and constructed, at a minimum, as composite lined monofills as specified in sub. (3).

(b) The department may approve alternate designs such as double liners if it finds that the design provides equivalent protection.

(c) All landfills which accept residue produced by burning municipal solid waste shall maintain a surface water runoff containment system approved by the department.

(d) All landfills which accept residue produced by burning municipal solid waste shall maintain access control to the landfill.

(e) All landfills which accept residue produced by burning municipal solid waste shall maintain a financial responsibility plan substantially meeting the requirements of ch. NR 520 and approved by the department.

(3) **DISPOSAL OF RESIDUE PRODUCED BY BURNING MUNICIPAL SOLID WASTE.** (a) No person may dispose of municipal solid waste combustor residue which does not exceed limits specified in s. NR 502.14 (8) (g) except according to the following criteria:

1. All residue shall be disposed of in a landfill designed, at a minimum, with a clay liner and leachate collection system and specifically approved by the department to accept municipal solid waste combustor residue.

2. After January 1, 1992 all residue shall be disposed of in a landfill area designed, at a minimum, as a monofill cell approved by the department. Non-acidic leachate producing wastes such as foundry process waste and utility ash may be mixed with the residue.

3. After January 1, 1993 all municipal solid waste combustor residue shall be disposed of in a landfill area designed, at a minimum, as a composite lined monofill cell. The composite liner shall consist of a minimum 60 mil geomembrane overlying a minimum thickness of 4 feet of compacted clay meeting the specifications of s. NR 504.05. The leachate collection system shall be designed such that the leachate from the residue

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monofill cell can be sampled and collected separately from non-residue disposal areas.

4. All residue produced by a municipal solid waste combustor which begins initial operation after June 1, 1992 shall be disposed of in a landfill area designed, at a minimum, as a composite lined monofill cell.

(b) After January 1, 1993 all municipal solid waste combustor residue which exceeds the test limits in s. NR 502.14 (8) (g) and is not subsequently treated to below those limits shall be disposed of in a double composite lined landfill. The double composite liner shall be constructed of 2 separate composite liners with each liner consisting of a minimum 60 mil geomembrane overlying a minimum thickness of 4 feet of compacted clay. The composite liners shall be separated by a leachate detection layer consisting of a minimum one foot layer of granular material. The clay components of the liner system shall have properties that meet the specifications of s. NR 504.05. Separate leachate collection systems shall be constructed above and between the composite liners. The leachate collection system shall be designed such that the leachate from the leachate detection layer can be sampled and collected separately from the upper leachate collection system and separately from the non-residue disposal areas. The department may approve alternate designs if it finds that the design provides equivalent protection.

(c) Operators of medical waste combustors with a design capacity of less than 10 tons per day may apply to the department for a written exemption to subd. 2 to 3 or both if they can demonstrate that no reasonable alternative is available. The department may place an expiration date on any exemption which is granted.

(d) All landfills which accept municipal solid waste combustor residue shall be approved by the department in accordance with s. NR 514.08 prior to accepting each specific residue waste stream.

History: Cr. Register, May, 1992, No. 437, eff. 6-1-92.