

Chapter NR 214

LAND DISPOSAL OF LIQUID WASTES

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NR 214.01 Purpose. The purpose of this chapter is to establish effluent limitations and monitoring requirements applicable in permits for discharges of liquid wastes to land disposal systems. Section 147.02, Wis. Stats., requires a permit for the lawful discharge of any pollutant into the waters of the state, which include ground waters by the definition set forth in section 147.015 (13), Wis. Stats. Therefore permits are required for discharges from point sources to land areas where pollutants may percolate, seep, or be leached to ground waters.

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.02 Applicability. (1) The discharge limitations, monitoring requirements, and other provisions of this chapter are applicable to discharges to land disposal systems of liquid wastes consisting of or resulting from:

- (a) Municipal waste and domestic waste,
- (b) Canned, frozen, and preserved fruit and vegetable processing,
- (c) Dairy products processing,
- (d) Meat and poultry products processing, and
- (e) The sand, gravel, stone, and concrete products industries.

(2) The discharge limitations, monitoring requirements, and additional limitations of this chapter are applicable to discharges to a land disposal system of liquid wastes from sources other than those identified in subsection (1) and shall be applied by the department on a case by case basis in accordance with section NR 214.08.

(3) The provisions of this chapter are not applicable to discharges:

- (a) From domestic sewage systems defined as plumbing in section 145.01 (1) (b), Wis. Stats.,
- (b) Of sludge from sewage treatment works,
- (c) Of wet or semiliquid wastes at a disposal site licensed pursuant to Wis. Adm. Code chapter NR 151.
- (d) Of domestic waste handled and disposed of in accordance with Wis. Adm. Code chapter NR 113.

(4) The department may on a case by case basis exempt from the requirements on this chapter the hauling and disposal of industrial wastes handled in accordance with the provisions of Wis. Adm. Code chapter NR 113 except:

(a) In cases where industrial waste is hauled from one industrial source to one disposal site; or

(b) In cases where the industrial waste from any one source exceeds a volume of 10,000 gallons on any one day.

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.03 Definitions. The following definitions are applicable to terms used in this chapter. Definitions of other terms and the meanings of abbreviations are set forth in Wis. Adm. Code chapter NR 205.

(1) "Land disposal system" means a facility for disposing of liquid wastes consisting of:

- (a) An absorption of seepage pond system,
- (b) A ridge and furrow system,
- (c) A spray irrigation system,
- (d) A spray runoff system,
- (e) A subsurface field absorption system, or
- (f) A surface spreading system,
- (g) Any other land area receiving liquid waste discharges.

(2) "Liquid waste" means the discharge in waste water of municipal waste, of domestic waste, or of processing wastes from food processing, manufacturing, and other industrial sources. Liquid manure, by product whey, and other agricultural wastes used as fertilizer by field spreading and non-contact cooling water which does not contain chemical additives are not included in this definition and are not subject to the provisions of this chapter.

(3) "Ground water monitoring" means either, as specified in the permit for a particular discharge:

- (a) Measuring the ground water level in and analyzing samples taken from one or more test wells, or
- (b) Analyzing samples of water in samples of soil taken at specified locations.

(4) "Hydraulic capacity" means the maximum hydraulic loading rate possible without system overload. Such rate shall be determined on the basis of any overload conditions observed in the last four years or in the absence of such conditions on the design capacity.

(5) "Hydraulic loading rate" means the average daily discharge to a land disposal system during a calendar month or other period specified in a permit for the discharge. The average is calculated by dividing the total discharge volume for such month or period by the number of days in such month or period.

(6) "Perimeter" means the boundary of a parcel of land, not intersected by any surface waters of the state, under one ownership or control on which a land disposal system is located.

(7) "Spray runoff system" means a spray irrigation system having a planned discharge to surface waters of some portion of the sprayed liquid waste.

(8) "Subsurface field absorption system" means a system of buried tile or perforated pipe for distributing liquid wastes below the soil surface.

(9) "Surface spreading system" means a system for continually distributing liquid wastes over a designated land area, as from a truck or wagon.

(10) "Ground water" means the portion of subsurface water which is within the zone of saturation.

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.04 Compliance with discharge limitations and monitoring requirements.

(1) Discharges to a land disposal system of liquid wastes identified in section NR 214.02 (1) from sources subject to the provisions of this chapter shall comply with discharge limitations and monitoring requirements:

- (a) In table 2 of this chapter for existing sources by July 1, 1977;
- (b) In table 3 of this chapter for existing sources by July 1, 1983; or
- (c) In table 4 of this chapter for new sources, and
- (d) Any additional limitations established pursuant to sections NR 214.08 (1) and (3).

(2) Discharges to a land disposal system of liquid wastes other than identified in section NR 214.02 (1) from sources subject to the provisions of this chapter shall comply with discharge limitations and monitoring requirements established by the department on a case by case basis pursuant to section NR 214.08.

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.05 Modification procedure. The discharge limitations and monitoring requirements of this chapter may be modified by the department for a discharge subject to the provisions of this chapter if the owner or operator having the discharge can demonstrate that such limitations and requirements are more stringent than necessary to maintain adequate and satisfactory ground water quality. This demonstration may be made:

(1) By evidence submitted at a public hearing following public notice by the department of the receipt of a complete application and intent to issue or modify a permit as provided in Wis. Adm. Code chapter NR 3, subchapter II, or

(2) By evidence presented at an adjudicatory hearing on the issued permit for such discharge as provided in Wis. Adm. Code chapter NR 3, subchapter III.

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.06 Application of discharge limitations. The discharge limitations set forth in this chapter shall be used to establish the

volume of liquid waste and the quantity or quality of pollutants or pollutant properties therein which may be discharged to a land disposal system, except as:

- (1) They may be modified in accordance with section NR 214.05,
- (2) They may be superseded by more stringent limitations necessary to achieve ground water quality standards or meet other legal requirements, or
- (3) They may be supplemented or superseded by standards or prohibitions for toxic pollutants or by additional limitations required to achieve ground water quality.

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.07 Discharge limitations and monitoring requirements.

As specified in table 2, 3, or 4 for the appropriate size class set forth in table 1, one or more of the discharge limitations and monitoring requirements of the following subsections are applicable to discharges to a land disposal system of liquid wastes of the types identified in section NR 214.02(1). Also, in accordance with section NR 214.08, these discharge limitations and monitoring requirements are applicable to discharges of other types of liquid wastes.

(1) No discharge shall exceed the maximum hydraulic loading rate specified in the permit for the discharge nor shall it have a pH or contain quantities of organic materials or suspended solids which interfere with operation of the system. In determining the maximum hydraulic loading rate for a land disposal system the department will consider the hydraulic capacity of the system, past operating performance if any, site conditions including soil and geologic characteristics, the concentration and characteristics of pollutants in the discharge, and other relevant information.

(2) There shall be no discharge to a land disposal system except after treatment in a sewage treatment system which includes a secondary treatment system approved by the department and, in the case of discharge of municipal wastes, unless industrial wastes tributary to the municipal treatment works are in compliance with pretreatment standards applicable pursuant to Wis. Adm. Code section NR 211.30.

(3) The concentration of BOD₅ in discharges to the land disposal system shall not exceed 50 mg/l in more than 20 percent of the monitoring samples required during a calendar quarter.

(4) Discharge to a land disposal system shall be limited so that the discharge and precipitation which falls within the boundary of the disposal system during such discharge does not overflow the boundary of the system.

(5) Discharge shall be limited so that during irrigation all of the discharge and any precipitation falling or flowing onto the irrigation fields during such discharge does not overflow the perimeter of the system.

(6) The discharge shall be alternately distributed to individual sections of the disposal system in a manner to allow sufficient resting periods to maintain the absorptive capacity of the soil.

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(7) The volume of discharge shall be limited to prevent ponding, except for temporary conditions following rainfall events.

(8) The discharge shall be free of material which interferes with the operation of spray nozzles or orifices.

(9) The volume of the discharge shall be limited to prevent inundation of the ridges except for temporary conditions following precipitation events.

(10) The geometric mean of the fecal coliform bacteria counts for effluent samples taken during a calendar quarter, or such other period as may be specified in the permit for the discharge, shall not exceed 200 per 100 ml. Fecal coliform bacteria shall be determined on at least one sample monthly.

(11) The volume of discharge shall be limited to prevent flow to or ponding on the ground surface.

(12) Discharges of municipal wastes and of domestic wastes to waste treatment works and from such waste treatment works to land disposal systems shall be monitored as follows:

(a) Discharges from aerated lagoons to an intermediate storage pond or directly to a land disposal system shall, as a minimum, be monitored daily for pH and weekly for BOD₅ and suspended solids using grab samples.

(b) Discharges from stabilization pond facilities which are operated on a flow through basis shall, as a minimum be monitored daily for flow, weekly for pH, and twice monthly for BOD₅ and suspended solids using grab samples.

(c) Discharges from stabilization pond facilities which are operated on a fill and draw basis shall, as a minimum, be monitored daily for total daily flow, weekly for pH, and twice monthly for BOD₅ and suspended solids using grab samples taken during periods of discharge.

(d) Discharges to an intermediate storage pond or directly to a land disposal system from waste treatment facilities other than aerated lagoons or stabilization ponds shall be monitored in accordance with appropriate Wis. Adm. Code section NR 210.11 (1), (2), or (3) except that monitoring for fecal coliform bacteria shall not be required.

(e) Discharges from intermediate storage ponds to a land disposal system shall be monitored daily for flow in addition to the monitoring required in paragraphs (a) and (d) above.

(f) Influent to all treatment facilities subject to the monitoring provisions of paragraphs (a), (b), (c), and (d) of this section shall be monitored as specified in the appropriate one of those subsections for pH, BOD₅, and suspended solids. Influent flow, and any flow bypassing the treatment facility to the land disposal system, shall be monitored continuously.

(13) The discharge to the land disposal system shall, as a minimum, be monitored for total daily flow;

(a) Monthly for systems with an hydraulic capacity of 20,000 gallons per day or less,

(b) Weekly for systems with an hydraulic capacity of more than 20,000 but less than 100,000 gallons per day, and

(c) Daily for systems with an hydraulic capacity of 100,000 gallons per day or more.

(14) Ground water shall be monitored, at locations specified in the permit, monthly for the first three months after the monitoring system is installed and twice annually thereafter except that the department may modify the twice annual requirement to once annually for land disposal systems receiving liquid wastes for a period of not more than four months annually.

(15) The department may require monitoring ground water for any or all of the following parameters; elevation, organic nitrogen, ammonia nitrogen, nitrate and nitrite nitrogen, chlorides, sulfates, dissolved solids, alkalinity, hardness, and pH.

(16) There shall be no discharge of liquid wastes from this category to this type of land disposal system.

(17) The discharge to the land disposal system shall be:

(a) Alternately distributed to individual sections of the land disposal system in a manner that allows sufficient resting periods to maintain a vegetative cover, and

(b) Limited so that it and any precipitation which falls within the area of the land disposal system is retained within the perimeter of the system except for any runoff which may be collected and discharged to a surface water in accordance with a WPDES permit for such discharge.

(18) The liquid waste shall be pretreated in a facility approved by the department prior to discharge to the land disposal system.

(19) Discharge to the land disposal system shall be limited so that during surface spreading all of the liquid waste and any precipitation falling onto or flowing onto the disposal field shall not overflow the perimeter of the system.

(20) Vehicles used for transporting and spreading the liquid wastes shall be in compliance with Wis. Adm. Code chapter NR 113. ✓

(21) The permittee shall maintain a daily record of the volume of waste discharged.

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.08 Additional limitations. (1) For discharges to a land disposal system of liquid wastes containing any substances or concentrations of substances normally associated with the types of discharge identified in section NR 214.02(1) the department may on a case by case basis impose one or more of the discharge limitations and monitoring requirements set forth in section NR 214.07. ✓

(2) For discharges to a land disposal system of liquid wastes containing substances or concentrations of substances not normally associated with the types of discharge identified in section NR 214.02(1) the department may on a case by case basis impose one or more of the discharge limitations and monitoring requirements set forth in section NR 214.07 and:

(a) Impose limitations on the quantity or concentration of substances discharged;

(b) Require monitoring at more frequent intervals than set forth in section NR 214.07 (13); ✓

(c) Require monitoring for parameters in addition to those set forth in sections NR 214.07 (12) ✓ and (15); ✓

(d) Require ground water monitoring at more frequent intervals than set forth in section NR 214.07 (14) ✓ and for parameters in addition to those set forth in section NR 214.07 (15); ✓ and

(e) Require treatment prior to discharge to the land disposal system and, for the purpose of evaluating such treatment, require monitoring;

1. Of the volume of flow before and/or after such treatment,

2. Of the concentration of critical parameters in such flow before and/or after such treatment, and

3. Of ground water in the vicinity of the system.

(3) For discharges of liquid waste to a land disposal system located on a site where soil, geologic, or other conditions may result in more rapid than normal seepage to ground water and/or an increased possibility of ground water contamination the department may require:

(a) Additional treatment beyond secondary treatment for municipal or domestic waste prior to discharge to such system, or

(b) Treatment of liquid wastes from other sources as set forth in section NR 214.08 (1) (e). ✓

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.

NR 214.09 Sampling and analytical methods. Unless otherwise specified in the permit for a land disposal system:

(1) The procedures for measuring flow and taking samples of discharges shall be those set forth in Wis. Adm. Code chapter NR 218, ✓ and

(2) The methods of analysis for substances contained in discharges shall be those set forth in Wis. Adm. Code chapter NR 219, except that for monitoring ground water the alternate methods for certain parameters set forth in the following table may be used. The references of the table are the same as those incorporated by reference in Wis. Adm. Code chapter NR 219. ✓

Parameter and Units	Method	SM ¹	Reference	
			ASTM ²	EPA ³
Alkalinity as CaCO ₃ (mg Ca CO ₃)	Titration, Electronic Manual or Automated Methyl Orange	52	143	6
Flouride (mg/l)	Distillation SPADNS Ion Specific Electrode	171	191	72
Surfactants (MBAS)	Methylene Blue Colorimetric	339	619	131
Iron Total (mg/l)	Colorimetric	187		
Nitrate + Nitrite (mg/l)	Cadmium Reduction Automated			175
pH (s.u.)	Glass Electrode	276	248	230
Methane (mg/l)	Combustible-Gass Volumetric	217 220		
Silica (mg/l)	Colorimetric	303	80	273

¹*Standard Methods for the Examination of Water and Wastewater, 13th Edition, 1971*

²*American Society for Testing and Material, Annual Book of Standards, Part 23, Water; Atmospheric Analysis, 1972*

³*Methods for Chemical Analysis of Water and Wastes, 1971*

Table 1
 Size Classes for Specified Types of Discharges
 Hydraulic Loading Rate shown in Million gallons per day
 Determines Size Class of Discharge to Disposal System

Source of Discharge	Class I	Class II	Class IIA	Class IIB	Class III	Class IV
Municipal and domestic wastes	greater than 1.0	.05-1.0	0.1-1.0	0.05-0.1	0.01-0.05	less than 0.01
Canned, Frozen, Preserved Fruits and Vegetables	greater than 1.0	0.14-1.0	0.34-1.0	0.14-0.34	0.01-0.14	less than 0.01
Dairy Products Processing	greater than 1.0	0.05-1.0	0.08-1.0	0.05-0.08	0.01-0.05	less than 0.01
Meat and Poultry Processing	greater than 1.0	0.05-1.0	0.1-1.0	0.05-0.1	0.01-0.05	less than 0.01
Sand, Gravel, Stone and Concrete Products					more than 0.01	less than 0.01

Table 2
 Discharge Limitations and Monitoring Requirements Applicable no later than July 1, 1977
 Numbers in this table specify applicable subsections in section NR 214.07

Type of Land Disposal System		Absorption Pond	Ridge & Furrow	Spray Irrigation	Spray Runoff	Subsurface Field Abs.	Surface Spreading
Type of Discharge Municipal waste and Domestic waste	Size Class I, IIA	1, 2, 4, 12, 14, 15	1, 2, 4, 6, 9, 12, 14, 15	1, 2, 5, 6, 7, 8, 10, 12, 14, 15	1, 2, 8, 10, 12, 14, 15, 17	1, 11, 12, 14, 15, 18	
	IIB, III, IV	1, 2, 4, 12	1, 2, 4, 6, 9, 12	1, 2, 5, 6, 7, 8, 10, 12	1, 2, 8, 10, 12, 17	1, 11, 12, 18	
Canned, Frozen, Preserved Fruits and Vegetables	I, IIA	1, 4, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 13, 14, 15	1, 8, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	IIB, III, IV	1, 4, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 13	1, 8, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Dairy Products Processing	I, IIA	1, 4, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 13, 14, 15	1, 8, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	IIB, III, IV	1, 4, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 13	1, 8, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Meat and Poultry Processing	I, IIA	1, 4, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 10, 13, 14, 15	1, 8, 10, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	IIB, III, IV	1, 4, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 10, 13	1, 8, 10, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Sand, Gravel, Stone Concrete Products	III, IV	1, 4, 13	1, 4, 9, 13	1, 5, 7, 8, 13	1, 8, 13, 17	1, 11, 13, 18	1, 7, 9, 20, 21

Table 3
Discharge Limitations and Monitoring Requirements Applicable no later than July 1, 1983
Numbers in this table specify applicable subsections in section NR 214.07

Type of Land Disposal System		Absorption Pond	Ridge & Furrow	Spray Irrigation	Spray Runoff	Subsurface Field Abs.	Surface Spreading
Type of Discharge Municipal waste and Domestic waste	Size Class I, II	1, 2, 3, 4, 12, 14, 15	1, 2, 3, 4, 6, 9, 12, 14, 15	1, 2, 3, 5, 6, 7, 8, 10, 12, 14, 15	1, 2, 3, 8, 10, 12, 14, 15, 17	1, 11, 12, 14, 15, 18	
	III, IV	1, 2, 3, 4, 12	1, 2, 3, 4, 6, 9, 12	1, 2, 3, 5, 6, 7, 8, 10, 12	1, 2, 3, 8, 10, 12, 17	1, 11, 12, 18	
Canned, Frozen, Preserved Fruits and Vegetables	I, II	1, 4, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 13, 14, 15	1, 8, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	III, IV	1, 4, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 13	1, 8, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Dairy Products Processing	I, II	1, 4, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 13, 14, 15	1, 8, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	III, IV	1, 4, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 13	1, 8, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Meat and Poultry Processing	I, II	1, 4, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 10, 13, 14, 15	1, 8, 10, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	III, IV	1, 4, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 10, 13	1, 8, 10, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Sand, Gravel, Stone Concrete Products	III, IV	1, 4, 13	1, 4, 9, 13	1, 5, 7, 8, 13	1, 8, 13, 17	1, 11, 13, 18	1, 7, 19, 20, 21

Table 4
Discharge Limitations and Monitoring Requirements for New Sources
Numbers in this table specify applicable subsections in section NR 214.07

Type of Land Disposal System		Absorption Pond	Ridge & Furrow	Spray Irrigation	Spray Runoff	Subsurface Field Abs.	Surface Spreading
Type of Discharge Municipal waste and Domestic waste	Size Class I, II	1, 2, 3, 4, 6, 12, 14, 15	1, 2, 3, 4, 6, 9, 12, 14, 15	1, 2, 3, 5, 6, 7, 8, 10, 12, 14, 15	1, 2, 3, 8, 10, 12, 14, 15, 17	1, 11, 12, 14, 15, 18	
	III, IV	1, 2, 3, 4, 6, 12	1, 2, 3, 4, 6, 9, 12	1, 2, 3, 5, 6, 7, 8, 10, 12	1, 2, 3, 8, 10, 12, 17	1, 11, 12, 18	
Canned, Frozen, Preserved Fruits and Vegetables	I, II	1, 2, 3, 4, 6, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 13, 14, 15	1, 8, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	III, IV	1, 2, 3, 4, 6, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 13	1, 8, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Dairy Products Processing	I, II	1, 2, 3, 4, 6, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 13, 14, 15	1, 8, 13, 14, 15, 17	16	1, 6, 7, 14, 15, 19, 20, 21
	III, IV	1, 2, 3, 4, 6, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 13	1, 8, 13, 17	16	1, 6, 7, 19, 20, 21
Meat and Poultry Processing	I, II	1, 2, 3, 4, 6, 13, 14, 15	1, 4, 6, 9, 13, 14, 15	1, 5, 6, 7, 8, 10, 13, 14, 15	1, 8, 10, 13, 14, 15, 17	1, 11, 13, 14, 15, 18	1, 6, 7, 14, 15, 19, 20, 21
	III, IV	1, 2, 3, 4, 6, 13	1, 4, 6, 9, 13	1, 5, 6, 7, 8, 10, 13	1, 8, 10, 13, 17	1, 11, 13, 18	1, 6, 7, 19, 20, 21
Sand, Gravel, Stone Concrete Products	III, IV	1, 4, 13	1, 4, 9, 13	1, 5, 7, 8, 13	1, 8, 13, 17	16	1, 7, 19, 20, 21

History: Cr. Register, June, 1976, No. 246, eff. 7-1-76.