Chapter NR 204

DOMESTIC SEWAGE SLUDGE MANAGEMENT

Note: Chapter NR 204 as it existed on December 31, 1995 was repealed and a new chapter was created effective January 1, 1996.

NR 204.01 Purpose. The purpose of this chapter is to establish discharge standards, monitoring, record keeping and reporting requirements for the use and disposal of sewage sludge and grit and screenings. Section 283.31, Stats., requires a permit for the lawful discharge of any pollutant into the waters of the state and for the disposal of sludge. Section 283.01 (20), Stats., defines"waters of the state" to include groundwater. The land application of sludge is considered a potential discharge to waters of the state. It is the intent of the department, through this chapter, to protect public health and to restore, protect and maintain the physical, chemical and biological integrity of the soil, air, surface water and groundwater of the state and to allow no detrimental effects to these resources, and the natural environment. The beneficial use of sewage sludge and its recycling to the land as a fertilizer or soil conditioner is encouraged, rather than disposing of sludge through incineration or landfilling.

Note: The department has promulgated this chapter pursuant to state statutory authority. Local governments should not enact ordinances which are inconsistent with this chapter or which infringe upon the spirit and general policies of the state's sludge program.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, November, 1996, No. 491.

NR 204.02 General. (1) APPLICABILITY. Any person who treats or generates sludge, applies sludge to land or places sludge in a landfill shall comply with the requirements in this chapter.

(a) In general, this chapter applies to the following:

1. The use and disposal of sludge and grit and screenings generated by any domestic wastewater treatment works.

2. The quantity and quality of sludge that is applied to land or landfilled. This includes sludge which is combined with another material. The other material may include industrial sludge, other municipal sludge, septage, manure, any material used for mixing or other wastes with which the sludge forms a composted material.

Note: Note: Chs. NR 502 and 518 may also apply to processing and use of solid waste and sludge mixtures.

3. The land on which sludge is applied and any landfill which receives the sludge.

(b) In general, these rules do not govern the following:

1. The use or disposal of sludge which is a hazardous waste as defined by ch. NR 660.

2. Septage as defined in ch. NR 113. This does not exempt centralized septage treatment facilities which are required to obtain a WPDES permit.

3. Sludge that is incinerated.

4. Bulk or bagged material which is derived from exceptional quality sludge. This is material which is derived after the generator distributes exceptional quality sludge. It does not include a bulk material which becomes exceptional quality after mixing or treatment with non-exceptional sludge.

5. Industrial sludge, including sewage sludge generated during the treatment of industrial wastewater that is combined with domestic sewage originating at that industrial facility.

6. Sludge with PCB concentrations greater than 50 mg/kg on a dry weight basis, unless this sludge is applied under a management plan approved by U.S. environmental protection agency (EPA) region V pursuant to 40 CFR part 761.

7. Incinerator ash.

8. Sludge generated through the treatment of drinking water.

Note: The regulation of the incineration of sludge under 40 CFR part 503 will be administered by the U.S. environmental protection agency.

(2) RESPONSIBILITY. A facility that generates sludge is ultimately responsible for the handling, transporting, storage and land application or disposal of the sludge and grit and screenings. A generator is responsible for compliance with its WPDES permit and all applicable provisions of this chapter. In the event a generator sends its sludge to another person for final land application or disposal and that person alters the characteristics of the sludge by mixing it with other wastes or substances or by treating it in some other manner, then the person who receives the sludge shall also be considered a generator and shall assume primary responsibility for compliance with this chapter. If a generator gives the sludge to another person to land apply, but that person does not alter the characteristics of the sludge, then that person is also responsible for complying with applicable provisions in this chapter, such as the land management practices specified in s. NR 204.07.

(3) FORMS. All forms required in this chapter may be obtained from the Department of Natural Resources, Bureau of Wastewater Management, 101 S. Webster Street, P.O. Box 7921, Madison, Wisconsin 53707.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96; correction in (1) (b) 1. made under s. 13.92 (4) (b) 7., Stats., Register February 2010 No. 650.

NR 204.03 Definitions. The following definitions are applicable to terms used in this chapter. Definitions of other terms and the meaning of abbreviations are in ch. NR 205.

(1) "Aerobic digestion" means the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

(2) "Agricultural land" means land on which a food crop, a feed crop or fiber crop will be grown within 12 months following sludge application. This includes range land and land used as pasture.

(3) "Agronomic rate" means the whole sludge application

rate, on a dry weight basis, designed to provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop or vegetation grown on the land, and designed to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater.

(4) "Anaerobic digestion" means the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

(5) "Annual pollutant loading rate" means the maximum amount of a pollutant that can be applied to a unit area of land during a 365-day period.

(6) "Application rate" means the loading limits placed on a landspreading site, as established by the agronomic needs of the crop and the characteristics of the sludge, normally expressed as dry tons/acre, gallons/acre or cu yd/acre.

(7) "Available nitrogen" means the nitrogen which is present in the sludge in the NH_3-N form and the nitrogen that is mineralized from the organic nitrogen in the sludge; both of which can then be absorbed and assimilated by growing plants in the cropping year.

(8) "Bag or other container" or "bagged" or "bag" means either a bag or an open or closed receptacle that has a capacity of one metric ton or less. This includes a bucket, a box, a carton and a vehicle or trailer.

(9) "Bedrock" means the rocks that underlie soil material. Bedrock may be present at the earth's surface when the weathered in-place consolidated material, larger than 2 mm in size, is greater than 50% by volume.

(10) "Bulk sewage sludge" means sewage sludge which will be applied to the land but is not bagged.

(11) "Centralized septage treatment facility" means a treatment facility which accepts septage from multiple sources and treats the septage prior to discharge or disposal.

(12) "Community well" means a public well which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year- round residents. Any well serving 7 or more homes, 10 or more mobile homes, 10 or more apartment units or 10 or more condominium units shall be considered a community well unless information is available to indicate that 25 year- round residents will not be served.

(13) "Cumulative metals loading rate" means the maximum amount of an inorganic metal that can be applied to a unit area of land.

(14) "Density of microorganisms" means the number of microorganisms per unit mass of total solids, on a dry weight basis, in the sewage sludge.

(15) "Department" means the department of natural resources.

(16) "Detrimental effects" means contamination of the lands or waters of the state or making the same injurious to public health, harmful for commercial or agricultural use, or deleterious to animal or plant life.

(17) "Domestic sewage" means waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

(18) "Dry run" means a drainage pathway, either natural or artificial, with definable banks, which contains confined flow during periods of natural runoff.

(19) "Exceptional quality sludge" means sludge that meets the class A requirements for pathogens, as specified in s. NR 204.07 (6) (a), the high quality pollutant concentrations, as specified in s. NR 204.07 (5) (c), and one of the pre-land application processes to reduce vector attraction, as specified in s. NR 204.07 (7) (a) to (i).

(20) "Feed crops" means crops produced primarily for consumption for animals.

(21) "Field" means a subset of a site.

(22) "Floodplain" means the land which has been or may be covered by flood water during the regional flood as specified under s. NR 116.03 (16) and (41).

(23) "Food crops" means tobacco and crops grown for human consumption.

(24) "Generator" means either the person who generates or prepares sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sludge or the person who changes the sludge characteristics either through treatment, mixing or any other process.

(25) "Geometric mean" means the average of the log values of the colony density and taking the antilog of that value, or by taking the nth root of the products of the n values, i.e., $(Y_1 \bullet Y_2 \bullet Y_3 \bullet ..... Y_n)$ to the 1/nth power.

(26) "Grit" means the heavy solid materials such as sand, gravel and cinders collected from the headwork of a treatment system.

(27) "Groundwater" means any of the waters of the state, as defined in ss. 281.01 (18) and 283.01 (20), Stats., occurring in a saturated subsurface geological formation of permeable rock or soil.

(28) "High groundwater level" means the higher of either the elevation to which the soil is saturated as observed as a free water surface in an unlined hole or the elevation to which the soil has been seasonally or periodically saturated as indicated by soil color patterns throughout the soil profile.

(29) "High quality sludge" means sludge that meets the monthly average pollutant concentration limits which are shown, as Table 3, in s. NR 204.07 (5) (c).

(30) "Historical site" means any property as established under s. 44.40 (2) (a), Stats.

(31) "Incorporation" means the mixing of sludge with topsoil to a minimum depth of 4 inches by such means as discing, moldboard plowing, chisel plowing, rototilling or other tillage methods.

(32) "Injection" means the subsurface placement of liquid sludge to a depth of 4 to 12 inches.

(33) "Land application" means the spraying or spreading of sludge onto the land surface, the injection of sludge below the land surface, or the incorporation of sludge into the soil. Sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

(34) "Land with high potential for public exposure" means land that the public uses frequently. This includes sites such as a public contact site, a lawn or home garden, and a reclamation site located in a populated area, e.g., a construction site located in a city.

(35) "Land with low potential for public exposure" means land that the public uses infrequently. This includes agricultural land, forest and reclamation sites located in an unpopulated area.

(36) "Monthly average" means the arithmetic mean of all measurements taken during the month using analytical methodologies specified in ch. NR 219.

(37) "Municipal solid waste landfill" means a discrete area of land or an excavation that is subject to the requirements in chs. NR 500 to 538 and is licensed to receive household waste, other

wastes such as commercial solid waste, nonhazardous sludge, small quantity generator waste and industrial solid waste. It does not include a land application site, surface disposal unit, surface impoundment, injection well or waste pile.

(38) "Pathogens" means disease causing organisms. This includes, but is not limited to, certain bacteria, protozoa, viruses and viable helminth ova.

(39) "PCBs" means polychlorinated biphenyls.

(40) "Permeability" means the rate of the movement of liquid through the soil expressed in inches per hour.

(41) "Person" means an individual, owner, operator, association, partnership, corporation, municipality, interstate agency, state agency or federal agency.

(42) "Person who prepares sludge" means a generator.

(43) "pH" means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° C or measured at another temperature and then converted to an equivalent value at 25° C.

(44) "POTW" or "publicly owned treatment works" means a treatment works which is owned by a public entity and any sewers that convey wastewater to the treatment works. This definition includes any device or system used by a municipality in the storage, treatment, recycling and reclamation of municipal sewage, sludge or liquid industrial waste.

(45) "Privately owned domestic wastewater treatment works" means a facility which has a permit under ch. 283, Stats., and which treats domestic wastewater or sludge and which is owned and operated by non-municipal entity or enterprise such as a mobile home park, restaurant, hotel, motel or country club.

(46) "Public contact site" means land with a high potential for contact by the public. This includes sites such as public parks, ball fields, plant nurseries, turf farms and golf courses.

(47) "Recreation area" means a designated area clearly identified for the purpose of providing an opportunity for recreational activity.

(48) "Reclamation site" means drastically disturbed land that is reclaimed using sewage sludge. This includes sites such as strip mines and construction sites.

(49) "Recycling" means the beneficial reuse of sludge through land application, composting or other approved method that returns organic matter or nutrients to the soil, or creates a useful product.

(50) "Research plots" means an area of land approved by the department and designed and operated by a qualified person to investigate questions pertaining to land application and uses of sludge.

(51) "Restricted public access" means private property or the limiting of entry, for a period of time, by means such as signs or traditional agricultural fencing or other department approved method.

(52) "School" means a public or private educational facility in which a program of educational instruction is provided to children or adults in any grade or grades from pre-school through the university level.

(53) "Screenings" means the coarse sewage solids collected from devices such as gratings, wire mesh or perforated plates.

(54) "Set aside land" or "acreage conservation reserve" means the agricultural land which is taken out of crop production on an annual basis for the purposes of conservation and to reduce the acreage planted of a particular crop.

(55) "Sewage sludge" or "sludge" or "biosolids" means the solid, semi-solid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes scum or solids removed in primary, secondary or advanced wastewater treatment processes and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

Note: All 3 terms defined here are interchangeable and recognized by the department, as they are all in common use.

(56) "Site" means any property used for recycling, disposal or storage of sludge and may be divided into fields.

(57) "Soil" means the unconsolidated material which overlies bedrock.

(58) "Soil compaction" means the degree of compaction to a soil at which its infiltration capacity, permeability and ability to function as a medium for plant growth is impeded.

(59) "Soil conservation practice" means a measure used to retain surface water and soil on agricultural fields, including contour strip cropping, terracing, grassed waterways or plant residue management practices.

(60) "Soil pH" means the pH of the soil in the plow layer as measured in water by a pH meter with a glass electrode or by using another department approved procedure.

(61) "Specific oxygen uptake rate" or "SOUR" means the mass of oxygen consumed per unit time per unit mass of total solids on a dry weight basis.

(62) "Stabilization of sludge" means any combination of chemical, physical, thermal or biological treatment processes which result in a significant reduction in the percentage of volatile solids or the specific oxygen uptake rate in the sludge.

(63) "Surface disposal unit" means an area of land on which only sewage sludge, including exceptional quality sludge, is placed for final disposal. This does not include land or lagoons on which sewage sludge is either stored or treated, municipal solid waste landfills or land application sites.

(64) "Surface water" means those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, all lakes, bays, rivers, streams, springs, ponds, impounding reservoirs, marshes, water courses, drainage systems and other surface water, natural or artificial, public or private within the state or under its jurisdiction, except those waters which are entirely confined and completely retained upon the property of a facility.

(65) "Threatened or endangered species" means those species defined in ch. NR 27.

(66) "Total nitrogen" means the sum of nitrite, nitrate, ammonia and organic nitrogen.

(67) "Total solids" means the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105° Celsius.

(68) "Treatment works" means a publicly or privately owned treatment works, centralized septage treatment facility, and treatment works owned by federal or state government.

(69) "Unstabilized solids" means the organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

(70) "Vector attraction" means the characteristics of sewage sludge that attract rodents, flies, mosquitos or other organisms capable of transporting infectious agents.

(71) "Volatile solids" means the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550° Celsius in the presence of excess air.

(72) "Wetlands" means those areas where water is at, near, or above the land surface long enough to be capable of supporting

aquatic or hydrophytic vegetation, and which have soils indicative of wet conditions.

(73) "Wisconsin pollutant discharge elimination system permit" or "WPDES permit" or "permit" means a permit issued by the department under ch. 283, Stats., for the discharge of pollutants.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, November, 1996, No. 491; correction in (37) made under s. 13.92 (4) (b) 7., Stats., Register February 2010 No. 650.

NR 204.04 Exceptional quality sludge. (1) GENERAL. Exceptional quality sludge may be applied to lawns and home gardens as well as other sites allowed under this chapter. Exceptional quality sludge is considered not to pose any reasonably anticipated threat to public health or the environment, and is therefore exempt from many requirements of this chapter. However, due to possible adverse impacts that may occur if bulk exceptional quality sludge enters waters of the state, the use of this material should ensure that it remains on the land and certain requirements of this chapter are imposed for that purpose. The department may impose additional requirements on the use of bulk exceptional quality sludge, through the permit or sludge management plan, on a case-by-case basis if it is determined that misuse of the material is occurring and the misuse may have a deleterious impact on public health or the environment. A permit is not required for imported bulk or bagged exceptional quality sludge, but submittal of a sludge management plan is required of the person responsible for importing bulk exceptional quality sludge. The use or disposal of imported exceptional quality sludge shall comply with all the applicable provisions in this chapter.

(2) BULK RESTRICTIONS. Application on frozen or snow covered ground of any bulk exceptional quality sludge shall be restricted to the same extent as all other sludge covered by ss. NR 204.07 (3) (L) and 204.11 (1).

(3) EXEMPTIONS. The use of exceptional quality sludge is exempt from the following sections:

(a) Section NR 204.05 (4).

(b) Section NR 204.06 (6), (7), and (8).

(c) Section NR 204.07 (2), (3) (b) to (j), (n), and (o), and (8).

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96; corrections in (2), (3) (a), (b), (c) made under s. 13.92 (4) (b) 7., Stats., Register May 2011 No. 665.

NR 204.05 Permit issuance. (1) GENERAL. A person that owns or operates a treatment works that generates sludge shall apply for a WPDES permit. The treatment works may not land apply or dispose of sludge unless the person who owns or operates the treatment works obtains a WPDES permit. A treatment works is ultimately responsible for the land application or disposal of sludge and is responsible for compliance with the terms of its WPDES permit and the requirements of this chapter.

(2) SLUDGE MIXTURES AND TREATMENT. (a) If a treatment works sends its sludge to another treatment or storage facility for final treatment prior to land application, and at that facility, the sludge is mixed with other materials such as, but not limited to another municipal sludge, industrial sludge, animal manure or septage, or if the characteristics of the sludge are altered in any other manner, the owner of the receiving facility shall apply for a separate WPDES permit and shall assume primary responsibility for compliance with this chapter.

Note: In this situation, both the treatment works that generates sludge and the facility that alters the characteristics of the sludge for final use or disposal must apply for a permit. The terms in each permit that relate to sludge will not duplicate each other but rather, will complement each other to comply with this chapter.

(b) If the receiving facility is a farmer's manure tank or lagoon and mixing of sludge and manure occurs in storage, that mixture shall comply with all requirements of this chapter. If the treatment works which originally generated the sludge, remains responsible for certifying that the mixture complies with the provisions of this chapter, the treatment works shall remain the sole permittee and retain full responsibility for compliance with their permit and this chapter.

(3) LAND APPLIERS. If the owner or operator of a treatment works hires another person to land apply sludge, the land applier, as well as the treatment works, is responsible for compliance with applicable sections of this chapter. The treatment works is required to obtain a permit. However, the land applier does not need to obtain a WPDES permit unless the land applier is required to do so under sub. (1), (2) or (4). If a land applier simply treats the sludge to meet the pathogen or vector attraction reduction requirements of this chapter for a single sludge generator, but does not alter or treat the sludge in any other manner, the land applier does not have to obtain a WPDES permit.

(4) IMPORTED SLUDGE. In the event non-exceptional quality bulk sludge which is generated outside the state of Wisconsin is imported into the state, the person responsible for importing the sludge shall have a WPDES permit for the land application or the beneficial use of the imported sludge as specified in s. NR 204.09. A permit is not required for imported sludge if it is being landfilled or incinerated. In the case of landfilling or incinerating, the person who imports the sludge shall notify and receive approval from the department prior to landfilling or incinerating the sludge. Approval will be based on contracts with licensed landfills or permitted incinerators.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.

NR 204.06 Reporting and monitoring requirements. The following reports shall be submitted to the department, by the permittee, annually by January 31, unless otherwise stated in this section or as specified in the permit. All records of required analyses and management practices specified in this chapter or the WPDES permit shall be retained for a minimum of 5 years. The department may modify the reporting requirements in the permit, based on size and complexity of the permittee's land application program, changes in the quantity or quality of industrial contributions to the treatment facility or when deemed necessary to ensure compliance with the provisions of this chapter.

(1) GENERAL INFORMATION REPORT. The permittee shall submit a general information report to the department pursuant to the permit or anytime there are significant changes in the sludge management program, including changes which alter the sludge characteristics or alter disposal or recycling methods. The report shall address the following:

(a) The sources, processes and treatment systems at the treatment facility from which the sludge originates.

(b) Sludge treatment or processing techniques used prior to recycling or disposal.

(c) The mode of sludge transportation, including the name and telephone number of the transporter of the sludge, the type of vehicle used for sludge transportation and, when applicable, the methods used to apply the sludge to the site or field.

(d) The quantity of sludge that is generated and the quantity of sludge that is recycled or disposed of on a monthly and yearly basis.

(e) The available capacity of sludge storage, expressed as the number of days worth of sludge generation that can be stored.

(f) Whether the sludge is given away or sold in bulk, bag or other container.

(2) CHARACTERISTICS REPORT. (a) The permittee shall report the physical, chemical and biological characteristics of the sludge or finished sludge product. If a permittee generates more

than one type of sludge, each sludge type shall be sampled and analyzed in accordance with the WPDES permit.

(b) A representative sample of the sludge shall be analyzed by the permittee as specified in the permit, for any or all of the following parameters, depending on the treatment facility size, processes used for treatment, methods of beneficial use or disposal, and characteristics of industrial discharges to the treatment facility:

1. Characteristics such as the percentage of total solids, volatile solids, pH and specific oxygen uptake rate (SOUR).

2. Nitrogen, phosphorus and potassium.

3. Arsenic, beryllium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium and zinc.

4. Fecal coliform, salmonella, enteric viruses and viable helminth ova.

5. Selected phenolics, pesticides, toxic substances and persistent organics.

6. Priority pollutant scan.

7. Toxicity characteristics leaching procedure (TCLP) test if landfilling.

8. Paint filter test if landfilling.

9. Any other parameters which the department determines may be present in the sludge and which may result in detrimental effects to public health or the environment.

(c) 1. The frequency of monitoring for parameters, other than those specified in subds. 2. and 3., shall be as specified by the department in the WPDES permit.

2. Facilities with lagoon or other treatment systems which land apply sludge on an infrequent basis, such as every 10 to 20 years, shall sample their sludge once every 5 years, and analyze it for the metals listed in Table 1 of s. NR 204.07 (5) (a). This frequency may be increased by the department in the permit, and corrective measures such as industrial pretreatment may be required, if high metal concentrations are determined to be present, or potentially present, in the sludge.

3. The frequency of monitoring for arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, pathogen or indicator organism densities, and vector attraction reduction requirements in sludge shall be based on the quantity of sludge land applied annually and determined by Table A. If sludge is landfilled under s. NR 204.08, the frequency of monitoring shall also be based on the quantity of sludge disposed of annually and determined by Table A:

Table A
Frequency of Monitoring — Land Application and Landfilling

AMOUNT OF SEWAGE SLUDGE (DRY METRIC TONS PER 365 DAY PERIOD)	AMOUNT OF SLUDGE (DRY U.S. TONS PER 365 DAY PERIOD)[1]	FREQUENCY OF MONITORING
0 < X < 290	0 < X < 320	Once per year
290 ≤ X < 1500	320 ≤ X < 1654	Once per quarter
1500 ≤ X < 15000	1654 ≤ X < 16540	Once per 60 days
15000 ≤ X	16540 ≤ X	Once per month

[1] Amount of sewage sludge land applied or landfilled on a dry weight basis.
[2] Metric tons = U.S. tons x 0.907

4. The amount of sludge per year which is actually land applied or landfilled shall determine the minimum monitoring frequency. If the applicable frequency of monitoring in subd. 3. is more than once per year, but land application is done only part of the year, the frequency of monitoring requirements may be reduced accordingly for nutrients, class B pathogen and vector attraction reduction requirements on a case-by-case basis in the permit by the department. Determinations shall be based on the facilities treatment process, the time of year land application occurs and the frequency at which the sludge is applied. In all cases, the intent is to have a representative analysis of the sludge which is actually being used. In all cases, the monitoring frequency indicated in subd. 3. for metals shall be adhered to, except as modified by subd. 5.

5. After 2 years of monitoring at the frequencies specified in subds. 3. and 4., the monitoring frequencies may be reduced at the permittee's request and subject to department approval.

(d) The following procedures shall be used unless otherwise specified in the permit:

1. The sludge sample shall be collected at the point and in a manner which will yield sample results which are representative of the sludge being tested.

2. The methods of analysis for substances contained in sludge shall be those established in ch. NR 219.

3. The permittee shall submit actual lab reports along with the sludge characteristics report, and shall supply all information necessary for the department to evaluate the quality assurance and quality control procedures.

(3) LANDFILLING REPORTS. The permittee shall report the volume of sludge disposed of at any landfill facility. The report shall include the name and address of the landfill, the department license number or other state's designation or license number for all landfills used during the report period and a letter of acceptability from the landfill owner. In addition, any permittee utilizing landfills as a disposal method shall submit to the department any test results used to indicate acceptability of the sludge at a landfill.

(4) BAGGED SLUDGE AND EXCEPTIONAL QUALITY SLUDGE REPORTS. The permittee shall report the quantity of sludge sold or given away in a bag or other container by the permittee to either commercial or domestic users both in- state and out-of-state. A copy of the label or information sheet used in the sale or distribution of non-exceptional quality bagged sludge shall be included in the report. The permittee shall also report the quantity of exceptional quality sludge which is either given away or sold.

(5) INCINERATION REPORTS. The permittee shall report the volume of sludge disposed of at any incinerator. The report shall include the name and address of the incinerator, and the department's license or permit number for the incinerator or other state's designation or license number for all incinerators used during the report period and a letter of acceptance from the incinerator owner.

(6) LAND APPLICATION SITE EVALUATION INFORMATION REPORT. The permittee shall submit sufficient information to allow the department to properly evaluate each land application site. This report shall be submitted whenever site approval is requested. Permittees may request permission from the department to review and approve their own land application sites. The request shall be made in writing and shall include information demonstrating that the permittee, or their agent, has competence in evaluating the necessary soil and site criteria. The department may, after review of the written submittal, give the permittee permission to review and approve land application sites. In these cases, all necessary forms shall be submitted to the department prior to the permittee using the land application site. Credentials for demonstration of competence to review sites shall include: the possession of a certified soil tester classification (CSTM or CSTS) from the department of industry, labor and human relations, a bachelor of science degree in soil science from a 4 year accredited college, or a certified professional soil scientist in good standing with the American society of agronomy. If a re-

quest is granted by the department, the request and approval shall be included in the land application site evaluation report. Land application site evaluation reports shall include:

(a) The location of the site delineated on a soils map and plat map or USGS topographic map or aerial photo.

Note: Plat maps are subject to copyright laws.

(b) The ownership of the site and a copy or description of any contracts or agreements covering the land application of sludge and other waste products at the land application site.

(c) The results of analysis of representative soil samples taken from each site or field used for land application. Soil sampling and submittal of information to the testing laboratory shall be done in accordance with the University of Wisconsin-extension bulletin A-2100, dated April 1991, or soil sampling guidance approved by the department. UW-extension bulletin A-2100 contains a soil information sheet that shall be filled out and submitted with the soil sample to form the basis of the nutrient recommendations. UW-extension bulletin A-2100 is incorporated by reference for this chapter and hereinafter referred to as the soil information sheet. The samples shall be analyzed by a department approved testing laboratory using methods of analysis and nutrient recommendations for the intended crops to be grown that are consistent with University of Wisconsin recommendations. Parameters analyzed shall include soil pH, organic matter, total phosphorus, exchangeable potassium and any other parameters deemed necessary by the department. The soil test results shall include identification of soil type and fertilizer recommendations for the crops to be grown. Application rates shall be based on the recommendations provided by this soil analysis and the soil information sheet. A site or field may not be used for land application of sludge unless the soil on the site or field has been tested at least once in the 4 years prior to land application.

Note: Copies of the University of Wisconsin extension bulletin A-2100 are available for inspection in the offices of the department of natural resources, secretary of state, and legislative reference bureau, Madison, Wisconsin, or may be purchased from the UW Soil and Plant Analysis Lab, 5711 Mineral Point Rd., Madison, WI 53705 or the Soil and Forage Analysis Lab, 8396 Yellowstone Dr., Marshfield, WI 54449.

(d) If sludge is intended to be applied to the site at a rate which would supply more than 30% of the nitrogen needs of the crop or vegetative cover to be grown, the permittee shall address the other sources of nitrogen through one of the following options:

1. In years when a soil sample is being taken, the soil information sheet shall address the other nitrogen sources so that the information is reflected in the resultant soil analysis report. If the soils information sheet is used to account for other sources of nitrogen and other sources of nitrogen are not accurately reflected in the soils analysis report, the department may require the submission of the actual soils information sheet along with the soils analysis report.

2. Provide documentation that the site or field is managed under an approved nutrient management plan.

3. Account for all other sources of nitrogen applied to the site or field for the crop year.

(e) The present use of the site or field and abutting properties.

(f) The limiting separation distances listed in Table B shall be indicated on submitted maps. Should the department have reason to believe that the soil survey maps are not of sufficient accuracy to demonstrate compliance with the requirements listed in Table B, the department may require that on-site testing be conducted to verify site conditions. These tests shall be conducted by an individual meeting the credentials specified in this subsection.

(g) Total acreage of the site or field available for sludge application.

(h) Crops to be grown or the dominant vegetation on the landspreading site or field.

(7) BULK SLUDGE LAND APPLICATION RECORDS REPORT. The permittee shall submit the following information for each site or field utilized during the reporting period:

(a) The number of acres on which sludge was applied.

(b) The total amount of sludge applied per acre reported in gallons, cubic yards or tons. The type of sludge, either cake or liquid, shall be specified.

(c) The amount of available nitrogen applied in pounds per acre on a dry weight basis. This would include nitrogen applied from sludge, manure, other waste, and commercial fertilizer. This information on nitrogen is not required if any of the following apply:

1. Other sources of nitrogen are addressed on the soils information sheet, or an alternative agronomic rate calculation sheet approved by the department.

2. The site or field is covered by an approved nutrient management plan.

3. The amount of nitrogen applied provides less than 30% of that required by the crop intended to be grown.

(d) The amount of each of the parameters listed in Table 1 of s. NR 204.07 (5) (a) applied on an annual basis and the cumulative metal loadings to the site.

(e) The result of any groundwater, surface water and plant tissue monitoring programs which may be required by the department.

(f) The total amount of sludge landspread on all sites used during the calendar year.

(g) The total amount of sludge produced during the calendar year.

(8) NOTIFICATION REPORTS. (a) In the event a generator of bulk sludge provides the bulk sludge to another person to land apply, the generator shall provide the applier with notice and necessary information, prior to application, to comply with the requirements of this chapter.

(b) In the event a generator of sludge gives the sludge to another person for further treatment or storage, the generator shall give the person receiving the sludge all information needed to comply with the requirements of this chapter.

(c) The person who generates bulk sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site shall provide the person who applies the bulk sludge, prior to application, written notification of the concentration of total nitrogen, expressed as N on a dry weight basis in the sludge.

(d) The producer or distributor of sludge distributed out-of-state shall notify the permitting authority of the receiving state of its intent to do so. This notification shall be given prior to the initial application of bulk sludge to the land application site by the applier. This allows sufficient time so that the permitting authority has the opportunity to determine whether a permit application or other appropriate oversight is needed. This notification shall be in writing and include the name, address, telephone number and permit number of the sludge supplier, and the specific location of the site, the approximate time the land application will occur and the name, address, telephone number and permit number, if appropriate, of the applier.

(e) The land applier of sludge shall obtain all information necessary to comply with the land application requirements of this chapter, apply sludge to the land in accordance with those requirements, and provide notice and necessary information to the owner or leaseholder of the land on which the sludge is applied.

(9) CERTIFICATION OF SLUDGE QUALITY RECORDS. All certification statements should follow the format in par. (e).

(a) For exceptional quality sludge distributed in bulk or bag, the permittee shall develop and retain the following records for a minimum of 5 years:

1. Documentation that each of the pollutant concentrations specified in Table 3 in s. NR 204.07 (5) (c) have not been exceeded.

2. Documentation that the class A pathogen requirements as prescribed in s. NR 204.07 (6) (a) and a pre-land application process to reduce vector attraction as prescribed in s. NR 204.07 (7) (a) to (i) have been met, and a description of how each was met.

3. A certification statement regarding the Class A pathogen requirements in s. NR 204.07 (6) (a) and one of the vector attraction reduction requirements in s. NR 204.07 (7) (a) to (i).

(b) For bulk sludge applied to land which does not meet the exceptional quality sludge criteria, the permittee shall develop and maintain the following records indefinitely:

1. Location of the sites used for application.

2. Number of acres used for sludge application.

3. Date on which the sludge was applied.

4. Documentation that the concentrations of each pollutant listed in Table 1 of s. NR 204.07 (5) (a) have not been exceeded.

5. The amount of each pollutant listed in Table 1 of s. NR 204.07 (5) (a) that was applied. This requirement does not apply if the sludge is high quality as specified in s. NR 204.07 (5) (c).

6. Documentation that the pathogen requirements specified in s. NR 204.07 (6) and the vector attraction reduction requirements specified in s. NR 204.07 (7) have been met and a description of how each was met.

7. The amount of the sludge and the characteristics of the sludge, other than those listed in subd. 5., that was applied to the site.

8. Certification statements regarding pathogen control, vector attraction reduction, and management practices.

9. Documentation as to whether the cumulative loading rate for any parameter at each site has reached 90% of the cumulative lifetime loading listed in Table 2, unless the sludge is high quality as specified in s. NR 204.07 (5) (c).

10. Time of sludge application if injection or incorporation are the options used for satisfaction of the vector attraction reduction requirement.

(c) For sludge that is sold or given away in bag or other container and does not met the pollutant concentrations in Table 3 of s. NR 204.07 (5) (c), the permittee shall develop and retain the following records for a minimum of 5 years:

1. Documentation that the pollutant ceiling concentrations in Table 1 of s. NR 204.07 (5) (a) have not been exceeded.

2. Documentation that the requirements specified in s. NR 204.07 (5) (d) have been satisfied.

3. Documentation that a class A pathogen requirement specified in s. NR 204.07 (6) (a) and a pre-land application process to reduce vector attraction specified in s. NR 204.07 (7) (a) to (i) have been met and a description of how each was met.

4. A certification statement regarding the Class A pathogen requirements in s. NR 204.07 (6) (a), one of the vector attraction reduction requirements in s. NR 204.07 (7) (a) to (i) and the labeling requirements in s. NR 204.07 (5) (d) 2.

(d) The person who land applies sludge shall develop a certification statement verifying that the management and applicable operational requirements, and in general, all applicable parts of this chapter have been adhered to. The statement shall be retained for a minimum of 5 years.

(e) The permittee and land applier shall develop and retain, as required in this subsection, certification statements verifying the characteristics and quality of the sludge produced, adherence to applicable management practices, and in general, all applicable parts of this chapter. The statement shall be tailored, by each permittee and land applier, for each applicable requirement. The following is an example of an acceptable certification statement for pathogen control and vector attraction reduction:

"I certify under penalty of law, that the information verifying compliance with the [insert either Class A pathogen requirements in s. NR 204.07 (6) (a) or Class B pathogen requirements in s. NR 204.07 (6) (b)] and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in s. NR 204.07 (7) (a) to (k)] has been prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.

NR 204.07 Land application of sludge. (1) GENERAL. No person may land apply sludge in a manner which does not comply with the requirements of a WPDES permit and this chapter.

(2) APPROVED SITES. The permittee shall obtain written or computer generated approval from the department for each site on which sludge is applied in bulk prior to land application, unless the permittee is authorized to inspect and approve their own sites under s. NR 204.06 (6). The department shall review and issue either approval, conditional approval or denial within 60 business days following receipt of the site's complete application, unless weather conditions preclude adequate site evaluation. Each site shall be reviewed based on information contained in the report required by s. NR 204.06 (6). Failure to comply with the conditions of the site approval may result in the revocation of the approval and be considered a violation of the permit. Reapproval shall be contingent on submittal of an operations report for the site which shall specify how further violations will be avoided. When a permittee contracts with another party to land apply sludge and the land applier is not required to hold its own WPDES permit under s. NR 204.05, the permittee maintains responsibility, as well as the land applier, for compliance with the WPDES permit and this chapter. The permittee shall supply the land applier with all information necessary to ensure compliance. The land applier shall also make reasonable attempts to obtain all information needed to ensure compliance with this chapter.

(3) OPERATIONAL AND SITE OR FIELD REQUIREMENTS. (a) Bulk sludge may not be applied to the land if it is likely to adversely affect a threatened or endangered species or its designated critical habitat, or a designated historical site.

(b) Bulk sludge may only be applied to sites that meet the requirements in Table B. Other sites, as specified in s. NR 204.09, may be approved by the department in writing on a case-by-case basis.

(c) Bulk sludge may not be applied to soils with a high groundwater level or bedrock at a depth of less than 3 feet. Exceptions may be granted by the department on a case-by-case basis. Parameters which may be considered for exceptions include: demonstration that the soil has an available water holding capacity that is greater than 5 inches, above the high groundwater level or bedrock; whether the high groundwater is a seasonal condition; depth of saturation at the proposed time of application to de-

termine whether a seasonal use approval may be granted and other relevant site specific conditions.

(d) Bulk sludge may not be applied on sites with soils which have a rapid permeability of greater than 6 inches per hour unless, through consideration of the sludge characteristics, loading rate, cropping practices and other soil characteristics, department approval is obtained.

(e) The pH of the soil shall be 5.5 or greater at the time the bulk sludge is applied, unless after consideration of the sludge quality, cropping practices and soil characteristics of the site, the department determines that the pH should be higher to protect the environment or public health.

(f) If the soil at a site or field is classified as highly erodible on the United States department of agriculture's county by county soil conservation service soil survey, the department may impose additional management practices, such as soil conservation practices, to minimize erosion from the site.

(g) Class B sludge, as specified in sub. (6) (b), that is land applied to sites shall have restricted public access for a period of 30 days for low exposure sites such as a farm field, and one year for high exposure sites such as a city park, following sludge application. Access may be restricted by the location of the site on private property, fencing or posting the application site, or other department approved methods that minimize human contact with the sludge.

(h) Bulk sludge shall be applied in a manner to minimize soil compaction, to prevent surface runoff and to control objectionable odors. Sludge may not be applied on saturated soils, during significant rainfall events or in areas with ponded water or to areas which are subject to ponding.

(i) Bulk sludge land application vehicles or equipment shall be moving at all times while sludge is being applied to ensure uniform application. Uniform application shall be accomplished for surface application vehicles by the use of a splash plate, spreader bar, beaters, expellers or other department approved methods.

(j) Bulk sludge transporting vehicles and equipment may not leak sludge during use, transport, operation or storage. Vehicles utilized for the land application of liquid sludge shall have cab actuated discharge valves.

(k) Sludge which has a PCB concentration greater than 50 mg/kg (dry weight) may not be applied unless a management plan is approved by the U.S. EPA region V administrator pursuant to 40 CFR 761.60 (a) (5) (iii). Sludge with a PCB concentration greater than 10 mg/kg (dry weight) shall be injected or incorporated into the soil.

(L) Application of bulk sludge, by any person, on frozen or snow covered ground is prohibited unless it is demonstrated, to the satisfaction of the department, that there are no other reasonable disposal methods available and there is absolutely no likelihood that the sludge will enter the waters of the state, or except as provided in par. (m).

(m) Application of bulk sludge on frozen or snow covered soils may be approved by the department on a case-by-case basis until storage is available, as required in s. NR 204.10. Department approvals for application on frozen or snow covered soils shall require the following restrictions at a minimum:

1. Sites or fields used shall have slopes less than or equal to 2%.

2. An application rate of less than 10,000 gal/acre.

3. Application is not allowed within 750 feet of any surface water, wetland or floodplain.

(n) When a WPDES permit requires testing for radium-226 and the sludge is subsequently found to contain radium-226, the land application of the sludge shall be terminated when the soil level of radium-226 equals or exceeds 2 pico curies per gram of soil on a dry weight basis in the top 12 inches of soil. In addition to other criteria in this section, the following conditions shall be adhered to when land applying sludge containing radium-226:

1. The soil pH shall be at least 6.0 prior to the application of sludge containing radium-226. This pH shall be maintained during the period the site is used for the land application of sludge containing radium-226.

2. The soil shall have at minimum a 6 inch layer with a clay content of at least 18% within the top 5 feet of the soil profile and be above the seasonal high groundwater level and bedrock. This determination shall be based primarily on the detailed county soil survey books.

3. The soil shall have at minimum a 6 inch layer with an organic matter content of at least 12 tons/acre within the top 5 feet of soil and be above seasonal high groundwater or bedrock. This determination shall be based primarily on the on-site soil test.

4. The department may on a case-by-case basis conditionally approve fields that do not meet all criteria established in subds. 1. to 3., where evaluation of sludge characteristics, soil features and management practices indicate no adverse impacts to the environment or public health would result.

5. Sludge containing radium-226 may not be applied to fields used for the production of tobacco.

6. Application of radium-226 sludge shall be terminated when the calculated site loading reaches 1640 microcuries per acre. To continue site use, the permittee shall sample soils according to a plan approved by department, and show that soil radium-226 activity is below 2 pCi/g in the top foot of soil.

Note: 1 microcurie = 10^{-6} curies, 1 picocurie = 10^{-12} curies

7. If plant tissue sampling for radium-226 is required by the department in the permit, it shall be done in accordance with a department approved method. The number of plant tissue samples obtained shall be identical to the number of subsamples needed to constitute a composite soil sample and shall yield a wet weight of approximately 4 pounds. The entire above ground plant shall be obtained as near as possible to the soil subsample site. Plant samples shall then be segregated between the above ground tissue, such as stems, stalks, petioles or leaves, and the "edible" portion, such as fruit, grain or seed.

(o) Table B site restrictions apply to all sludges that are applied to land in bulk unless prior department approval has been received. The distances stated in Table B are minimums. Table C applies to all bulk sludge designated as Class B with respect to pathogens that is applied to land. The intervals of time listed in Table C refer to the time period between the sludge application and harvesting. The permittee or land applier shall supply the farmer with the information in Table C, in a timely manner, to ensure compliance with these requirements.

Table B
Sludge Applied to the Land in Bulk

Site Criteria	Surface	Incorporation	Injection
Depth to bedrock	3 ft.	3 ft.	3 ft.
Depth to high groundwater	3 ft.	3 ft.	3 ft.
Allowable slopes	0-6%	0-12%	0-12%
Distance to wells			
—Community water supply or school	1000 ft.	1000 ft.	1000 ft.
—Other*	250 ft.	250 ft.*	250 ft.*
Minimum distance to residence, business or recreation area	500 ft.	200 ft.	200 ft.
Minimum distance to residence or business w/permission	250 ft.	100 ft.	100 ft.
Distance to rural schools and health care facilities	1000 ft.	1000 ft.	500 ft.
Distance to property line	50 ft.**	25 ft.**	25 ft.**
Minimum distance to streams, lakes, ponds, wetlands or channelized waterways connected to a stream, lake, pond or wetland.			
—Slope 0 to < 6	200 ft.	150 ft.	100 ft.
—Slope 6 to <12	Not allowed	200 ft.	150 ft.
Minimum distance to grass waterways, or dry run with a 50 foot range grass strip. ***			
—Slope 0 to <6	100 ft.	50 ft.	25 ft.
—Slope 6 to <12	Not allowed	100 ft.	50 ft.
Soil permeability range (in/hr)	0.2-6.0	0-6.0	0-6.0

* Separation distances to non-potable wells used for irrigation or monitoring may be reduced to 50 ft. if the sludge is incorporated or injected and the department does not determine that a greater distance to the wells is required to protect the groundwater.

** The distances to property lines may be reduced with the written permission of both property owners.

*** Separation distances not required if grass waterway or dry run with grass strip is contained within a site or field for the purpose of erosion control.

(4) SLUDGE QUALITY (STANDARDS AND PROCESSES). (a) In addition to other requirements in this chapter, there are 3 categories of requirements of sludge quality which must be satisfied before the sludge may be applied to land. The categories are listed in subs. (5), (6) and (7). They are metal concentrations, pathogen densities and treatment processes, and vector attraction reduction. Each category is divided into 2 levels which determine a higher or lower quality of sludge. They are: for metals—pollutant concentrations and ceiling concentrations, specified in sub. (5); for pathogens—class A and class B, specified in sub. (6); and for vector attraction reduction—treatment processes and physical barriers, specified in sub. (7). A sludge shall meet the minimum, or lower quality, requirements for each category in order to be land applied. When a sludge meets the higher quality level in all 3 categories, it is considered exceptional quality sludge. When a sludge meets the higher level in the metals category it is considered high quality and exempt from tracking cumulative metal loadings to the application sites.

(b) When a sludge is exceptional quality or when it is bagged and satisfies the requirements in sub. (5) (c) or (d), it may be used on lawns or home gardens. Sludge not meeting those requirements may not be used on lawns or home gardens.

(c) Sludge that will be sold or given away in a bag shall, at a minimum, satisfy the class A pathogen requirements in sub. (6) (a), one of the vector attraction reduction process requirements in sub. (7) (a) to (i) and either the high quality pollutant concentration limits in Table 3 or the ceiling concentration limits in Table 1. Bagged sludge that does not meet the high quality limits in Table 3 is subject to the requirements in sub. (5) (d).

Table C
Minimum Duration Between Application and Harvest\grazing\access for Class B Sludge Applied to the Land

Criteria	Surface	Incorporation	Injection
Food crops whose harvested part may touch the soil/sludge mixture (beans, melons, squash, etc.)	14 months	14 months	14 months
Food crops whose harvested parts grow in the soil (potatoes, carrots, etc.)	20/38 months*	20/38 months*	38 months
Feed or other food crops (field corn, hay, sweet corn, etc.)	30 days	30 days	30 days
Grazing of animals	30 days	30 days	30 days
Public access restriction			
—High potential**	1 year	1 year	1 year
—Low potential	30 days	30 days	30 days

*The 20 month duration between application and harvesting applies when the sludge that is surface applied stays on the surface for 4 months or longer prior to incorporation into the soil. The 38 month duration is in effect when the sludge remains on the surface for less than 4 months prior to incorporation.
**This includes application to turf farms which place turf on land with a high potential for public exposure.

(5) METAL CONCENTRATIONS. (a) Table 1 lists the ceiling concentrations of metal pollutants for sludge that is land applied. Sludge may not be applied to land if the concentration of pollutants in the sludge exceeds any of the ceiling concentration limits established in Table 1. Options available if a ceiling concentration in sludge is exceeded include: retesting, mixing with another sludge or other material and demonstration of compliance with Table 1, landfilling or incinerating.

(b) Table 2 lists the cumulative metal pollutant loading limits for sites on which bulk sludge is applied. If bulk sludge is applied to land and the sludge does not meet the pollutant concentration limits in Table 3, then the limits in Table 2 shall apply to all land application sites. Bulk sludge that does not meet the Table 3 concentration limits may not be applied to sites where the cumulative pollutant loading limits in Table 2 have been reached. When bulk sludge that does not meet Table 3 limits is applied to land, the permittee shall monitor and retain cumulative pollutant loadings records to each site, and shall notify the department, in their annual report, when any site reaches 90% of the allowable cumulative loading for any metal established in Table 2.

(c) Sludge shall meet all the pollutant concentration limits established in Table 3, to be considered high quality. High quality sludge is exempt from the cumulative loading limits specified in par. (b).

Table 1
Ceiling Concentrations

Pollutant	Ceiling concentrations (milligrams per kilogram—ppm) (dry weight)
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

Table 2
Lifetime Cumulative Metal Loadings

Pollutant	Kg/ha	lbs/ac
Arsenic	41	36
Cadmium	39	34
Copper	1500	1339
Lead	300	268
Mercury	17	15
Molybdenum	Deleted Until EPA	Revises
Nickel	420	375
Selenium	100	89

Note: The department strongly encourages permittees to produce sludge which meets the high quality pollutant concentration limits set in Table 3.

Table 3
Pollutant Concentrations

Pollutant	Monthly average concentrations (milligrams per kilogram—ppm) (dry weight)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Molybdenum	Deleted Until EPA Revises
Nickel	420
Selenium	100
Zinc	2800

(d) 1. Table 4 lists the maximum annual pollutant loading rates for sites where bagged sludge that is not high quality is land applied. If bagged sludge does not meet all of the pollutant concentrations in Table 3, the pollutant loading requirements in Table 4 apply to all land application sites utilized, including lawns and home gardens. To ensure that the annual pollutant loading rates in Table 4 are not exceeded, the amount of sludge applied annually shall be less than the annual sludge application rate calculated as follows:

$$\text{ASAR} = (\text{APLR})/(\text{C} \times 0.001)$$

Where:

ASAR = Annual sludge application rate in metric tons per hectare per 365 day period calculated on a dry weight basis.

APLR = Annual pollutant loading rate for a pollutant in kilograms per hectare per 365 day period, as stated in Table 4.

C = Pollutant concentration in milligrams, per kilogram of total solids calculated on a dry weight basis.

0.001 = A conversion factor.

2. When distributing bagged sludge that is subject to the Table 4 loading rates, the permittee shall provide an information sheet to each person receiving the bagged sludge or shall print instructions on the bag or container or label. The label instructions or information sheet shall contain the following information, at a minimum:

a. The name and address of the permittee who generated the sludge.

b. A statement that prohibits the use of the sludge except in accordance with the instructions on the label or information sheet.

c. An annual sludge application rate as calculated in this subsection that will ensure that the annual pollutant loading rate limits, established in Table 4, are not exceeded.

d. The percentage content of nitrogen, phosphorus and potassium present in the sludge.

Table 4
Annual Pollutant Loading Rate

Pollutant	Kg/ha	lbs/ac
Arsenic	2.0	1.78
Cadmium	1.9	1.69
Copper	75	66.9
Lead	15	13.4
Mercury	0.85	0.76
Molybdenum	Deleted Until EPA	Revises
Nickel	21	18.7
Selenium	5	4.4
Zinc	140	125

(6) PATHOGEN DENSITIES AND TREATMENT PROCESSES. Sludge may not be land applied unless the Class A pathogen requirements in par. (a) or the Class B pathogen requirements in par. (b) are satisfied. These requirements are summarized in Tables 5 and 6. Bagged sludge and exceptional quality sludge shall satisfy the Class A requirements in par. (a).

(a) One of the requirements in each subds. 1. and 2. shall be met for sludge to be classified as Class A. Class A requirements shall be met prior to or at the time of meeting the vector attraction reduction requirements specified in sub. (7), unless the process used to meet the vector requirements is one of either sub. (7) (f), (g) or (h). Class A requirements are summarized in Table 5:

Table 5
Class A

Parameter	Unit	Limit
Fecal Coliform	MPN/g TS	1000
or		
Salmonella	MPN/4g TS	3
AND, ONE OF THE FOLLOWING PROCESS OPTIONS		
Temp/Time based on % Solids	Alkaline Treatment	
Prior test for Enteric Virus/Viable Helminth Ova	Post test for Enteric Virus/Viable Helminth Ova	
Composting	Heat Drying	
Heat Treatment	Thermophilic Aerobic Digestion	
Beta Ray Irradiation	Gamma Ray Irradiation	
Pasteurization	PFRP Equivalent Process	

1. 'Pathogen or indicator organism densities.' The required fecal coliform density or salmonella density shall be satisfied immediately after the treatment process in subd. 2. is completed. If the material is bagged or distributed at that time, no re-testing is required. If the material is bagged, distributed or land applied at a later time, the sludge shall be retested and the requirements of subd. 1. a. or b. satisfied at that time also, to ensure that regrowth of the organisms has not occurred.

a. The sludge shall have a fecal coliform density equal to or less than 1,000 most probable number (MPN) per gram of total solids on a dry weight basis. Compliance with this requirement shall be demonstrated by calculating the geometric mean of at least 7 separate samples; or

b. The sludge shall have a salmonella density equal to or less than 3 MPN per 4 grams of total solids on a dry weight basis; and

2. 'Pathogen treatment processes.' a. Satisfy the requirements as specified in 40 CFR 503.32 (a). 40 CFR 503.32 (a) as stated on January 1, 1996 is incorporated by reference; or

Note: Copies of this section are available for inspection in the offices of the department of natural resources, secretary of state, and the legislative reference bureau, Madison, Wisconsin, or may be purchased from the superintendent of documents, U.S. government printing office, Washington DC 20402.

b. Compost the sludge using either within-vessel or static aerated pile composting methods and maintain the temperature of the sludge at 55° C or higher for 3 days, or compost the sludge using windrow composting methods and maintain the temperature of the sewage sludge at 55° C or higher for 15 days or longer. During this period, a minimum of 5 windrow turnings are required; or

c. Dry the sludge by direct or indirect contact with hot gases to reduce the moisture content of the sludge to 10% or lower. Either the temperature of the sewage sludge particles shall exceed 80° C or the wet bulb temperature of the gas in contact with the sludge as the sludge leaves the dryer shall exceed 80° C; or

d. Heat liquid sludge to a temperature of 180° C or higher for 30 minutes; or

e. Agitate liquid sludge with air or oxygen to maintain aerobic conditions. The mean cell residence time for the sludge shall be 10 days at 55° to 60° Celsius; or

f. Irradiate the sludge with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature; or

g. Sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at dosages of at least 1.0 megarad at room temperature; or

h. Maintain the temperature of the sludge at 70° Celsius or higher for 30 minutes or longer; or

i. Treat the sludge in a process that is equivalent to a process to further reduce pathogens, as approved by the department.

(b) Either subd. 1. or one of the requirements in subd. 2. shall be met for the sludge to be classified as Class B. The Class B requirements are summarized in Table 6:

Table 6
Class B

Parameter	Unit	Limit
Fecal Coliform	MPN or CFU/g TS	2,000,000
OR ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent	

1. 'Fecal coliform density.' The sludge shall have a fecal coliform density of less than or equal to 2,000,000 most probable number (MPN) or colony forming units (CFU) per gram of total solids on a dry weight basis. Compliance with this requirement shall be demonstrated by calculating the geometric mean of at least 7 separate samples; or

2. 'Pathogen treatment processes.' a. Agitate the sludge with air or oxygen to maintain aerobic conditions for a mean cell residence time and temperature between 40 days at 20° C and 60 days at 15° C; or

b. Dry the sludge on sand beds or on paved or unpaved basins for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature shall be above 0° C; or

c. Treat the sludge in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35° to 55° C and 60 days at 20° C; or

d. Compost the sludge using either the within-vessel, static aerated pile, or windrow composting methods and raise the temperature of the sludge to 40° C or higher for 5 days. For 4 hours during the 5 days, the temperature in the compost pile shall exceed 55° C; or

e. Add sufficient lime to the sludge to raise the pH to 12 after 2 hours of contact; or

f. Treat the sludge in a process that is equivalent to a process to significantly reduce pathogens, as approved by the department.

(7) VECTOR ATTRACTION REDUCTION. Sludge may not be land applied unless one of the 11 vector attraction reduction options in pars. (a) to (k) is satisfied. Paragraphs (a) to (i) are processes which treat the sludge to reduce its attraction to vectors. Bagged sludge and exceptional quality sludge shall satisfy one of the requirements in pars. (a) to (i). The options are summarized in Table 7.

(a) The mass of volatile solids in the sludge shall be reduced by a minimum of 38% between the time the sludge enters the digestion process and the time it either exits the digester or a storage facility; or

(b) The specific oxygen uptake rate SOUR for aerobic sludge shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids on a dry weight basis, corrected to 20° Celsius; or

(c) Demonstrate through additional digestion, in a bench-scale test, that additional volatile solids reduction for anaerobically digested sludge is less than 17%. This shall be demonstrated by digesting a portion of the previously digested sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30° and 37° Celsius. This requirement is satisfied when, at the end of the test, volatile solids have been reduced by less than 17%, as measured from the beginning to the end of the test; or

(d) Demonstrate through additional digestion, in a bench scale test, that additional volatile solids reduction for aerobically digested sludge is less than 15%. This shall be demonstrated by digesting a portion of the previously digested sludge, at a concentration of 2% solids or less, aerobically in the laboratory in a bench-scale unit for 30 additional days at a temperature of 20° Celsius. Sludge with higher percent solids shall be diluted with effluent down to 2% at the start of the test. This requirement is satisfied when, at the end of the test, volatile solids have been reduced by less than 15%, as measured from the beginning to the end of the test; or

(e) Sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sludge shall be higher than 40°Celsius and the average temperature of the sludge shall be higher than 45°Celsius; or

(f) The pH of the sewage sludge shall be raised to 12 or higher

by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 2 hours and then at 11.5 or higher for an additional 22 hours; or

(g) Dry the sludge to 75% total solids when the sludge contains no unstabilized solids from primary treatment; or

(h) Dry the sludge to 90% total solids when the sludge contains unstabilized solids from primary treatment; or

(i) Treat the sludge in a process which is equivalent to one of the vector attraction reduction requirements specified in pars. (a) to (h), as approved by the department.

Table 7
Vector Attraction Reduction
(One of the following shall be satisfied)

Option	Limit	Where/When Requirements Must Be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O_2/hr/g TS	On aerobic stabilized sludge
Anaerobic benchscale test	<17% VS reduction	On anaerobic digested sludge
Aerobic benchscale test	<15% VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, T >40°C and avg T >45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	When applied or bagged
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Equivalent process	Determined by the department	Varies with process
Injection	—	When applied
Incorporation	—	When applied

(j) Injection below the soil surface

1. No significant amount of the sludge shall be present on the land surface within one hour after the sludge is injected.

2. If the injected sludge is Class A, the sludge shall be injected within 8 hours after being discharged from the pathogen treatment process; or

(k) Incorporation

1. Class B sludge shall be incorporated within 6 hours, unless otherwise specified by the department.

2. Class A sludge shall be surface applied within 8 hours after being discharged from a pathogen treatment process. It then shall be incorporated within 6 hours of surface application, unless otherwise specified by the department.

(8) APPLICATION RATES. (a) The amount of available nitrogen from sludge and other nitrogen sources applied per growing season may not exceed the nitrogen requirement of the crop, as determined by recommendations based on the University of Wisconsin-extension bulletin A-2100, dated April 1991 and incorporated by reference in s. NR 204.06 (6) (c). The department may authorize exceptions to this requirement on a case-by-case basis. Review for exceptions will consider proposals such as mine or other site reclamation projects.

(b) Unless specific mineralization rates are determined by the permittee, the following mineralization rates are to be used in calculating the available organic nitrogen from initial sludge application and from carryover of previous years' application: 25%-12%-6% in years 1 through 3.

(c) Bulk sludge may be applied to all leguminous crops, except soybeans, at a volume sufficient to supply 200 pounds per acre of available nitrogen. If sludge is applied to soybeans, the loading shall be limited to 140 pounds per acre of available nitrogen.

(d) Bulk sludge that is land applied and does not meet the pollutant concentrations in Table 3 of sub. (5) (c) may not be applied if the cumulative metals loadings listed in Table 2 of sub. (5) (b) have been reached.

(e) The department shall be notified in writing, by the permittee, when 90% of the lifetime cumulative metal loadings has been reached on any site or field. From that point on, all loading to that site or field shall be individually monitored and reported.

(f) The department may, on a case-by-case basis in the permit, require additional monitoring and limit the land application of sludge containing pollutants that may result in environmental degradation or threaten public health.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.

NR 204.08 Landfill disposal. (1) GENERAL. Sewage sludge may not be disposed of in a municipal solid waste landfill unless the landfill meets the requirements of chs. NR 500 to 538 and is an approved facility as defined in s. 289.01 (3), Stats. Any facility accepting sewage sludge shall be approved by the department in writing to accept sewage sludge. Disposal of sewage sludge in a municipal solid waste landfill shall be in accordance with ss. NR 506.13 and 506.14. Sewage sludge may not be disposed of in a surface disposal unit as defined in s. NR 204.03 (63).

(2) APPROVAL. The permittee shall obtain approval from the department prior to the disposal of sludge at a Wisconsin licensed landfill.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96; correction in (1) made under s. 13.93 (2m) (b) 7., Stats., Register, November, 1996, No. 491; correction in (1) made under s. 13.92 (4) (b) 7., Stats., Register February 2010 No. 650.

NR 204.09 Alternative uses of sludge. Alternative uses of sludge such as land application on sod farms, nurseries, Christmas tree plantations, mined land reclamation sites, restoration of construction sites or other drastically disturbed sites, research plots, highway right-of-ways and medians, fallow lands, set-aside lands as covered by the Acreage Conservation Reserve (ACR) program, final cover at landfills and use in building materials may not be conducted unless department approval is obtained. Sludge used to generate energy may be approved on a case-by-case basis. Department approval will consider factors such as the nature of the alternative use proposed, sludge quality, number of applications that are proposed, loading of pollutants to the land, air and water, and the proximity to waters of the state. Proposals for alternative uses of sludge may include the land application site evaluation information as required by s. NR 204.06 (6) and shall include any additional information that would allow the department to make a determination that the proposed use is beneficial and will not result in detrimental effects to the environment, public health or wildlife.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.

NR 204.10 Storage facilities. (1) GENERAL. (a) No person may construct or use any sludge storage facility without obtaining department approval. All facilities shall be designed

and operated in accordance with the appropriate requirements in ch. NR 110 and this chapter.

(b) All municipal mechanical treatment plants shall have the ability to store sludge for 180 days. Storage shall be available by October 1, 1998 for facilities with a design flow of 1 million gallons per day or greater and by October 1, 2000 for facilities with a design flow of less than 1 million gallons per day. This storage requirement only applies to facilities which recycle sludge through land application or site reclamation projects. Wastewater treatment lagoons are also exempt from this requirement. An agreement with an approved municipal solid waste landfill, an incinerator, another permittee or other approved facility during winter months may be construed as acceptable storage, although a minimum of 15 days storage capacity shall be provided for emergency situations. Written documentation of an agreement shall be submitted to the department as evidence of compliance with this requirement. If a permittee does not currently have adequate storage, the permittee shall develop with the department a compliance schedule to obtain adequate sludge storage.

(2) OTHER STORAGE FACILITIES. The department may determine leasing to be an acceptable alternative to construction if the lease is for a minimum of 5 years with an option for another 5 years when the WPDES permit is reissued. If leasing is a temporary solution while a permittee is constructing long-term storage or developing an alternative long-term solution, the contract may be for less than 5 years. Sludge may be stored individually or in combination with other waste at sites such as, but not limited to, manure storage facilities and septage storage lagoons following the review and approval of the design and acceptance by the department of an operations report that shall demonstrate compliance with this chapter. This report shall contain at the minimum:

(a) The location of the storage facility.

(b) The type and volume of the storage facility, including construction details to demonstrate the integrity of the system and compliance with ch. NR 110.

(c) Sufficient site characteristics information to evaluate the environmental impact and suitability of the sludge storage location.

(d) The name and address of the owners of the storage facility.

(e) Any contractual agreements the permittee enters into with another party.

(f) Sampling and analysis results of the combined wastes for nutrients and any other applicable parameters which demonstrate compliance with this chapter. Testing shall be conducted in accordance with requirements in the WPDES permit and this chapter.

(g) The methods to be used for land application of the sludge or sludge mixture.

(h) A list of the sites or fields where the stored sludge will be recycled, unless the sludge produced in the mixture meets the exceptional quality sludge criteria.

(3) EXTENDED STORAGE. If a person stores or treats a batch of sludge for longer than 2 years, the person shall retain the following information during the storage period:

(a) The name and address of all generators of the sludge.

(b) The name and address of the person who owns the storage or treatment facility.

(c) The location or address of the facility.

(d) A brief explanation of why the sludge needs to remain in storage or treatment for longer than 2 years before it is land applied or disposed of.

(e) The approximate time period when the sludge will be land applied or disposed of.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.

NR 204.11 Sludge management plan. (1) GENERAL. The department may require the permittee to develop a sludge management plan, submit the plan to the department for approval and operate in compliance with the approved plan. The plan shall include a description of the facility's sludge management program and how the permittee plans to operate the facility in compliance with the requirements of this chapter.

(2) IMPORTED SLUDGE. Any person who is responsible for importing bulk exceptional quality sludge into this state shall submit a sludge management plan to the department. Bulk exceptional quality sludge may not be imported until the department has approved the sludge management plan.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.

NR 204.12 Grit and screenings disposal. All grit and screenings generated from a facility shall be disposed of at a solid waste disposal facility licensed under chs. NR 500 to 538.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96; correction made under s. 13.92 (4) (b) 7., Stats., Register February 2010 No 650.

NR 204.13 Sludge management program standards and requirements based upon federal regulations. (1) NEW FEDERAL REGULATIONS. In the event that new federal sludge standards or regulations are promulgated under section 405 of the clean water act, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations. The requirement in this subsection shall be included as a permit condition in all permits that regulate sludge use and disposal under this chapter.

(2) STATE ADOPTION. The department shall, as soon as possible, and in conformance with federal requirements, after the promulgation of any federal regulation establishing sludge management program standards or requirements as described in sub. (1), adopt appropriate standards or requirements for permittees subject to this chapter and ch. 283, Stats.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96; correction in (2) made under s. 13.93 (2m) (b) 7., Stats., Register, November, 1996, No. 491.

NR 204.14 Fact sheets. (1) GENERAL. The department shall prepare a fact sheet or briefing memo for any generator applying for a permit under s. NR 204.05. Information specified in this section shall be included in the fact sheet or briefing memo sent to the applicant.

(2) INFORMATION INCLUDED. The fact sheet or briefing memo shall include when applicable, the following:

(a) A brief description of the type of facility or activity which is the subject of the draft permit.

(b) The type and quantity of sludge which is or will be treated, stored, disposed of, used or recycled.

(c) A brief summary of the basis for the draft permit conditions related to sludge including references to applicable statutory or regulatory provisions.

(d) Reasons why any requested variances or alternatives to required sludge standards do or do not appear justified.

(e) Name and phone number of a person to contact for additional information.

(f) Any calculations or other information regarding the derivation of specific conditions or standards for sludge use or disposal, including a citation to applicable performance standards, the imposition of a pretreatment program for a sludge only

facility, special monitoring requirements, special sludge limitations, permits issued to individual users of a privately owned treatment works. This information should include the reasons why the conditions or standards are applicable or an explanation of how and why alternate limitations were developed.

(g) For permits that include a sludge land application program, a brief description of how each of the required elements of the land application plan addressed in the permit.

Note: This information is intended to accompany and complement, not duplicate the requirements in ch. NR 201.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.

NR 204.15 Variances. (1) GENERAL. A permittee may request a variance from any non-statutory requirement of this chapter, providing that minimum federal regulations are adhered to. The department may approve a variance from requirements of this chapter when special circumstances show that a variance will not negatively impact the environment or pose a threat to public health.

(2) REQUEST FOR VARIANCE. A request for a variance shall be submitted in writing to the department, as far in advance as possible. Each request for a variance shall contain the following:

(a) The name, address, phone number and permit number of the applicant.

(b) The section or sections of this chapter from which a variance is sought and a statement explaining why it is requested.

(c) A full description of the variance and the circumstances in which it will be used, including any pertinent background information which is relevant to making a determination on the justification of granting the variance. Full detail of the permittee's sludge management operation and plan should be included here with specific details of any proposed alternative management plan; and

(d) A statement as to whether the same or similar variance has been requested previously, and if so, outcome of the previous request.

(3) APPROVAL OF VARIANCE. A copy of each variance request and the department response shall be retained in the permittee's permit file.

History: Cr. Register, December, 1995, No. 480, eff. 1-1-96.