Chapter NR 181

HAZARDOUS WASTE MANAGEMENT

Subchapter I

General

NR 181.01 Purpose. The purpose of these rules is to establish criteria for identifying the characteristics of hazardous waste and to establish a list of solid wastes identified as hazardous based on the use of the criteria, which shall be used by a solid waste generator, transporter, or owner or operator of a solid waste treatment, storage, or disposal facility to determine if the waste handled is a hazardous waste subject to regulation; to establish minimum standards defining acceptable hazardous waste management practices applicable to owners or operators of facilities which recycle, treat, store, or dispose of hazardous waste; to establish standards for the transportation and labeling of hazardous waste; to establish standards for the review of plans, and the issuance of licenses; and to describe waste management fund contributions and the closure and long-term care responsibilities of the owners or operators of hazardous waste facilities which will be utilized for the protection of health and the environment. These rules are adopted pursuant to ss. 144.01, 144.025, 144.43 through 144.47, 144.60 through 144.74, 144.76, and 227.014, Stats.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.02 Applicability. These rules are applicable to persons who generate, transport, store, treat or dispose of solid waste defined as hazardous waste under s. NR 181.12, with the following exceptions:

(1) The provisions of this chapter are not applicable to the generation, transportation, storage, treatment or disposal of metallic mining wastes resulting from a mining operation as defined in s. 144.81(5), Stats., except that generators of metallic mining wastes are required to comply with s. NR 181.22 to determine whether their wastes are hazardous or nonhazardous.

Note: Metallic mining wastes are regulated under ch. NR 182.

(2) The provisions of this chapter are not applicable to the generation, transportation, storage, treatment or disposal of polychlorinated biphenyls (PCBs) except where this chapter or portions of this chapter are referenced in ch. NR 157, which has been adopted under s. 144.79, Stats., for the regulation of PCBs.

Note: The provisions of this chapter are consistent with, and in some instances identical to, federal regulations found in 40 CFR parts 124, 260 through 265 and 270, July 1, 1983.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. (1), renum. (2) and (3) to be (1) and (2) and am. Register, June, 1985 No. 354, eff. 7-1-85.

NR 181.03 Severability. History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.04 Definitions. (1) "Above ground tank" means a tank with 90% or more of its storage capacity above the final ground elevation.

(1m) "Active portion" means that portion of a storage, treatment, or disposal facility where operations are being or have been conducted after the effective date of these rules and is not a closed portion.

(2) "Alternate facility" means that hazardous waste facility which has been designated on a manifest pursuant to s. NR 181.23 (2) (d) as the facility where the hazardous waste may be taken in the event an emergency prevents delivery of the waste to the designated facility.

(3) "Aquifer" means a geologic formation, part of a formation or connected group of formations which are saturated and can transmit groundwater.

(4) "ASTM" means the American society for testing and materials.

(5) "Authorized representative" means the person responsible for the overall operation of a facility, or part of a site or facility, such as a plant manager, superintendent or person of equivalent responsibility.

(6) "Authorized state" means a state that has been authorized by EPA under 42 USC 6926, and federal regulations promulgated under that section of the resource conservation and recovery act, to administer a state hazardous waste program in place of the federal hazardous waste program in that state.

(6g) "Beneficial use or reuse of a hazardous waste" means the use or reuse of hazardous waste as an ingredient or feedstock in production processes, the use of hazardous waste as a substitute for raw material in processes that usually use raw materials as feedstocks or using or reusing hazardous waste as a substitute for commercial chemical products. This term does not include burning or the legitimate recovery or reclamation of a hazardous waste.

(6r) "Boiler" means an enclosed device using controlled flame combustion and having the following design characteristics:

(a) The unit has provision for heat recovery; and

(b) The combustion chamber and heat recovery section are of integral design. The combustion chamber and heat recovery sections are of integral design if formed physically into one manufactured or assembled unit. (A unit in which the furnace or combustion chamber and heat recovery section are joined by ducts or connections carrying flue gas is not integrally designed); and

(c) Significant heat recovery of 25 to 35% of the total heat recovered by the unit takes place in the combustion chamber section by radiant transfer of heat to the transfer medium.

Note: Examples of a transfer medium are water, steam, molten salt and chemical heat transfer fluid.

(7) "CFR" means the code of federal regulations.

(7g) "Certification" means a statement of professional opinion based upon knowledge and belief.

(7r) "Clay" or "clay soil" means a soil which is a fine grain soil classified as CL or CH under the unified soil classification system specified in ASTM standard D-2487-69 (1975).

Note: The publication containing this standard may be obtained from:

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

The publication containing this standard is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(8) "Closed portion" means that portion of a facility which an owner or operator has closed in accordance with the approved facility closure plan and all applicable closure requirements.

(9) "Closing" has the meaning specified under s. 144.43 (1m), Stats.

(10) "Closure" means those actions taken by the owner or operator of a hazardous waste facility to prepare the facility for long-term care and to make it suitable for other uses.

(11) "Closure plan" means a written report, generally submitted with the plan of operation, detailing the measures that will be taken by a hazardous waste facility owner or operator to ensure and effect proper closure.

(12) "COD" means chemical oxygen demand.

(13) "Combustion zone" means that portion of the internal capacity of an incinerator where the gas temperatures of the materials being burned are within 100°C of the specified operating temperature, and there is oxygen present in excess of the theoretical amount necessary to completely oxidize any combustible materials.

(15) "Construct" means to engage in a program of on-site construction including but not limited to the erection or building of new structures, replacement, expansion, remodeling, alteration or extension of existing structures, the acquisition and installation of initial equipment associated with the new or expanded, remodeled structures, and site clearing, grading, dredging or landfilling.

(16) "Construction observation report" means a written report submitted under the seal of a registered professional engineer advising that a hazardous waste facility has been constructed in substantial compliance with a department approved plan of operation.

(17) "Container" means any portable enclosure in which a material is stored, transported, treated, disposed of, or otherwise handled.

(18) "Contingency plan" means a document setting out an organized, planned and coordinated course of action to be followed in the event of a fire, explosion, or discharge of hazardous wastes or hazardous waste constituents into the environment which has the potential for endangering human health or the environment.

(19) "Critical habitat areas" means any habitat determined by the department to be critical to the continued existence of any endangered species listed in ch. NR 27.

(20) "Department" means the Wisconsin department of natural resources.

(21) "Design capacity" means the total design volume of a disposal facility and includes the volume of waste and daily or intermediate cover, but does not include final cover or topsoil.

(22) "Designated facility" means a hazardous waste facility or recycling facility which has been designated on a manifest by the generator

pursuant to s. NR 181.23 (2) as the facility where the hazardous waste must be taken unless an emergency prevents delivery to that facility.

(23) "Detrimental effect on ground or surface water" means having a significant damaging impact on ground or surface water quality for any present or future consumptive or nonconsumptive uses.

(24) "Discharge" means, but is not limited to, spilling, leaking, pumping, pouring, emitting, emptying or dumping into the air, soil or waters of the state or the environment.

(25) "Disposal" has the meaning specified under s. 144.61 (3), Stats.

(26) "Disposal facility" means a facility or part thereof where hazardous waste disposal occurs and where the waste will remain after closure.

(27) "DOT" means the United States department of transportation.

(28) "DOT identification number" means the hazardous materials identification number assigned by the DOT, in 49 CFR 172.101 and 172.102, October 1, 1983.

(29) "Elementary neutralization unit" means a device which:

(a) Is used for neutralizing wastes which are hazardous wastes only because they exhibit the corrosivity characteristic defined in s. NR 181.15 (3) or are listed in s. NR 181.16 only for this reason; and

(b) Meets the definition of tank, container, transport vehicle or vessel.

(30) "EPA" means the United States environmental protection agency.

(31) "EPA administrator" means the administrator of the EPA or anyone delegated authority to act for the adminstrator of the EPA.

(31m) "Facility" means all contiguous land and structures, other appurtenances, and improvements on the land used for treating, storing or disposing of hazardous waste. A facility may consist of several treatment, storage or disposal operating units or regulated units.

(32) "Feasibility report" means a report for a specific hazardous waste facility that describes the facility, surrounding area, and proposed operation in terms of land use, topography, soils, geology, groundwater, surface water, proposed waste quantities and characteristics, preliminary facility design concepts, and any anticipated environmental impacts.

(32m) "Feasibility and plan of operation report" means a single report for a specific hazardous waste facility that includes the elements of both a feasibility report and a plan of operation.

(33) "Final cover" means cover material that is applied upon closure of a landfill and is permanently exposed at the surface.

(34) "Floodplain" means the land which has been or may be hereafter covered by flood water during the regional flood as defined in ch. NR 116, and includes the floodway and the flood fringe as defined in ch. NR 116.

(35) "Fluid" means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas or any other form or state.

(37) "FR" means the federal register.

(38) "Freeboard" means the vertical distance between the top of a tank or surface impoundment dike and the surface of the waste contained therein.

(39) "Free liquids" means liquids which readily separate from the solid portion of a waste under ambient temperature and pressure.

(40) "Generation" has the meaning specified in s. 144.61 (4), Stats.

(41) "Generation site" means the contiguous site at or on which one or more hazardous wastes are generated. A generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste but is considered a single generation site if the site is contiguous.

(42) "Generator" means any person, owning or operating a generation site, whose act or process produces a hazardous waste identified or listed in subch. II.

(43) "Groundwater" means water in a saturated zone beneath the land surface.

(43m) "Hazardous substance" has the meaning specified under s. 144.01(4m), Stats.

(44) "Hazardous waste" or "waste" means a solid waste that fits the definition of hazardous waste in s. NR 181.12.

(45) "Hazardous waste boundary" means, for disposal facilities, the outermost perimeter of the hazardous waste projected in the horizontal plane as would exist at the completion of the disposal activity or, for storage or treatment facilities, the outermost boundary of hazardous waste storage or treatment.

(45m) "Hazardous waste constituent" or "hazardous constituent" means a substance which caused the department to list a hazardous waste in s. NR 181.16, or a contaminant listed in Table I in s. NR 181.15.

(46) "Hazardous waste facility" has the meaning specified under s. 144.61(5m), Stats.

(47)"Hazardous waste management" has the meaning specified under s. 144.61(6), Stats.

(48) "Hazardous waste number" means the number assigned to each hazardous waste listed in s. NR 181.16 and to each characteristic identified in s. NR 181.15.

(49) "Hydraulic gradient" means the change in hydraulic pressure per unit of distance in a given direction.

(50) "Identification number" or "EPA identification number" means the unique number assigned to each generator, transporter, or treatment, storage or disposal facility. This identification number is identical to the EPA identification number assigned by the EPA to each generator, transporter, or treatment, storage or disposal facility.

(51) "Incinerator" means an enclosed device using flame combustion to treat hazardous waste. This terms includes an industrial furnace or boiler.

(52) "Incompatible waste" means a hazardous waste which is unsuitable for:

(a) Placement in a particular device, site or facility because it may cause corrosion or decay of containment materials, such as the container, inner liners or tank walls.

(b) Commingling with another waste or material under uncontrolled conditions because the commingling might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mists, fumes or gases, or flammable fumes or gases.

(52m) "Industrial furnace" means any of the following devices that are integral components of manufacturing processes and use flame combustion or elevated temperature to accomplish recovery of materials or energy: cement kilns, lime kilns, aggregate kilns, phosphate kilns, blast furnace, smelting furnaces, methane reforming furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, and pulping liquor recovery furnaces. The department may decide to add devices to this list on the basis of one or more of the following factors:

(a) The device is designed and used primarily to accomplish recovery of material products;

(b) The device burns secondary materials as ingredients in an industrial process to make a material product;

(c) The device burns secondary materials as effective substitutes for raw materials in processes using raw materials as principal feed stocks;

(d) The device burns raw materials to make a material product;

(e) The device is in common industrial use to produce a material product;

(f) Other factors, as appropriate.

(53) "Injection" means the subsurface emplacement of a fluid or waste.

(54) "Inner liner" means a continuous layer of material placed inside a tank or container which protects the construction materials of the tank or container from the contained wastes or reagents used to treat the waste.

(54m) "Land treatment" means the application of waste onto the soil surface or into the soil surface through incorporation. This term does not include the placement of waste in a landfill cell.

(55) "Landfill" means a disposal facility, or part of a disposal facility, where hazardous waste is placed in or on land and which is not a surface impoundment or a land treatment facility.

(56) "Landfill cell" means a discrete volume of a hazardous waste landfill which used a liner to provide isolation of wastes from adjacent cells or wastes.

Note: Examples of landfill cells are trenches and pits.

(57) "LC^{50}" means the median lethal concentration which is the statistical estimate of the concentration of a substance in air or water neces-

sary to kill 50% of test organisms within a specified time under standardized conditions.

(58) "LD^{50}" means the median lethal dose which is the statistical estimate of the dosage of a substance necessary to kill 50% of an infinite population of test animals as determined from exposure to the substance, by any route other than inhalation, of a significant number from that population.

(59) "Leachate" means any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste.

(60) "Leachate collection and removal system" means a system capable of collecting leachate or other liquids generated within a hazardous waste landfill, and removing the leachate or other liquids from the landfill. The system is placed or constructed above a landfill liner system.

(61) "Leachate monitoring system" means a system within a facility used to monitor leachate or other liquids generated within a hazardous waste landfill. The system is placed or constructed above the landfill liner system.

Note: One example of a leachate monitoring system is a leachate head well.

(61g) "Legitimate recovery or reclamation of a hazardous waste" means the regeneration of a hazardous waste to remove contaminants so that the waste can be put to further use, the processing of a hazardous waste to recover usable materials, or the regeneration of waste to its original form. This term does not include the burning or beneficial use or reuse of a hazardous waste.

Note: Examples of legitimate recovery or reclamation are solvent recovery stills and metal recovery units, such as silver recovery from photographic waste.

(61r) "Licensee" means the person responsible for compliance with any conditions which are a part of any license issued under this chapter.

(62) "Liner" means a continuous layer of natural or man-made materials beneath and on the sides of a waste pile, surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate.

(63) "Long-term care" has the meaning specified under s. 144.43 (3), Stats.

(63m) "Long-term compatibility testing" means testing which continues for the life of the facility, including the entire period of long-term care.

(64) "Manifest" is defined in s. 144.61 (8), Stats. For the purpose of this chapter, "manifest" means the shipping document state of Wisconsin form 4400-66 or EPA form 8700-22 and, if necessary, EPA form 8700-22A, originated and signed by the generator in accordance with the requirements of s. NR 181.23.

(64m) "Manifest document number" means the EPA identification number assigned to the generator plus a unique 5 digit document number assigned to the manifest by the generator for recording and reporting purposes.

(65) "Marking" means applying the DOT descriptive name, instructions, cautions, weight or specification marks or combinations thereof required by this chapter to be placed upon the outside of containers of hazardous waste.

(66) "Monitoring" means all procedures used to systematically inspect and collect data on operational parameters of a facility or on the quality of the air, groundwater, surface water, or soils.

(67) "Nonpoint source" means a source from which pollutants emanate in an unconfined and unchannelled manner, including, but not limited to, the following:

(a) For water effluent, "nonpoint source" has the meaning specified under s. 144.25 (2) (b), Stats.

(b) For nonpoint sources of air contaminant emissions, this normally includes any landfills or surface impoundments.

(68) "On-site" means on the same or geographically contiguous property which may be divided by public or private right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing, as opposed to going along, the right-of-way. Non-contiguous properties owned by the same person, but connected by a right-of-way which the person controls and to which the public does not have access, is also considered on-site property.

(69) "Open burning" means the combustion of any material without the following characteristics:

(a) Control of combustion air to maintain an adequate temperature for efficient combustion;

(b) Containment of the combustion reaction in an enclosed device to provide sufficient residence time and turbulence for complete combustion; and

(c) Control of emission of the gaseous combustion products.

(70) "Operator" means the person who is responsible for the overall operation of a hazardous waste facility or recycling facility, or part of a hazardous waste facility or recycling facility.

(70m) "Operating unit" or "regulated unit" means a portion of a facility that performs one particular treatment, storage or disposal function.

Note: For example, a separate landfill cell, storage tank, treatment tank, or container storage area is an operating unit or regulated unit.

(71) "Owner" means the person who owns a hazardous waste facility or recycling facility, or part of a hazardous waste facility or recycling facility.

(71m) "Partial closure" means the closure of a discrete part of a facility in accordance with the applicable closure requirements of this chapter.

Note: Partial closure may include the closure of a particular unit, such as a landfill cell or trench, while other parts of the same facility continue to operate or will be placed in operation in the future.

(72) "Person" has the meaning specified under s. 144.61 (9), Stats.

(73) "Pile" means any noncontainerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage.

(74) "Plan of operation" means a report submitted for a hazardous waste facility that describes its location, design, construction, operation, maintenance, closing and long-term care.

(74m) "POHC" means a principal organic hazardous constituent.

(75) "Point source" means any discernible, confined, and discrete conveyance, including, but not limited to, the following:

(a) For water effluent, "point source" has the meaning specified under s. 147.015(8), Stats.; and

(b) For air contaminant emissions, any stack, duct, or vent from which pollutants are or may be discharged.

(76) "Proof of financial responsibility" means a bond, deposit, or proof of an established escrow account, trust account or other proof of financial responsibility satisfactory to the department ensuring that sufficient funds will be available to comply with the closure and long-term care requirements of this chapter and the approved plan of operation.

(77) "Publicly owned treatment works" or "POTW" means any device or system used in the treatment, including recycling and reclamation, of municipal sewage or industrial wastes of a liquid nature which is owned by the state or a municipality. This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

(78) "Recharge zone" means an area through which water enters an aquifer.

(78g) "Recycling" means the beneficial use, reuse or legitimate recovery or reclamation of a hazardous waste. Recycling includes the recovery of energy from hazardous waste.

(78r) "Recycling facility" means a treatment facility where hazardous waste is recycled and may include a facility where hazardous waste has been generated.

(79) "Registered professional engineer" means a professional engineer registered as such with the Wisconsin examining board of architects, professional engineers, designers and land surveyors.

(80) "Reporting quarter" means the 3 month time period covered by each quarterly report. The reporting quarters end on the last day of March, June, September, and December.

(81) "Representative sample" means any sample of a universe or whole, such as groundwater or hazardous waste, which can be expected to exhibit the average properties of the universe or whole. Methods for obtaining representative samples of hazardous wastes are given in appendix I.

(81m) "Resource conservation and recovery act" has the meaning specified under s. 144.61(9m), Stats.

(82) "Retention time" means the time hazardous waste is subjected to the combustion zone temperature in an incinerator.

(83) "Run-off" means any rainwater, leachate or other liquid that drains over land, from any part of a hazardous waste facility.

(84) "Run-on" means any rainwater, leachate, or other liquid that drains over land onto any part of a hazardous waste facility.

(85) "Saturated zone" means that part of the earth's crust in which all voids are filled with water.

(86) "Schedule of compliance" means a schedule of remedial measures including an enforceable sequence of interim requirements leading to compliance with the requirements of this chapter.

(87) "Short-term compatibility testing" means testing which is performed in the laboratory and continues for a minimum of 180 days.

(88) "Sludge" means any solid, semi-solid, or liquid waste generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant or air pollution control facility, exclusive of any of the treated effluent from a wastewater treatment plant.

(89) "Small quantity accumulation facility" means a facility which stores only hazardous waste shipments from small quantity generators in compliance with s. NR 181.13(9).

(90) "Solid waste" has the meaning specified under s. 144.01(15), Stats.

Note: The domestic sewage exemption in the definition of "solid waste" applies to non-domestic waste once mixed with sanitary wastes in a sewer system leading to a POTW. An industrial waste stream that never mixes with sanitary wastes in the sewer prior to storage or treatment does not fall within the exemption.

(91) "Solid waste facility" has the meaning specified under s. 144.43(5), Stats.

(91m) "State agency" means any department, board, commission, bureau or institution of state government, including the university of Wisconsin system.

(92) "Storage" has the meaning specified under s. 144.61 (10), Stats.

(93) "Storage facility" means a facility, or part of a facility, which stores hazardous waste, except for a generation site where a generator stores its own waste in compliance with s. NR 181.21 (5), a small quantity accumulation facility or a transfer facility.

(94) "Surface impoundment" or "impoundment" means a facility, or part of a facility, which is a natural topographic depression, man-made excavation, or dike area formed primarily of earthen materials although it may be lined with man-made materials, and which is designed to hold an accumulation of liquid wastes or wastes containing free liquids.

Note: Examples of surface impoundments are holding, storage, settling and aeration pits, ponds and lagoons.

(95) "Tank" means a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of nonearthen materials, such as wood, concrete, steel, plastic, which provide structural support.

(96) "Topsoil" means natural loam, sandy loam, silt loam, silt clay loam or clay loam humus-bearing soils or other material that will easily

produce and sustain dense growths of vegetation capable of preventing wind and water erosion of the topsoil itself and other soils and materials beneath.

(97) "Termination" has the meaning specified under s. 144.43 (8), Stats.

(98) "Thermal treatment" means the treatment of hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical or biological character or composition of the hazardous waste.

Note: Examples of thermal treatment processes are incineration, molten salt, pyrolysis, calcination, wet air oxidation and microwave discharge.

(99) "Totally enclosed treatment facility" means a facility for the treatment of hazardous waste which is directly connected to a production process and which is constructed and operated in a manner which is designed to prevent the discharge of any hazardous waste or constituent thereof into the environment during treatment.

Note: Examples of totally enclosed treatment facilities are pipelines, tanks, stills, distillation columns and pressure vessels which are completely contained on all sides. Another examples is a pipe in which acid is neutralized.

(99m) "Transfer facility" means any transportation related facility including loading docks, parking areas, storage areas and other similar areas where shipments of hazardous waste are held during the normal course of transportation in compliance with s. NR 181.395.

(100) "Transport" is defined in s. 144.61 (12), Stats. For the purpose of this chapter, "transport" means the movement of hazardous wastes from generation sites or between hazardous waste facilities which are subject to or require a license under this chapter or under the resource conservation and recovery act.

(101) "Transport vehicle" means a motor vehicle or rail car, used for the transportation of cargo by any mode. Each cargo carrying body, such as a trailer or railroad car, is a separate transport vehicle.

(102) "Transportation service" means a service engaged in the off-site transport of hazardous waste by air, rail, highway or water.

(103) "Transporter" means the owner or operator of a transportation service licensed under this chapter.

(104) "Treatment" has the meaning specified under s. 144.61 (13), Stats.

(105) "Treatment facility" has the meaning specified under s. 144.61 (14), Stats.

(106) "Triple rinsed" refers to a container which has been flushed 3 times, each time using a volume of diluent at least equal to 10% of the container's capacity.

(107) "24-hour, 25-year storm" means a storm of 24-hour duration with a probable recurrence interval of once in 25 years as determined under s. NR 205.05.

(107m) "Underground tank" means a tank with 10% or more of its storage capacity below the final ground elevation. This term includes un-

covered in-ground tanks. This term does not include tanks which are an integral part of a leachate collection system which are placed or constructed above the landfill liner system.

(108) "Unsaturated zone" means the zone between the land surface and the nearest saturated zone, in which the interstices are occupied partially by air.

(108m) "Unsaturated zone monitoring system" means a system beneath a facility used to monitor water quality in the unsaturated zone as necessary to detect leaks from landfills and surface impoundments. One example is a pressure-vacuum lysimeter.

(109) "USDA" means the United States department of agriculture.

(110) "USGS" means the United States geological survey.

(111) "Vessel" means any description of watercraft, used or capable of being used as a means of transportation on the water.

(111m) "Wastewater treatment unit" means a device which:

(a) Is part of a wastewater treatment facility which is subject to regulation under ch. 147, Stats.; and

(b) Receives and treats or stores an influent wastewater which is a hazardous waste as defined in s. NR 181.12, or generates and accumulates a wastewater treatment sludge which is a hazardous waste as defined in s. NR 181.12 or treats or stores a wastewater treatment sludge which is a hazardous waste as defined in s. NR 181.12; and

(c) Meets the definition of tank in sub. (95).

Note: Certain sludge treatment units which treat hazardous sludges from wastewater treatment units may also be considered wastewater treatment units under this definition. For example, frame and filter presses and belt presses for treating hazardous sludges are considered to be wastewater treatment units.

(112) "Water table" means the upper surface of the saturation zone in groundwaters where the hydrostatic pressure is equal to atmospheric pressure.

(113) "Well" means a bored, drilled or driven shaft, or a dug hole where the depth of the dug hole is greater than the largest surface dimension, and which is terminated above, within or below an aquifer.

(114) "Well nest" means 2 or more wells installed within 10 feet of each other at the ground surface and constructed to varying depths.

(115) "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.

(116) "WPDES permit" means the Wisconsin pollution discharge elimination system permit issued by the department under ch. 147, Stats., for the discharge of pollutants.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; renum. (1) to be (1m), cr. (1), (6g), (6r), (7g), (7r), (31m), (32m), (43m), (45m), (52m), (54m), (61g), (61r), (63m), (64m), (70m), (71m), (74m), (78g), (78r), (81m), (91m), (99m), (107m), (108m), (111m) and (116), am. (2), (5), (6), (8), (10), (19), (22), (24), (26), (28), (32), (34), (43), (51), (55), (56), (61), (62), (64), (67)(a), (70), (71), (75)(a) and (b), (93), (94), (98), (99), (100) and (107), r. and recr. (9), (25), (40), (46), (47), (63), (72), (87), (89), (90), (91), (92), (97), (104) and (105), r. (14) and (36), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.05 Alternative requirements. Exemptions from the requirements of ss. NR 181.42 through 181.49 may be granted for hazardous waste facilities in relation to location, engineering design, and operations, except as otherwise provided in those sections. A person may apply for an exemption by providing the department with a request and documentation justifying the need for an exemption in writing. Such a request shall be included in the applicant's feasibility report or feasibility and plan of operation report to allow the department to provide sufficient public notice as required by s. 144.44, Stats. A person applying for an exemption has the burden of showing and documenting that the proposed alternative requirement provides the same level of control and protection as the requirements of ss. NR 181.42 through 181.49. Prior to granting an exemption, the department shall make a determination that the proposed alternative requirement does not pose an increased threat to human health or the environment, taking into consideration such factors as the quantity, composition and degree of hazard of the waste to be managed, any potential degradation of the environment and potential nuisance conditions. All exemptions pertaining to a hazardous waste facility shall be granted in writing by the department in the final determination of feasibility. Exemptions shall be reviewed periodically with regard to any potential nuisance, hazard to public health and safety, or potential degradation of the environment.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June 1985, No. 354, eff. 7-1-85.

NR 181.06 Notification of hazardous waste activities. (1) EXISTING ACTIVITIES. Any person who on the effective date of these rules, or any amendment thereof, generates or transports hazardous waste, or owns or operates a recycling facility or a facility for the treatment, storage or disposal of a hazardous waste, shall, within 90 days of the effective date of the applicable rule, notify the department of such activities, unless that person has previously notified the EPA in compliance with the preliminary notification requirements of 42 USC 6930, or is otherwise exempted from this requirement under s. NR 181.13(2).

(2) NEW ACTIVITIES. Any person who intends to generate or transport hazardous waste, or intends to own or operate a recycling facility or a facility for the treatment, storage or disposal of hazardous waste shall, within 30 days prior to the initiation of these activities, notify the department of such activities, unless the person is otherwise exempted from this requirement under s. NR 181.13(2).

Note: Section NR 181.13 does not exempt small quantity generators who recycle, treat or dispose of their waste on-site from the notification requirements of this section. Such generators are considered owners or operators of a recycling, treatment or disposal facility under this chapter.

(3) SEPARATE FORMS REQUIRED. Separate notification forms shall be submitted to the department in accordance with sub. (1) or (2) for each generation site, transportation service, recycling facility and hazardous waste facility.

Note: In order to obtain an identification number, a notification form must be filed in accordance with this section.

(4) CONTENTS OF NOTIFICATION FORM. The notification form shall be provided by the department upon request and shall, at a minimum, contain the following information:

(a) The name of the generation site, transportation service or facility.

(b) The mailing address of the generation site, transportation service, or facility.

(c) The location of the generation site, transportation service or facility.

(d) The name and telephone number of a responsible individual at the generation site, transportation service or facility who can be contacted for clarification of information submitted in the notification.

(e) The name of the operator and the owner of the generation site, transportation service, or facility.

(f) The types of hazardous waste activity conducted, such as the generation, transportation, or treatment, storage or disposal of hazardous waste either on the site of hazardous waste generation or off-site.

(g) The mode of transportation.

(h) Whether this is the first, or a subsequent, notification of hazardous waste activities.

(i) A description of the hazardous wastes generated, transported, treated, stored or disposed.

1. For hazardous wastes from non-specific sources, the hazardous waste number from table II in s. NR 181.16 (2) (a) for each listed hazardous waste.

2. For hazardous wastes from specific sources, the hazardous waste number from table III in s. NR 181.16 (2) (b) for each listed hazardous waste.

3. For commercial chemical product hazardous wastes, the hazardous waste number from tables IV and V in s. NR 181.16 (3) for each chemical substance listed.

4. For non-listed hazardous wastes, the hazardous waste number from s. NR 181.15 for each ignitable, corrosive, reactive or toxic waste as determined under s. NR 181.15.

(j) A certification stating "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submittal information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment", must be signed by the owner or operator, or an authorized representative, of the generation site, transportation service or facility.

Note: The notification form may be obtained from the Department of Natural Resources, P.O. Box 8094, Madison, Wisconsin 53708 at no charge.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81. am. (1), renum. (2) to be (4), cr. (2) and (3), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.07 Confidentiality. (1) Except as provided under sub. (2), any records, reports or other information furnished to or obtained by the department in the administration of ss. 144.60 through 144.74, Stats., are

public records subject to the provisions of ss. 19.31 through 19.39, Stats., and s. NR 2.195.

(2) If confidential status is sought for records, reports or other information furnished to or obtained by the department under ss. 144.60 through 144.74, Stats., the standards and procedures in s. 144.70, Stats., and s. NR 2.19 shall be applied.

(3) Except for emission data, the name and address of any person applying for a license under this chapter, or a licensee, for which the department may not grant confidential status, the department shall grant confidential status for any records, reports or other information received by the department and certified by the owner or operator of the facility to be related to production or sales figures or to processes or production unique to the owner or operator or which would tend to adversely affect the competitive position of the owner or operator if made public.

(4) Records, reports and other information that have been granted confidential status:

(a) May be used by the department in compiling or publishing analyses or summaries relating to the general condition of the environment if the analyses or summaries do not identify a specific owner or operator or the analyses or summaries do not reveal records or other information granted confidential status; and

(b) May be released by the department to the EPA or its authorized representative, if the department includes in each release of records, reports or other information a request to EPA or its authorized representative to protect the confidentiality of the records, reports or other information;

(c) May be released for general distribution if the owner or operator expressly agreed to the release; and

(d) May be released on a limited basis if the department is directed to take this action by a judge or hearing examiner under an order which protects the confidentiality of the records, reports or other information.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.08 Special requirements where a discharge has occurred or is likely to occur. (1) The department may require any owner or operator of a recycling facility, or other hazardous waste facility which is otherwise not required to comply with all or part of subch. V, to comply with all or part of the requirements of subch. V where compliance with such requirements is necessary to protect public health, safety or welfare or the environment, if the department determines that:

(a) Hazardous waste or hazardous waste constituents have been discharged at the facility.

(b) Existing control measures are inadequate to prevent a discharge of hazardous waste or hazardous constituents at the facility.

(2) The department may require any generator or transporter to comply with all or part of the requirements of subch. V where compliance

with such requirements is necessary to protect public health, safety or welfare or the environment, if the department determines that:

(a) Hazardous waste or hazardous waste constituents have been discharged since May 20, 1978 at the generation site or transportation service location; or

(b) Existing control measures are inadequate to prevent such a discharge at the generation site or transportation service location.

History: Cr. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.09 Review time periods. Except as otherwise provided in this chapter, the department shall review, and approve, deny or deem incomplete, requests for approvals or exemptions within 65 business days after receiving the request.

Note: Saturdays, Sundays and those holidays designated in s. 230.35 (4) (a), Stats., are not included in counting business days. Sixty-five business days is roughly equivalent to 90 calendar days.

Many of the review time periods in this chapter are specified in "days," i.e. calendar days, instead of business days, because ch. 144, Stats., specifies several review time periods in calendar days. It is not possible to specify all the review time periods in this chapter in calendar days, however, because of s. 227.0105, Stats., requires that review time periods which were not established by statute or rule prior to November 17, 1983, be specified in business days.

History: Cr. Register, June, 1985, No. 354, eff. 7-1-85.

Subchapter II

Identification of Hazardous Waste

NR 181.11 Applicability. This subchapter identifies those solid wastes which are subject to regulation as hazardous waste under this chapter.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.12 Definition of hazardous waste. (1) A solid waste, as defined in s. NR 181.04 (90), is a hazardous waste if:

(a) It is not excluded from regulation as a hazardous waste under sub. (4); and

(b) It meets any of the following criteria:

1. It is listed in s. NR 181.16 and has not been excluded from the lists in s. NR 181.16 under s. NR 181.17.

2. It is a mixture of solid waste and one or more hazardous wastes listed in s. NR 181.16 and has not been excluded under s. NR 181.17; however, the following mixtures of solid wastes and hazardous wastes listed in s. NR 181.16 are not hazardous wastes, except by application of subd. 1. or 3., if the generator can demonstrate that the mixture consists of wastewater, the discharge of which is subject to regulation under ch. 147, Stats., including wastewater at facilities which have eliminated the discharge of wastewater, and:

a. One or more of the following spent solvents listed in s. NR 181.16 table II: carbon tetrachloride, tetrachloroethylene, trichloroethylene; provided that the maximum total weekly usage of these solvents, other than the amounts that can be demonstrated not to be discharged to

wastewater, divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed one part per million; or

b. One or more of the following spent solvents listed in s. NR 181.16 table II: methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isolbutanol, pyridine, spent chlorofluorocarbon solvents; provided that the maximum total weekly usage of these solvents, other than the amounts that can be demonstrated not to be discharged to wastewater, divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 25 parts per million; or

c. One of the following wastes listed in s. NR 181.16 table III: heat exchanger bundle cleaning sludge from the petroleum refining industry (hazardous waste no. K050); or

d. A discarded commercial chemical product, or chemical intermediate listed in s. NR 181.16 table IV or V, arising from minimal losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process. For purposes of this paragraph, "minimal" losses include those from normal material handling operations, e.g. spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials; minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing and cleaning of personal safety equipment, and rinsate from empty containers or from containers that are rendered empty by that rinsing; or

e. Wastewater resulting from laboratory operations containing toxic (T) wastes listed in s. NR 181.16, provided that the annualized average flow of laboratory wastewater does not exceed one percent of total wastewater flow into the headworks of the facility's wastewater treatment or pretreatment system, or provided the wastes combined annualized average concentration does not exceed one part per million in the headworks of the facility's wastewater treatment or pretreatment facility. Toxic (T) wastes used in laboratories that are demonstrated not to be discharged to wastewater are not to be included in this calculation.

3. It exhibits any of the characteristics of hazardous waste identified in s. NR 181.15.

4. Except as provided in subd. 5, it is generated from the treatment, storage or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust or leachate, and:

a. It exhibits any of the characteristics of hazardous waste identified in s. NR 181.15, or

b. It is a waste which is listed under s. NR 181.16, contains a waste listed under s. NR 181.16, or is derived from a waste listed under s. NR 181.16, and it has not been excluded under s. NR 181.17.

5. It is a waste pickle liquor sludge derived from the lime stabilization treatment of spent pickle liquor from the iron and steel industry falling under the standard industrial classification (SIC) codes 331 and 332, and

the sludge exhibits one or more of the characteristics of hazardous waste identified in s. NR 181.15.

Note: If waste pickle liquor sludge derived from the lime stabilization treatment of spent pickle liquor from the iron and steel industry falling under SIC codes 331 and 332 does not display one or more of the characteristics of hazardous waste identified in s. NR 181.15, it is not a hazardous waste.

(2) WHEN REGULATION BEGINS. A solid waste which is not excluded from regulation under sub. (4) becomes a hazardous waste when any of the following events occur:

(a) In the case of a waste listed in s. NR 181.16, when the waste first meets the listing description set forth in s. NR 181.16.

(b) In the case of a mixture of solid waste and one or more listed hazardous wastes, when a hazardous waste listed in s. NR 181.16 is first added to the solid waste.

(c) In the case of any other solid waste, including a solid waste mixture, when the waste exhibits any of the characteristics identified in s. NR 181.15.

(3) WHEN REGULATION ENDS. A hazardous waste will remain a hazardous waste unless and until it:

(a) No longer exhibits any of the characteristics of a hazardous waste identified in s. NR 181.15; or

(b) In the case of a waste which is listed under s. NR 181.16, contains a waste listed under s. NR 181.16, or is derived from a waste listed under s. NR 181.16, the waste is excluded under s. NR 181.17.

(4) EXCLUSIONS. The following solid wastes are not hazardous wastes:

(a) Household waste, including waste that has been collected, transported, stored, treated, disposed of, recovered or reused, except if the hazardous waste in this stream is separated and accumulated by a person other than a member of the household where the waste is generated, for later treatment, storage or disposal. Such accumulation is subject to regulation under this chapter.

(b) Cement kiln dust waste.

(c) Solid wastes generated by any of the following and which are returned to the soils as fertilizers:

1. The growing and harvesting of agricultural crops.

2. The raising of animals, including animal manures.

(d) Discarded wood or wood products which fail the test for the characteristic of EP toxicity given in s. NR 181.15 (5) and are not a hazardous waste for any other reason, if the waste is generated by persons who utilize arsenical-treated wood and wood products for the intended end use of these materials.

(e) Polychlorinated biphenyls (PCBs) regulated under ch. NR 157.

(f) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.

(g) Drilling fluids, produced waters, and other wastes associated with the exploration, development or production of crude oil, natural gas or geothermal energy.

(h) Wastes which fail the test for the characteristic of EP toxicity because chromium is present or are listed in s. NR 181.16 due to the presence of chromium, which do not fail the test for the characteristic of EP toxicity for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for any other characteristic, if it is shown by a waste generator or waste generators that:

1. The chromium in the waste is exclusively (or nearly exclusively) trivalent chromium; and

2. The waste is generated from an industrial process which used trivalent chromium exclusively (or nearly exclusively) and the process does not generate hexavalent chromium; and

3. The waste is typically and frequently managed in non-oxidizing environments.

(i) Specific wastes which meet the standard in par. (h), as long as they do not fail the test for the characteristic of EP toxicity, and do not fail the test for any other characteristic are:

1. Chrome (blue) trimmings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

2. Chrome (blue) shavings generated by the following subcategories of the leather tanning and finishing industry; hair pulp/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

3. Buffing dust generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue.

4. Sewer screenings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

5. Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

6. Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; and through-the-blue.

7. Waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries.

8. Wastewater treatment sludges from the production of titanium dioxide pigment using chromium-bearing ores by the chloride process.

(5) GENERATION OF WASTE IN PRODUCT OR RAW MATERIAL UNITS. A hazardous waste which is generated in a product or raw material storage tank, a product or raw material vehicle, railroad freight car, vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment manufacturing unit, is not subject to regulation under this chapter until it exits the unit in which it was generated, unless the unit is a surface impoundment or unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials. In accordance with s. NR 181.21 (5) (a) 4., the date upon which each period of accumulation begins after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials, shall be clearly marked and visible for inspection on each unit.

(6) SAMPLES. (a) Except as provided in par. (b), a sample of solid waste or a sample of water, soil, or air which is collected for the sole purpose of testing to determine its characteristics or composition is not subject to regulation under this chapter when the sample is being:

1. Transported to a laboratory for the purpose of testing;

2. Transported back to the sample collector after testing;

3. Stored by the sample collector before transport to a laboratory for testing;

4. Stored in a laboratory before testing;

5. Stored in a laboratory after testing but before it is returned to the sample collector; or

6. Stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

(b) In order to qualify for the exemption in par. (a) 1. and 2., a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector shall:

1. Comply with DOT, U.S. postal service (USPS), or any other applicable shipping requirements; or

2. Comply with the following requirements, if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

a. Assure that the following information accompanies the sample: the sample collector's name, mailing address, and telephone number; the quantity of the sample, the date of shipment; and a description of the sample; and

b. Package the sample so that it does not leak, spill or vaporize from its packaging.

(c) This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory no longer meets any of the conditions stated in par. (a).

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (1) (b) 2. and 4. intro., (4) (a), (c) 2. and (e) and (5), cr. (1) (b) 5., (4) (h) and (i) and (6) Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.13 Special requirements for hazardous waste generated by small quantity generators. (1) LESS THAN 1,000 KILOGRAMS. Except as otherwise provided in sub. (2) or (3), a generator who generates in a calendar month a total of less than 1,000 kilograms (2,205 pounds) of hazardous wastes, and does not accumulate at any time quantities of hazardous wastes greater than 1,000 kilograms, is exempt from the requirements of subchs. III through VI except those requirements referenced in pars. (a) through (f), but is not exempt from the requirements of subchs. I and II, if the generator complies with the following:

(a) The generator shall comply with s. NR 181.22; and

(b) The generator shall treat, store or dispose of the waste in an on-site facility or recycle the waste in an on-site recycling facility which has received an operating license, interim license, variance or waiver, or is exempt from licensing under sub. (5) or s. NR 181.42 (1) (a); or ensure delivery to an off-site treatment, storage, disposal or recycling facility which:

1. For facilities located outside of Wisconsin, is permitted by the EPA, is exempt from permitting or has interim status under of the resource conservation and recovery act or is permitted or approved by an authorized state;

2. Has been issued an operating license as a hazardous waste facility under this chapter or has an interim license, variance, waiver, or exemption from licensing under s. NR 181.42 (1) (a);

3. Is licensed as a solid waste disposal facility under ch. NR 180 and has approval under sub. (6) to accept these wastes; or

4. Is exempt from licensing as an accumulation facility which meets the requirements of sub. (9).

(c) If a generator treats or disposes of a hazardous waste at a solid waste disposal facility in accordance with par. (b) 3., the generator shall:

1. Provide the solid waste disposal facility operator with the results of the hazardous waste determination required by s. NR 181.22; and

2. Notify the solid waste disposal facility operator when the waste is delivered.

(d) The generator shall annually report to the department the types of hazardous waste generated, the name and identification of any transporter who transported the waste and the name and location of the facility where the wastes were treated, stored or disposed. This report shall be submitted by March 1 for the preceding calendar year.

(e) The generator shall comply with the manifest requirements of s. NR 181.23, if the generator chooses to use the Wisconsin uniform manifest.

(f) The generator shall comply with the notification requirements of s. NR 181.06 within 90 days after July 1, 1985.

(2) LESS THAN 100 KILOGRAMS. Except as otherwise provided in sub. (3), a generator who generates in a calendar month a total of less than 100 kilograms (220 pounds) of hazardous waste, and does not accumulate at any time quantities of hazardous waste greater than 100 kilograms is exempt from the following requirements of sub. (1):

(a) The manifest requirements of sub. (1) (e) and the notification requirements of sub. (1) (f) unless the small quantity generator chooses to uses the Wisconsin manifest system, in which case, the manifest requirements of s. NR 181.23 and the notification requirements of s. NR 181.06 apply.

(b) The annual reporting requirements for small quantity generators in sub. (1) (d).

(3) ACUTE HAZARDOUS WASTE. Any generator who generates in a calendar month, or accumulates at any time, any of the following hazardous wastes in quantities greater than those set forth in par. (a) or (b), is subject to regulation under this chapter.

(a) A total of one kilogram (2.2 pounds) of those commercial products or manufacturing chemical intermediates listed in table IV in s. NR 181.16 (3), which are discarded or are intended to be discarded, and those off-specification commercial chemical products or manufacturing chemical intermediates which, if they met specifications, would have a generic name listed in table IV in s. NR 181.16 (3) which are discarded or are intended to be discarded.

(b) One hundred kilograms (220 pounds) of any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any commercial chemical product or manufacturing chemical intermediate listed in table IV in s. NR 181.16 (3), or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification commercial chemical products or manufacturing chemical intermediates which, if they met specifications, would have a generic name listed in table IV in s. NR 181.16 (3).

(4) QUANTITY OF WASTE GENERATED. In determining the quantity of hazardous waste generated, but not accumulated:

(a) Hazardous waste which has already been counted to determine the quantity generated within the calendar month at the time of generation need not be counted again when it is removed from on-site storage; and

(b) Hazardous waste produced by on-site treatment of hazardous waste which was generated on-site need not be included.

(5) ON-SITE ACCUMULATION. A small quantity generator may accumulate hazardous waste on-site. If a generator accumulates at any time more than 1,000 kilograms (2,205 pounds) of hazardous waste, or acutely hazardous waste in quantities greater than those set forth in sub. (3), all of those accumulated wastes are subject to regulation under this chapter. The time period of s. NR 181.21 (5) for accumulation of wastes on-site begins when the accumulated wastes exceed the applicable exclusion level.

(6) SOLID WASTE DISPOSAL FACILITIES. Any person who operates or maintains a solid waste disposal facility licensed under ch. NR 180 that has approval under sub. (7) to accept small quantities of specific hazardous wastes is exempt from the requirements of subchs. V and VI if:

(a) Hazardous wastes that are excluded from regulation under this section are the only hazardous wastes treated, or disposed of by the facility;

(b) All the conditions of sub. (7) approval are met, including, but not limited to operational requirements and cumulative waste quantity limits;

(c) Quarterly reports are submitted to the department no later than April 15, July 15, October 15 and January 15 for each previous calendar quarter, listing the hazardous waste types and quantities of waste accepted at the facility in each quarter and the generators and transporters of that waste; and

(d) Waste management fund fees at the rate specified in s. NR 181.42 (12) are paid for the hazardous waste quantities accepted at the facility at the same time and in the same manner as waste management fund fees required under s. NR 180.16 are to be paid.

(7) APPROVAL TO ACCEPT HAZARDOUS WASTE. Any person who operates or maintains a solid waste disposal facility licensed under ch. NR 180, shall apply for and obtain written departmental approval under this subsection before accepting hazardous wastes which are excluded from regulation under this section. The department shall advise the applicant in writing of the receipt of an application for such approval. The department shall advise the applicant in writing as to whether the application is complete or incomplete within 65 business days after receipt of the application. The department shall advise the applicant of the approval or disapproval of the application within 65 business days after finding the application complete. This approval shall constitute a license under subch. VI.

(8) MIXTURES. (a) Hazardous waste subject to the reduced requirements of this section may be mixed with non-hazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitations identified in this section, unless the mixture meets any of the characteristics of hazardous waste identified in s. NR 181.15.

(b) If a small quantity generator mixes a solid waste with a hazardous waste that exceeds the quantity limits identified in this section, the mixture is subject to regulation under this chapter.

(9) SMALL QUANTITY ACCUMULATION FACILITIES. Shipments of hazardous waste from small quantity generators may be accumulated in containers off-site without a storage license, provided that the waste will not be recycled, treated, placed in a storage facility or disposed of on-site, and provided that the owner or operator of the accumulation facility complies with the following requirements:

(a) The accumulation shall be for the purpose of accumulating more economical shipments.

(b) Within 90 days, all accumulated waste shall be shipped to a facility which meets the requirements of sub. (1) (b) 1. or 2., except it may not be shipped to another small quantity accumulation facility.

(c) The notification requirements of s. NR 181.06 shall be met for each accumulation facility.

(d) The owner or operator shall initiate a manifest for each shipment in accordance with s. NR 181.23 at the time the shipment is offered for transportation from the accumulation facility.

(e) The owner or operator may not accept shipments of wastes from any one small quantity generator in quantities greater than the applicable exclusion levels specified in sub. (5).

(f) The owner or operator shall limit the total number of containers at the accumulation facility to 80 containers or 4400 gallons, whichever is less.

(g) The accumulation shall be in compliance with the following container storage requirements:

1. The owner or operator shall comply with the packaging, labeling, marking and placarding requirements in s. NR 181.26.

2. The owner or operator shall inspect all containers used for storing hazardous waste at least weekly for evidence of leakage, corrosion or deterioration of the containers or discharge confinement structures, such as dikes.

3. The owner or operator shall record the inspections under subd. 2. in an inspection log or summary. These records shall be placed in the operating record required under par. (k) and kept for at least 3 years from the date of the inspection. At a minimum, these records shall include the date and the time of inspection, the name of the inspector, a notation of the observation made, and the date and name of any repairs or other remedial actions.

4. If a container is not in good condition or if the contents of the storage container begin to leak, the hazardous waste in the container shall be recontainerized in a storage container in good condition.

5. A container holding hazardous waste shall always be closed during storage.

6. A container holding hazardous waste may not be opened, handled or stored in a manner which may rupture the container or cause it to leak.

7. Containers holding ignitable or reactive waste shall be located at least 50 feet from the accumulation facility's property line.

8. Storage containers holding hazardous waste which is incompatible with any waste or other materials stored nearby in other containers, waste piles, open tanks or surface impoundments shall be separated from them by means of a dike, berm, wall or other device.

9. No waste shall be mixed, combined or recontainerized, except as required by subd. 4.

10. The container shall be made or lined with materials which will not react with, and are otherwise compatible with the hazardous waste to be stored.

(h) The date upon which each period of accumulation begins shall be clearly marked and visible for inspection on each container.

(i) The owner or operator shall comply with the applicable general waste analysis and waste analysis plan requirements in s. NR 181.42 (1) (d) and (e).

(j) The owner or operator shall comply with the contingency plan and emergency procedures in s. NR 181.42 (4) and personnel training requirements in s. NR 181.42 (5).

(k) The owner or operator shall comply with the recordkeeping, operating record and reporting requirements in s. NR 181.42 (6) (b) and (c), except for the requirements in s. NR 181.42 (6) (b) 1.f., 1.g., 1.h., 1.i. and 4.

(l) The identity and location of all stored hazardous waste shall be known through the entire accumulation period.

(m) Signs shall be posted at each entrance to the accumulation facility indicating that only authorized personnel are allowed, and that entry can be dangerous. The owner or operator shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock into the accumulation facility.

(n) The waste accumulated under this subsection shall be kept separate from any waste accumulated under any other provision of this chapter and shall be clearly delineated and marked as a segregated storage area.

(o) The accumulation of hazardous waste shall be conducted in such a manner that no discharge of hazardous waste occurs.

(p) The facility shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any discharge of hazardous waste or hazardous waste constituents to the air, land, or surface which could be harmful to human health or the environment.

(q) As provided in s. NR 181.08, the department may require the owner or operator of an accumulation facility to comply with all or part of the requirements of subch. V, if the department determines that there is a potential for discharge of the hazardous waste or hazardous constituents or determines that a discharge has occurred at the accumulation facility.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. (5), renum. (2) to (4) to be (3) to (5) and am. cr. (2) and (9), am. (1), (6) (intro.), (d), (7) and (8), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.135 Residues of hazardous waste in empty containers. (1) Any hazardous waste that is remaining in either an empty container or an inner liner removed from an empty container, as defined in sub. (3), (4) or (5), is not subject to regulation under this chapter.

(2) Any hazardous waste in either a container that is not empty or an inner liner removed from a container that is not empty, as defined in sub. (3), (4) or (5), is subject to regulation under this chapter.

(3) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified in table IV in s. NR 181.16 (3), is empty if:

(a) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g. pouring, pumping and aspirating; and

(b) No more than 2.5 centimeters (one inch) of residue remains on the bottom of the container or inner liner, or

(c) No more than 3% by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or

(d) No more than 0.3% by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

(4) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric pressure.

(5) A container or an inner liner removed from a container that has held a hazardous waste identified in table IV in s. NR 181.16 (3) is empty if:

(a) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(b) The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(c) In the case of a container, the inner liner, that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

Note: Empty containers and rinsate from the cleaning or reconditioning of empty containers are regulated as solid waste under ch. NR 180. In addition, any rinsate from the cleaning or reconditioning of empty containers as defined in this section is subject to regulation as a hazardous waste under this chapter if it exhibits any of the characteristics in s. NR 181.15.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.14 Hazardous waste criteria. (1) CRITERIA FOR IDENTIFYING THE CHARACTERISTICS OF HAZARDOUS WASTE. The department shall identify and define a characteristic of hazardous waste only upon determining that:

(a) A solid waste that exhibits the characteristic may:

1. Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness, or

2. Pose a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed of or otherwise managed; and

(b) The characteristic can be:

1. Measured by an available standardized test method which is reasonably within the capability of generators of solid waste or private sector laboratories that are available to serve generators of solid waste; or

2. Reasonably detected by generators of solid waste through their knowledge of their waste.

(2) CRITERIA FOR LISTING HAZARDOUS WASTE. (a) The department shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria:

1. It exhibits any of the characteristics of hazardous waste identified in s. NR 181.15.

2. It has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown to have an oral LD^{50} toxicity (rat) of less than 50 milligrams per kilogram, an inhalation LC^{50} toxicity (rat) of less than 2 milligrams per liter, or a dermal LD^{50} toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible, illness.

3. It contains any of the hazardous constituents listed in table VI in s. NR 181.16 (4) unless, after considering any of the following factors, the department concludes that the waste is not capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed:

a. The nature of the toxicity presented by the constituent.

b. The concentrations of the constituent in the waste.

c. The potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in subd. 3. g.

d. The persistence of the constituent or any toxic degradation product of the constituent.

e. The potential for the constituent or any toxic degradation product of the constituent to degrade into non-harmful constituents and the rate of degradation.

f. The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems.

g. The plausible types of improper management to which the waste could be subjected.

h. The quantities of the waste generated at individual generation sites or on a regional or statewide basis.

i. The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent.

j. Actions taken by other govenmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent.

k. Such other factors as may be relevant in a specific case.

(b) The department may list classes or types of solid waste if there is reason to believe that individual wastes, within the class or type of waste, because their quantity, concentration, or physical, chemical or infectious characteristics, typically or frequently:

1. Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise mismanaged.

(c) Hazardous wastes which have been listed in accordance with the criterion in par. (a) 2. are designated as acute hazardous wastes and wastes which have been listed in accordance with the criterion in par. (a) 3. are designated as toxic wastes.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.15 Characteristics of hazardous waste. (1) GENERAL. (a) A solid waste which is not excluded from regulation under s. NR 181.12 (4) is a hazardous waste if it exhibits any of the characteristics identified in this section.

(b) A hazardous waste which is identified by a characteristic in this section, but is not listed as a hazardous waste in s. NR 181.16, is assigned the hazardous waste number set forth for that characteristic in this section. This number shall be used in complying with the notification requirements in s. NR 181.06 and record-keeping and reporting requirements under subchs. III, IV and V.

(c) For purposes of this section, the department will consider a sample obtained using any of the applicable sampling methods specified in appendix I to be a representative sample as defined in s. NR 181.04 (81).

(2) CHARACTERISTIC OF IGNITABILITY. (a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

1. It is a liquid, other than an aqueous solution containing less than 24% alcohol by volume, and has a flash point less than 60°C (140°F), as determined by a Pensky-Martens closed cup tester, using the test method specified in ASTM standard D-93-79, or D-93-80, or a Setaflash closed cup tester, using the test method specified in ASTM standard D-3278-78, or as determined by an equivalent test method approved by EPA.

Note: The publications containing these standards may be obtained from:

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

The publications containing these standards are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

2. It is not a liquid and is capable, at a temperature of 0°C and a pressure of one atmosphere, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

3. It is an ignitable compressed gas as defined in 49 CFR 173.300, Oct. 1, 1983, and as determined by the test methods described in that regula-

tion, ASTM standard D-323, or equivalent test methods approved by EPA.

Note: The publication containing this regulation may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

The publication containing this regulation is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

4. It is an oxidizer, such as a chlorate, permanganate, inorganic peroxide, nitro carbo nitrate or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

(b) A solid waste that exhibits the characteristic of ignitability, but is not listed as hazardous waste in s. NR 181.16 (2), has the hazardous waste number of D001.

(3) CHARACTERISTIC OF CORROSIVITY. (a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

1. It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by EPA. The EPA test method for pH is specified as method 5.2 in SW-846, "Test Methods for the Evaluation of Solid Waste."

Note: This publication may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

2. It is a liquid and corrodes plain carbon steel with a carbon content of 0.20% at a rate greater than 6.35 mm (0.250-inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) standard TM-01-69 as standardized in SW-846, "Test Methods for the Evaluation of Solid Waste", or an equivalent test method approved by EPA.

(b) A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in s. NR 181.16 (2), has the hazardous waste number of D002.

(4) CHARACTERISTIC OF REACTIVITY. (a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

1. It is normally unstable and readily undergoes violent change without detonating.

2. It reacts violently with water.

3. It forms potentially explosive mixtures with water.

4. When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

5. It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

6. It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

7. It is readily capable of detonation or explosive decomposition or reaction at a temperature of 0°C and a pressure of one atmosphere.

8. It is a forbidden explosive as defined in 49 CFR 173.51, October 1, 1983, or a Class A explosive as defined in 49 CFR 173.53, Oct. 1, 1983, or a Class B explosive as defined in 49 CFR 173.88, Oct. 1, 1983.

Note: The publications containing these regulations may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

The publications containing these regulations are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(b) A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in s. NR 181.16, has the hazardous waste number of D003.

(5) CHARACTERISTIC OF EP TOXICITY. (a) A solid waste exhibits the characteristic of extraction procedure (EP) toxicity if, using the test methods described in s. NR 181.18, the extract from a representative sample of the waste contains any of the contaminants listed in table I at a concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5% filterable solids, the waste itself, after filtering, is considered to be the extract for the purpose of this section.

(b) A solid waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in s. NR 181.16, has the hazardous waste number specified in table I which corresponds to the toxic contaminant causing it to be hazardous.

Table I

Maximum Concentration of Contaminants for Characteristic of EP Toxicity

Hazardous Waste Number	Contaminant	Maximum Concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1, 2, 3, 4, 10, 10-hexachloro-1,7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo, endo-5, 8-dimethano naphthalene)	0.02
D013	Lindane (1, 2, 3, 4, 5, 6-hexachlorocyclohexane, gamma isomer)	0.4
D014	Methoxychlor (1, 1, 1-Trichloro-2, 2-bis (p-methoxyphenyl) ethane)	10.0
D015	Toxaphene ($C^{10}H^{10}Cl^8$, Technical chlorinated camphene, 67-69 per cent chlorine)	0.5
D016	2, 4-D, (2, 4-Dichlorophenoxyacetic acid)	10.0
D017	2, 4, 5-TP Silvex (2, 4, 5-Trichlorophenoxypropionic acid)	1.0

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (2) (a) 1. and 3., (3) (a) 1. and 2., (4) (a) 8. and table 1, Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.16 Lists of hazardous wastes and hazardous waste constituents. (1) GENERAL. (a) A solid waste is a hazardous waste if it is listed in this section, unless it has been excluded from the lists under s. NR 181.17.

(b) The department has indicated the basis for listing the classes or types of wastes listed in this section by employing one or more of the following hazard codes:

1. Ignitable waste (I)

2. Corrosive waste (C)

3. Reactive waste (R)

4. EP toxic waste (E)

5. Acute hazardous waste (H)

6. Toxic waste (T)

(c) Appendix II identifies the constituent which caused the department to list the waste as a EP toxic waste (E) or toxic waste (T) in sub. (2) (a) and (b).

(d) Each hazardous waste listed in subs. (2) and (3) is assigned a hazardous waste number which precedes the name of the waste. This number shall be used in complying with the notification requirements of s. NR 181.06 and recordkeeping requirements under subchs. III, IV and V.

(2) HAZARDOUS WASTE SOURCES. (a) Solid waste from nonspecific sources is a hazardous waste if it is listed in table II.

Table II

Hazardous Waste from Nonspecific Sources

Hazardous Waste Number	Hazardous Waste	Hazardous Code
Generic F001	The spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1, 1, 1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons, any mixture of these solvents or mixtures of these solvents and the spent solvents F002, F003, F004 or F005 and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1, 2, 2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane, any mixture of these solvents or mixtures of these solvents and the spent solvents F001, F003, F004 or F005 and the still bottoms from the recovery of these solvents.	(T)
F003	The spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, n-butyl alcohol, cyclohexanone, methanol, and methyl isobutyl ketone, any mixtures of these solvents or mixtures of these solvents and the spent solvents F001, F002, F004 or F005 and the still bottoms from the recovery of these solvents.	(I)
F004	The spent non-halogenated solvents: cresols, cresylic acid, and nitrobenzene, any	(T)

	mixtures of these solvents and the spent solvents F001, F002, F003 or F005 and the still bottoms from the recovery of these solvents.	
F005	The spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine, any mixtures of these solvents or mixtures of these solvents and the spent solvents F001, F002, F003 or F005 and the still bottoms from the recovery of these solvents.	(I, T)
F006	Wastewater treatment sludges from electroplating operations, except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning or stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations, except precious metals electroplating spent cyanide plating bath solutions.	(R, T)
F008	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process, except for precious metals electroplating plating bath sludges.	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating where cyanides are used in the process, except for precious metals electroplating spent stripping and cleaning bath solutions.	(R, T)
F010	Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process, except for precious metals heat-treating quenching bath sludges.	(R, T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations, except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning.	(R, T)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process, except for	(T)

	precious metals heat treating quenching wastewater treatment sludges	
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum.	(T)
F024	Wastes including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to 5, utilizing free radical catalysed processes. This listing does not include light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts and waste listed in table III in s. NR 181.16(2)(b).	(T)
F500	Waste contaminated with the halogenated compounds tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, chloroform, ortho-dichlorobenzene, dichlorodifluoromethane, 1,1,2-trichloro-1, 2, 2-trifluorethane, trichlorofluoromethane, 1,1-dichloroethylene, and 1,2-dichloroethylene at greater than 1% (10,000 ppm) solvent concentration. This listing includes any combination of the above named halogenated compounds where the total concentration of the sum of the concentrations of the individual compounds exceeds 1% or 10,000 ppm on a weight to weight basis. Halogenated solvent concentration shall be determined using EPA methods 8010 or 8240 for halogenated volatile organics as specified in SW-846, "Test Methods for Evaluating Solid Waste" or total chloride analysis of bomb washings from ASTM D 240-76, "Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter."	(T)

Note: The publication SW-846, "Test Methods for Evaluating Solid Waste", may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The publication containing the ASTM method may be obtained from:

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

The publications are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(b) Solid waste from specific sources is a hazardous waste if it is listed in table III.

Table III

Hazardous Waste from Specific Sources

Hazardous Waste Number	Hazardous Waste	Hazard Code
Wood Preservation		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote or pentachlorophenol.	(T)
Inorganic Pigments		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments.	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments.	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments.	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments.	(T)
K008	Oven residue from the production of chrome oxide green pigments.	(T)
Organic Chemicals		
K009	Distillation bottoms from the production of acetaldehyde from ethylene.	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene.	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.	(R, T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile.	(R, T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile.	(T)
K015	Still bottoms from the distillation of benzyl chloride.	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride.	(T)

K017	Heavy ends or still bottoms from the purification column in the production of epichlorohydrin.	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production.	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production.	(T)
K022	Distillation bottom tars from the production of phenol or acetone from cumene.	(T)
K023	Distillation light ends from the production of phthalic anhydride from napthalene.	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene.	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene.	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(T)
K026	Stripping still tails from the production of methyl ethyl pyridines.	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production.	(R, T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1, 1, 1-trichloroethane.	(T)
K029	Waste from the product stream stripper in the production of 1, 1, 1-trichloroethane.	(T)
K095	Distillation bottoms from the production of 1, 1, 1-trichloroethane.	(T)
K096	Heavy ends from the heavy ends column from the production of 1, 1, 1-trichloroethane.	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(T)
K083	Distillation bottoms from aniline production.	(T)

K085	Distillation or fractionating column bottoms from the production of chlorobenzenes.	(T)
K103	Process residues from aniline extraction from the production of aniline.	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production.	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(T)

Pesticides

K031	By-products salts generated in the production of MSMA and cacodylic acid.	(T)
K032	Wastewater treatment sludge from the production of chlordane.	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.	(T)
K034	Filter solids from the filtration of hexachloro-cyclopentadiene in the production of chlordane.	(T)
K097	Vacuum stripper discharge from the chlordane chlorination in the production of chlordane.	(T)
K035	Wastewater treatment sludges generated in the production of creosote.	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton.	(T)
K037	Wastewater treatment sludges from the production of disulfoton.	(T)
K038	Wastewater from the washing and stripping of phorate production.	(T)
K039	Filter cake from the filtration of diethylphosphoro-dithioic acid in the production of phorate.	(T)
K040	Wastewater treatment sludge from the production of phorate.	(T)
K041	Wastewater treatment sludge from the production of toxaphene.	(T)
K098	Untreated process wastewater from the production of toxaphene.	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T.	(T)

K043	2,6-Dichlorophenol waste from the production of 2,4-D.	(T)
K099	Untreated wastewater from the production of 2,4-D.	(T)

Explosives

K044	Wastewater treatment sludges from the manufacturing and processing of explosives.	(R)
K045	Spent carbon from the treatment of wastewater containing explosives.	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(T)
K047	Pink or red water from TNT operations.	(R)

Petroleum Refining

K048	Dissolved air flotation (DAF) float from the petroleum refining industry.	(T)
K049	Slop oil emulsion solids from the petroleum refining industry.	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry.	(T)
K051	American Petroleum Institute (API) separator sludge from the petroleum refining industry.	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry.	(T)

Iron and Steel

K061	Emission control dust or sludge from the electric furnace production of steel.	(T)
K062	Spent pickle liquor from steel finishing operations.	(C,T)

Secondary Lead

K069	Emission control dust or sludge from secondary lead smelting.	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.	(T)

Inorganic Chemicals

K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(T)
K073	Chlorinated hydrocarbon wastes from the purification step of the diaphragm cell	(T)

	process using graphite anodes in chlorine production.	
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(T)

Ink Formulation

K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments; driers, soaps, and stabilizers containing chromium and lead.	(T)

Veterinary Pharmaceuticals

K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)

Coking

K060	Ammonia still lime sludge from coking operations.	(T)
K087	Decanter tank tar sludge from coking operations.	(T)

(3) DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF. (a) The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded:

1. Any commercial chemical product or manufacturing chemical intermediate having the generic name listed in tables IV or V.

2. Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have a generic name listed in tables IV or V.

3. Any residue remaining in a container or an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having a generic name listed in table IV, unless the container is empty as defined in s. NR 181.135 (4).

4. Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in table IV or V, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on

any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in table IV or V.

Note: The phrase "commercial chemical product or manufacturing chemical intermediate" refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a waste, such as a manufacturing process waste, that contains any of the substances listed in tables IV or V. Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in tables IV or V, such waste will be listed in sub. (2), or will be identified as a hazardous waste by the characteristics set forth in s. NR 181.15.

(b) The commercial chemical products, manufacturing chemical intermediates or off specification commerical chemical products or manufacturing chemical intermediates listed in table IV are identified as acute hazardous wastes (H) and are subject to the small quantity exclusion defined in s. NR 181.13 (3).

Table IV

Acute Hazardous Commercial Chemical Products and Manufacturing Chemical Intermediates

Hazardous Waste Number	Substance
P023	Acetaldehyde, chloro
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-Fluoro-
P058	Acetic acid, fluoro-, sodium salt
P066	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P001	3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-aAminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P010	Arsenic acid
P012	Arsenic (III) oxide
P011	Arsenic (V) oxide
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl-
P054	Aziridine
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nirto-
P028	Benzene, (chloromethyl)-
P042	1,2-Benzenediol, 4-[1-hydroxy-2-(methyl-amino)ethyl]
P014	Benzenethiol
P028	Benzyl chloride
P015	Beryllium dust
P016	Bis(chloromethyl) ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P123	Camphene, octachloro-
P103	Carbamimidoselenoic acid
P022	Carbon bisulfide
P022	Carbon disulfide
P095	Carbonyl chloride
P033	Chlorine cyanide
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropionitrile
P029	Copper cyanides
P030	Cyanides (soluble cyanide salts), not elsewhere specified
P031	Cyanogen
P033	Cyanogen chloride
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P039	0,0-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate
P041	Diethyl-p-nitrophenyl phosphate
P040	0,0-Diethyl O-pyrazinyl phosphorothioate
P043	Di-isopropylfluorophosphate
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone-0-[(methylamino)carbonyl] oxime
P071	0,0-Dimethyl 0-p-nitrophenyl phosphorothioate
P082	Dimethylnitrosamine
P046	alpha, alpha-Dimethylphenethylamine
P047	4,6-Dinitro-o-cresol and salts
P034	4,6-Dinitro-o-cyclohexylphenol
P048	2, 4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramide, octamethyl-
P039	Disulfoton
P049	2,4-Dithiobiuret
P109	Dithiopyrophosphoric acid, tetraethyl ester
P050	Endosulfan
P088	Endothall
P051	Endrin
P042	Epinephrine
P046	Ethanamine, 1,1-dimethyl-2-phenyl-
P084	Ethenamine, N-methyl-N-nitroso-
P101	Ethyl cyanide
P054	Ethylenimine
P097	Famphur
P056	Fluorine

Hazardous Waste Number	Substance
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P065	Fulminic acid, mercury(11) salt (R,T)
P059	Heptachlor
P051	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, endo-1,4,5,8-dimethanonaphthalene
P037	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, exo-1,4,5,8-demethanonaphthalene
P060	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo-dimethanonaphthalene
P004	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,:5,8-endo,exo-dimethanonaphthalene
P060	Hexachloro-hexahydro-exo, exo-dimethanonaphthalene
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P064	Isocyanic acid, methyl ester
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	Mercury, (acetato-0) phenyl-
P065	Mercury fulminate (R,T)
P016	Methane, oxybis (chloro-
P112	Methane, tetranitro-(R)
P118	Methanethiol, trichloro-
P059	4,7-Methano-IH-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P066	Methomyl
P067	2-Methylaziridine
P068	Methyl hydrazine
P064	Methyl isocyanate
P069	2-Methyllactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P074	Nickel cyanide
P074	Nickel (ll) cyanide
P073	Nickel tetracarbonyl
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen (ll) oxide
P078	Nitrogen (IV) oxide
P081	Nitroglycerine (R)
P082	N-Nitrosomethylamine
P084	N-Nitrosomethylvinylamine
P050	5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro, cyclic sulfite
P085	Octamethylpyrophosphoramide
P087	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo [2.2.1] heptane-2, 3-dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	Phenol, 2,4-dinitro-
P047	Phenol, 2,4-dinitro-6-methyl-
P020	Phenol, 2,4-dinitro-6(1-methylpropyl)-
P009	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P036	Phenyl dichloroarsine
P092	Phenylmercuric acetate
P093	N-Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl p-nitrophenyl ester
P044	Phosphorodithioic acid, 0,0-dimethyl S-[2-(methylamino)-2-oxoethyl]ester
P043	Phosphorofluoric acid, bis(1-methylethyl)-ester
P094	Phosphorothioic acid, 0-0-diethyl S-(ethylthio)methyl ester
P089	Phosphorothioci acid, 0,0-diethyl 0-(p-nitrophenyl) ester
P040	Phosphorothioic acid, 0-0-diethyl 0-pyrazinyl ester
P097	Phosphorothioic acid, 0-0-dimethyl 0-[p-((dimethylamino)-sulfonyl)phenyl]ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P099	Potassium silver cyanide
P070	Propanal, 2-methyl-2(methylthio)-, 0-[(methylamino)carbonyl]oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl-
P081	1,2,3-Propanetriol, trinitrate-(R)
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal

Hazardous Waste Number	Substance	Hazardous Waste Number	Substance
P005	2-Propen-1-ol	P113	Thallic oxide
P067	1,2-Propylenimine	P113	Thallium (III) oxide
P102	2-Propyn-1-ol	P114	Thallium (I) selenite
P008	4-Pyridinamine	P115	Thallium (I) sulfate
P075	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts	P045	Thiofanox
P111	Pyrophosphoric acid, tetraethyl ester	P049	Thiomidodicarbonic diamide
P103	Selenourea	P014	Thiophenol
P104	Silver cyanide	P116	Thiosemicarbazide
P105	Sodium azide	P026	Thiourea (2-chlorophenyl)-
P106	Sodium cyanide	P072	Thiourea, 1-naphthalenyl-
P107	Strontium sulfide	P093	Thiourea, phenyl-
P108	Strychnidin-10-one, and salts	P123	Toxaphene
P018	Strychnidin-10-one, 2,3-dimethoxy-	P118	Trichloromethanethiol
P108	Strychnine and salts	P119	Vanadic acid, ammonium salt
P115	Sulfuric acid, thallium (I) salt	P120	Vanadium pentoxide
P109	Tetraethyldithiopyrophosphate	P120	Vanadium (V) oxide
P110	Tetraethyl lead	P001	Warfarin
P111	Tetraethylpyrophosphate	P121	Zinc cyanide
P112	Tetranitromethane (R)	P122	Zinc phosphide (R,T)
P062	Tetraphosphoric acid, hexaethyl ester		

(c) Discarded commercial chemical products, off-specification species, containers, and spill residues of commercial chemical products or manufacturing chemical intermediates, listed in table V are identified as toxic wastes (T) unless otherwise designated and are subject to the small quantity exclusion defined in s. NR 181.13(2). These wastes and their corresponding hazardous waste numbers are:

Table V

Toxic Commercial Chemical Products and Manufacturing Chemical Intermediates

Hazardous Waste Number	Substance	Hazardous Waste Number	Substance
U001	Acetaldehyde (I)	U008	Acrylic acid (I)
U034	Acetaldehyde, trichloro-	U009	Acrylonitrile
U187	Acetamide, N-(4-ethoxyphenyl)-	U150	Alanine, 3-[p-bis(2-chloroethyl)amino] phenyl-,L-
U005	Acetamide, N-9H-fluoren-2-yl	U011	Amitrole
U112	Acetic acid, ethyl ester (I)	U012	Aniline (I,T)
U144	Acetic acid, lead salt	U014	Auramine
U214	Acetic acid, thallium (I) salt	U015	Azaserine
U002	Acetone (I)	U010	Azirino (2', 3': 3, 4) pyrrolo (1, 2-a) indole-4, 7-dione, 6-amino-8-[((amino-carbonyl) oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-
U003	Acetonitrile (I,T)	U157	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U004	Acetophenone		
U005	2-Acetylaminofluorene		
U006	Acetyl chloride (C, R, T)		
U007	Acrylamide		

Hazardous Waste Number	Substance
U016	Benz[c]acridine
U016	3,4 Benzacridine
U017	Benzal chloride
U018	Benz(a)anthracene
U018	1,2-Benzanthracene
U094	1,2-Benzanthracene, 7,12-dimethyl-
U012	Benzenamine (I,T)
U014	Benzenamine, 4,4-carbonimidoylbis (N,N-dimethyl-
U049	Benzenamine, 4-chloro-2-methyl-
U093	Benzenamine, N, N'-dimethyl-4-phenylazo-
U158	Benzenamine, 4,4'-methylenebis (2-chloro-
U222	Bensenamine, 2-methyl-, hydrochloride
U181	Benzenamine, 2-methyl-5-nitro
U019	Benzene (I, T)
U038	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	Benzene, 1-bromo-4-phenoxy-
U037	Benzene, chloro-
U190	1,2-Benzenedicarboxylic acid anhydride
U028	1,2-Benzenedicarboxylic acid, [bis(2-ethyl-hexyl)]ester
U069	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	1,2-Benzenedicarboxylic acid, diethyl ester
U102	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	1,2-Benzenedicarboxylic acid, di-n-octyl ester
U070	Benzene, 1,2-dichloro-
U071	Benzene, 1,3-dichloro-
U072	Benzene, 1,4-dichloro-
U017	Benzene, (dichloromethyl)-
U223	Benzene, 1,3-diisocyanatomethyl-(R, T)
U239	Benzene, dimethyl-(I,T)
U201	1,3-Benzenediol
U127	Benzene, hexachloro-
U056	Benzene, hexahydro-(I)
U188	Benzene, hydroxy-
U220	Benzene, methyl
U105	Benzene, 1-methyl-1-2,4 dinitro-
U106	Benzene, 1-methyl-2,6-dinitro-
U203	Benzene, 1,2-methylenedioxy-4-allyl
U141	Benzene 1,2-methylenedioxy-4-propenyl-
U090	Benzene, 1,2-methylenedioxy-4 propyl-
U055	Benzene, (1-methylethyl)-(I)
U169	Benzene, nitro-(I,T)
U183	Benzene, pentachloro-
U185	Benzene, pentachloro-nitro-
U020	Benzenesulfonic acid chloride (C,R)
U020	Benzenesulfonyl chloride (C,R)
U207	Benzene, 1,2,4,5-tetrachloro-
U023	Benzene, (trichloromethyl)-(C,R,T)
U234	Benzene, 1,3,5-trinitro-(R,T)
U021	Benzidine
U202	1,2-Benzisothiazolin-3-one, 1,1-dioxide
U120	Benzo [j,k] fluorene
U022	Benzo[a]pyrene
U022	3,4-Benzopyrene
U197	p-Benzoquinone
U023	Benzotrichloride (C, R, T)
U050	1,2-Benzphenanthrene
U085	2,2'-Bioxirane (I,T)
U021	(1,1'-Biphenyl)-4,4'-diamine
U073	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethyl-
U024	Bis(2-chloroethoxy)methane
U027	Bis(2-chloroisopropyl) ether
U244	Bis(dimethylthiocarbamoyl) disulfide
U028	Bis(2-ethylhexyl) phthalate
U246	Bromine cyanide
U225	Bromoform
U030	4-Bromophenyl phenyl ether
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	1-Butanamine, N-butyl-N-nitroso-
U035	Butanoic acid, 4-[Bis(2-chloroethyl)amino] benzene-
U031	1-Butanol (I)
U159	2-Butanone (I,T)
U160	2-Butanone peroxide (R,T)
U053	2-Butenal
U074	2-Butene, 1,4-dichloro-(I,T)
U031	n-Butyl alcohol (I)
U136	Cacodylic acid
U032	Calcium chromate
U238	Carbamic acid, ethyl ester
U178	Carbamic acid, methylnitroso-, ethyl ester

Hazardous Waste Number	Substance
U176	Carbamide, N-ethyl-N-nitroso-
U177	Carbamide, N-methyl-N-nitroso-
U219	Carbamide, thio-
U097	Carbomoyl chloride, dimethyl-
U215	Carbonic acid, dithallium (I) salt
U156	Carbonochloridic acid, methyl ester (I,T)
U033	Carbon oxyfluoride (R,T)
U211	Carbon tetrachloride
U033	Carbonyl fluoride (R, T)
U034	Chloral
U035	Chlorambucil
U036	Chlordane, technical
U026	Chlornaphazine
U037	Chlorobenzene
U039	4-Chloro-m-cresol
U041	1-Chloro-2, 3-epoxypropane
U042	2-Chloroethyl vinyl ether
U044	Chloroform
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	o-Chlorophenol
U049	4-Chloro-o-toluidine hydrochloride
U032	Chromic acid, calcium salt
U050	Chrysene
U051	Creosote
U052	Cresols
U052	Cresylic acid
U053	Crotonaldehyde
U055	Cumene (I)
U246	Cyanogen bromide
U197	1,4-Cyclohexadienedione
U056	Cyclohexane (I)
U057	Cyclohexanone (I)
U130	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	Cyclophosphamide
U240	2,4-D, salts and esters
U059	Daunomycin
U060	DDD
U061	DDT
U142	Decachloroctahydro-1,3,4-metheno-2H-cyclobuta [c,d]-pentalen-2-one
U062	Diallate
U133	Diamine (R,T)
U221	Diaminotoluene
U063	Dibenz(a,h)anthracene
U063	1,2:5,6-Dibenzanthracene
U064	1,2:7,8-Dibenzopyrene
U064	Dibenz[a,i]pyrene
U066	1,2-Dibromo-3-chloropropane
U069	Dibutyl phthalate
U062	S-(2,3-Dichloroallyl) diisopropylthiocarbamate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-Dichlorobenzidine
U074	1,4-Dichloro-2-butene (I, T)
U075	Dichlorodifluoromethane
U192	3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide
U060	Dichloro diphenyl dichloroethane
U061	Dichloro diphenyl trichloroethane
U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U025	Dichloroethyl ether
U081	2, 4-Dichlorophenol
U082	2,6-Dichlorophenol
U240	2,4-Dichlorophenoxyacetic acid, salts and esters
U083	1,2-Dichloropropane
U084	1,3-Dichloropropene
U085	1,2:3,4-Diepoxybutane (I,T)
U108	1,4-Diethylene dioxide
U086	N,N-Diethylhydrazine
U087	0, 0-Diethyl-S-methyl-dithiophosphate
U088	Diethyl phthalate
U089	Diethylstilbestrol
U148	1,2-Dihydro-3,6-pyradizinedione
U090	Dihydrosafrole
U091	3,3-Dimethoxybenzidine
U092	Dimethylamine (I)
U093	Dimethylaminoazobenzene
U094	7,12-Dimethylbenz[a]anthracene
U095	3,3'-Dimethylbenzidine
U096	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	Dimethylcarbamoyl chloride
U098	1,1-Dimethylhydrazine
U099	1,2-Dimethylhydrazine
U101	2,4-Dimethylphenol
U102	Dimethyl phthalate
U103	Dimethyl sulfate
U105	2,4-Dinitrotoluene
U106	2,6-Dinitrotoluene
U107	Di-n-octyl phthalate

Hazardous Waste Number	Substance
U108	1,4-Dioxane
U109	1,2-Diphenylhydrazine
U110	Dipropylamine (I)
U111	Di-N-propylnitrosamine
U001	Ethanal (I)
U174	Ethanamine, N-ethyl-N-nitroso-
U067	Ethane, 1,2-dibromo-
U076	Ethane, 1,1-dichloro-
U077	Ethane, 1,2-dichloro-
U114	1,2-Ethanediylbiscarbamodithioic acid
U131	Ethane, 1,1,1,2,2,2-hexachloro-
U024	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-
U003	Ethanenitrile (I,T)
U117	Ethane, 1,1'-oxybis-(I)
U025	Ethane, 1,1'-oxybis[2-chloro-
U184	Ethane, pentachloro
U208	Ethane, 1,1,1,2-tetrachloro-
U209	Ethane, 1,1,2,2-tetrachloro-
U218	Ethanethioamide
U227	Ethane, 1,1,2-trichloro-
U247	Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)
U043	Ethene, chloro-
U042	Ethene, 2-chloroethoxy-
U078	Ethene, 1,1-dichloro-
U079	Ethene, trans-1,2-dichloro-
U210	Ethene, 1,1,2,2-tetrachloro-
U173	Ethanol, 2,2'-(nitrosoimino)bis-
U004	Ethanone, 1-phenyl-
U006	Ethanoyl chloride (C,R,T)
U112	Ethyl acetate (I)
U113	Ethyl acrylate (I)
U238	Ethyl carbamate (urethan)
U038	Ethyl 4,4'-dichlorobenzilate
U114	Ethylenebis(dithiocarbamic acid)
U067	Ethylene dibromide
U077	Ethylene dichloride
U115	Ethylene oxide (I, T)
U116	Ethylene thiourea
U117	Ethyl ether (I)
U076	Ethylidene dichloride
U118	Ethylmethacrylate
U119	Ethyl methanesulfonate
U139	Ferric dextran
U120	Fluoranthene
U122	Formaldehyde
U123	Formic acid (C, T)
U124	Furan (I)
U125	2-Furancarboxaldehyde (I)
U147	2,5-Furandione
U213	Furan, tetrahydro-(I)
U125	Furfural (I)
U124	Furfuran (I)
U206	D-Glucopyranose, 2-deoxy-2(3-methyl-3-nitrosoureido)-
U126	Glycidylaldehyde
U163	Guanidine, N-nitroso-N-methyl-N'nitro-
U127	Hexachlorobenzene
U128	Hexachlorobutadiene
U129	Hexachlorocyclohexane (gamma isomer)
U130	Hexachlorocyclopentadiene
U131	Hexachloroethane
U132	Hexachlorophene
U243	Hexachloropropene
U133	Hydrazine (R, T)
U086	Hydrazine, 1,2-diethyl-
U098	Hydrazine, 1,1-dimethyl-
U099	Hydrazine, 1,2-dimethyl-
U109	Hydrazine, 1,2-diphenyl-
U134	Hydrofluoric acid (C, T)
U134	Hydrogen fluoride (C,T)
U135	Hydrogen sulfide
U096	Hydroperoxide, 1-methyl-1-phenylethyl-(R)
U136	Hydroxydimethylarsine oxide
U116	2-Imidazolidinethione
U137	Indeno [1,2,3-cd]pyrene
U139	Iron dextran
U140	Isobutyl alcohol (I, T)
U141	Isosafrole
U142	Kepone
U143	Lasiocarpine
U144	Lead acetate
U145	Lead phosphate
U146	Lead subacetate
U129	Lindane
U147	Maleic anhydride
U148	Maleic hydrazide
U149	Malononitrile
U150	Melphalan
U151	Mercury
U152	Methacrylonitrile (I, T)
U092	Methanamine, N-methyl-(I)
U029	Methane, bromo-

Hazardous Waste Number	Substance
U045	Methane, chloro-(I,T)
U046	Methane, chloromethoxy-
U068	Methane dibromo-
U080	Methane, dichloro-
U075	Methane, dichlorodifluoro-
U138	Methane, iodo-
U119	Methanesulfonic acid, ethyl ester
U211	Methane, tetrachloro-
U121	Methane, trichlorofluoro-
U153	Methanethiol (I,T)
U225	Methane, tribromo-
U044	Methane, trichloro-
U121	Methane, trichlorofluoro-
U123	Methanoic acid (C,T)
U036	4,7-Methanoindan,1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-
U154	Methanol (I)
U155	Methapyrilene
U247	Methoxychlor
U154	Methyl alcohol (I)
U029	Methyl bromide
U186	1-Methylbutadiene (I)
U045	Methyl chloride (I,T)
U156	Methyl chlorocarbonate (I,T)
U226	Methylchloroform
U157	3-Methylcholanthrene
U158	4, 4'-Methylenebis(2-chloroaniline)
U132	2,2'-Methylenebis(3,4,6-trichlorophenol)
U068	Methylene bromide
U080	Methylene chloride
U122	Methylene oxide
U159	Methyl ethyl ketone (I,T)
U160	Methyl ethyl ketone peroxide (R,T)
U138	Methyl iodide
U161	Methyl isobutyl ketone (I)
U162	Methyl methacrylate (I, T)
U163	N-Methyl-N'-nitro-N-nitrosoguanidine
U161	4-Methyl-2-pentanone (I)
U164	Methylthiouracil
U010	Mitomycin C
U059	5,12-Naphthacenedione, (8S-cis)8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxyl]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
U165	Naphthalene
U047	Naphthalene, 2-chloro-
U166	1,4-Naphthalendione
U236	2,7-Naphthalenedisulfonic acid, 3,3'-[3,3-dimethyl-(1,1'-biphenyl)-4,4'diyl)]-bis(azo)bis(5-amino-4-hydroxy)-,tetrasodium salt
U166	1,4-Naphthoquinone
U167	1-Naphthylamine
U168	2-Naphthylamine
U167	alpha-Naphthylamine
U168	beta-Naphthylamine
U026	2-Naphthylamine, N,N'-bis(2-chloromethyl)-
U169	Nitrobenzene (I, T)
U170	p-Nitrophenol
U171	2-Nitropropane (I)
U172	N-Nitrosodi-n-butylamine
U173	N-Nitrosodiethanolamine
U174	N-Nitrosodiethylamine
U111	N-Nitroso-N-propylamine
U176	N-Nitroso-N-ethylurea
U177	N-Nitroso-N-methylurea
U178	N-Nitroso-N-methylurethane
U179	N-Nitrosopiperidine
U180	N-Nitrosopyrrolidine
U181	5-Nitro-o-toluidine
U193	1,2-Oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorine, 2-[bis(2-chloro-ethyl)amino]tetrahydro-, oxide 2-
U115	Oxirane (I,T)
U041	Oxirane, 2-(chloromethyl)-
U182	Paraldehyde
U183	Pentachloroethane
U184	Pentachlorobenzene
U185	Pentachloronitrobenzene
U242	Pentachlorophenol
U186	1,3-Pentadiene (I)
U187	Phenacetin
U188	Phenol
U048	Phenol, 2-chloro-
U039	Phenol, 4-chloro-3-methyl-
U081	Phenol, 2,4-dichloro-
U082	Phenol, 2,6-dichloro-
U101	Phenol, 2,4-dimethyl-
U170	Phenol, 4-nitro-
U242	Phenol, pentachloro-
U212	Phenol, 2,3,4,6-tetrachloro-
U230	Phenol, 2,4,5-trichloro-
U231	Phenol, 2,4,6-trichloro-
U137	1, 10-(1,2-phenylene)pyrene

Hazardous Waste Number	Substance
U145	Phosphoric acid, Lead salt
U087	Phosphorodithioic acid, 0,0-diethyl-, S-methylester
U189	Phosphorous sulfide (R)
U190	Phthalic anhydride
U191	2-Picoline
U192	Pronamide
U194	1-Propanamine (I,T)
U110	1-Propanamine, N-propyl-(I)
U066	Propane, 1,2-dibromo-3-chloro-
U149	Propanedinitrile
U171	Propane, 2-nitro-(I)
U027	Propane, 2,2'-oxybis[2-chloro-
U193	1,3-Propane sultone
U235	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U126	1-Propanol, 2,3-epoxy-
U140	1-Propanol, 2-methyl-(I,T)
U002	2-Propanone (I)
U007	2-Propenamide
U084	Propene, 1,3-dichloro-
U243	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	2-Propenenitrile
U152	2-Propenenitrile, 2-methyl-(I,T)
U008	2-Propenoic acid (I)
U113	2-Propenoic acid, ethyl ester (I)
U118	2-Propenoic acid, 2-methyl-,ethyl ester
U162	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U233	Propionic acid, 2-(2,4,5-trichlorophenoxy)-
U194	n-Propylamine (I, T)
U083	Propylene dichloride
U196	Pyridine
U155	Pyridine, 2-[2-(dimethylamino)2-thenyla-mino]-
U179	Pyridine, hexahydro-N-nitroso-
U191	Pyridine, 2-methyl-
U164	4(IH)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	Pyrrole, tetrahydro-N-nitroso-
U200	Reserpine
U201	Resorcinol
U202	Saccharin and salts
U203	Safrole
U204	Selenious acid
U204	Selenium dioxide
U205	Selenium disulfide (R, T)
U015	L-Serine, diazoacetate (ester)
U233	Silvex
U089	4,4'-Stilbenediol, alpha, alpha'-diethyl-
U206	Streptozotocin
U135	Sulfur hydride
U103	Sulfuric acid, dimethyl ester
U189	Sulfur phosphide (R)
U205	Sulfur selenide (R,T)
U232	2,4,5-T
U207	1,2,4,5-Tetrachlorobenzene
U208	1,1,1,2-Tetrachloroethane
U209	1,1,2,2-Tetrachloroethane
U210	Tetrachloroethene
U212	2,3,4,6-Tetrachlorophenol
U213	Tetrahydrofuran (I)
U214	Thallium (I) acetate
U215	Thallium (I) carbonate
U216	Thallium (I) chloride
U217	Thallium (I) nitrate
U218	Thioacetamide
U153	Thiomethanol (I,T)
U219	Thiourea
U244	Thiram
U220	Toluene
U221	Toluenediamine
U223	Toluene diisocyanate (R,T)
U222	O-Toluidine hydrochloride
U011	IH-1,2,4-Triazol-3-amine
U226	1,1,1-Trichloroethane
U227	1,1,2-Trichloroethane
U228	Trichloroethene
U228	Trichloroethylene
U121	Trichloromonofluoromethane
U230	2,4,5-Trichlorophenol
U231	2,4,6-Trichlorophenol
U232	2,4,5-Trichlorophenoxyacetic acid
U234	sym-Trinitrobenzene (R, T)
U182	1,3,5-Trioxane,2,4,5-trimethyl-
U235	Tris (2,3-dibromopropyl)phosphate
U236	Trypan blue
U237	Uracil, 5[bis(2-chloromethyl)amino]-
U237	Uracil mustard
U043	Vinyl chloride

Hazardous Waste Number	Substance	Hazardous Waste Number	Substance
U239	Xylene (I)		
U200	Yohimban-16-carboxylic acid, 11, 17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester		

(4) HAZARDOUS CONSTITUENTS. A solid waste which contains any of the hazardous constituents listed in table VI shall be listed as a hazardous waste unless the department concludes, after considering the factors set forth in s. NR 181.14 (2) (a) 3., that the waste is not capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed, or otherwise managed.

Note: Section NR 181.14 (2) (a) 3. identifies criteria for listing hazardous waste. A waste containing any of the constituents in table VI is examined by the department using these criteria. If the department determines the waste should be listed, it will be included under: Table II, Hazardous Waste from Nonspecific Sources; Table III, Hazardous Waste from Specific Sources; Table IV, Acute Hazardous Commericial Chemical Products and Manufacturing Chemical Intermediates; or Table V, Toxic Commercial Chemical Products and Manufacturing Chemical Intermediates. One should not assume that a waste containing one or more of the constituents in table VI will automatically be a hazardous waste. In table VI, the abbreviation N.O.S. (not otherwise specified) signifies those members of the general class not specifically listed by name.

Table VI

Hazardous Constituents

Acetonitrile (Ethanenitrile)

Acetatophenone (Ethanone, 1-phenyl)

3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts (Warfarin)

2-Acetylaminofluorene (acetamide, N-(9H-fluoren-2-yl)-)

Acetylchloride (Ethanoyl chloride)

1-Acetyl-2-thiourea (Acetamide, N-(aminothioxomethyl)-)

Acrolein (2-Propenal)

Acrylamide (2-Propenamide)

Acrylonitrile (2-Propenenitrile)

Aflatoxins

Aldrin (1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a,8b-hexahydro-endo, exo-(1,4,5,8-Dimethanonaphthalene)

Allyl alcohol (2-Propen-1-ol)

Aluminum phosphide

4-Aminobiphenyl([1,1'-Biphenyl]-4-amine)

6-Amino-1, 1a, 2, 8, 8a, 8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methylcarbamate azirino [2', 3': 3, 4] pyrrolo[1, 2-a] alindole-4, 7-dione, (ester) (Mitomycin C) Azirino[2'3':3,4]pyrrolo(1,2-a)indole-4,7-one, 6-amino-8-[((amino-carbonyl)oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-)

5-(Aminomethyl)-3-isoxazolol (3(2H)-Isoxazolone, 5-(aminomethyl)-) 4-Aminopyridine(4-Pyridinamine)

Amitrole (1H-1,2,4,-Triazol-3-amine)

Aniline (Benzenamine)

Antimony and compounds, N.O.S.

Aramite (Sulfurous acid, 2-chloroethyl-,2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester)

Arsenic and compounds, N.O.S.

Arsenic acid (Orthoarsenic acid)

Arsenic pentoxide (Arsenic (V) Oxide)

Arsenic trioxide (Arsenic (III) oxide)

Auramine (Benzenamine, 4,4'-carbonimidoylbis[N,N-Dimethyl-, monohydrochloride)

Azaserine (L-Serine, diazoacetate (ester))

Barium and compounds, N.O.S.

Barium cyanide

Benz[c]acridine (3,4-Benzacridine)

Benz[a]anthracene (1,2-Benzanthracene)

Benzene (Cyclohexatriene)

Benzenearsonic acid (Arsonic acid, phenyl-)

Benzene, dichloromethyl-(Benzal chloride)

Benzenethiol (Thiophenol)

Benzidine ([1,1'-Biphenyl]-4,4'diamine)

Benzo[b]fluoranthene (2,3-Benxofluoranthene)

Benzo[j]fluoranthene (7,8-Benzofluoranthene)

Benzo[a]pyrene (3,4-Benzopyrene)

p-Benzoquinone (1,4-Cyclohexadienedione)

Benzotrichloride (Benzene, trichloromethyl-)

Benzyl chloride (Benzene, (chloromethyl)-)

Beryllium and compounds, N.O.S.

Bis(2-chloroethoxy)methane (Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-])

Bis(2-chloroethyl) ether [Ethane, 1,1'-oxybis[2-chloro-])

N, N-Bis(2-chloroethyl)-2-napthylamine (Chlornaphazine)

Bis(2-chloroisopropyl) ether (Propane, 2,2'-oxybis[2-chloro-]

Bis(chloromethyl) ether (Methane, oxybis[chloro-])

Bis(2-ethylhexyl) phthalate (1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester)

Bromoacetone (2-Propanone, 1-bromo-)

Bromomethane (Methyl bromide)

4-Bromophenyl phenyl ether (Benzene, 1-bromo-4-phenoxy-)

Brucine (Strychnidin-10-one, 2,3-dimethoxy-)

2-Butanone peroxide (Methyl ethyl ketone, peroxide)

Butyl benzyl phthalate (1,2-Benzenedicarboxylic acid, butyl phenyl-methyl ester)

2-sec-Butyl-4,6-dinitrophenol (DNBP) (Phenol, 2,4-dinitro-6-(1-methylpropyl)-)

Cadmium and compounds, N.O.S.

Calcium chromate (Chromic acid, calcium salt)

Calcium cyanide

Carbon disulfide (Carbon bisulfide)

Carbon oxyfluoride (Carbonyl fluoride)

Chloral (Acetaldehyde, trichloro-)

Chlorambucil (Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-)

Chlordane (alpha and gamma isomers) (4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3,4,7,7a-tetrahydro-) (alpha and gamma isomers)

Chlorinated benzenes, N.O.S.

Chorinated ethane, N.O.S.

Chlorinated fluorocarbons, N.O.S.

Chlorinated napthalene, N.O.S.

Chlorinated phenol, N.O.S.

Chloroacetaldehyde (Acetaldehyde, chloro-)

Chloroalkyl ethers, N.O.S.

p-Chloroaniline (Benzenamine, 4-chloro-)

Chlorobenzene (Benzene, chloro-)

Chlorobenzilate (Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester)

2-Chloro-1,3-butadiene (chloroprene)

p-Chloro-m-cresol (Phenol, 4-chloro-3-methyl)

1-Chloro-2,3-epoxypropane (Oxirane, 2-(chloromethyl)-)

2-Chloroethyl vinyl ether (Ethane, (2-chloroethoxy)-)

Chloroform (Methane, trichloro-)

Chloromethane (Methyl chloride)

Chloromethyl methyl ether (Methane, chloromethoxy-)

2-Chloronaphthalene (Naphthalene, beta-chloro-)

2-Chlorophenol (Phenol, o-chloro-)

1-(o-Chlorophenyl)thiourea (Thiourea, (2-chlorophenyl)-)

3-Chloropropene (allylchloride)

3-Chloropropionitrile (Propanenitrile, 3-chloro-)

Chromium and compounds, N.O.S.

Chrysene (1,2-Benzphenanthrene)

Citrus red No. 2 (2-Naphthol, 1-[(2,5-dimethoxyphenyl)azol-)

Coal tars

Copper cyanide

Creosote (Creosote, wood)

Cresols (Cresylic acid) (Phenol, methyl-)

Crotonaldehyde (2-Butenal)

Cyanides (soluble salts and complexes), N.O.S.

Cyanogen (Ethanedinitrile)

Cyanogen bromide (Bromine cyanide)

Cyanogen chloride (Chlorine cyanide)

Cycasin (beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl-)

2-Cyclohexyl-4, 6-dinitrophenol (Phenol, 2-cyclohexyl-4,6-dinitro-)

Cyclophosphamide (2H-1,3,2,-Oxazaphosphorine, [bis(2-chloroethyl)amino]-tetrahydro-, 2-oxide

Daunomycin (5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-)

DDD (Dichlorodiphenyldichloroethane) (Ethane, 1,1-dichloro-2,2-bis(p-chlorophenyl)-)

DDE (Ethylene, 1,1-dichloro-2,2-bis(4-chlorophenyl)-)

DDT (Dichlorodiphenyltrichloroethane) (Ethane, 1,1,1-trichloro-2,2-bis(p-chlorophenyl)-)

Diallate (S-(2,3-dichloroallyl) diisopropylthiocarbamate)

Dibenz[a, h]acridine (1,2,5,6-Dibenzacridine)

Dibenz[a, j]acridine (1,2,7,8-Dibenzacridine)

Dibenz[a, h]anthracene (1,2,5,6-Dibenzanthracene)

7H-Dibenzo[c, g]carbazole (3,4,5,6-Dibenzcarbazole)

Dibenzo[a, e]pyrene (1,2,4,5-Dibenzpyrene)

Dibenzo[a, h]pyrene (1,2,5,6-Dibenzpyrene)

Dibenzo[a, i]pyrene (1,2,7,8-Dibenzpyrene)

1, 2-Dibromo-3-chloropropane (Propane,1,2-dibromo-3-chloro-)

1, 2-Dibromoethane (Ethylene dibromide)

Dibromomethane (Methylene bromide)

Di-n-butyl phthalate (1,2-Benzenedicarboxylic acid, dibutyl ester)

o-Dichlorobenzene, (Benzene, 1,2-dichloro-)

m-Dichlorobenzene, (Benzene, 1,3-dichloro-)

p-Dichlorobenzene, (Benzene, 1,4-dichloro-)

Dichlorobenzene, N.O.S. (Benzene, dichloro-, N.O.S.)

3,3'-Dichlorobenzidine ([1,1'-Biphenyl]-4-4'-diamine, 3,3'-dichloro-)

1,4-Dichloro-2-butene (2-Butene, 1,4-dichloro-)

Dichlorodifluoromethane (Methane, dichlorodifluoro-)

1,1-Dichloroethane (Ethylidene dichloride)

1,2-Dichloroethane (Ethylene dichloride)

trans-1, 2-Dichloroethene (1,2-Dichloroethylene)

Dichloroethylene, N.O.S. (Ethene, dichloro-, N.O.S.)

1, 1-Dichloroethylene (Ethene, 1,1-dichloro-)

Dichloromethane (Methylene chloride)

2,4-Dichlorophenol (Phenol, 2,4-dichloro-)

2,6-Dichlorophenol (Phenol, 2,6-dichloro-)

2,4-Dichlorophenoxyacetic acid (2,4-D), salts and esters (Acetic acid), 2,4-dichlorophenoxy-, salts and esters)

Dichlorophenylarsine (Phenyl dichloroarsine)

Dichloropropane, N.O.S. (Propane, dichloro-, N.O.S.)

1,2-Dichloropropane (Propylene dichloride)

Dichloropropanol, N.O.S. (Propanol, dichloro-, N.O.S.)

Dichloropropene, N.O.S. (Propene, dichloro-, N.O.S.)

1,3-Dichloropropene (1-Propene, 1,3-dichloro-)

Dieldrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octa-hydro-endo, exo-1,4:5,8-Dimethanonaphthalene)

1,2:3,4-Diepoxybutane (2,2'-Bioxirane)

Diethylarsine (Arsine, diethyl-)

N,N-Diethylydrazine (Hydrazine, 1,2-diethyl)

O, O-Diethyl S-methyl ester of phosphorodithioic acid (Phosphorodithioic acid, O,O-diethyl S-methyl ester

0,0-Diethylphosphoric acid, O-p-nitro-phenyl ester (Phosphoric acid, diethyl p-nitrophenyl ester)

Diethyl phthalate (1,2-Benzenedicarboxylic acid, diethyl ester)

0,0-Diethyl 0-2,pyrazinyl phosphorothioate (Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester

Diethylstilbesterol (4,4'-Stilbenediol, alpha, alpha-diethyl, bis(dihydrogen phosphate, (E)-)

Dihydrosafrole (Benzene, 1,2-methylene-dioxy-4-propyl-)

3,4-Dihydroxy-alpha-(methylamino)methyl benzyl alcohol (1,2-Benzenediol, 4,-[1-hydroxy-2(methylamino)ethyl]-)

Di-isopropylfluorophosphate (DFP) (Phosphorofluoridic acid, bis(1-methylethyl) ester)

Dimethoate (Phosphorodithioic acid, 0,0-dimethyl S-[2-(methylamino)-2-oxoethyl] ester

3,3'-Dimethoxybenzidine ([1,1'-Biphenyl]-4,4'diamine, 3-3'-dimethoxy-)

p-Dimethylaminoazobenzene (Benzenamine, N,N-dimethyl-4-(phenylazo)-)

7, 12-Dimethylbenz[a]anthracene (1,2-Benzanthracene, 7,12-dimethyl-)

3,3'-Dimethylbenzidine ([1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-)

Dimethylcarbamoyl chloride (Carbamoyl chloride, dimethyl-)

1,1-Dimethylhydrazine (Hydrazine, 1,1-dimethyl-)

1,2-Dimethylhydrazine (Hydrazine, 1,2-dimethyl-)

3,3-Dimethyl-1-(methylthio)-2-butanone)O-[(methylamino) carbonyl]oxime (Thiofanox)

alpha, alpha-Dimethylphenethylamine (Ethanamine, 1,1-dimethyl-2-phenyl-)

2,4-Dimethylphenol (Phenol, 2,4-dimethyl-)

Dimethyl phthalate (1,2-Benzenedicarboxylic acid, dimethyl ester)

Dimethyl sulfate (Sulfuric acid, dimethyl ester)

Dinitrobenzene, N.O.S. (Benzene, dinitro-,N.O.S.)

4,6-Dinitro-o-cresol and salts (Phenol, 2,4-dinitro-6-methyl-, and salts)

2, 4-Dinitrophenol (Phenol, 2,4-dinitro-)

2,4-Dinitrotoluene (Benzene, 1-methyl-2,4-dinitro-)

2,6-Dinitrotoluene (Benzene, 1-methyl-2,6-dinitro-)

Di-n-octyl phthalate(1,2-Benzenedicarboxylic acid, dioctyl ester)

1,4-Dioxane (1,4-Diethylene oxide)

Diphenylamine (Benzenamine, N-phenyl-)

1,2-Diphenylhydrazine (Hydrazine, 1,2-diphenyl-)

Di-n-propylnitrosamine (N-Nitroso-di-n-propylamine)

Disulfoton (0,0-diethyl S-[2-(ethylthio)ethyl]phosphorodithioate)

2,4-Dithiobiuret (Thioimidodicarbonic diamide)

Endosulfan (5-Norbornene, 2,3-dimethanol, 1,4,5,6,7,7-hexachloro-, cyclic sulfite)

Endrin and metabolites (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, endo-1,4:5,8-dimethanonaphthalene, and metabolites)

Ethyl carbamate (Urethan) (Carbamic acid, ethyl ester)

Ethyl cyanide (propanenitrile)

Ethylenebisdithiocarbamic acid, salts and esters (1,2-Ethanediylbiscarbamodithioic acid, salts and esters)

Ethyleneimine (Aziridine)

Ethylene oxide (Oxirane)

Ethylenethiourea (2-Imidazolidinethione)

Ethyl methacrylate (2-Propenoic acid, 2-methyl-, ethyl ester)

Ethyl methanesulfonate (Methanesulfonic acid, ethyl ester)

Fluoranthene (Benzo[j,k]fluorene)

Fluorine

2-Fluoroacetamide (Acetamide, 2-fluoro-)

Fluoroacetic acid, sodium salt (Acetic acid, fluoro-, sodium salt)

Formaldehyde (Methylene oxide)

Formic acid (Methanoic acid)

Glycidylaldehyde (1-Propanol-2,3-epoxy)

Halomethane, N.O.S.

Heptachlor (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-)

Heptachlor epoxide (alpha, beta, and gamma isomers) (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-2,3-epoxy-3a,4,7,7-tetrahydro-, alpha, beta, and gamma isomers)

Hexachlorobenzene (Benzene, hexachloro-)

Hexachlorobutadiene (1,3-Butadiene, 1,1,2,3,4,4-hexachloro-)

Hexachlorocyclohexane (all isomers) (Lindane and isomers)

Hexachlorocyclopentadiene (1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-)

Hexachloroethane (Ethane, 1,1,1,2,2,2-hexachloro-)

1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, endo-dimethanonaphthalene (Hexachlorohexahydro-endo-endo-dimethanonapthalene)

Hexachlorophene (2,2'-Methylenebis(3,4,6-trichlorophenol))

Hexachloropropene (1-Propene, 1,1,2,3,3,3-hexachloro-)

Hexaethyl tetraphosphate (Tetraphosphoric acid, hexaethyl ester)

Hydrazine (Diamine)

Hydrocyanic acid (Hydrogen cyanide)

Hydrofluoric acid (Hydrogen fluoride)

Hydrogen sulfide (Sulfur hydride)

Hydroxydimethylarsine oxide (Cacodylic acid)

Indeno (1, 2, 3-c, d)pyrene (1,10-(1,2-phenylene)pyrene)

Iodomethane (Methyl iodide)

Iron dextran (Ferric dextran)

Isocyanic acid, methyl ester (Methyl isocyanate)

Isobutyl alcohol (1-Propanol, 2-methyl-)

Isosafrole (Benzene, 1,2-methylenedioxy-4-allyl-)

Kepone (Decachloroctahydro-1,3,4-Methano-2H-cyclobuta[cd]pentalen-2-one)

Lasiocarpine (2-Butenoic acid, 2-methyl-, 7-[(2,3-dihydroxy-2-2(1-methoxyethyl)-3-methyl-1-oxobutoxy)methyl[-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl-ester)

Lead and compounds, N.O.S.

Lead acetate (Acetic acid, lead salt)

Lead phosphate (Phosphoric acid, lead salt)

Lead subacetate (Lead, bis(acetato-0)tetrahydroxytri-)

Maleic anhydride (2,5-Furandione)

Maleic hydrazide (1,2-Dihydro-3,6-pyridazinedione)

Malononitrile (Propanedinitrile)

Melphalan (Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-, L-)

Mercury fulminate (Fulminic acid, mercury salt)

Mercury and compounds, N.O.S.

Methacrylonitrile (2-Propenenitrile, 2-methyl-)

Methanethiol (Thiomethanol)

Methapyrilene (Pyridine, 2-[dimethylamino)ethyl]-2-thenylamino-)

Methomyl (Acetimidic acid, N-[(methylcarbamoyl)oxy][thio-, methyl ester

Methoxychlor (Ethane, 1,1,1-trichloro-2,2'-bis)p-methoxyphenyl)-)

2-Methylaziridine (1,2-Propylenimine)

3-Methylcholanthrene (benz[j]aceanthrylene, 1,2,-dihydro-3-methyl-)

Methyl cholocarbonate (Carbonochloridic acid, methyl ester)

4,4'-Methylenebis(2-chloroaniline) (Benzenamine, 4,4'-methylenebis-(2-chloro-)

Methyl ethyl ketone (MEK) (2-Butanone)

Methyl hydrazine (Hydrazine, methyl-)

2-Methyllactonitrile (Propanenitrile, 2-hydroxy-2-methyl-)

Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)

Methyl methanesulfonate (Methanesulfonic acid, methyl ester)

2-Methyl-2-(methylthio)propionaldehydeo-(methylcarbonyl) oxime (Propanal, 2-omethyl-2-(methylthio)-,

0-[(methylamino)carbonyl]oxime

N-Methyl-N'-nitro-N-nitrosoguanidine (Guanidine, N-nitroso-N-methyl-N'-nitro-)

Methyl parathion (0,0-dimethyl 0-(4-nitrophenyl)phosphorothioate)

Methylthiouracil (4-1H-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-)

Mustard gas (Sulfide, bis(2-chloroethyl)-)

Napthalene

1,4-Naphthoquinone (1,4-Naphthalene-dione)

1-Napthylamine (alpha-Naphthylamine)

2-Napthylamine (beta-Naphthylamine)

1-Napthyl-2-thiourea (Thiourea, 1-naphthalenyl-)

Nickel and compounds, N.O.S.

Nickel carbonyl(Nickel) tetracarbonyl

Nickel cyanide(Nickel(II)cyanide

Nicotine and salts(Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts

Nitric oxide (Nitrogen (II) oxide)

p-Nitroaniline (Benzenamine, 4-nitro-)

Nitrobenzene (Benzene), nitro-)

Nitrogen dioxide (Nitrogen (IV) oxide)

Nitrogen mustard and hydrochloride salt (Ethanamine, 2-chloro-,N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)

Nitrogen mustard N-oxide and hydrochloride salt (Ethanamine, 2-chloro, N-(2-chloroethyl) -N-methyl-, and hydrochloride salt

Nitroglycerine (1,2,3-Propanetriol, trinitrate)

4-Nitrophenol (Phenol, 4-nitro-)

4-Nitroquinoline-1-oxide (Quinoline, 4-nitro-1-oxide-)

Nitrosamine, N.O.S.

N-Nitrosodi-n-butylamine (1-Butanamine, N-butyl-N-nitroso-)

N-Nitrosodiethanolamine (Ethanol, 2,2'-(nitrosoimino)bis-)

N-Nitrosodiethylamine (Ethanamine, N-ethyl-N-nitroso-)

N-Nitrolsodimethylamine (Dimethylnitrosamine)

N-Nitroso-N-methylurea (Carbamide, N-ethyl-N-nitroso-)

N-Nitrosodiphenylamine (Ethanamine, N-methyl-N-nitroso-)

N-Nitroso-N-methylurea (Carbaminde, N-methyl-N-nitroso-)

N-Nitroso-N-methylurethane (Carbamic acid, methylnitroso-, ethyl ester)

N-Nitrosomethylvinylamine (Ethenamine, N-methyl-N-nitroso-)

N-Nitrosomorpholine (Morpholine, N-nitroso-)

N-Nitrosonornicotine (Nornicotine, N-nitroso-)

N-Nitrosopiperidine (Pyridine, hexahydro-,N-nitroso-)

N-Nitrosopyrrolidine (Pyrrole, tetrahydro-, N-nitroso-)

N-Nitrososarcosine (Sarcosine,N-nitroso-)

5-Nitro-o-toluidine (Benzenamine, 2-methyl-5-nitro-)

Octamethylpyrophosphoramide (Diphosphoramide, octamethyl-)

Osmium tetroxide (Osium(VIII)oxide)

7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid (Endothal)

Paraldehyde (1,3,5-Trioxane, 2,4,6-trimethyl-)

Parathion (Phosphorothioic acid, 0,0-diethyl 0-(p-nitrophenyl)ester

Pentachlorobenzene(Benzene,pentachloro-)

Pentachloroethane (Ethane, pentachloro-)

Pentachloronitrobenzene (PCNB) (Benzene, pentachloronitro-)

Pentachlorophenol (Phenol, pentachloro-)

Phenacetin (Acetamide, N-(4-ethoxy-phenyl)-)

Phenol (Benzene, hydroxy-)

Phenylenediamine (Benzenediamine)

Phenylmercury acetate (Mercury, acetato-phenyl-)

N-Phenylthiourea (Thiourea, phenyl-)

Phosgene (Carbonyl chloride)

Phosphine (Hydrogen phosphide)

Phosphorothioic acid, O,O-diethyl S-[(ethylthio)methyl]ester(Phorate)

Phosphorotioic acid, 0,0-dimethyl 0-[p-((dimethylamino)sulfonyl) phenyl] ester (Famphur)

Phthalic acid esters, N.O.S. (Benzene, 1,2-dicarboxylic acid, esters, N.O.S.)

Phthalic anhydride (1,2-Benzenedicarboxylic acid anhydride)

2-Picoline (Pyridine, 2-methyl-)

Polychlorinated biphenyl, N.O.S.

Potassium cyanide

Potassium silver cyanide (Argentate(1-), dicyano-, potassium)

Pronamide (3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide

1,3-Propane sultone (1,2-Oxathiolane, 2,2-dioxide)

n-Propylamine (1-Propanamine)

Propylthiouracil (undecamethylenediamine, N,N'-bis(2-chlorobenzyl)-, dihydrochloride

2-Propyn-1-ol (propargyl alcohol)

Pryidine

Reserpine (Yohimban-16-carboxylic acid,11,17-dimethoxy-18-[3,4,5-trimethoxybenzoyl)oxy], methyl ester)

Resorcinol (1,3-Benzenediol)

Saccharin and salts (1,2-Benzoisothiazolin-3-one, 1,1-dioxide, and salts)

Safrole (Benzene, 1,2-methylenedioxy-4-allyl-)

Selenious acid (Selenium dioxide)

Selenium and compounds, N.O.S.

Selenium sulfide (Sulfur selenide)

Selenourea(Carbamimidoselenoic acid)
Silver and compounds, N.O.S.
Silver cyanide
Sodium cyanide
Streptozotocin (D-Glucopyranose, 2-dioxy-2-(3-methyl-3-nitrosoureido)-)
Strontium sulfide
Strychnine and salts (Strychnidin-10-one, and salts)
1,2,4,5-Tetrachlorobenzene (Benzene, 1,2,4,5-tetrachloro-)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (Dibenzo-p-dioxin,2,3,7,8-tetrachloro-)
Tetrachloroethane, N.O.S. (Ethane, tetrachloro-,N.O.S.)
1,1,1,2-Tetrachloroethane (Ethane, 1,1,1,2-tetrachloro-)
1,1,2,2-Tetrachloroethane (Ethane, 1,1,2,2-tetrachloro-)
Tetrachloroethene (Ethene, 1,1,2,2,-tetrachloro-)
Tetrachloromethane (Carbon tetrachloride)
2, 3, 4, 6-Tetrachlorophenol (Phenol, 2,3,4,6-tetrachloro-)
Tetraethyldithiopyrophosphate (Dithiopyrophosphoric acid, tetraethyl-ester)
Tetraethyl lead (Plumbane, tetraethyl-)
Tetraethylpyrophosphate (Pyrophosphoric acid, tetraethyl ester)
Tetranitromethane (Methane, tetranitro-)
Thallium and compounds, N.O.S.
Thallic oxide (Thallium(III)oxide)
Thallium (I) acetate (Acetic acid, thallium(I)salt)
Thallium (I) carbonate (Carbonic acid, dithallium(I)salt)
Thallium (I) chloride
Thallium (I) nitrate (Nitric acid, thallium(1)salt)
Thallium selenite
Thallium (I) sulfate (Sulfuric acid, thallium(I)salt)
Thioacetamide (Ethanethiomide)
Thiosemicarbazide (Hydrazinecarbothioamide)
Thiourea (Carbamide thio-)
Thiuram (Bis(dimethylthiocarbamoyl) disulfide)
Toluene (Benzene, methyl-)
Toluenediamine (Diaminotoluene)
o-Toluidine hydrochloride (Benzenamine, 2-methyl-,hydrochloride)
Tolylene diisocyanate (Benzene, 1,3-diisocyanatomethyl-)
Toxaphene (Camphene, octachloro-)
Tribromomethane (Bromoform)
1,2,4-Trichlorobenzene (Benzene, 1,2,4-trichloro-)
1,1,1-Trichloroethane (Methyl chloroform)
1,1,2-Trichloroethane (Ethane, 1,1,2-trichloro-)
Thrichloroethene (Trichloroethylene)
Trichloromethanethiol (Methanethiol, trichloro-)
Trichloromonofluoromethane (Methane, trichlorofluoro-)
2,4,5-Trichlorophenol (Phenol, 2,4,5-trichloro-)
2,4,6-Trichlorophenol (Phenol, 2,4,6-trichloro-)
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)(Acetic acid, 2,4,5-trichlorophenoxy-)
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP) (Silvex) (Propionoic acid, 2-(2,4,5-trichlorophenoxy)-)
Trichloropropane, N.O.S. (Propane, trichloro-,N.O.S.)
1, 2, 3-Trichloropropane (Propane, 1,2,3-trichloro-)
0,0,0-Triethyl phosphorothioate (Phosphorothioic acid, 0,0,0-triethyl ester)
sym-Trinitrobenzene (Benzene, 1,3,5-trinitro-)
Tris(1-azridinyl) phosphine sulfide (Phosphine sulfide, tris(1-aziridnyl-)
Tris(2,3-dibromopropyl) phosphate (1-Propanol, 2,3-dibromo-,phosphate)
Trypan blue (2,7-Naphthalenedisulfonic acid, 3,3'-[3,3'-dimethyl(1,1'-biphenyl)-4,4'-diyl)bis(azo)]bis(5-amino-4-hydroxy-,tetrasodium salt)
Uracil mustard (Uracil 5-[bis)2-chloroethyl}amino]-)
Vanadic acid, ammonium salt (ammonium vandadate)
Vanadium pentoxide (Vanadium(V)oxide)
Vinyl chloride (Ethene, chloro-)
Zinc cyanide
Zinc phosphide

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81, r. (1)(e), am. Table II, III, (3)(a)4., (b), (c)(intro.) and (4), r. and recr. Table IV, V and VI, Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.17 Amendments to the hazardous waste lists. (1) Any person seeking to exclude either a waste listed in s. NR 181.16 or a waste produced at a particular generation site from the hazardous waste lists in s. NR 181.16 which is also listed as a hazardous waste in the federal regula-

tions promulgated by the EPA under 42 USC 6921(b) shall petition the EPA to delist that waste.

(2) Any person seeking to exclude a waste from the hazardous waste lists in s. NR 181.16 or a waste produced at a particular generation site which is not listed as a hazardous waste in the federal regulations promulgated by the EPA under 42 USC 6921(b) shall petition the department to delist that waste. The department shall either deny the petition in writing or proceed with rulemaking to delist the waste from the hazardous waste lists in s. NR 181.16.

(3) If the EPA deletes a hazardous waste from the hazardous waste lists in the federal regulations promulgated by the EPA under USC 6921(b), the department shall proceed with rulemaking to either delete the waste from the hazardous waste lists in s. NR 181.16 or retain it. The department may retain the waste on the hazardous waste lists in NR 181.16 if the department determines that the waste has characteristics which identify it as a hazardous waste based on the criteria in s. NR 181.14 and if the department determines that the retention is necessary to protect public health, safety or welfare. The department shall issue specific findings and conclusions on which its determination is based.

(4) If EPA deletes a hazardous waste from a particular generation site from the hazardous waste lists in the federal regulations promulgated by EPA under USC 6921(b), the department may not regulate under this chapter those wastes that have been deleted.

(5) If the EPA adds an additional solid waste to the hazardous waste lists in the federal regulations promulgated by the EPA under USC 6921(b), the department shall regulate the additional waste as a hazardous waste under this chapter as soon as EPA's action becomes final and shall proceed with rulemaking to adopt identical changes in s. NR 181.16.

(6) The department may include, or a person may petition the department to include, on the hazardous waste lists in s. NR 181.16 any additional solid waste which is not included on the hazardous waste lists in the federal regulations promulgated by the EPA under USC 6921(b) if the department determines that the solid waste has characteristics which identify it as a hazardous waste based on the criteria in s. NR 181.14 and if the department determines that the inclusion is necessary to protect public health, safety or welfare. The department shall issue specific findings and conclusions on which its determination is based and shall include the additional solid waste on the lists of hazardous waste in s. NR 181.16 by rule.

Note: For the purpose of this section, petitions under subs. (2) and (6) are petitions for rules under s. 227.015, Stats.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.18 EP toxicity test procedure. (1) TOXIC EXTRACTION PROCEDURE (EP). (a) A representative sample of the waste to be tested, no less than 100 grams in size, shall be obtained using the methods specified in appendix I or any other method capable of yielding a representative sample within the meaning of s. NR 181.04 (81).

Note: For detailed guidance on conducting the various aspects of the toxic extraction procedure see "Test Methods for the Evaluation of Solid Waste", SW-846. This publication is

available from: The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402, and is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(b) The sample shall be separated into its component liquid and solid phases using the method described in sub. (2). If the percent solids obtained from using this method totals less than 0.5% of the original weight of the waste, the residue shall be discarded and the operator should treat the liquid phase as the extract and proceed to par. (h). The percent solids is determined by drying the filter pad at 80°C until it reaches a constant weight and then calculating the percent solids using the following equation:

$$\frac{(\text{weight of pad} + \text{solid}) - (\text{tare weight of pad}) \times 100}{\text{initial weight of sample}} = \% \text{ solids}$$

(c) The solid material obtained from the separation procedure, set forth in sub. (2), shall be evaluated for its particle size. If the solid material has a surface area per gram of material equal to, or greater than, 3.1 cm^2 or passes through a 9.5 mm (0.375 inch) standard sieve, the operator shall proceed to par. (d). If the surface area is smaller or the particle size larger than specified above, the solid material shall be prepared for extraction by crushing, cutting or grinding the material so that it passes through a 9.5 mm (0.375 inch) sieve or, if the material is in a single piece, by subjecting the material to the structural integrity procedure described in sub. (3).

(d) The solid material obtained in par. (c) should be weighed and placed in an extractor with 16 times its weight of deionized water. Do not allow the material to dry prior to weighing. For purposes of this test, an acceptable extractor is one which will impart sufficient agitation to the mixture to not only prevent stratification of the sample and extraction fluid but also insure that all sample surfaces are continuously brought into contact with well mixed extraction fluid.

(e) After the solid material and deionized water are placed in the extractor, the operator shall begin agitation and measure the pH of the solution in the extractor. If the pH is greater than 5.0, the pH of the solution shall be decreased to 5.0 $\pm$ 0.2 by adding 0.5 N acetic acid. If the pH is equal to or less than 5.0, no acetic acid shall be added. The pH of the solution shall be monitored during the course of the extraction and if the pH rises above 5.2, 0.5N acetic acid should be added to bring the pH down to 5.0 $\pm$ 0.2. However, in no event shall the aggregate amount of acid added to the solution exceed 4 ml of acid per gram of solid. The mixture shall be agitated for 24 hours and maintained at 20° - 40°C (68°-104°F) during this time. It is recommended that the operator monitor and adjust the pH during the course of the extraction with a device such as the Type 45-A pH Controller manufactured by Chemtrix, Inc., Hillsboro, Oregon 97123 or its equivalent, in conjunction with a metering pump and reservoir or 0.5N acetic acid. If such a system is not available, the following manual procedure shall be employed:

1. A pH meter should be calibrated in accordance with the manufacturer's specifications.

2. The pH of the solution should be checked and, if necessary, 0.5N acetic acid should be manually added to the extractor until the pH reaches 5.0 $\pm$ 0.2. The pH of the solution should be adjusted at 15, 30

and 60 minute intervals, moving to the next longer interval if the pH does not have to be adjusted more than 0.5N pH units.

3. The adjustment procedure should be continued for at least 6 hours.

4. If at the end of the 24-hour extraction period, the pH of the solution is not below 5.2 and the maximum amount of acid (4 ml per gram of solids) has not been added, the pH should be adjusted to 5.0 $\pm$ 0.2 and the extraction continued for an additional 4 hours, during which the pH should be adjusted at one hour intervals.

(f) At the end of the 24-hour extraction period, deionized water shall be added to the extractor in an amount determined by the following equation:

$V = (20)(W) - 16(W) - A$, where,

V = ml deionized water to be added

W = weight in grams of solid charged to extractor

A = ml of 0.5N acetic acid added during extraction

(g) The material in the extractor should be separated into its component liquid and solid phases as described under sub. (2).

(h) The liquids resulting from pars. (b) and (g) shall be combined. This combined liquid (or the waste itself if it has less than ½% solids, as noted in par. (b)), is the extract and shall be analyzed for the presence of any of the contaminants specified in table I of s. NR 181.15 (5) (b) using the analytical procedures designated in sub. (4).

(2) SEPARATION PROCEDURE. (a) *Equipment.* A filter holder, designed for filtration media having a nominal pore size of 0.45 micrometers and capable of applying a 5.3 kg/cm^2 (75 psi) hydrostatic pressure to the solution being filtered shall be used. For mixtures containing nonabsorptive solids, where separation can be affected without imposing a 5.3 kg/cm^2 pressure differential, vacuum filters employing a 0.45 micrometers filter media can be used.

Note: For further guidance on filtration equipment for procedures see SW-846, "Test Methods for Evaluating Solid Waste." This publication is available from: The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402, and is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(b) *Procedure.* 1. Following manufacturer's directions, the filter unit shall be assembled with a filter bed consisting of a 0.45 micrometer filter membrane. For difficult or slow to filter mixtures a prefilter bed consisting of the following prefilters in increasing pore size (0.65 micrometer membrane, fine glass fiber prefilter, and coarse glass fiber prefilter) shall be used.

2. The waste shall be poured into the filtration unit.

3. The reservoir shall be slowly pressurized until liquid begins to flow from the filtrate outlet at which point the pressure in the filter shall be immediately lowered to 10-15 psig. Filtration shall be continued until liquid flow ceases.

4. The pressure shall be increased stepwise in 10 psi increments to 75 psig and filtration continued until flow ceases or the pressurizing gas begins to exit from the filtrate outlet.

5. The filter unit shall then be depressurized, the solid material removed and weighed and then transferred to the extraction apparatus, or, in the case of final filtration prior to analysis, discarded. Do not allow the material retained on the filter pad to dry prior to weighing.

6. The liquid phase should be stored at 4°C for subsequent use in sub. (1) (h).

Note: This procedure is intended to result in separation of the "free" liquid portion of the waste from any solid matter having a particle size 0.45 um. If the sample will not filter, various other separation techniques can be used to aid in the filtration. As described above, pressure filtration is employed to speed up the filtration process. This does not alter the nature of the separation. If liquid does not separate during filtration, the waste can be centrifuged. If separation occurs during centrifugation, the liquid portion (centrifugate) is filtered through the 0.45 um filter prior to becoming mixed with the liquid portion of the waste obtained from the initial filtration. Any material that will not pass through the filter after centrifugation is considered a solid and is extracted.

(3) STRUCTURAL INTERGRITY PROCEDURE. (a) *Equipment.* A structural integrity tester having a 3.18 cm (1.25 in.) diameter hammer weighing 0.33 kg (0.73 lbs.) and having a free fall of 15.24 cm (6 in.) shall be used.

Note: Such a device may be obtained from Associated Design and Manufacturing Company, Alexandria, VA 22314, as Part No. 125.

(b) *Procedure.* 1. The sample holder should be filled with the material to be tested. If the sample of waste is a large monolithic block, a portion should be cut from the block having the dimensions of 3.3 cm (1.3 in.) diameter × 7.1 cm (2.8 in.) cylinder. For a fixated waste, samples may be cast in the form of a 3.3 cm (1.3 in.) diameter × 7.1 cm (2.8 in.) cylinder for purposes of conducting this test. In such cases, the waste may be allowed to cure for 30 days prior to further testing.

2. The sample holder should be placed into the structural integrity tester, then the hammer should be raised to its maximum height and dropped. This should be repeated 15 times.

3. The material should be removed from the sample holder, weighed, and transferred to the extraction apparatus for extraction.

(4) ANALYTICAL PROCEDURES FOR ANALYZING EXTRACT CONTAMINANTS. The test methods for analyzing the extract are as follows:

(a) For arsenic, barium, cadmium, chromium, lead, mercury, selenium or silver: "Methods for Chemical Analysis of Water and Wastes," as contained in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, May, 1980, EPA, Office of Solid Waste.

(b) For endrin; lindane; methoxychlor; toxaphene; 2,4-D; 2,4,5-TP Silvex: in "Methods for Benzidine, Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater," as contained in SW-846 "Test Methods for the Evaluation of Solid Waste."

(c) For all analyses, the method of standard addition shall be used for the quantification of species concentration. This method is described in SW-846 "Test Methods for the Evaluation of Solid Waste."

Note: This publication may be obtained from:

The Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

This publication is available for inspection at the offices of the department, the secretary of state, and the revisor of statutes.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81, am. (4), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.19 Recycling. (1) GENERAL. (a) Except as provided in sub. (2), the owner or operator of a hazardous waste recycling facility which meets the requirements of this section may be exempted from all of the requirements of subch. V, except those requirements specifically made applicable in this section, in one of 2 ways:

1. The owner or operator of a recycling facility which meets the requirements of sub. (3) is exempt from regulation under subch. V and is not required to apply for a written exemption under this section.

2. The owner or operator of a recycling facility which is not exempt under sub. (3) may apply to the department for a written exemption from regulation under subch. V. The following provisions apply to the owner or operator of a recycling facility who applies for a written exemption from the requirements of subch. V under sub. (4), (5) or (6):

a. The owner or operator of a recycling facility who obtained an operating license, interim license, variance or waiver for the recycling activities prior to July 1, 1985 may continue to operate the recycling facility under the terms and conditions of the applicable approval, or may request an exemption under this section to replace that approval.

b. The owner or operator of a recycling facility in existence on July 1, 1985 who did not obtain an operating license, interim license, variance or waiver shall, within 180 days of July 1, 1985, request an exemption under this section, apply for an interim license under s. NR 181.53(2) or terminate the hazardous waste recycling activity and decontaminate or remove all hazardous waste and hazardous waste residues, regardless of whether the facility was exempt from regulation under this section as it existed prior to July 1, 1985. Receipt of a request for an exemption under this section by the department with 180 days after July 1, 1985 shall allow such a facility to continue to operate until the exemption request is approved or denied by the department, provided that the owner or operator complies with the following requirements:

1) The security requirements specified in s. NR 181.42 (3) (a).

2) The inspection requirements specified in s. NR 181.42(7).

3) Operation requirements specified in s. NR 181.42 (1) (m).

4) Recordkeeping and reporting requirements specified in s. NR 181.42 (6) (b) and (c).

5) The hazardous waste discharge reporting requirements specified in s. NR 181.42 (4) (c)3.

6) Incinerators burning only hazardous waste for the primary purpose of heat recovery shall comply with the operational requirements specified in s. NR 181.45(4).

7) This temporary exemption applies only to the actual recycling activity and not to other hazardous waste management activities. Applicable generator, transporter, storage, treatment and disposal requirements shall be complied with unless the facility is specifically exempted.

c. The owner or operator of a proposed recycling facility may request an exemption under this section from certain requirements of subch. V for the proposed recycling activities. The owner or operator of a proposed recycling facility may not construct or operate such a facility until the department approves the exemption request in writing.

(b) The department shall advise the applicant in writing of the receipt and approval or disapproval of any exemption request. Disapproval of an exemption request shall require the owner or operator to terminate the existing hazardous waste recycling activity and decontaminate or remove all hazardous waste and hazardous waste residues, unless the facility can be operated under an existing department approval under par. (a)2. The department shall advise the applicant, in writing with 65 business days after receipt of the exemption request, of whether the exemption request is complete or incomplete. Failure to provide a complete exemption request with 65 business days after the date of the written advisory that the request is incomplete may be a basis for denial of the request. The department may extend the period to provide a complete exemption request if the applicant can show that such an extension is necessary to develop the required information to complete the request. The department shall advise the applicant of the approval or disapproval of the exemption request within 65 business days after finding the request complete.

(c) 1. The department shall make a determination of an exemption request based on the following criteria:

a. The types of wastes to be recycled and their associated hazards.

b. The likelihood of a discharge of hazardous waste or hazardous constituents from the normal operations of the recycling activity and the associated impact on public health and safety or the environment.

c. Whether the exemption would promote improved methods of managing hazardous waste.

2. The department shall grant an exemption to all recycling facilities which meet the requirements of this section unless the department determines that the recycling will present a significant hazard to public health and safety or the environment, which may not be eliminated or mitigated by appropriate procedures or controls.

(d) Any recycling exemption applies only to the actual recycling activity, and not to other hazardous waste management activities. Applicable generator, transporter, storage, treatment and disposal requirements shall be complied with unless the facility is specifically exempted.

Note: Any hazardous waste generated from a recycling activity is regulated under this chapter. For example, wastes generated from the processing of used batteries, such as acid, lead plates and battery cases must be properly managed at an approved hazardous waste facility.

(e) Hazardous waste recycling units shall be constructed of sturdy, leakproof materials and shall be designed, constructed and operated so as to prevent hazardous waste from being discharged during the unit's operating life.

(f) Upon termination of a recycling activity regulated under this section, the owner or operator shall remove all hazardous waste and hazardous waste residues from the recycling units and terminate the hazardous

waste recycling activity and decontaminate or remove any other hazardous waste or hazardous waste residues.

Note: Any hazardous waste recycling activity regulated under this section may be terminated by modifying the recycling activity so as to cease recycling hazardous waste, but continuing to recycle nonhazardous solid waste.

(2) INELIGIBLE ACTIVITIES. The following types of activities are not eligible for an exemption under this section:

(a) Recycling that constitutes disposal as defined in s. NR 181.04(25).

(b) Except as provided in sub. (4), the burning of hazardous waste in incinerators as defined in s. NR 181.04(51).

(c) Recycling in surface impoundments.

(d) Recycling in waste piles.

(e) Recycling in land treatment units.

(3) LEGITIMATE RECOVERY OR RECLAMATION. The legitimate recovery or reclamation of hazardous waste, as defined in s. NR 181.04 (61g), is exempt from regulation under subch. V., provided that the owner or operator of such a recycling facility complies with the following requirements:

(a) The security requirements in s. NR 181.42 (3).

(b) The contingency plan requirements in s. NR 181.42 (4), except that these requirements do not apply to any generator who recycles only waste generated on-site and who generates and accumulates hazardous waste in quantities less than those specified in s. NR 181.13.

(c) The personnel training requirements in s. NR 181.42 (5) (a) and (b), except that these requirements do not apply to any generator who recycles only waste generated on-site and who generates and accumulates hazardous waste in quantities less than those specified in s. NR 181.13.

(d) The manifest, recordkeeping and reporting requirements in s. NR 181.42 (6).

(e) The general inspection requirements in s. NR 181.42 (7).

(f) The hazardous waste discharge reporting requirements specified in s. NR 181.42 (4) (c)3.

(g) The notification requirements in s. NR 181.06.

(h) The operational requirements specified in s. NR 181.42 (1) (m).

(i) If the facility is accepting waste from off-site for recycling, the following additional requirements apply:

1. The general waste analysis requirements in s. NR 181.42 (1) (d).

2. The waste analysis plan requirements in s. NR 181.42 (1) (e).

3. The applicable storage requirements in s. NR 181.43.

(j) The requirements of sub. (1) (d), (e) and (f).

(k) Other requirements as ordered, and determined to be necessary, by the department to protect public health and safety or the environment.

(4) LEGITIMATE BURNING. Burning hazardous waste, for energy recovery in boilers or industrial furnaces, as defined in s. NR 181.04(6r) and (52m), may be exempted from regulation under subch. V. To be considered for this exemption the owner or operator of the facility shall submit a written request to the department in accordance with sub. (1) (a)2.

(a) At a minimum, the request shall contain the following:

1. The name, address and telephone number of the owner and the operator of the facility.

2. A drawing of the recycling facility.

3. A description of the processes to be used for the recycling of hazardous waste, and how these processes meet the definition of recycling under s. NR 181.04(78g), the capacity of these processes and a description of the management of any hazardous waste residues generated from the recycling activity.

4. A description of the hazardous wastes to be recycled at the facility, including the hazardous waste numbers, and an estimate of the quantities of each waste to be recycled annually.

5. A description of how the requirements of par. (b) will be complied with, including a copy of the facility's contingency plan as required under s. NR 181.42 (4) and a description of how the facility will close in accordance with sub. (1) (f), except that this description is not required for facilities which burn hazardous waste for energy recovery in a boiler or industrial furnace as defined in s. NR 181.04(6r) and (52m), in amounts less than 1,000 kilograms per month, provided that the only hazardous waste burned exhibits only the characteristic of ignitability, and no other characteristic listed in s. NR 181.15, or is listed under s. NR 181.16 solely because it exhibits the characteristic of ignitability.

6. The signature of the owner or operator as specified in s. NR 181.55(3).

(b) Exemptions for burning hazardous waste in boilers and in industrial furnaces for energy recovery shall be issued in writing by the department. The owner or operator of such an exempt facility shall meet the following requirements:

1. The security requirements in s. NR 181.42(3).

2. The contingency plan requirements in s. NR 181.42(4).

3. The personnel training requirements in s. NR 181.42 (5) (a) and (b).

4. The manifest, recordkeeping and reporting requirements in s. NR 181.42(6).

5. The general inspection requirements in s. NR 181.42(7).

6. The hazardous waste discharge reporting requirements specified in s. NR 181.42 (4) (c) 3.

7. The operational requirements specified in s. NR 181.42 (1) (m).

8. The notification requirements specified in s. NR 181.06.

9. The requirements of sub. (1) (d), (e) and (f).

10. Other requirements as specified, and determined to be necessary, by the department to protect public health and safety or the environment.

(5) BENEFICIAL USE OR REUSE. Beneficial use or reuse of a hazardous waste as defined in s. NR 181.04(6g) may be exempted from regulation under subch. V. To be considered for this exemption, the owner or operator of the facility shall submit a written request to the department in accordance with sub. (1) (a)2.

(a) At a minimum the request shall contain the following:

1. The name, address and telephone number of owner and the operator of the facility where the waste will be used or reused.

2. A description of how the hazardous wastes will be used or reused, including any processes for treatment of the hazardous wastes prior to use or reuse.

3. A description of the hazardous wastes to be used or reused at the facility, including the hazardous waste numbers, and an estimate of the quantities of each of waste to be recycled annually.

4. A description of the management of any hazardous waste residues generated from the recycling activity.

5. A description of how the requirements of par. (b) will be complied with, including a copy of the facility's contingency plan as required under s. NR 181.42 (4) and a description of how the facility will close in accordance with sub. (1) (f).

6. The signature of the owner or operator as specified in s. NR 181.55(3).

(b) Exemptions for using or reusing hazardous waste shall be issued in writing, by the department. The owner or operator of such an exempt facility shall meet the following requirements:

1. The security requirements in s. NR 181.42(3).

2. The contingency plan requirements in s. NR 181.42(4).

3. The personnel training requirements in s. NR 181.42 (5) (a) and (b).

4. The manifest, recordkeeping and reporting requirements in s. NR 181.42(6).

5. The general inspection requirements in s. NR 181.42(7).

6. The hazardous waste discharge reporting requirements specified in s. NR 181.42 (4) (c)3.

7. The operational requirements specified in s. NR 181.42 (1) (m).

8. The notification requirements in s. NR 181.06.

9. The requirements of sub. (1) (d), (e) and (f).

10. Other requirements as specified, and determined to be necessary, by the department to protect public health and safety or the environment.

(6) OTHER ACTIVITIES. Other recycling activities not specifically eligible for an exemption under subs. (3), (4) and (5) may also be exempted by the department from certain requirements of subch. V. Owners or operators of such recycling facilities shall make a request to the department, in writing, for such an exemption. The request shall be made in accordance with sub. (1) (a)2. and shall contain the minimum information specified in sub. (4) (a).

(7) SPECIAL REQUIREMENTS. The department may require the owner or operator of any recycling facility which is otherwise exempt under this section to comply with all or part of the requirements of subch. V, under s. NR 181.08, where compliance with such requirements is necessary to protect public health, safety or welfare, or the environment.

(8) REVOCATION. An exemption under this section may be revoked by the department if the owner or operator of the recycling facility fails to comply with any of the applicable requirements of this section or any term or condition of the exemption.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81, r. and recr. Register, June, 1985, No. 354, eff. 7-1-85.

Subchapter III

Generators

NR 181.21 General. (1) APPLICABILITY. All generators of solid waste shall determine if that waste is hazardous using the procedures specified in s. NR 181.22. Generators of solid waste who find their waste to be hazardous following such evaluation, and who meet the definition of a generator in s. NR 181.04 (42), shall comply with the requirements of this subchapter, except as provided in sub. (2). Any person who imports hazardous waste from abroad into Wisconsin shall comply with the requirements of this subchapter.

(2) EXEMPTIONS. (a) Any generator who generates or accumulates hazardous waste in quantities less than those specified in s. NR 181.13 is exempt from the requirements of this subchapter, except as otherwise provided in s. NR 181.13.

(b) If the generator sends hazardous waste to an on-site storage, treatment, disposal or recycling facility, the generator shall comply with all the requirements of this subchapter with regard to the hazardous wastes which are managed on-site, including wastes which are recycled on-site, except the requirements of s. NR 181.23 (2).

(c) Persons who generate waste pesticide containers which are a hazardous waste and who triple rinse each emptied pesticide container in accordance with s. NR 181.135 (4) and dispose of the pesticide rinsate on their own property in accordance with the prescribed dosage rate, in a manner which is consistent with its original use and which will not contaminate the waters of the state or create a hazard to persons or property, including fish and wildlife, are not required to comply with the re-

quirements of subch. V or VI or any of the requirements of this subchapter except s. NR 181.22.

(d) A person who generates metallic mining wastes resulting from a mining operation as defined in s. 144.81 (5), Stats., is not required to comply with any of the requirements of this subchapter except s. NR 181.22.

(3) INFORMATION ON HAZARDOUS CHARACTERISTICS. Generators shall identify the hazardous characteristics of the waste which must be known to enable the owner or operator of a storage, treatment or disposal site or facility to comply with the requirements of this chapter or with the conditions of the license issued under the provisions of s. NR 181.55, and shall supply this information to the designated facility before offering the hazardous waste to a transporter.

(4) STORAGE, TREATMENT AND DISPOSAL. (a) Except as provided in sub. (2), all generators shall either:

1. Store, treat, dispose or recycle all hazardous waste in an on-site hazardous waste facility or recycling facility which has received an operating license, interim license, variance or waiver, or is exempt from licensing under sub. (5), (6), or (7), or under s. NR 181.42 (1) (a); or

2. Ensure delivery to an off-site hazardous waste facility or recycling facility which:

a. For facilities located outside of Wisconsin, is permitted by the EPA, is exempt from permitting or has interim status under 42 USC 6925 (e); or

b. Has been issued an operating license as a hazardous waste facility under this chapter, or has an interim license, variance, waiver, or exemption from licensing under s. NR 181.42 (1) (a).

(b) If the generator sends the hazardous waste to an on-site hazardous waste facility or an off-site hazardous waste facility within Wisconsin which the generator owns or operates, the generator shall comply with the requirements of subchs. V and VI, except as provided in subs. (5), (6) and (7) and s. NR 181.42 (1) (a).

(5) ACCUMULATION OF WASTES BY GENERATORS FOR 90 DAYS OR LESS. (a) *On-site accumulations.* A generator may accumulate hazardous waste on-site, in containers or above ground tanks, but not underground tanks, without a storage license, for 90 days or less provided that the generator complies with the following requirements:

1. Within 90 days, all such waste is either:

a. Shipped off-site to a facility which meets the requirements of sub. (4) (a)2.; or

b. Treated, stored or disposed of in an on-site hazardous waste facility or an on-site recycling facility that has received an operating license, interim license, variance or waiver, or is exempt from licensing under s. NR 181.42 (1) (a) and is approved to accept the waste under the operating license, interim license, variance, waiver or exemption.

2. If the waste is placed in containers, the generator shall meet the following requirements:

a. The generator shall comply with the packaging, labeling, marking and placarding requirements in s NR. 181.26.

b. The generator shall inspect all containers used for storing hazardous waste at least weekly for evidence of leakage, corrosion or deterioration of the containers or discharge confinement structures, such as dikes.

c. The generator shall record the inspections under subpar. b. in an inspection log or summary. These records shall be kept for at least 3 years from the date of the inspection. At a minimum, these records shall include the date and time of inspection, the name of the inspector, a notation of the observation made, and the date and name of any repairs or other remedial actions.

d. If a container is not in good condition or if the contents of the storage container begin to leak, the hazardous waste in the container shall be recontainerized in a storage container in good condition.

e. A container holding hazardous waste shall always be closed during storage except with it is necessary to add or remove waste.

f. A container holding hazardous waste may not be opened, handled or stored in a manner which may rupture the container or cause it to leak.

g. Containers holding ignitable or reactive waste shall be located at least 50 feet from the generation site's property line.

h. Storage containers holding hazardous waste which is incompatible with any waste or other materials stored nearby in other containers, waste piles, open tanks or surface impoundments shall be separated from them by means of a dike, berm, wall or other device.

i. Hazardous waste may not be placed in an unwashed container that previously held an incompatible waste or material, unless s. NR 181.42 (1) (m)2., is complied with.

j. The container shall be made or lined with materials which will not react with, and are otherwise compatible with the hazardous waste to be stored.

3. If the waste is placed in above ground tanks, the generator shall meet the following requirements:

a. The generator shall inspect all tanks used for storing hazardous waste at least weekly for evidence of leakage, or corrosion or deterioration of the tank or discharge confinement structures, such as dikes.

b. The generator shall inspect tanks used to store hazardous waste once each operating day to ensure that discharge control equipment, such as the waste feed cutoff, is in good working order, to ensure that the tank is being operated according to its design by gathering data from monitoring equipment, such as pressure or temperature gauges and to ensure that the level of the waste in the tank complies with subpar. f.

c. The generator shall record the inspections under subpar. a. in an inspection log or summary. These records shall be kept for at least 3 years from the date of the inspection. At a minimum, these records shall include the date and time of inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

d. Incompatible waste may not be placed in the same tank unless s. NR 181.42 (1) (m)2. is complied with.

e. Storage tanks which contain volatile waste shall comply with s. NR 154.13, regarding the control of organic compound emissions.

f. Uncovered tanks shall be operated to ensure at least 2 feet of freeboard.

g. Hazardous waste may not be placed in a tank if the waste could cause the tank or its inner liner to rupture, leak, corrode or otherwise fail before the end of its intended life.

h. Ignitable or reactive waste may not be placed in a tank unless the waste is treated, rendered, or mixed before or immediately after placement in the tank so that the resulting waste mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste in s. NR 181.15 (2) or (4); or compliance with s. NR 181.42 (1) (m)2. is ensured; or the waste is stored or treated in such a way that it is protected from any condition which may cause the waste to ignite or react; or the tank is used solely for emergencies.

i. The owner or operator of a facility which stores ignitable or reactive waste in covered tanks shall comply with the buffer zone requirements for tanks set forth in ch. Ind. 8.

j. Where hazardous waste is continuously fed into a tank, the tank shall be equipped with a means to stop this inflow, such as a waste feed cutoff system or a bypass system to a stand-by tank.

4. The date upon which each period of accumulation begins shall be clearly marked and visible for inspection on each container or tank;

5. The generator complies with the contingency plan and emergency procedures in s. NR 181.42(4) and personnel training requiements in s. NR 181.42(5).

6. The identity and location of all stored hazardous waste shall be known throughout the entire accumulation period.

7. The storage of hazardous waste shall be conducted in such a manner that no discharge of hazardous waste occurs.

8. As provided in s. NR 181.08, the department may require a generator to comply with all or part of the requirements of subch. V, if the department determines that there is a potential for discharge of the hazardous waste or hazardous constituents or determines that a discharge has occurred at the generation site.

(b) *Extension of 90-day period.* A generator who accumulates hazardous waste for more than 90 days in containers or above ground tanks is an operator of a hazardous waste storage facility and is subject to the facility requirements of subch. V and the licensing requirements of subch. VI, unless the generator has been granted an extension to the 90 day period. Such an extension may be granted by the department if hazardous wastes must remain on-site for longer than 90 days due to unforeseen, temporary and uncontrollable circumstances. An extension of up to 30 days may be granted at the discretion of the department on a case-by-case basis. Such extensions:

1. Shall be applied for in writing. Written requests shall be submitted to the department and shall state what the unforeseen, temporary and uncontrollable circumstances are which caused the generator to apply.

2. Shall be issued in written form.

3. May be revoked by the department at any time if it is determined that revocation is appropriate to protect human health and the environment.

(6) ACCUMULATION IN UNDERGROUND SPILL CONTAINMENT TANKS. A generator may accumulate hazardous waste on-site in underground tanks used for spill or leak containment, without a storage license, provided that the generator meets the following requirements:

(a) The underground tank shall be an integral part of a spill containment system which is used to collect hazardous waste from a spill or leak;

(b) The storage capacity of the tank shall be less than 1,000 gallons;

(c) The tank shall be normally empty, unless a spill or leak occurs;

(d) The generator shall remove all hazardous wastes which accumulate in the tank as a result of a spill or leak within 7 days;

(e) The generator shall comply with the applicable tank requirements in par. (a)3.a. through j.; and

(f) The generator shall manage any hazardous waste which is removed from the tank in accordance with the requirements of this subchapter.

(7) TREATMENT WITH ABSORBENT MATERIAL BY GENERATORS. A generator may combine absorbent material with a waste generated on-site in a container for the purpose of eliminating free liquids, without a treatment license, but only at the time that waste is first placed in a container and only if the generator complies with all of the following requirements when such treatment takes places:

(a) The requirements of s. NR 181.42 (1) (m)2. for ignitable, reactive and incompatible wastes;

(b) The requirements of sub. (5) (a)2.d. for containers not in good condition;

(c) The requirements of sub. (5) (a)2.j. for container materials; and

(d) The treatment shall be performed in such a way as to not allow any spillage of waste or treated waste. If spillage is unavoidable, the treatment shall take place in an area where all spilled waste can be contained and collected for immediate placement in the container in which the treatment is taking place.

(e) The generator shall manage any hazardous waste which is treated in accordance with the requirements of this subchapter.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81, am. (2) (a) and (b), (4) and (5), cr. (6) and (7), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.22 Hazardous waste determination. A person who produces a solid waste as defined in s. NR 181.04 (90) shall determine if that waste is a hazardous waste using the following procedure:

(1) First determine if the solid waste is excluded from regulation under s. NR 181.12 (4) or (5).

(2) Then determine if the solid waste is listed as a hazardous waste in s. NR 181.16.

(3) If the waste is not listed as a hazardous waste in s. NR 181.16, it shall then be determined whether the waste is identified in s. NR 181.15 by either:

(a) Testing the waste according to the methods set forth in s. NR 181.15; or

(b) Applying knowledge of the hazard characteristic of the solid waste in light of the materials or the processes used.

(4) A generator shall keep records of any test results, waste analyses or other determinations made in accordance with the requirements of this section for at least 3 years from the date that the waste was last sent to an on-site or off-site storage, treatment or disposal facility. Upon written notice from the department to the generator, the period of retention may be extended beyond 3 years. The notice shall specify the records or types of records that are to be retained.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.23 Identification number and manifest system. (1) IDENTIFICATION NUMBER. (a) A generator may not treat, store, dispose of, recycle, transport, or offer for transporation, hazardous waste without an identification number.

(b) A generator who has not received an identification number may obtain one by applying to the department using the notification form specified in s. NR 181.06.

(c) A generator may not offer hazardous waste to transporters or to storage, treatment, or disposal or recycling facilities that have not received an identification number.

(2) MANIFEST SYSTEM. (a) Any generator who transports, or offers for transportation, hazardous waste for off-site storage, treatment, disposal or recycling shall prepare a uniform manifest form before the waste is transported.

(b) The generator shall use the following hierarcy in acquisition of the uniform manifest form:

1. If the state to which the shipment is manifested (consignment state) supplies the uniform manifest form and requires its use, then the generator shall use that manifest form.

2. If the consignment state does not supply the uniform manifest form, then the generator shall use the Wisconsin uniform manifest form.

Note: The Wisconsin uniform manifest form may be obtained from the Department of Natural Resources district offices at no charge. The department will not provide the Wisconsin uniform manifest form for use by generators for shipments of only non-hazardous solid waste. The uniform manifest form should not be used for shipments of only non-hazardous solid waste.

(c) A generator shall specify on the manifest one designated facility, which if in Wisconsin has received an operating license, interim license,

variance, waiver or is exempt from licensing under s. NR 181.42 (1) (a) and is approved to accept the waste shipment under the operating license, interim license, variance, waiver or exemption. If the designated facility is outside of Wisconsin, the generator shall specify on the manifest a facility which has an EPA permit, interim status or is exempt from permitting under the resource conservation and recovery act, or a permit or approval from an authorized state, to handle the waste described on the manifest.

(d) A generator may also specify on the manifest one alternate facility which meets the requirements of par. (c) in accordance with par. (b). If the alternate facility is located in a different state than the designated facility under par. (c), and the state in which the alternate facility is located supplies a uniform manifest form and requires its use, the generator shall:

1. Provide the transporter with a second uniform manifest form from the alternate facility state which is completed in accordance with par. (h) or (i); and

2. Void the original manifest.

(e) If the transporter is unable to deliver the hazardous waste to the designated facility or the alternate facility, the generator shall either designate another facility or instruct the transporter to return the waste.

(f) The generator shall initiate the use of the manifest. The generator shall fill out all required information and sign the manifest. After the transporter signs and dates the manifest, the generator shall retain one copy, shall send a copy to the department within 5 working days, shall send a copy to the consignment state, if the consignment state is not Wisconsin and shall give the remaining copies to the transporter to accompany the hazardous waste shipment.

Note: An employe of the generator need not be an authorized representative to sign a manifest on behalf of the generator.

(g) The generator shall maintain on file the copy of the manifest retained in accordance with par. (f) and the copy received from the operator of the designated facility to which the hazardous waste is shipped. These copies shall be retained for a period of 3 years, and shall be available at reasonable times for inspection by the department. Upon written notice from the department to the generator, the period of retention may be extended beyond 3 years. The notice shall specify the records or types of records that are to be retained.

(h) If the generator uses the Wisconsin uniform manifest form, the form shall contain, at a minimum, the following information, in accordance with the instructions included in the manifest form:

1. The manifest document number which is the U.S. EPA 12 digit identification number assigned to the generator plus a unique 5 digit document number assigned to the uniform manifest form by the generator for recording and reporting purposes.

2. The generator's name and mailing address.

3. The generator's phone number.

4. The identification number, name and phone number of each transporter.

5. The EPA identification number, phone number, name and address of the designated facility and the alternative facility, if applicable.

6. The U.S. DOT description of the waste including the proper shipping name, hazard class and identification number required by 49 CFR 172.101, 172.102, 172.202, and 172.203, October 1, 1983.

Note: The publication containing these regulations may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The publications containing these regulations are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

7. The number and type of containers used to transport the waste.

8. The total quantity of the waste with the appropriate unit of measure (weight/volume).

9. Any special handling instructions or any other additional information.

10. One primary hazardous waste number corresponding to the name of the waste being shipped, that is selected using the following criteria where more than one waste number may correspond to the name of the waste:

a. If the waste displays the characteristic of reactivity in s. NR 181.15(4), and is not listed in s. NR 181.16, the number shall be D003.

b. If subpar. a. does not apply, the waste displays a characteristic in s. NR 181.15, and is not listed in s. NR 181.16, the number selected shall be based on the prevalent hazardous waste characteristic displayed.

c. If more than one hazardous waste number listed in s. NR 181.16 may describe the waste, the number selected shall be the one for which the basis for listing is the reactivity characteristic, if it exists.

d. If subpar. c. does not apply, the number selected shall be the one which has more than one characteristic as a basis for listing, if it exists.

e. If subpars. c. and d. do not apply, the number selected shall be based on the preponderant source of the waste mixtures.

11. Certification that the uniform manifest form is accurately filled out and that the material is properly described, packaged, marked, labeled and in proper condition to be transported or has been received and accepted in accordance with this chapter.

12. Any additional description for the materials and any handling codes for the wastes listed.

(i) If the generator uses a manifest from the consignment state, the generator shall complete the manifest in accordance with the consignment state's requirements and shall, at the time the generator provides a copy of the manifest to the department in accordance with par. (f), provide the department with the following information:

1. The transporter's phone number.

2. The designated facility's phone number.

3. One primary hazardous waste number corresponding to the name of the waste being shipped, selected based on the criteria specified in par. (h)10.

4. Any additional description for the materials and any handling codes for the wastes listed.

(j) For bulk shipments of hazardous waste within the United States solely by railroad or solely by water, the generator shall send 3 copies of the manifest dated and signed in accordance with this section to the owner or operator of the designated facility. Copies of the manifest are not required for each transporter.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am., Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.24 Reporting. (1) Except as provided in subs. (2) and (3), generators of hazardous waste shall complete an annual report form and file it with the department no later than March 1 for the preceding calendar year. The annual report shall cover generator activities during the previous calendar year and shall, at a minimum, contain the following information:

(a) The identification number, name and address of the generator.

(b) The closing date of the reporting period.

(c) The name, address and identification number of each off-site hazardous waste treater, storer and disposer to which hazardous waste was shipped during the reporting period. For exported shipments, the report shall give the name and address of the foreign facility.

(d) The name and identification number of each transporter used during the reporting period.

(e) A description, hazardous waste number from subch. II, DOT hazard class and quantity of each hazardous waste shipped off-site during the reporting period.

(f) A certification signed by the generator or authorized representative as specified in s. NR 181.55 (3), stating that "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Note: This form may be obtained from the Department of Natural Resources, P.O. Box 8094, Madison, Wisconsin 53708 at no charge.

(2) Any generator who treats or disposes of hazardous wastes on-site shall submit quarterly reports, regarding all hazardous wastes managed, in accordance with s. NR 181.42 (6) (c).

(3) Any generator who stores hazardous wastes on-site shall submit quarterly reports, regarding all hazardous waste managed, in accordance with s. NR 181.42 (6) (c), except as provided in s. NR 181.21 (5).

(4) The generator shall retain a copy of the annual report for a period of at least 3 years from the due date of the report. Upon written notice from the department to the generator, the period of retention may be extended beyond 3 years. The notice shall specify the records or types of records to be retained.

(5) The department may require generators to furnish additional reports concerning the quantities and disposition of wastes identified or listed in subch. II.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am., Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.25 Exception reporting. (1) A generator who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 35 days of the date the waste was accepted by the initial transporter shall contact the transporter or owner or operator of the designated facility to determine the status of the hazardous waste.

(2) A generator shall submit an exception report to the department if a copy of the manifest with the handwritten signature of the owner or operator of the designated facility is not received by the generator within 45 days of the date the waste was accepted by the initial transporter. The exception report shall include:

(a) A legible copy of the manifest for which the generator does not have confirmation of delivery; and

(b) A cover letter signed by the generator, or an authorized representative, explaining the efforts taken to locate the hazardous waste and the results of those efforts.

(3) Generators shall keep a copy of each exception report for a period of at least 3 years. Upon written notice from the department to the generator, the period of retention may be extended beyond 3 years. The notice shall specify the records or types of records to be retained.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.26 Packaging, labeling, marking and placarding. (1) PACKAGING. Every generator shall place the hazardous waste to be shipped in packages in accordance with DOT regulations on packaging in 49 CFR Parts 173, 178 and 179, October 1, 1983.

(2) LABELING. Before transporting or offering hazardous waste for transportation off-site, a generator shall label each package in accordance with applicable DOT regulations on hazardous materials in 49 CFR Part 172, October 1, 1983.

(a) Before placing hazardous waste in an accumulation area pursuant to s. NR 181.21 (5) (a) or placing hazardous waste in an one-site storage facility pursuant to s. NR 181.21 (4) (a) 1., a generator shall mark each container in accordance with sub. (c), with the words "HAZARDOUS WASTE," or with other words that identify the contents of the container as hazardous waste.

(b) Before transporting, or offering hazardous waste for transportation off-site, a generator shall mark each package of hazardous waste in accordance with DOT regulations on hazardous materials in 49 CFR Part 172, October 1, 1983.

(c) Before transporting, or offering hazardous waste for transportation off-site, a generator shall mark each container used to transport hazardous waste with the following words: "HAZARDOUS WASTE"—state and federal law prohibits improper disposal. If found contact the nearest police department, division of emergency government, or department of natural resources. Generators name and address _____ Manifest document number _____. In addition to providing the manifest document number as defined in s. NR 181.04 (64m), a generator shall provide the state manifest document number, if the manifest has such a number. For the purpose of this section, "state manifest document number" means the document number printed on the manifest in item A by the state that provides the manifest.

(4) PLACARDING. Before transporting hazardous waste, or offering hazardous waste for transportation off-site, a generator shall offer the initial transporter the appropriate placards required by DOT regulations for hazardous materials in 49 CFR Part 172, Subpart F, October 1, 1983.

Note: The publications containing these regulations may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

The publications containing these regulations are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.27 International shipments. (1) When shipping hazardous waste outside the United States, the operator shall:

(a) Notify the department and the EPA administrator in writing 4 weeks before the initial shipment of hazardous waste to each country in each calendar year.

Note: Notices sent to the EPA administrator should be sent to:

Office of International Activities (A-106)
U.S. Environmental Protection Agency
Washington, D.C. 20460

(b) Require that the foreign consignee confirm the delivery of the hazardous waste in the foreign country. A copy of the manifest signed by the foreign consignee may be used for this purpose.

(c) Meet the requirements under s. NR 181.23 (2) for the manifest, except that:

1. In place of the name, address, and identification number of the designated facility, the name and address of the foreign consignee shall be used.

2. The generator shall identify the point of departure from the United States through which the hazardous waste shall travel before entering a foreign country.

(2) The generator shall file an exception report with the department, pursuant to s. NR 181.24 (2), if:

(a) The generator has not received a copy of the manifest signed by the transporter stating the date and place of departure from the United States within 45 days from the date it was accepted by the initial transporter; or

(b) Within 90 days from the date the hazardous waste was accepted by the initial transporter, the generator has not received written confirmation from the foreign consignee that the hazardous waste was received.

(3) When importing a hazardous waste, all the requirements of s. NR 181.23 (2) for the manifest shall be met except that:

(a) In place of the generator's name, address and identification number, the importer's name, address and identification number shall be used.

(b) In place of the generator's signature on the certification statement, the U.S. importer or agent thereof shall sign and date the certification and obtain the signature of the original transporter.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (1) (a), Register, June, 1985, No. 354, eff. 7-1-85.

Subchapter IV

Transportation

NR 181.31 General. (1) Except as otherwise provided in s. NR 181.32, no person shall transport hazardous waste in Wisconsin unless the person has obtained a transportation service license from the department, in accordance with the requirements of s. NR 181.55.

(2) A transporter of hazardous waste shall comply with subch. III if the transporter:

(a) Mixes wastes of different shipping descriptions by placing them in a single container; or

(b) Transports hazardous waste into Wisconsin from abroad.

(3) Transportation services collecting only hazardous wastes that do not require a manifest as specified in s. NR 181.13 shall comply with all the requirements of this subchapter except the manifest requirements specified in s. NR 181.34.

Note: Hazardous waste facilities may require the use of a manifest for recordkeeping purposes before accepting the hazardous waste.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.32 Exemptions. (1) A generator or owner or operator of a hazardous waste facility who transports hazardous waste solely to an on-site storage, treatment or disposal site or facility is exempt from all of the requirements of this subchapter.

(2) A person who transports metallic mining wastes resulting from a mining operation as defined in s. 144.81 (5), Stats., is exempt from all of the requirements of this subchapter.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.33 Identification number. (1) A transporter shall not transport hazardous wastes in Wisconsin without an identification number.

(2) A transporter who has not received an identification number may obtain one by applying to the department using the notification form specified in s. NR 181.06.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.34 Manifest system. (1) Transporters collecting hazardous wastes subject to the special requirements of s. NR 181.13 are exempt from the provisions of this section for those wastes.

(2) Hazardous waste which was generated out of state and is being transported through Wisconsin for delivery to an out-of-state hazardous waste facility shall be accompanied by a manifest that meets the requirements of 40 CFR Part 263, Subpart B, July 1, 1983, as amended by 49 FR 10490-10510, March 20, 1984.

(3) The transporter shall be responsible for ensuring that a copy of a manifest meeting the requirements of 40 CFR Part 263, Subpart B, July 1, 1983, as amended by 49 FR 10490-10510, March 20, 1984, signed by the generator, accompanies the shipment of hazardous waste at all times, except as provided in sub. (1).

Note: The publication containing these regulations may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The publications containing these regulations are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(4) Before transporting the hazardous waste, the transporter shall sign and date the manifest acknowledging acceptance of the hazardous waste from the generator. The transporter shall return the original and 2 signed copies of the manifest to the generator before leaving the generator's premises.

Note: An employe of a transporter need not be an authorized representative to sign a manifest on behalf of the transporter.

(5) If the hazardous waste shipment is transferred to another transporter, the original transporter is responsible for retaining a copy of the manifest in accordance with s. NR 181.35. The original transporter shall give the 3 remaining copies of the manifest, plus an extra copy needed to replace the copy retained in accordance with s. NR 181.35, to the new transporter. The new transporter shall sign and date the manifest acknowledging acceptance of the hazardous waste.

(6) The transporter shall, upon delivery of the hazardous waste to the designated facility, obtain the signature and date of acceptance from the owner or operator of the designated facility on the manifest. The transporter shall retain one copy of the manifest in accordance with s. NR 181.35, and shall give the remaining copies to the owner or operator of the designated facility.

(7) The transporter shall deliver the entire quantity of the hazardous waste that was accepted from the generator or transporter to:

(a) The designated facility on the manifest; or

(b) The alternate facility specified on the manifest, if the hazardous waste cannot be delivered to the designated facility because an emergency prevents delivery; or

(c) The next designated transporter; or

(d) The place outside the United States designated by the generator.

(8) If the hazardous waste cannot be delivered in accordance with sub. (7), the transporter shall contact the generator for further directions and shall revise the manifest or obtain a second manifest, in accordance with s. NR 181.23 (2) (d) and (e), and shall, if necessary, return the waste to the generator as undeliverable.

(9) The requirements of subs. (3), (4), (5) and (6) do not apply to water (bulk shipments) transporters if:

(a) The hazardous waste is delivered by water (bulk shipment) to the designated facility; and

(b) A shipping paper containing all the information required on the manifest, excluding the identification numbers, generator certification and signatures, accompanies the hazardous waste;

(c) The delivering transporter obtains the date of delivery and handwritten signature of the owner or operator of the designated facility on either a manifest or a shipping paper;

(d) The person delivering the hazardous waste to the initial rail or water (bulk shipment) transporter obtains the date of delivery and signature of the water (bulk shipment) transporter on a manifest and forwards it to the designated facility; and

(e) A copy of the shipping paper or manifest is retained by each water (bulk shipment) transporter in accordance with s. NR 181.35.

(10) For shipments involving rail transportation, the requirements of subs. (3), (4), (5) and (6) do not apply and the following requirements shall apply:

(a) When accepting hazardous waste from a non-rail transporter, the initial rail transporter shall:

1. Sign and date the manifest acknowledging acceptance of the hazardous waste;

2. Return a signed copy of the manifest to the non-rail transporter;

3. Forward all remaining copies of the manifest, except one, to:

a. The next non-rail transporter, if any;

b. The designated facility, if the shipment is delivered to that facility by rail; or

c. The last rail transporter designated to handle the waste in the United States; and

4. Retain one copy of the manifest and rail shipping paper in accordance with s. NR 181.35.

(b) Rail transporters shall ensure that a shipping paper containing all the information required on the manifest (excluding the EPA identification numbers, generator certification, and signatures) accompanies the hazardous waste at all times.

Note: Intermediate rail tranporters are not required to sign either the manifest or shipping paper.

(c) When delivering hazardous waste to the designated facility, a rail transporter shall:

1. Obtain the date of delivery and handwritten signature of the owner or operator of the designated facility on the manifest or the shipping paper (if the manifest has not been received by the facility); and

2. Retain one copy of the manifest or signed shipping paper in accordance with s. NR 181.35.

(d) When delivering hazardous waste to a non-rail transporter a rail transporter shall:

1. Obtain the date of delivery and handwritten signature of the next non-rail transporter on the manifest; and

2. Retain a copy of the manifest in accordance with s. NR 181.35.

(e) Before accepting hazardous waste from a rail transporter, a non-rail transporter shall sign and date the manifest and provide a copy to the rail transporter.

(11) Transporters who transport hazardous waste out of the United States shall:

(a) Indicate on the manifest the date the hazardous waste left the United States; and

(b) Sign the manifest and retain one copy in accordance with s. NR 181.35 (3); and

(c) Return a signed copy of the manifest to the generator.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (2) to (5), (8) and (9), renum. (10) to be (11), cr. (10), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.35 Recordkeeping. (1) A transporter of hazardous waste shall keep a copy of the manifest, if required by s. NR 181.34, signed by the generator, that transporter, and the next designated transporter or the owner or operator of the designated facility, for a period of 3 years from the date the hazardous waste was accepted by the initial transporter.

(2) For shipments delivered to the designated facility by rail or water (bulk shipment), each rail or water (bulk shipment) transporter shall retain a copy of a shipping paper containing all the information specified in s. NR 181.34 (9) (b) for a period of 3 years from the date the hazardous waste was accepted by the initial transporter.

(3) A transporter who ships hazardous waste out of the United States shall keep a copy of the manifest indicating that the hazardous waste left

the United States, for a period of 3 years from the date the hazardous waste was accepted by the initial transporter.

(4) The periods of retention referred to in this section may be extended beyond 3 years upon written notice from the department to the transporter, specifying the records or types of records that are to be retained.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.36 Hazardous waste discharges. (1) If a discharge of hazardous waste occurs during transportation, the transporter shall:

(a) Telephone the division of emergency government and comply with the requirements of s. 144.76, Stats., and ch. NR 158, and

Note: The division of emergency government's 24 hour number is (608) 266-3232, collect calls accepted.

(b) Report in writing as required by 49 CFR 171.16, October 1, 1983, to the director, office of hazardous materials regulations, materials transportation bureau, DOT, Washington, D.C. 20590.

(2) A water (bulk shipment) transporter who as discharged hazardous waste shall give the same notice as required by 33 CFR 153.203, July 1, 1983, for oil and hazardous substances.

Note: The publications containing these regulations may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The publications containing these regulations are available for inspection at the office of the department, the secretary of state, and the revisor of statutes.

(3) The removal and subsequent containerization, transportation and disposal of spilled hazardous waste shall be in compliance with the provisions of this chapter.

(4) If the department determines that immediate removal of the hazardous waste is necessary to protect human health or the environment, the department may authorize the removal of the hazardous waste by transporters who do not have transportation service licenses, identification numbers and without preparation of a manifest.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. and recr. (1), renum. (2) and (3) to be (3) and (4), cr. (2), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.37 Packaging, labeling, marking and placarding. (1) APPLICABILITY. The requirements of this section apply to both intrastate and interstate transportation.

(2) PACKAGING. A transporter may not move a transport vehicle containing hazardous waste unless the hazardous waste is packaged in accordance with the applicable requirements of 49 CFR Part 173, October 1, 1983.

(3) LABELING AND MARKING. A transporter may not transport hazardous waste unless the hazardous waste packages are labeled and marked in accordance with the applicable requirements of 49 CFR Part 172, October 1, 1983.

(4) PLACARDING. A transporter may not move a transport vehicle containing hazardous waste unless it is placarded in accordance with the applicable requirements of 49 CFR Part 172, October 1, 1983.

Note: The publications containing these regulations may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The publications containing these regulations are available for inspection at the office of the department, the secretary of state, and the revisor of statutes.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. and recr. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.38 Operational requirements. (1) Containerized hazardous waste shall be loaded onto the transport vehicle in such a manner that the containers are reasonably secure against movement within the transport vehicle.

(2) Tank transport vehicles shall not be left unattended during the loading or unloading of hazardous waste.

(3) No tools or equipment likely to damage the effectiveness of the closure of any container shall be used for the loading or unloading of hazardous waste.

Note: DOT regulations concerning operational aspects of transportation of hazardous materials on public highways are given in 49 CFR Part 177, October 1, 1983.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. (4), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.39 Equipment operater qualifications. (1) Equipment operators for transportation services shall be properly trained in the utilization of the equipment they are authorized to operate. Each transportation service shall have a training program for handling and transportation vehicle operators. Topics shall include the problems and potential hazards posed by the transportation and disposal of hazardous waste, and equipment inspection techniques.

(2) Records of operator training and equipment inspections shall be kept for a period of 3 years by the transportation service. Upon written notice from the department to the transporter, the period of retention may be extended beyond 3 years.

(3) Transportation services shall have a viable program for inspecting equipment. The inspection program shall include a schedule for equipment inspection and a checklist of specific areas or items which are to be inspected. Each piece of hazardous waste handling and transportation equipment shall be inspected periodically by the owner or operator of the equipment. Records shall be maintained showing when the equipment was inspected, any problems observed during the inspection, and any maintenance performed on the equipment.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81.

NR 181.395 Transfer facilities. A hazardous waste transporter, licensed in accordance with s. NR 181.55, may accumulate manifested shipments of hazardous waste in containers off-site without a storage license, provided that the waste will not be recycled, treated, placed in a storage

facility or disposed of on-site and provided that the transporter complies with the following requirements:

(1) The accumulation shall be in connection with the transporting or movement of hazardous waste shipments.

(2) Within 10 days, all accumulated waste shall be shipped to a facility which meets the requirements of s. NR 181.21 (4) (a) 2., except it may not be shipped to another transfer facility or a small quantity accumulation facility in Wisconsin.

(3) The notification requirements of s. NR 181.06 shall be met for each transfer facility.

(4) The accumulation shall be in compliance with the following container storage requirements:

(a) The transporter shall comply with the packaging, labeling, marking and placarding requirements of s. NR 181.26.

(b) The transporter shall inspect all containers used for storing hazardous waste at least weekly for evidence of leakage, corrosion or deterioration of the containers or discharge confinement structures, such as dikes.

(c) The transporter shall record the inspection under par. (b) in an inspection log or summary. These records shall be placed in the operating record required under sub. (7) and kept for at least 3 years from the date of the inspection. At a minimum, these records shall include the date and the time of inspection, the name of the inspector, a notation of the observation made, and the date and name of any repairs or other remedial actions. The inspection program under this paragraph and par. (b) shall be included in the inspection program under s. NR 181.39 (3).

(d) If a container is not in good condition or if the contents of the storage container begin to leak, the hazardous waste in the container shall be recontainerized in a storage container in good condition.

(e) A container holding hazardous waste shall always be closed during storage.

(f) A container holding hazardous waste may not be opened, handled or stored in a manner which may rupture the container or cause it to leak.

(g) Containers holding ignitable or reactive waste shall be located at least 50 feet from the transfer facility's property line.

(h) Storage containers holding hazardous waste which is incompatible with any waste or other materials stored nearby in other containers, waste piles, open tanks or surface impoundments shall be separated from them by means of a dike, berm, wall or other device.

(i) No wastes may be mixed, combined or recontainerized except as required by par. (d).

(j) The container shall be made or lined with materials which will not react with, and are otherwise compatible with the hazardous waste to be stored.

(5) The date upon which each period of accumulation begins shall be clearly marked and visible for inspection on each container. .

(6) The transporter shall comply with the contingency plan and emergency procedures in s. NR 181.42 (4) and personnel training requirements in s. NR 181.42 (5). The training program under this subsection shall be included in the training program under s. NR 181.39 (1).

(7) The transporter shall comply with the recordkeeping, operating record and reporting requirements in s. NR 181.42 (6) (b) and (c), except for the requirements in s. NR 181.42 (6) (b) 1.f., 1.g., 1.h., 1.i., and 2.c.

(8) The identity and location of all stored hazardous waste shall be known throughout the entire accumulation period.

(9) Signs shall be posted at each entrance to the transfer facility indicating that only authorized personnel are allowed, and that entry can be dangerous. The transporter shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock into the transfer facility.

(10) The waste accumulated under this section shall be kept separate from any waste accumulated under any other provision of this chapter and shall be clearly delineated and marked as a segregated storage area.

(11) The facility shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any discharge of hazardous waste or hazardous waste constituents to the air, land, or surface which could be harmful to human health or the environment. The transporter shall comply with s. NR 181.36 with respect to the accumulation of hazardous waste.

(12) As provided in s. NR 181.08, the department may require the owner or operator of a transfer facility to comply with all or part of the requirements of subch. V, if the department determines that there is a potential for discharge of the hazardous waste or hazardous constituents or determines that a discharge has occurred at the transfer facility.

History: Cr. Register, June, 1985, No. 354, eff. 7-1-85.

Subchapter V

Standards for Storage, Treatment and Disposal Facilities

NR 181.41 Environmental and health standards. (1) GROUNDWATER, HUMAN HEALTH AND ENVIRONMENTAL STANDARD. A hazardous waste facility may not be located, designed, constructed or operated in such a manner that the department after investigation or review finds that there is a reasonable probability that management of hazardous waste within such an area will have a detrimental effect on groundwater quality or will cause a violation of groundwater standards adopted under ch. 160, Stats.

Note: As of July 1, 1985, groundwater standards had not been adopted under ch. 160, Stats.

(2) SURFACE WATER, HUMAN HEALTH AND ENVIRONMENTAL STANDARD. A hazardous waste facility may not be located, designed, constructed, or operated in such a manner as to allow any surface or sub-surface discharge from the facility into navigable waters to cause a violation of water quality standards established in chs. NR 102 through 104, or a viola-

tion of s. 144.76, Stats., nor in such a manner that the department after investigation or review finds that there is a reasonable probability that the management of hazardous waste within such an area will have a detrimental effect on surface water quality.

(3) AIR HUMAN HEALTH AND ENVIRONMENTAL STANDARD. A hazardous waste facility shall be located, designed, constructed, and operated in such a manner as to prevent air emissions from such facilities from causing a violation of standards or regulations in ch. NR 154.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.415 Underground injection and land treatment. (1) Underground injection of any hazardous waste through a well is prohibited.

Note: Section NR 112.20 prohibits the use of any well for the disposal of solid wastes, sewage, surface water or wastewater.

(2) Land treatment of any hazardous waste is prohibited.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.42 General facility standards. The requirements of this section apply to the owners or operators of all facilities, except as provided in sub. (1) (a). Additional requirements for specific types of facilities are given in ss. NR 181.43 through 181.47.

(1) GENERAL STANDARDS. (a) *Exemptions.* The requirements of this section do not apply to the following, except to the extent they are specifically included:

1. The owner or operators of a wastewater treatment unit as defined in s. NR 181.04 (111m) provided that the owner or operator of such a unit which treats waste from off-site complies with subpars. a. through d. This exemption does not apply to the treatment, storage or disposal of sludges, residues or other hazardous waste produced during the treatment process when this material is removed from the wastewater treatment unit or when the treatment process ceases. This exemption shall apply to the wastewater treatment units which treat waste from off-site provided that the owner or operator complies with the following requirements:

a. The notification requirements specified in s. NR 181.42 (1) (b).

b. The manifest system requirements specified in s. NR 181.42 (6) (a);

c. The recordkeeping requirements specified in s. NR 181.42 (6) (b) 1.a. and b.; and

d. The reporting requirements specified in s. NR 181.42 (6) (c) 1. and 2.

2. The owner or operator of a POTW which accepts hazardous waste for treatment or recycling, provided that the owner or operator complies with subpars. a. through d. This exemption does not apply to the treatment, storage or disposal of sludges, residues or other hazardous waste produced during the treatment process when the material is removed from the POTW treatment units or whent the treatment process ceases. To be exempt under this subdivision, the owner or operator shall:

a. Have a WPDES permit;

b. Comply with the conditions of that permit;

c. Comply with the notification requirements specified in s. NR 181.42 (1) (b), the manifest system requirements specified in s. NR 181.42 (6) (a), the recordkeeping requirements specified in s. NR 181.42 (6) (b) 1.a. and b., the reporting requirements specified in s. NR 181.42 (6) (c) 1. and 2; and

d. Except for spent pickle liquor that is accepted for recycling, meet all federal, state and local pretreatment requirements which would be applicable to the waste if it were discharged into the POTW through a sewer, pipe or similar conveyance.

e. Except as provided in subpar. f., if a hazardous waste is stored prior to treatment or recycling, the storage shall be in a wastewater treatment unit as specified in subd. 1. or in a storage facility which has received an operating license, interim license, variance or waiver.

f. If spent pickle liquor is stored prior to recycling, the storage shall be in accordance with subpar. e., or shall be in a tank which is approved under s. 144.04, Stats.

3. The owner or operator of a surface impoundment which has its discharges regulated under ch. 147, Stats., which accepts hazardous waste for treatment, provided that the owner or operator complies with subpars. a. through c. This exemption does not apply to the treatment, storage or disposal of sludges, residues or other hazardous waste produced during the treatment process when this material is removed from the impoundment or impoundments or when the treatment process ceases. To be exempt under this subdivision, the owner or operator shall:

a. Have a WPDES permit for the discharge from the impoundment or have the discharge from the impoundment conveyed to a POTW directly through a sewer or pipe or similar conveyance;

b. Comply with the conditions of the WPDES permit or all the federal, state and local pretreatment requirements which are applicable for direct discharges to a POTW; and

c. Comply with all the requirements of s. NR 181.47.

4. The owner or operator of a solid waste disposal facility licensed under ch. NR 180, provided that the only hazardous waste the facility treates, stores or disposes is excluded from regulation under this subchapter by s. NR 181.13 and the facility has been approved under s. NR 181.13 (7) to accept small quantities of hazardous wastes.

5. A generator accumulating waste on-site in containers or aboveground tanks, in compliance with s. NR 181.21 (5), except to the extent that the requirements of this subchapter are made applicable in s. NR 181.21 (5).

6. The owner or operator of a totally enclosed treatment facility, as defined in s. NR 181.04 (99).

7. The owner or operator of a recycling facility, provided that the owner or operator complies with the requirements specified in s. NR 181.19.

8. The owners or operators of facilities used for the storage, treatment or disposal of metallic mining wastes resulting from a mining operation as defined in s. 144.81 (5), Stats.

Note: Metallic mining wastes are regulated under ch. NR 182.

9. The owner or operator of an elementary neutralization unit as defined in s. NR 181.04 (29), provided the owner or operator of the elementary neutralization unit complies with the following requirements:

a. Obtains an identification number as specified in s. NR 181.42 (1) (b).

b. The security requirements specified in s. NR 181.42 (3) (a).

c. The inspection requirements specified in s. NR 181.42 (7).

d. Operation requirements as specified in s. NR 181.42 (1) (m).

e. Manifest, recordkeeping and reporting requirements specified in s. NR 181.42 (6).

f. The hazardous waste discharge reporting requirement specified in s. NR 181.42 (4) (c) 3.

g. At closure, the owner or operator of an elementary neutralization unit shall remove all hazardous waste and hazardous waste residue from the unit and comply with the applicable requirements of this chapter for this waste.

h. Any sludges, residues or other hazardous waste produced during the neutralization process are subject to the applicable requirements of this chapter when this material is removed from the elementary neutralization unit or when the neutralization process ceases.

i. The elementary neutralization unit shall be constructed of sturdy, leakproof material and shall be designed, constructed and operated so as to prevent hazardous waste from being discharged during the operating life of the unit.

10. The owner or operator of a facility operating under an interim license except to the extent that the requirements are listed in s. NR 181.53 (4), (5) and (6).

11. A licensed transporter accumulating manifested shipments of waste at a transfer facility in compliance with s. NR 181.395.

12. The owner or operator of a small quantity accumulation facility which is operated in compliance with s. NR 181.13 (9).

13. A small quantity generator accumulating waste on-site in compliance with s. NR 181.13 (5).

14. A generator who combines absorbent material with a waste generated on-site in a container for the purpose of eliminating free liquids, provided that the generator complies with s. NR 181.21 (7).

15. A generator accumulating waste on-site in underground tanks used for spill or leak containment, provided that the generator complies with s. NR 181.21 (6).

(b) *Identification numbers.* A facility owner or operator who does not have an identification number shall obtain one by applying to the depart-

ment using the notification form specified in s. NR 181.06. The identification number shall be included on the manifest and hazardous waste summary report.

(c) *Required notices.* 1. The owner or operator of a hazardous waste facility that has arranged to receive hazardous waste from a foreign source shall notify the department in writing at least 4 weeks in advance of the date the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required.

2. Before transferring ownership or operation of a hazardous waste facility during its operating life, or of a disposal facility during the long-term care period, the owner or operator shall notify the new owner or operator in writing of the requirements of this subchapter and subch. VI.

3. The owner or operator of a hazardous waste facility that receives hazardous waste from an off-site source, except where the owner or operator is also the generator, shall inform the generator in writing that the hazardous waste facility has the appropriate license for, and will accept, the waste the generator is shipping. The owner or operator shall keep a copy of this written notice as part of the operating record.

(d) 1. Before an owner or operator treats, stores, or disposes of any hazardous waste, a detailed chemical and physical analysis of a representative sample of the waste shall be obtained from the generator. At a minimim, this analysis shall contain all the information which must be known to treat, store, or dispose of the waste in accordance with the requirements of this chapter or the conditions of an interim license, variance or approved plan of operation.

2. The analysis may include data developed under subch. II and existing published or documented data on the hazardous waste or on waste generated from similar processes.

3. The analysis shall be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis shall be repeated:

a. When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

b. For off-site facilities, when the results of the inspection required in subd. 4. indicate that the hazardous waste shipment received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

4. The owner or operator of an off-site facility shall inspect and if necessary, analyze in accordance with waste analysis plan required by sub. (e), each hazardous waste shipment received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

(e) *Waste analysis plan.* The owner or operator shall develop and follow a written waste analysis plan which describes the procedures which will be carried out to comply with par. (d). The owner or operator shall keep this plan at the facility. At a minimum, the plan shall specify:

1. The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters, and why analysis

for these parameters will provide sufficient information on the waste's properties to comply with par. (d);

2. The test methods which will be used to test for these parameters;

3. The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

a. One of the sampling methods described in Appendix 1 of this chapter; or

b. An equivalent sampling method.

4. The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date;

5. For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply; and

6. Where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in ss. NR 181.42 (1) (m), 181.43 (7) (i), 181.43 (9) (c), 181.44 (10) (g), 181.45 (4) (o) and 181.46 (5) (b) and (c).

7. For off-site facilities, the procedures which will be used to inspect and, if necessary, analyze each shipment of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan shall describe:

a. The procedures which will be used to determine the identity of each shipment of waste managed at the facility; and

b. The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

(f) *Open burning and detonation of waste explosives.* Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the potential to detonate and bulk military propellants which cannot safely be disposed of through other modes of treatment. Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound. Owners or operators choosing to open burn or detonate waste explosives shall do so in accordance with table VII and in a manner that does not threaten human health or the environment. The department may require distances greater than the minimum distances listed in table VII be used if, based on the specific material being burned or detonated and site specific conditions, it is determined that the burning or detonation may potentially endanger human health or the environment, or create nuisance conditions.

Table VII

Minimum Distance from Open Burning or Detonation of Waste Explosives or Propellants to the Property Line of Property Owned by Other Persons

Pounds of waste explosives or propellants	Minimum distance
0 to 100	204 meters (670 feet)
101 to 1,000	380 meters (1,250 feet)
1,001 to 10,000	530 meters (1,730 feet)
10,001 to 30,000	690 meters (2,260 feet)

(g) *Point source discharges.* All facilities with point source discharges to the waters of the state including discharges from leachate collection systems and surface water run-off collection systems, shall comply with all applicable regulations promulgated under ch. 147, Stats. Additionally, facilities with discharges to municipal sewer systems shall meet applicable pretreatment standards and have the approval of the municipal treatment system authority for that discharge.

(h) *Surface water run-on and run-off.* 1. All surface water run-on shall be diverted from active portions of a facility. At a minimum, dikes or equivalent structures shall be designed, constructed, and properly maintained to divert all run-on from a 24-hour, 25-year storm.

2. All surface water run-off from the active portions of the facility shall be collected and confined to a point source before discharge or treatment, as may be required by regulations promulgated under ch. 144 or 147, Stats. At a minimum, facilities shall be designed, constructed and operated to collect all run-off from active portions of the facility anticipated from the 24-hour, 25-year storm.

(i) *Generation or removal of waste.* Any person who generates or removes a hazardous waste from a hazardous waste facility shall comply with the requirements of subch. III.

(j) *Closure of noncomplying portions of facilities.* Owners or operators shall close, in accordance with the requirements of sub. (8), all portions of a facility which do not comply with the applicable requirements of this subchapter.

(k) *Water quality.* All owners or operators shall comply with applicable requirements of state water quality management plans approved under ch. 147, Stats.

(l) *Non-point source discharges.* Non-point source discharges from hazardous waste facilities into navigable waters may not cause or contribute to the violation of water quality standards specified in chs. NR 102 through 104.

(m) *General requirements for ignitable, reactive, or incompatible wastes.* 1. The owner or operator shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste shall be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks, spontaneous ignition, and radiant heat.

While ignitable or reactive waste is being handled, the owner or operator shall confine smoking and open flame to specially designated locations. "No Smoking" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

2. Where specifically required by other sections of this subchapter, the treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes or materials, shall be conducted so that it does not:

a. Generate extreme heat or pressure, fire or explosion, or violent reaction;

b. Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;

c. Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

d. Damage the structural integrity of the device or facility containing the waste; or

e. Through other like means threaten human health or the environment.

3. When required to comply with subd. 1. or 2., the owner or operator shall document that compliance. This documentation may be based on references to published scientific or engineering literature, data from trial tests, such as bench scale or pilot scale tests, waste analyses as specified in par. (e), or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

(2) GENERAL SITE SELECTION. (a) Except as provided in s. NR 181.51 (2) (i) for facilities operating under an interim license, variance or waiver, a hazardous waste facility may not be located in a floodplain.

(b) A hazardous waste facility shall not be located in a wetland.

(c) A hazardous waste facility may not be located in a habitat determined by the department to be critical to the continued existence of any endangered species listed in ch. NR 27.

(d) The department may require that active portions of a facility be located up to 200 feet away from the property line of the facility.

(3) SECURITY. (a) The owner or operator shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility, unless the owner or operator can successfully demonstrate to the department that:

1. Physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility, and

2. Disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements of this subchapter.

(b) Unless exempt under par. (a) 1. and 2., a facility shall have:

1. A 24-hour surveillance system, such as television monitoring or surveillance by guards or facility personnel to continuously monitor and control entry onto the active portion of the facility; or

2. a. An artificial or natural barrier such as a fence in good repair or a fence combined with a cliff surrounding the active portion of the facility, and

b. A means to control entry, at all times, through the gates or other entrances to the active portion of the facility, such as an attendant, television monitor, locked entrance or controlled roadway access to the facility.

(c) Unless exempt under par. (a) 1. and 2. a sign with the legend, "Danger — Unauthorized Personnel Keep Out", shall be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to the active portion. The legend shall be legible from a distance of at least 25 feet. Existing signs with a legend other than "Danger — Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

(4) CONTINGENCY PLAN AND EMERGENCY PROCEDURES. (a) *Contingency plan.* 1. The owner or operator of a facility shall develop a contingency plan so as to prevent or minimize human health or environmental damage in the event of fire, explosion, or any unplanned sudden or nonsudden discharge of hazardous waste or hazardous waste constituents to air, land, groundwater or surface water. The provisions of the plan shall be implemented immediately in the event of a fire explosion or discharge of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

2. Either a copy of the contingency plan and all revisions of the plan, or a letter stating that the contingency plan is kept at the facility office and available for review, shall be sent to all local police departments, fire departments, hospitals and emergency response teams who may be called on to provide emergency services. A copy of the contingency plan and all revisions of the plan shall be filed with the department. The plan shall be reviewed and immediately amended, if necessary, whenever:

a. The facility operating license, interim license, variance, or waiver is amended.

b. The contingency plan fails in an emergency.

c. The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or discharge of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency.

d. The list of emergency coordinators changes; or

e. The list of emergency equipment changes.

3. At all times when the facility is in operation there shall be at least one person present with the responsibility of coordinating all emergency response measures. When the facility is not in operation, this facility emergency coordinator shall be present or on call and available to

respond to an emergency by reaching the facility in a short period of time. This facility emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations activities at the facility, the location and characteristics of waste handled, the location of manifests within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan.

4. The contingency plan shall, as a minimum, contain the following:

a. The name, position, address and phone number, office and home, of all persons qualified to act as facility emergency coordinator as described in subd. 3., and this list shall be kept up to date. Where more than one person is listed, one shall be designated as the primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates. For new facilities, this information shall be supplied to the department at the time an operating license application is submitted.

b. A description of the facility layout, types of waste handled and their associated hazards, places where facility personnel would normally be working and entrances to and roads inside the facility.

c. An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall describe signals to be used to begin evacuation, evacuation routes and alternate evacuation routes, in case the primary routes may be blocked.

d. Procedures for emergency shutdown of facility operations, and the actions facility personnel shall take to comply with subd. 1 and par. (c) in response to fires, explosions or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to the air, land or surface water at the facility.

e. A description of the procedures that will be used to notify local police departments, fire departments, hospitals and emergency response teams of the discharge of hazardous waste or fire or explosion at the facility.

f. A list of all emergency equipment at the facility, such as fire extinguishing equipment, internal and external alarms, and decontamination equipment where this equipment is required. This list shall be kept up to date. The list shall include the location, physical description, and description of the capabilities of each item.

5. Facility employes shall be familiarized with all emergency procedures, equipment, and systems contained in the contingency plan.

6. If the owner or operator has already prepared a spill prevention, control, and countermeasures (SPCC) plan in accordance with 40 CFR Part 112, July 1, 1983, this plan need only be amended to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this subchapter.

Note: The publication containing this regulation may be obtained from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

The publication containing this regulation is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(b) *Preparedness and prevention.* 1. Facilities shall be designed, constructed, maintained and operated to minimize the possibility of a fire, or explosion, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to the air, land, or surface waste which could be harmful to human health or the environment.

2. All facilities shall be equipped with the following unless it can be demonstrated to the department by the owner or operator that none of the waste handled at the facility could require a particular kind of equipment specified below:

a. An alarm, a telephone, a 2-way radio, or similar device capable of summoning emergency assistance from local police departments, fire departments, or state or local emergency response teams;

b. An internal communications system capable of providing immediate emergency instructions, voice or signal, to facility personnel;

c. Portable fire extinguishers, fire control equipment, including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals, spill control equipment and decontamination equipment that is applicable to the type of hazardous waste handled at the facility; and

d. Extinguishing agents with adequate volume and adequate delivery systems.

3. At any time that hazardous waste is being poured, mixed, spread, or otherwise handled, all employes involved in the operation shall have immediate access to an internal or external alarm or emergency communication device, either directly or through visual or voice contact with another employe unless the department has determined that such a device is not required under subd. 2. If at any time during operation of the facility there is a sole employe on the premises, that person shall have immediate access to an alarm, a telephone which is immediately available at the scene of operation, a hand-held 2-way radio, or a similar device capable of summoning external emergency assistance unless the department has determined that such a device is not required under subd. 2.

4. All facility communication or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment where required, shall be tested or maintained as applicable to ensure its proper operation in time of emergency.

5. The owner or operator shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the department that aisle space is not needed for any of these purposes.

6. The owner or operator shall take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes. This waste shall be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, fricitonal heat, sparks, spontaneous ignition, and radiant heat. While ignitable or reactive waste is being handled, the owner or operator shall confine smoking and open flame to specifically designated locations.

"No Smoking" signs shall be conspicuously placed whenever there is a hazard from ignitable or reactive waste.

7. The owner shall attempt to make the following arrangements, as appropriate for the type of waste handled at the facility and the potential need for the services of these organizations. Where state or local authorities decline to participate in these arrangements, the owner or operator shall document their refusal in the operating record.

a. Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of the hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes;

b. Where more than one police and fire department may respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

c. Agreements with state emergency response teams, emergency response contractors, and equipment suppliers; and

d. Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or discharges at the facility.

(c) *Emergency procedures.* 1. In the event that a facility has, or there is an imminent threat that the facility may have, a discharge of hazardous waste or hazardous substance, a fire, or an explosion which has the potential for damaging human health or the environment, the facility's emergency coordinator shall:

a. Activate internal facility alarms or communication systems to notify all personnel of an imminent or actual emergency situation, where applicable.

b. Telephone the division of emergency government and comply with the requirements of s. 144.76, Stats., and ch. NR 158.

Note: The division of emergency government's 24-hour number is (608) 266-3232, collect calls accepted.

c. Immediately identify the character, source, amount, and areal extent of any discharged materials. This may be done by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

d. Assess possible hazards to human health or the environment that may result from the discharge, fire, or explosion. This assessment shall consider both direct and indirect effects of the discharge, fire or explosion such as the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemcial agents used to control fire and heat induced explosions.

e. Immediately notify appropriate local authorities, if an assessment indicates that a discharge, fire, or explosion could threaten human health or the environment outside the facility, and that evacuation of local

areas may be advisable. The emergency coordinator shall be available to help appropriate officials decide whether local areas shall be evacuated.

f. Take all reasonable measures necessary to ensure that fires, explosions, and discharges do not occur, reoccur, or spread to other hazardous waste at the facility. These measures shall include, where applicable, stopping processes and operations, collecting and containing discharge waste, and removing or isolating containers.

g. Monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes or other equipment, where appropriate, if the facility stops operation in response to a fire, explosion, or discharge.

h. Provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a discharge, fire, or explosion at the facility, immediately after an emergency.

i. Ensure that, in the affected areas of the facility, no waste that may be incompatible with the discharged material is treated, stored, or disposed of until cleanup procedures are completed; and all emergency equipment listed in the contingency plan is clean and fit for its intended use before operations are resumed.

2. The owner or operator shall notify the department that the facility is in compliance with subd. 1. i. before operations are resumed in the affected areas of the facility.

3. The owner or operator shall note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the owner or operator shall submit a written report on the incident to the department. The report shall include:

a. Name, address, and telephone number of the owner or operator;

b. Name, address, and telephone number of the facility;

c. Date, time, and type of incident, such as fire, explosion;

d. Name and quantity of materials involved;

e. The extent of injuries, if any;

f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

g. Estimated quantity and disposition of recovered material that resulted from the incident.

h. A narrative describing the known or suspected causes of the incident and a statement describing the measures taken to investigate the incident to determine the cause. The narrative shall also describe any necessary measures which have been or will be taken to prevent such incidents in the future.

i. Any amendments to the contingency plan as required in par. (a) 2.

(5) PERSONNEL TRAINING. (a) Facility personnel shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's

compliance with the requirements of this subchapter. The owner or operator shall ensure that this program includes all the elements described in the document required under par. (d) 3.

1. This program shall be directed by a person trained in hazardous waste management procedures, and shall include instruction which teaches facility personnel hazardous waste management procedures, including contingency plan implementation, relevant to the positions in which they are employed.

2. At a minimum, the training program shall be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including where applicable:

a. Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

b. Key parameters for automatic waste feed cut-off systems;

c. Communications or alarm systems;

d. Response to fires or explosions;

e. Response to groundwater contamination incidents; and

f. Shutdown of operations.

(b) Facility personnel employed at the facility as of the effective date of these rules shall successfully complete the program required in par. (a) within 6 months of the effective date of these rules. Personnel assigned to the facility or to a new position at the facility after the effective date of these regulations shall not work in unsupervised positions until they have completed the training requirements of par. (a).

(c) Facility personnel shall take part in an annual review of the initial training required in par. (a).

(d) The owner or operator shall maintain the following documents and records at the facility:

1. The job title for each position at the facility related to hazardous waste management, and the name of the employe filling each job;

2. A written job description for each position listed under subd. 1. This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company, location or bargaining unit, but shall include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position.

3. A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed in subd. 1.

4. Records that document that the training or job experience required under pars. (a), (b), and (c) has been given to, and completed by, facility personnel.

(e) Training records on current personnel shall be kept until closure of the facility. Training records on former employes shall be kept for at least 3 years from the date the employe last worked at the facility.

Personnel training records shall accompany personnel transferred within the same company.

(6) MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING. (a) *Manifest system.* 1. The operator of a hazardous waste facility accepting out-of-state wastes is responsible for all the requirements of this section, including requiring the generator to initiate a Wisconsin manifest.

2. No hazardous waste facility operator shall accept a manifested shipment of hazardous waste that does not meet the following requirements:

a. The manifest is complete.

b. Each container and portable tank containing hazardous waste is properly labeled.

c. The manifests and the labels are consistent.

3. No hazardous waste facility operator may accept a hazardous waste that the facility operator is not allowed to manage under that hazardous waste facility's license, interim license, variance, waiver or licensing exemption under this chapter.

4. If a facility receives hazardous waste accompanied by a manifest, the owner, operator, or an employe shall:

a. Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

b. Note any significant discrepancies in the manifest as defined in subd. 6. a. on each copy of the manifest;

c. Immediately give the transporter at least one copy of the signed manifest;

d. Within 30 days after the delivery, send a copy of the manifest to the generator; and

e. Retain at the facility a copy of each manifest for at least 3 years from the date of delivery.

f. Send a copy of each manifest, which contains all the information required in s. NR 181.23 (h) or (i), as appropriate, to the department within 5 working days.

5. If a hazardous waste facility receives, from a rail or water bulk shipment transporter, hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest, but excluding the identification number, generator's certification, and signature, the owner or operator, or an employe shall:

a. Sign and date each copy of the shipping paper to certify that the hazardous waste covered by the shipping paper was received;

b. Note any significant discrepancies in the shipping paper as defined in subd. 6. a. on each copy of the shipping paper;

c. Immediately give the rail or water bulk shipment transporter at least one copy of the shipping paper;

d. Within 30 days after the delivery, send a copy of the shipping paper to the generator; however, if a manifest is received within 30 days after the delivery, the owner or operator, or an employe shall sign and date the manifest and return it to the generator in lieu of the shipping paper;

e. Retain at the facility a copy of each shipping paper and manifest for at least 3 years from the date of delivery; and

f. Send a copy of the shipping paper to the department.

6. a. Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste a facility actually receives. Significant discrepancies in quantity are 10% in weight for bulk shipments or any variation in piece count, such as a discepancy of one drum in a truckload for batch shipments of waste. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper.

b. Upon discovering a significant discrepancy, the owner or operator shall attempt to reconcile the discepancy with the waste generator or transporter, such as with telephone conversations. If the discrepancy is not resolved within 15 days after receiving the waste, the owner or operator shall submit to the department a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

7. Whenever a shipment of hazardous waste is initiated from a facility, the owner or operator of that facility shall comply with the requirements of subch. III.

(b) RECORDKEEPING. 1. The owner or operator shall keep a written operating record at the facility. The following information shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

a. A description of the waste including its common name, hazardous waste number, physical form, and quantity;

b. The method and date of the waste's storage, treatment or disposal at the facility;

c. The location where each hazardous waste was placed within the facility and the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste shall be recorded on a map or diagram of each cell or disposal area. For all facilities, this information shall include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

d. Records and results of waste analyses performed as specified in sub. (1) (d) and (e);

e. Summary reports and details of all incidents that required implementing the contingency plan as specified in sub. (4) (c) 3.

f. Records and results of inspections as required by sub. (7) (d), although this data need be kept only 3 years.

g. For off-site facilities, notices to generators as specified in sub. (1) (c) 3.

h. Monitoring, testing or analytical data where required by ss. NR 181.44 (11), 181.45 (4) (j), 181.46 (5) (m) and 181.49.

i. Closure or long-term care cost estimates required under s. NR 181.42 (10).

2. All records including plans required under this subchapter shall be furnished upon request, and made available at all reasonable times for inspection, by any officer or employe of the department.

3. The retention period for all records required under the subchapter may be extended upon written notice from the department to the owner or operator of the facility, specifying the records or types of records that are to be retained. The retention period for these records is extended automatically during the course of any unresolved enforcement action by the department or as requested by the department.

4. A copy of records of waste disposal locations and quantities under subd. 1. c. shall be submitted to the department upon closure of the facility.

(c) *Reporting.* 1. Quarterly reports. The owner or operator shall prepare and submit a quarterly report to the department within 30 days of the close of each reporting quarter. The quarterly report shall cover facility activities during the previous reporting quarter and shall, at a minimum, contain the following information:

a. The identification number, name and address of the facility;

b. The closing date of the reporting quarter;

c. For off-site facilities, the identification number of each hazardous waste generator from which a hazardous waste was received during the reporting quarter. For imported shipments, the name and address of the foreign generator;

d. A description and the quantity of each hazardous waste the facility received during the reporting quarter. For off-site facilities, this information shall be listed by identification number of each generator;

e. The method of treatment, storage, or disposal for each hazardous waste; and

f. A certification signed by the owner or operator of the facility, or authorized representative as specified in s. NR 181.55 (3), stating that "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

2. Unmanifested waste report. If a facility accepts for treatment, storage or disposal any hazardous waste from an off-site source without

an accompanying manifest, or without an accompanying shipping paper as described in s. NR 181.34 (8) (b), and if the waste is not excluded from the manifest requirement by s. NR 181.13, then the owner or operator shall prepare and submit a report to the department within 15 days of receiving the waste. The report shall, at a minimum, contain the following information:

a. The identification number, name and address of the facility;

b. The date the facility received the waste;

c. The identification number, name, and address of the generator or transporter, if available;

d. A description and the quantity of each unmanifested hazardous waste received;

e. The method of treatment, storage or disposal for each hazardous waste;

f. A brief explanation of why the waste was unmanifested, if known; and

g. A certification signed by the owner, operator, or authorized representative of the facility as specified in s. NR 181.55 (3) stating that "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

3. Additional reports. In addition to submitting the quarterly reports and unmanifested waste reports described in subds. 1. and 2., the owner or operator shall also report to the department discharges, fires and explosions as specified in sub. (4) (c) 3. Reports of monitoring data as specified in ss. NR 181.44 and 181.49 shall be submitted within 30 days of the close of each reporting quarter, or more frequently if required by an license, variance or plan approval for landfills, surface impoundments and other sites or facilities where monitoring may be required.

(7) GENERAL INSPECTION REQUIREMENTS. (a) The owner or operator shall inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, a discharge of hazardous waste or hazardous waste constituents to the environment or a threat to human health. The owner or operator shall conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(b) Inspection schedule. 1. The owner or operator shall develop and follow a written schedule for inspecting monitoring equipement, safety and emergency equipment, security devices, and operating and structural equipment, such as dikes and sump pumps, that are important to preventing, detecting, or responding to environmental or human health hazards.

2. The schedule shall be kept at the facility.

3. The schedule shall identify the types of problems, such as malfunctions or deterioration, which are to be looked for during the inspection, such as inoperative sump pump, leaking fitting, eroding dike, etc.

4. The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction of any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, shall be inspected daily when in use. At a minimum, the inspection schedule shall include the items and frequencies called for in ss. NR 181.43 (6), 181.43 (7), 181.44 (10), 181.45 (4), and 181.46 (5), where inspection requirements are specified.

(c) The owner or operator shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(d) The owner or operator shall record inspections in an inspection log or summary. These records shall be kept for at least 3 years from the date of inspection. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

(8) CLOSURE. (a) The owner or operator of a facility shall close the facility in a manner that:

1. Minimizes the need for further maintenance;

2. Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post closure escape of wastes, hazardous leachate, contaminated rainfall, or waste decomposition products to ground or surface waters, or to the atmosphere; and

3. Meets the additional closure requirements for landfills and surface impoundments as specified in s. NR 181.44 (12), if applicable.

(b) The owner or operator of a facility shall have a written closure plan demonstrating compliance with this paragraph. The plan shall be submitted to the department for approval as part of the application for an interim license under s. NR 181.53. The plan shall also be submitted to the department for approval as part of the reports or plans required for an initial operating license, where specifically required under this subchapter. Closure plans may be required by the department for a facility which is no longer in operation, if the facility was in existence on August 1, 1981 and has not been properly closed. A copy of the approved plan and all revisions to the plan shall be kept at the facility until closure is completed and certified in accordance with par. (h). The plan shall identify the steps necessary to completely or partially close the facility at any point during its intended operating life and to completely close the facility at the end of its intended operating life. The closure plan shall include, but not be limited to:

1. A description of how and when the facility will be partially closed, if applicable, and finally closed. The description shall identify the maximum extent of the operation which will be unclosed during the life of the facility.

2. A description of possible uses of the land after closure if waste will remain on-site after closure.

3. The anticipated time until closing, the estimated time required for closure and any anticipated partial closures and the time required for any intervening closure activities which will allow tracking of the progress of closure.

4. An estimate of the maximum inventory of wastes in storage or in treatment at any given time during the life of the facility.

5. A description of the steps needed to decontaminate facility structures or equipment.

6. A description of how the requirements of pars. (a), (e), (f), (g) and (h) will be met.

7. A description of how the applicable closure requirements in ss. NR 181.43 (10), 181.44 (12) and (13), 181.45 (5), 181.46 (6) and 181.47 (14) will be met.

(c) The owner or operator may amend the closure plan at any time during the active life of the facility. The owner or operator shall amend the plan whenever changes in operating plans or facility design affect the closure plan, or whenever there is a change in the expected year of closure. The owner or operator shall obtain prior department approval for any amendment in accordance with s. NR 181.55 (6) and (8) (e).

(d) At least 180 days prior to beginning the closure of a facility, the owner or operator shall notify the department in writing of the intent to close the facility. No later than this date, the owner or operator shall notify current users of the facility of the intent to close the facility. When, after July 1, 1985, such notice is received by the department for a facility which has applied for or received an interim license under ss. NR 181.53 and 181.54, but which has not obtained an operating license under s. NR 181.55, the department shall provide the public, through a newspaper notice, the opportunity to submit written comments on, and request modifications of, the closure plan within 30 days of the date of the notice. The department may also, in response to a request, or at its own discretion, hold an informational hearing pursuant to s. 144.431 (2), Stats., whenever such a hearing might clarify one or more issues concerning a closure plan. The department shall give public notice of the hearing at least 30 days before it occurs. Public notice of the hearing may be given at the same time as notice of the opportunity for the public to submit written comments, and the 2 notices may be combined. The department shall approve, deny or modify the closure plan within 65 business days after the close of the comment period or 65 business days after the public hearing, whichever is later, regardless of any prior approval under s. NR 181.54. If the department denies the closure plan, the owner or operator shall submit a modified or new plan for approval within 30 days. A new or modified plan, if required, shall be approved or modified

by the department within 65 business days of receipt. If the department modifies the plan, this modified plan becomes the approved closure plan.

Note: Closure should be begin within 30 days of receiving the final volume of waste.

(e) Within 90 days after receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan under par. (d), if that is later, the owner or operator shall remove from the site, or manage on site, all hazardous wastes in accordance with requirements of this chapter and an approved closure plan as specified in par. (b). Prior to the end of the 90 day period, the owner or operator may obtain department approval for a longer period, in accordance with par. (c), if the owner or operator demonstrates that:

1. All steps necessary to prevent threats to human health and environment have been taken and will continue to be taken; and

2. The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

3. The facility has the capacity to receive additional wastes, there is a reasonable likelihood that a person other than the owner or operator will recommence operation of the site, and closure of the facility would be incompatible with continued operation of the site.

(f) The owner or operator shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes. Prior to the end of the 180 day period, the owner or operator may obtain department approval for a longer period, in accordance with par. (c), if the owner or operator demonstrates that:

1. All steps necessary to prevent threats to human health and the environment from the unclosed but inactive facility have been taken and will continue to be taken; and

2. The closure activities will, of necessity, take longer than 180 days to complete; or

3. The facility has the capacity to receive additional wastes, there is reasonable likelihood that a person other than the owner or operator will recommence operation of the site, and closure of the facility would be incompatible with continued operation of the site.

(g) At completion of closure, all equipment and structures used in the operation of the facility shall be properly disposed of or decontaminated by removal of all hazardous waste and residues.

(h) At completion of closure, all required equipment shall be provided and arrangements shall be made to implement the long term care provisions contained in the approved long-term care plan.

(i) At completion of closure, the owner or operator shall submit to the department certification both by the owner or operator and by an independent registered professional engineer that the facility has been closed in accordance with the requirements of this subchapter, any plan of operation and all applicable license conditions.

(9) LONG TERM CARE. (a) The requirements of this subsection shall apply to all disposal facilities, and to other facilities where required under ss. NR 181.08, 181.43, 181.44 or 181.47. The owner of such a facility shall

provide long-term care for a period of 30 years from the date closure is completed under s. 144.441, Stats.

(b) Long-term care shall consist of at least the following:

1. Monitoring and reporting in accordance with the requirements of this subchapter.

2. Maintenance and monitoring of waste containment systems and maintenance of drainage control features, slopes, vegetative cover, monitoring equipment, and continuation of security requirements necessary to prevent hazards to human health, in accordance with the requirements of this subchapter.

3. Control of erosion, settlement, surface water drainage and land usage.

4. Measures needed to correct contamination caused by leachate or gases generated within the landfill and any other maintenance or security features necessary to protect the environment and prevent hazards to human health.

(c) The use of a site on or in which hazardous waste remains after closure shall never be allowed to disturb the integrity of the final cover, liner, or any other component of any containment system, or the facility's monitoring system, unless the owner or operator can demonstrate to the department that the disturbance:

1. Is necessary to the proposed use of the property and will not increase the potential hazard to human health or the environment; or

2. Is necessary to reduce a threat to human health or the environment.

(d) All long-term care activities shall be in accordance with the provisions of the approved long-term care plan as specified in par. (e).

(e) The owner or operator of a disposal facility shall have a written long-term care plan demonstrating compliance with this paragraph. In addition, certain other facilities are required, under ss. NR 181.08, 181.43, 181.44, and 181.47, to have a long-term care plan demonstrating compliance with this paragraph. The plan shall be submitted to the department for approval as part of the application for an interim license under s. NR 181.53. The plan shall also be submitted to the department for approval as part of the reports or plans required for an initial operating license, where specifically required under this subchapter. A copy of the approved plan and all revisions to the plan shall be kept at the facility until the long-term care period begins. This plan shall identify the activities that will be carried on after closure and the frequency of these activities and include, but not be limited to:

1. A description of the planned monitoring activities and frequencies at which they will be performed to comply with the requirements of this subchapter during the long-term care period; and

2. A description of the planned maintenance activities and frequencies at which they will be performed to ensure:

a. The integrity of the cap and final cover or other containment system in accordance with the requirements of this subchapter;

b. The function of the facility monitoring equipment in accordance with the requirements of this subchapter; and

c. The name, address, and phone number of the person or office to contact during the long-term care period. This person or office shall keep an updated long-term care plan during the long-term care period.

(f) The owner or operator may amend the long-term care plan at any time during the active life of the disposal facility or during the long-term care period. The owner shall amend the plan whenever changes in operating plans or facility design, or events which occur during the active life of the facility or during the long-term care period, affect the long-term care plan. The long-term care plan shall be amended whenever there is a change in the expected year of closure. The owner shall request and obtain prior department approval for any amendments in accordance with s. NR 181.55 (6) and (8) (e).

(g) The department shall, upon receipt, after July 1, 1985, of notification of closure under s. NR 181.42 (8) (d) for a disposal facility which has applied for or has obtained an interim license under ss. NR 181.53 and 181.54 but which has not obtained an operating license under s. NR 181.55, provide the public, through a newspaper notice, the opportunity to submit written comments on, and request modifications of, the long-term care plan within 30 days after the date of the notice. The department may also, in response to a request or at its own discretion, hold an informational hearing pursuant to s. 144.431 (2), Stats., whenever such a hearing might clarify one or more issues concerning a long-term care plan. The department shall give public notice of the hearing at least 30 days before it occurs. Public notice of the hearing may be given at the same time as notice of the opportunity for the public to submit written comments, and the 2 notices may be combined. The department shall approve, deny or modify the long-term care plan within 65 business days after the close of the comment period or 65 business days after the public hearing, whichever is later, regardless of any prior approval under s. NR 181.54. If the department denies the long-term care plan, the owner or operator shall submit a modified or new plan for approval within 30 days. A new or modified plan, if required, shall be approved, denied, or modified by the department within 65 business days of receipt. If the department modifies the plan, this modified plan becomes the approved long-term care plan.

(h) Within 90 days after closure is completed or as provided in s. NR 181.51 (2) (k), whichever is earlier, the owner of a disposal facility shall file with the office of the register of deeds in each county in which a portion of the facility was located, and with the department, a survey plat, indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat shall be prepared and certified by a professional land surveyor. The plat filed with each office of the register of deeds shall contain a note, prominently displayed, which states the owner's obligation to restrict disturbance of the site as specified in par. (c). In addition, the owner shall submit to the office of the register of deeds in each county in which a portion of the facility was located, and to the department, a record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility. For wastes disposed of before these regulations were promulgated, the owner shall identify the type, location and quantity of the wastes to the best of the owner's knowledge and in accordance with

any records the owner has kept. Any changes in the type, location, or quantity of hazardous wastes disposed of within each cell or area of the facility that occur after the survey plat and record of wastes have been filed shall be reported to the office of the register of deeds in each county in which a portion of the facility was located and to the department.

(i) The owner of the property on which a disposal facility is located shall record, in accordance with applicable requirements for the recording of documents in the office of the register of deeds under ss. 59.51 to 59.575, Stats., a notation on the deed to the facility property, or on some other instrument which is normally examined during a title search, that will in perpetuity notify any potential purchaser of the property that:

1. The land has been used to manage hazardous wastes;

2. Its use is restricted under par. (c), and

3. The survey plat and record of the type, location, and quantity of hazardous waste disposed of within each cell or area of the facility required in par. (e) have been filed with the office of the register of deeds in each county in which a portion of the facility was located and with the department.

(j) If at any time the owner or operator or any subsequent owner or operator of the land upon which a hazardous waste facility was located removes the waste and waste residues, the liner, if any, and all contaminated underlying and surrounding soil, the notation on the deed to the facility property or other instrument normally examined during a title search may be removed, or a notation to the deed or instrument indicating the removal of the waste may be added.

(10) FINANCIAL RESPONSIBILITY FOR CLOSURE AND LONG-TERM CARE. (a) *Definitions.* 1. "Actual dollar inpayments" means equal annual payments made by the facility owner into a long-term care account.

2. "Certificate of deposit" means a certificate issued by a bank or financial institution acknowledging receipt of a specific large sum of money in a special kind of time deposit, drawing interest and requiring written notice of withdrawal.

3. "Closure period" means the 60 day period after a facility ceases for hazardous waste treatment and storage facilities and the 90 day period after a facility ceases to accept waste for hazardous waste land disposal facilities unless otherwise specified in the approved plan of operation.

4. "Equal annual outpayments" means estimated payments for long-term care which are the same amount in each year of the period of owner responsibility for the long-term care of the facility.

5. "Interest bearing accounts" means escrow accounts, trust accounts or cash deposits with the department.

6. "Non-interest bearing accounts" means letters of credit or performance or forfeiture bonds.

7. "Real dollar inpayments" means payments made by the facility owner which increase each year at the rate of inflation, into a long-term care account.

8. "Unequal annual outpayments" means estimated payments for long-term care which are higher in the early years of the period of owner responsibility for long-term care than they are later in the long-term period care after the facility has stabilized.

9. "U.S. government securities" includes treasury bills, treasury bonds, treasury certificates, treasury notes, treasury stocks or other obligations guaranteed by the federal government.

(b) *Applicability.* 1. Closure. The owner of every hazardous waste storage, treatment or disposal facility shall provide, as part of an interim license submittal or an initial operating license application and annually thereafter for the period of active facility life, proof of financial responsibility to ensure compliance with the closure requirements of the approved plan of operation for the facility, or if no approved plan of operation exists for the facility, with the requirements in sub. (8).

2. Long-term care. The owner of every hazardous waste disposal facility shall provide, as part of an initial license submittal or an initial operating license application and annually thereafter for the period of active facility life, proof of financial responsibility to ensure compliance with the long-term care requirements of the approved plan of operation for the facility, or if no approved plan of operation exists for the facility, with the requirements in sub. (9). An owner responsible for long-term care shall be responsible for the 30 year period of owner responsibility.

3. Successors in interest. Any person acquiring rights of ownership, possession or operation of a licensed hazardous waste storage, treatment, or disposal facility shall be subject to all requirements of the license for the facility and shall provide any required proof of financial responsibility to the department in accordance with this subsection. The previous owner is responsible for closure and long-term care, and shall maintain any required proof of financial responsibility, until the person acquiring ownership, possession or operation of the facility establishes any required proof of financial responsibility.

(c) *Methods of providing proof of financial responsibility.* Financial assurances for closure and long-term care shall be established separately. The owner shall specify, as part of the plan of operation submittal or interim license submittal, which method of providing proof of financial responsibility will be used for closure and for long-term care. To provide proof of financial responsibility, the applicant shall use one of the following methods for each account:

1. Performance or forfeiture bond. a. If the owner chooses to submit a bond, it shall be in the amount determined according to par. (e)2. conditioned upon faithful performance by the owner, and any successor in interest, of all closure or long-term care requirements of the approved plan of operation, or if no approved plan of operation exists for the facility, all applicable requirements in sub. (8) or (9). The bond shall be delivered to the department as part of an interim license submittal or an initial operating license application. Bond forms shall be supplied by the department.

b. Bonds shall be issued by a surety company authorized to do surety business in this state. At the option of the owner, a performance bond or a forfeiture bond may be filed. The department shall be the obligee of the bond. Surety companies may have the opportunity to complete the clo-

sure or long-term care of the facility in lieu of cash payment to the department if the owner or any successor in interest fails to carry out the closure or long-term care requirements of the approved plan of operation, or the applicable requirements in sub. (8) or (9). The department shall mail notification of its intent to use the funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation or the applicable requirements in sub. (8) or (9) have been carried out.

c. Each bond shall provide that as long as any obligation of the owner for closure or long-term care remains, the bond may not be cancelled by the surety, unless a replacement bond or other proof of financial responsibility under this subsection is provided to the department by the owner. If the surety proposes to cancel such a bond, the surety shall provide notice to the department in writing by registered or certified mail not less than 90 days prior to the proposed cancellation date. Not less than 30 days prior to the expiration of the 90-day notice period, the owner shall deliver to the department a replacement bond or other proof of financial responsibility under this subsection, in the absence of which all storage, treatment or disposal operations shall immediately cease and the bond shall remain in effect as long as any obligation of the owner remains for closure or long-term care.

d. If the surety company becomes bankrupt or insolvent or its authorization to do business in the state is revoked or suspended, the owner shall, within 30 days after receiving written notice thereof, deliver to the department a replacement bond or other proof of financial responsibility under this subsection in the absence of which all storage, treatment or disposal operations shall immediately cease and the bond shall remain in effect as long as any obligation of the owner remains for closure or long-term care.

2. Deposit with the department. An owner may deposit cash, certificates of deposit, or U.S. government securities with the department, the amount of the deposit shall be determined according to par. (e)1. and shall be submitted as part of an interim license submittal or an initial operating license application. Cash deposits placed with the department shall be segregated and invested in an interest bearing account. All interest payments shall be accumulated in the account. The department shall have the right to use part or all of the funds to carry out the closure or long-term care requirements of the approved plan of operation or the applicable requirements in sub. (8) or (9) if the owner fails to do so. The department shall mail notification of its intent to use funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determing whether or not the closure or long-term care requirements of the approved plan of operation or the applicable requirements in sub. (8) or (9) have been carried out.

3. Escrow account. If the owner establishes an escrow account, it shall be with a bank or financial institution located within the state of Wisconsin which is examined and regulated by the state or a federal agency in

the amount determined according to par. (e)1. The assets in the escrow account shall consist of cash, certificates of deposit, or U.S. government securities. All interest payments shall be accumulated in the account. A duplicate original of the escrow agreement with original signatures shall be submitted to the department as part of an interim license submittal or an initial operating license application. Escrow account forms shall be supplied by the department. The department shall be a party to the escrow agreement, which shall provide that there shall be no withdrawals from the escrow account except as authorized in writing by the department. The escrow agreement shall further provide that the department shall have the right to withdraw and use part or all of the funds in the escrow account to carry out the closure or long-term care requirements of the approved plan of operation or the applicable requirements in sub. (8) or (9) if the owner fails to do so. The department shall mail notification of its intent to use funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation or the applicable requirements in sub. (8) or (9) have been carried out.

4. Irrevocable trust. If the owner creates an irrevocable trust, it shall be exclusively for the purpose of ensuring that the owner or any successor in interest will comply with the closure or long-term care requirements of the approved plan of operation, or if no approved plan of operation exists for the facility, the applicable requirements in sub. (8) or (9). The trust agreement shall designate the department as sole beneficiary. The trustee shall be a bank or other financial institution located within the state of Wisconsin, which has the authority to act as a trustee and whose trust operations are regulated and examined by the state or a federal agency. The trust corpus shall consist of cash, certificates of deposit or U.S. government securities in the amount determined according to par. (e)1. All interest payments shall be accumulated in the account. A duplicate original of the trust agreement with original signatures shall be submitted to the department for approval as part of an interim license submittal or an initial operating license application. Trust forms shall be supplied by the department. The trust agreement shall provide that there shall be no withdrawals from the trust fund except as authorized by the department. The trust agreement shall further provide that sufficient monies shall be paid from the trust fund to the beneficiary in the event that the owner or any successor in interest fails to complete the closure or long-term care requirements of the approved plan of operation, or if no approved plan of operation exists for the facility, the applicable requirements in sub. (8) or (9). The department shall mail notification of its intent to use funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall, prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation or the applicable requirements in sub. (8) or (9) have been carried out.

5. Letter of credit. a. If the owner chooses to submit a letter of credit, it shall be in the amount determined according to par. (e)2. conditioned upon faithful performance by the owner and any successor in interest, of all closure or long-term care requirements of the approved plan of opera-

tion, or if no approved plan of operation exists for the facility, the applicable requirements in sub. (8) or (9). The original letter of credit shall be delivered to the department as part of an interim license submittal or an initial operating license application. Letter of credit forms shall be supplied by the department.

b. Letters of credit shall be issued by a bank or financial institution which is examined and regulated by a federal agency, or in the case of a bank or financial institution located within the state of Wisconsin, which is examined and regulated by the state or a federal agency. The department shall be the beneficiary of the letter of credit.

c. Each letter of credit shall provide that as long as any obligation of the owner for closure or long-term care remains, the letter of credit may not be cancelled by the bank or financial institution, unless a replacement letter of credit or other proof of financial responsibility under this subsection is provided to the department by the owner. If the bank or financial institution proposes to cancel such a letter of credit, the bank or financial institution shall provide notice to the department in writing by registered or certified mail not less than 90 days prior to the proposed cancellation date. Not less than 30 days prior to the expiration date of the 90 day notice period, the owner shall deliver to the department a replacement letter of credit or other proof of financial responsibility under this subsection, in the absence of which all storage, treatment or disposal operations shall immediately cease and the letter of credit shall remain in effect as long as any obligation of the owner remains for closure or long-term care.

d. If the bank or financial institution becomes bankrupt or insolvent or if its authorization to do business is revoked or suspended, the owner shall, within 30 days after receiving written notice thereof, deliver to the department a replacement letter of credit or other proof of financial responsibility under this subsection, in the absence of which all storage, treatment or disposal operations shall immediately cease and the letter of credit shall remain in effect as long as any obligation of the owner remains for closure or long-term care.

e. The letter of credit shall further provide that the department shall have the right to withdraw and use part or all of the funds to carry out the closure or long-term care requirements of the plan of operation or the applicable requirements in sub. (8) or (9) if the owner fails to do so. The department shall mail notification of its intent to use the funds for that purpose to the last known address of the owner. If the owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements of the approved plan of operation or the applicable requirements in sub. (8) or (9) have been carried out.

6. Net worth test. a. Only a company that meets the definition in s. 144.443 (1) (b), Stats., may use the net worth method of providing proof of financial responsibility.

b. The owner shall comply with the net worth test requirements of s. 144.443 (4) and (6) or (7), Stats., and the minimum security requirements of s. 144.443 (8) or (9), Stats., whichever is applicable.

c. Companies using the net worth test to provide proof of financial responsibility for more than one facility shall use the total cost of compliance for all facilities in determining the net worth to closure and long-term care cost ratio.

d. The department determinations under the net worth test shall be done in accordance with s. 144.443 (5), Stats.

7. Insurance. a. If the owner chooses to submit an insurance policy for closure or long-term care, it shall be issued for the maximum risk limit determined according to par. (e)3. A certificate of insurance shall be delivered to the department as part of an interim license submittal or an initial operating license application. Certificates of insurance shall be supplied by the department.

b. At a minimum, the agent or broker shall be licensed as a surplus lines insurance agent or broker. The department shall determine the acceptability of a surplus lines insurance company to provide coverage for proof of financial responsibility. The department shall base the determination on any evaluations prepared in accordance with s. 618.41 (6) (d), Stats., by the office of the commissioner of insurance. The department shall be the beneficiary of the insurance policy.

c. The insurance policy shall provide that, as long as any obligation of the owner for closure or long-term care remains, the insurance policy shall not be cancelled by the insurer, unless a replacement insurance policy or other proof of financial responsibility under this subsection is provided to the department by the owner. If the insurer proposes to cancel such an insurance policy, the insurer shall provide notice to the department in writing by registered or certified mail not less than 90 days prior to the proposed cancellation date. Not less than 30 days prior to the expiration of the 90-day notice period, the owner shall deliver to the department a replacement insurance policy or other proof of financial responsibility under this subsection, in the absence of which all disposal operations shall immediately cease and the policy shall remain in effect as long as any obligation of the owner remains for closure or long-term care.

d. If the insurance company becomes bankrupt or insolvent or if the company receives an unfavorable evaluation under s. 618.41 (6) (d), Stats., the owner shall, within 30 days after receiving written notice thereof, deliver to the department a replacement insurance policy or other proof of financial responsibility under this subsection, in the absence of which all disposal operations shall immediately cease and the policy shall remain in effect as long as any obligation of the owner remains for closure or long-term care.

e. The insurance policy shall further provide that funds, up to an amount equal to the maximum risk limit of the policy, will be available to the department to carry out the closure and long-term care requirements of the approved plan of operation, or if no approved plan of operation exists, all applicable requirements in sub. (8) or (9), if the owner fails to do so. The department shall mail notification of its intent to use the funds for that purpose to the last known address of the owner. If the insurer or owner submits a written request for a hearing to the secretary of the department within 20 days after the mailing of the notification, the department shall prior to using the funds, hold a hearing for the purpose of determining whether or not the closure or long-term care requirements

of the approved plan of operation or the applicable requirements in sub. (8) or (9) have been carried out.

f. Each insurance policy shall contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditioned upon the consent of the insurer, provided such consent is not unreasonably refused.

Note: These forms may be obtained from the Department of Natural Resources, Bureau of Solid Waste Mangement, P.O. Box 7921, Madison, Wisconsin, 53707 or any district office.

8. Other methods. The department shall consider other financial commitments made payable to or established for the benefit of the department to ensure the owner or operator will comply with the closure or long-term care requirements of the approved plan of operation, or if no approved plan of operation exists for the facility, the applicable requirements in sub. (8) or (9). The department shall review the request of any owner or operator to establish proof of financial responsibility under this subsection. The owner shall submit the request and all supporting information as part of the plan of operation.

(d) *Cost estimates.* 1. For the purpose of determining the amount of proof of financial responsibility that is required in par. (a), the owner shall estimate the total cost of closure for the point in time in the operation of the facility when the extent or manner of its operation make closure most expensive, estimate the annual cost of long-term care of the facility for the period of owner responsibility and submit the estimated closure and long-term costs, together with all necessary justification to the department for approval, as part of an interim license submittal or a plan of operation submittal. The costs shall be reported on a per unit basis. The source of the estimates shall be indicated.

2. At a minimum, closure costs shall include any necessary cover material, topsoil, seeding, fertilizing, mulching, labor, and disposal or decontamination of hazardous waste and residues on equipment and structures.

3. At a minimum, long-term care costs shall include land surface care; gas monitoring; leachate pumping, transportation, monitoring and treatment; groundwater monitoring, collection and analysis; maintenance of facility monitoring and waste containment devices; and security requirements necessary to prevent hazards to human health.

4. The estimated annual rate of inflation shall be the latest percent change in the annual gross national product implicit price deflator published in the survey of current business by the bureau of economic analysis, U.S. department of commerce.

5. The estimated annual rate of interest shall be the rate specified by the financial institution managing the fund or deposit.

(e) *Formulas for calculating the amount of proof of financial responsibility.* The owner shall, as part of an interim license submittal or a plan of operation submittal, perform the calculation of the formula for the chosen method of providing proof of financial responsibility for closure and for long-term care. 1. Deposits in escrow, trust or department accounts. a. Interest bearing for closure. The formula for closure shall be:

$$D = C \frac{(1 + f)}{(1 + i)}$$

in which:

D = the unknown deposit for closure

C = the estimated cost of closure

f = the estimated annual rate of inflation

i = the estimated annual rate of interest

b. Interest bearing accounts for long-term care. 1) The following information used in calculating the amounts deposited to the long-term care account shall be specified in an interim license submittal or a plan of operation submittal: the rate of outpayment during the period of long-term care, expressed in equal annual outpayments or unequal annual outpayments, and the equal annual rate of inpayment, expressed as either real dollar inpayments or actual dollar inpayments.

When equal annual outpayments, actual dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[R (1 + f)^{SL} \left(\frac{1 + f}{1 + i} \right)^{e} \left[\frac{1 - \left(\frac{1 + f}{1 + i} \right)^{LTC}}{\left(\frac{1 + i}{1 + f} \right) - 1} \right] \right] \div \left[(1 + i) \left[\frac{(1 + i)^{SL} - 1}{i} \right] \right]$$

3) When equal annual outpayments, actual dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[R (1 + f)^{SL} \left[\frac{1 - \left(\frac{1 + f}{1 + i} \right)^{LTC}}{\left(\frac{1 + i}{1 + f} \right) - 1} \right] \right] \div \left[(1 + i) \left[\frac{(1 + i)^{SL} - 1}{i} \right] \right]$$

4) When unequal annual outpayments, actual dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[\leq \left[R_x (1 + f)^{SL} \left(\frac{1 + f}{1 + i} \right)^{x + e} \right] \right] \div \left[(1 + i) \left[\frac{(1 + i)^{SL} - 1}{i} \right] \right]$$

5) When unequal annual outpayments, actual dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[\leq \left[R_x \ (1+f)^{SL} \left(\frac{1+f}{1+i} \right)^x \right] \right] \div \left[(1+i) \left[\frac{(1+i)^{SL} - 1}{i} \right] \right]$$

6) When equal annual outpayments, real dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[R\,(1+f)^{SL} \left(\frac{1+f}{1+i} \right)^c \left[\frac{1 - \left(\frac{1+f}{1+i} \right)^{LTC}}{\left(\frac{1+i}{1+f} \right) - 1} \right] \right] \div \left[(1+i)^{SL+1} \left[\frac{1 - \left(\frac{1+f}{1+i} \right)^{SL}}{i-f} \right] \right]$$

7) When equal annual outpayments, real dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[R\,(1+f)^{SL} \left[\frac{1 - \left(\frac{1+f}{1+i} \right)^{LTC}}{\left(\frac{1+i}{1+f} \right) - 1} \right] \right] \div \left[(1+i)^{SL+1} \left[\frac{1 - \left(\frac{1+f}{1+i} \right)^{SL}}{i-f} \right] \right]$$

8) When unequal annual outpayments, real dollar inpayments and a closure period are used, the formula shall be expressed as:

$$A = \left[\leq \left[R_x \ (1+f)^{SL} \left(\frac{1+f}{1+i} \right)^{x+c} \right] \right] \div \left[(1+i)^{SL+1} \left[\frac{1 - \left(\frac{1+f}{1+i} \right)^{SL}}{i-f} \right] \right]$$

9) When unequal annual outpayments, real dollar inpayments and no closure period are used, the formula shall be expressed as:

$$A = \left[\leq \left[R_x \ (1+f)^{SL} \left(\frac{1+f}{1+i} \right)^x \right] \right] \div \left[(1+i)^{SL+1} \left[\frac{1 - \left(\frac{1+f}{1+i} \right)^{SL}}{i-f} \right] \right]$$

in which:

A = the unknown inpayment for long-term care per year of active facility life

i = the estimated annual rate of interest

f = the estimated annual rate of inflation

SL = the estimated active life of the facility in years

R = the estimated annual cost

R_x = The estimated unequal annual costs

x = the year of long-term care

LTC = the period of long-term care

c = the closure period as a fraction of one year

Σ = the sum from year 1 through the last year of LTC

2. Bonds and letters of credit. a. Non-interest bearing accounts for closure. The formula for closure is:

$$CB = C(1 + f)$$

in which:

CB = the unknown amount of the bond or letter of credit for closure

C = the estimated closure cost

f = the estimated annual rate of inflation

b. Non-interest bearing accounts for long-term care. The rate of outpayment shall be as specified in par. (e)1.b., and the rate of inpayment shall be in equal actual dollar inpayments.

When equal annual outpayments are used, the formula shall be:

$$PB = \left[R(1 + f)^{SL + 1 + c} \left[\frac{(1 + f)^{LTC} - 1}{f} \right] \right] \div SL$$

When unequal annual outpayments are used, the formula shall be:

$$PB = \left[\Sigma \left[R_x (1 + f)^{SL + x + c} \right] \right] \div SL$$

in which:

PB = the unknown bond or letter of credit amount for long-term care to increase per year of active facility life;

f = the estimated annual rate of inflation;

SL = the estimated active life of the site facility;

R = the estimated annual costs;

R_x = the estimated unequal annual costs

LTC = the period of long-term care;

x = the year of the long-term care;

c = the closure period as a fraction of one year

Σ = the sum from year 1 through the last year of LTC

3. Insurance. a. Closure. The formula shall be:

$$CI = C(1 + f)$$

in which:

CI = the unknown amount of the closure insurance

C = the estimated closure cost

f = the estimated annual rate of inflation

b. Long-term care. 1) The rate of outpayment shall be as specified in par. (e) 1.b. When equal annual outpayments are used, the formula shall be:

$$INS = \left[R(1 + f)^{SL+1+c} \left[\frac{(1 + f)^{LTC} - 1}{f} \right] \right]$$

When unequal annual outpayments are used, the formula shall be:

$$INS = \left[\Sigma \left[R_x (1 + f)^{SL+x+c} \right] \right]$$

in which:

INS = the unknown amount of the long-term care insurance

f = the estimated annual rate of inflation

SL = the estimated action life of the facility in years

R = the estimated annual costs

R_x = the estimated unequal annual costs

LTC = the long-term care period

x = the year of long-term care

c = the closure period as a fraction of a year

Σ = the sum of year 1 through the last year of LTC

(f) *Changing methods of proof of financial responsibility.* The owner of a hazardous waste facility may change from one method of providing proof of financial responsibility under par. (c) to another, but not more than once per year. Such a change may only be made on the anniversary of the submittal of the original method of providing proof of financial responsibility.

(g) *Adjustment of financial responsibility.* The owner of a hazardous waste facility shall prepare a new closure cost estimate whenever a substantial change in the closure plan affects the cost of closure and a new long-term care cost estimate whenever a substantial change in the long-term care requirements in the approved plan of operation, or if no approved plan of operation exists, in sub. (9), affects the cost of long-term care. Proof of the increase in the amount of all bonds, letters of credit, escrow accounts and trust accounts established under this subsection shall be submitted annually to the department. The department may adjust the amount of the required proof of financial responsibility for closure or long-term care based upon pravailing or projected interest and inflation rates and the latest cost estimates, and may annually require the owner or operator to adjust the amount of proof of financial responsibility accordingly.

(h) *Access and default.* Whenever on the basis of any reliable information, and after opportunity for hearing, the department determines that an owner or operator of a hazardous waste facility is in violation of any of the requirements for closure or long-term care specified in the approved plan of operation, or if no approved plan of operation exists, in sub. (8) or (9), the department and its designees shall have the right to enter upon the facility and carry out the closure or long-term care requirements. The department may use part or all of the money deposited with it, or the money deposited in escrow or trust accounts, or performance or forfeiture bonds, or letters of credit, or funds accumulated under other approved methods to carry out the closure or long-term care requirements.

(i) *Authorization to release funds.* 1. Closure. When an owner or operator has completed closure, the owner may apply to the department for release of a bond or letter of credit or return of money held on deposit, in escrow, or in trust for closure of the facility. The application shall be accompanied by an itemized list of costs incurred. Upon determination by the department that complete closure has been accomplished, the department shall in writing authorize release and return of all funds accumulated in such accounts or give written permission for cancellation of a bond or letter of credit. Determinations shall be made within 90 days of the application.

2. Long-term care. One year after closure, and annually thereafter for the period of owner responsibility, the owner, who has carried out all necessary long-term care during the preceding year, may make application to the department for reimbursement from an escrow account, trust account, deposit with the department, or other approved methods, or for reduction of the bond, insurance or letter of credit equal to the estimated costs for long-term care for that year. The application shall be accompanied by an itemized list of costs incurred. Upon determination that the expenditures incurred are in accordance with the long-term care requirements anticipated in the approved plan of operation, or if no approved plan of operation exists, are in accordance with the requirements in sub. (9), the department may authorize in writing the release of the funds or

approve a reduction in the bond or letter of credit. Prior to authorizing a release of the funds or a reduction of the bond or letter of credit, the department shall determine that adequate funds exist to complete required long-term care work for the remaining period of owner responsibility. Determinations shall be made within 90 days of the application. Any funds remaining in an escrow account, trust account, or on deposit with the department at the termination of the period owner responsibility shall be released to the owner.

(j) *Bankruptcy notification.* The owner or operator of a hazardous waste facility shall notify the department by certified mail of the commencement of a voluntary or involuntary proceeding under the bankruptcy code, 11 USC s. 101, et seq., naming the owner or operator as debtor, within 10 days after commencement of the proceeding.

(11) LIABILITY REQUIREMENTS. (a) *Definitions.* The department intends the meaning of terms used in this subsection to be the same as their common meaning within the insurance industry. The following definitions are intended to assist in understanding the requirements of this subsection and are not intended to limit the meaning of the defined terms in a way that conflicts with general insurance industry usage:

1. "Accidental occurrence" means an accident which results in bodily injury or property damage neither expected nor intended from the standpoint of the insured.

2. "Legal defense costs" means any expenses that an insurer incurs in defending against claims of third parties brought under the terms and conditions of an insurance policy.

3. "Nonsudden accidental occurrence" means an accidental occurrence which takes place over time and involves continuous or repeated exposure.

4. "Sudden accidental occurrence" means an accidental occurrence which is not continuous or repeated in nature.

(b) *Coverage for sudden accidental occurrences.* The owner or operator of every hazardous waste facility, or group of hazardous waste facilities, located in Wisconsin, except facilities owned and operated by a state agency or a federal agency, department or instrumentality, shall demonstrate financial responsibility for bodily injury and property damage to third parties caused by sudden accidental occurrences arising from operations of the facility or group of in-state facilities. The owner or operator shall have and maintain liability coverage for sudden accidental occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million, exclusive of legal defense costs.

(c) *Coverage for nonsudden accidental occurrences.* The owner or operator of every hazardous waste surface impoundment or landfill, or group of such facilities, located in Wisconsin, except facilities owned and operated by a state agency, department or instrumentality, shall demonstrate financial responsibility for bodily injury and property damage to third parties caused by nonsudden accidental occurrences arising from operations of the facility or group of such facilities. The owner or operator shall have and maintain liability coverage for nonsudden accidental occurrences in the amount of at least $3 million per occurrence with an annual aggregate of at least $6 million, exclusive of legal defense costs.

(d) *Demonstration of coverage.* The owner or operator shall demonstrate the financial responsibility required under pars. (b) and (c) by having liability insurance. Each insurance policy shall be amended by attachment of a hazardous waste facility liability endorsement or evidenced by a certificate of liability insurance. The wording of an endorsement shall be identical to the wording specified in par. (h). The wording of a certificate of insurance shall be identical to the wording specified in par. (h). At a minimum, the agent or broker shall be licensed as a surplus lines insurance agent or broker. The department shall determine the acceptability of a surplus lines insurance company to provide coverage for both sudden and nonsudden accidental occurrences. The department shall base the determination on any evaluations prepared, in accordance with s. 618.41 (6) (d), Stats., by the office of the commissioner of insurance.

(e) *Period of coverage.* The owner or operator shall continuously provide liability insurance as required by this subsection until the department authorizes cancellation of the policy or policies. If the insurance company becomes bankrupt or insolvent or if the company receives an unfavorable evaluation under s. 618.41 (6) (d), Stats., the owner or operator shall, within 30 days after receiving written notice thereof, deliver to the department demonstration of liability coverage as required by par. (d). When an owner or operator has completed closure in accordance with s. NR 181.52, the owner or operator may apply to the department for authorization to cancel the liability insurance required by this subsection. This application may be made jointly with the application necessary for the release of proof of financial responsibility for closure under sub. (10) (g). Upon determination by the department that closure has been completed in accordance with s. NR 181.52, the department shall authorize the owner to cancel any liability insurance required under this subsection. The department shall approve or deny the application within 90 days of receipt of the application.

(f) *Required submittals.* The owner or operator of a facility which has obtained a variance under s. NR 181.55 (10) or obtained or applied for an interim license shall submit the signed duplicate original of the hazardous waste facility liability endorsement or the certificate of liability insurance within 180 days after July 1, 1985. The owner or operator of a proposed facility shall submit the signed duplicate original of the hazardous waste facility liability endorsement or the certificate of liability insurance as part of the initial operating license application. If requested by the department, the owner or operator shall provide a signed duplicate original of all insurance policies. The owner or operator of a facility which has not obtained an interim license due to the withdrawal or denial of the interim license application or which no longer has an interim license or a variance, and has not received a written determination from the department that closure was completed in accordance with s. NR 181.52, shall within 180 days after July 1, 1985, either:

1. Submit the signed duplicate original or the hazardous waste facility liability endorsement or the certificate of liability insurance; or

2. Apply for department authorization to cancel the liability insurance requirement in accordance with par. (e), provided that closure has been completed in accordance with s. NR 181.52.

(g) *Adjustments by the department.* If the department determines that the levels of coverage required by pars. (b) and (c) are not consistent with the degree and duration of risk associated with treatment, storage,

or disposal at the facility, the department may adjust the level of coverage required under pars. (b) and (c) as may be necessary to protect human health and the environment. This adjusted level will be based on the department's assessment of the degree and duration of risk associated with the ownership or operation of the facility or group of in-state facilities. In addition, if the department determines that there is a significant risk to human health or the environment from nonsudden accidental occurrences resulting from the operations of a facility that is not a surface impoundment or landfill, the owner or operator may be required to comply with par. (c). An owner or operator shall furnish to the department, within a reasonable time, any information which the department requests to determine whether cause exists for such adjustments of level or type of coverage.

(h) *Endorsement and certificate wording.* 1. A hazardous waste facility liability endorsement as required in par. (d) shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

This endorsement certifies that the policy to which the endorsement is attached provides liability insurance covering bodily injury and property damage in connection with the insured's obligation to demonstrate financial responsibility under s. NR 181.42 (11), Wis. Adm. Code. The coverage applies at [list EPA Identification Number, name, and address for each facility] for [insert "sudden accidental occurrences," "nonsudden accidental occurrences," or "sudden and nonsudden accidental occurrences", if coverage is for multiple facilities and the coverage is different for different facilities, indicate which facilities are insured for sudden accidental occurrences, which are insured for nonsudden accidental occurrences, and which are insured for both]. The limits of liability are [insert the dollar amount of the "each occurrence" and "annual aggregate" limits of the insurer's liability], exclusive of legal defense costs.

The insurance afforded with respect to such occurrences is subject to all of the terms and conditions of the policy; provided, however, that any provisions of the policy inconsistent with the provisions of this endorsement stated below are hereby amended to conform with this endorsement.

Bankruptcy or insolvency of the insured may not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the insurer.

Whenever requested by the Department of Natural Resources (DNR) the Insurer agrees to furnish to the DNR a signed duplicate original of the policy and all endorsements.

Cancellation of this endorsement, whether by the Insurer or the insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the DNR.

Any other termination of this endorsement will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the DNR.

Attached to and forming part of policy No. _____ issued by [name of Insurer], herein called the Insurer, of [address of Insurer] to [name of insured] of [address] this _____ day of _____, 19____. The effective date of said policy is _____ day of _____, 19____.

I hereby certify that the wording of this endorsement is identical to the wording specified in s. NR 181.42 (11) (h), Wis. Adm. Code, as such was constituted on the date first above written, and that the agent or broker is licensed as a surplus lines insurance agent or broker.

[Signature of Authorized Representative of Insurer]
[Type name]
[Title], Authorized Representative of [name of insurer]
[Address of Representative]

2. A certificate of liability insurance as required in par. (d) shall be worded as follows, except that the instruction in brackets are to be replaced with the relevant information and the brackets deleted:

HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

[Name of Insurer], (the "Insurer"), of [address of Insurer] hereby certifies that it has issued liability insurance covering bodily injury and property damage to [name of insured], (the "insured"), of [address of insured] in connection with the insured's obligation to demonstrate financial responsibility under s. NR 181.42 (11), Wis. Adm. Code. The coverage applies at [list EPA Identification Number, name, and address for each facility] for [insert "sudden accidental occurrences," "nonsudden accidental occurrences," or "sudden and nonsudden accidental occurrences"; if coverage is for multiple facilities and the coverage is different for different facilities, indicate which facilities are insured for sudden accidental occurrences, which are insured for nonsudden accidental occurrences, and which are insured for both]. The limits of liability are [insert the dollar amount of the "each occurrence" and "annual aggregate" limits of the Insurer's liability], exclusive of legal defense costs. The coverage is provided under policy number _____, issued on [date]. The effective date of said policy is [date].

The Insurer further certifies the following with respect to the insurance described above:

Bankruptcy or insolvency of the insured may not relieve the Insurer of its obligations under the policy.

The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer.

Whenever requested by the Department of Natural Resources (DNR) the Insurer agrees to furnish to the DNR a signed duplicate original of the policy and all endorsements.

Cancellation of the insurance, whether by the Insurer or the insured, shall be effective only upon written notice and only after the expiration

of sixty (60) days after a copy of such written notice is received by the DNR.

Any other termination of the insurance shall be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the DNR.

I hereby certify that the wording of this endorsement is identical to the wording specified in s. NR 181.42 (11) (h), Wis. Adm. Code, as such regulation was constituted on the date first above written, and that the agent or broker is licensed as a surplus lines insurance agent or broker.

[Signature of Authorized Representative of Insurer]
[Type name]
[Title], Authorized Representative of [name of Insurer]
[Address of Representative]

(12) WASTE MANAGEMENT FUND. (a) *Applicability.* 1. All owners or operators of licensed hazardous waste disposal facilities shall pay to the department a tonnage fee for each ton of hazardous waste or solid waste received and disposed of at the facility, or a minimum waste management fund base fee of $100, whichever is greater, facility no longer receives waste and begins closure activities, except as otherwise provided in s. 144.441 (3) (b) or (c), Stats. The department shall deposit all tonnage and waste management base fees into the waste management fund provided for in s. 25.45, Stats.

2. For all hazardous waste disposal facilities with a plan of operation approved under s. 144.44 (3), Stats., the owner shall be responsible for the long-term care of the facility for 30 years after facility closure. The fees to be paid by the owner or operator into the waste management fund shall be in accordance with par. (c) 1. and 4., if applicable, or par. (c) 2., whichever fee is greater.

3. All solid waste land disposal facilities approved and licensed under ch. NR 180, shall pay the solid waste tonnage fees for all solid waste received and disposed of at the facility and the hazardous waste tonnage fees for all small quantities of hazardous waste received and disposed of at the facility. The fees to be paid by the owner or operator into the waste management fund shall be in accordance with par. (c) 1. and 4., if applicable, or par. (c) 2., whichever fee is greater.

4. For all hazardous waste or solid waste land disposal facilities without a plan of operation approved under s. 144.44 (3), Stats., the fees to be paid by the owner or operator into the waste management fund shall be those indicated under the 30 year rate of payment in par. (c) 1. and 4., if applicable, or par. (c) 2., whichever fee is greater.

5. For those companies which have provided proof of financial responsibility by the net worth method under s. 144.443 (4) and (8), Stats., the fees to be paid by the owner or operator into the waste management fund shall be in accordance with par. (c) 3. and 4., if applicable, or par. (c) 2., whichever fee is greater.

(b) *Certification.* The owner or operator of a licensed hazardous waste disposal facility shall certify, on a form provided by the department, the amount of hazardous waste received and disposed of during the preceding reporting period. The department shall specify the term of the reporting period on the certification form. The department shall mail the

certification form to the owner or operator every January. The certification form shall be completed and returned to the department with the appropriate fee within 45 days after mailing of the form by the department to the owner or operator. An owner or operator failing to submit the waste management certification form and appropriate fees within 45 days after mailing of the form to the owner or operator shall pay a late processing fee of $50.

(c) *Fees.* 1. The hazardous waste tonnage fees established in s. 144.44 (4), Stats., are summarized in table VIII.

Table VIII

WASTE MANAGEMENT FUND TONNAGE FEES

	Waste Type	Rate of Payment
a.	Hazardous wastes	15¢/ton
b.	Hazardous ashes or sludges from electric and process steam generating facilities	1.5¢/ton
c.	Hazardous sludges produced by waste treatment or manufacturing processes at pulp or paper mills	1.5¢/ton
d.	Hazardous manufacturing process solid wastes from foundries	1.5¢/ton
e.	Hazardous sludges produced by municipal wastewater treatment facilities	1.5¢/ton

2. As provided in s. 144.441 (5), Stats., the owner or operator shall pay to the department a waste management fund base fee of $100 for each calendar year.

3. The facilities described in par. (a) 5. shall increase the tonnage fees in subpar. 1. and if applicable, subpar. 4. by 25%.

4. The solid waste tonnage fees established in s. 144.441 (4) (a) and (d), Stats., shall be paid for each ton of solid waste received and disposed of at a hazardous waste land disposal facility.

(d) *Use of fund.* Only an approved facility as defined in s. 144.441 (2) (a) 1., Stats., is eligible for use of the money accumulated in the waste management fund. The monies in the waste management fund shall be expended exclusively as set forth in s. 144.441 (6), Stats.

(e) *Determination of waste tonnages.* 1. Determination by owner or operator. The owner or operator shall use one of the following methods for determining the number of tons of waste received and disposed of at the land disposal facility.

a. The owner or operator may use actual weight or volume records.

b. The owner or operator may use manifest records.

2. Conversion factors. The conversion factors in table IX shall be used. All conversion factors are based on wet densities.

Table IX

CONVERSION FACTORS

Liquid wastes	Actual weighing of the waste material is required.
Pulp and papermill sludge	
As delivered - uncompacted	1,800 pound/cubic yard
In-field - compacted	2,200 pounds/cubic yard
Municipal wastewater sludge	1,684 pounds/cubic yard
Utility ash - fly and bottom	
As delivered - uncompacted	2,200 pound s/cubic yard
In-field - compacted	2,400 pounds/cubic yard
Foundry wastes	
As delivered - uncompacted	2,600 pounds/cubic yard
In-field - compacted	3,000 pounds/cubic yard

3. Department estimates. The department may estimate by waste category the number of tons received at a hazardous waste disposal facility. The department's estimate shall appear on the certification form and shall be the number of tons received and reported for the previous reporting period.

(f) *Waste management fund expenditures.* 1. Payments for long-term care after termination of owner responsibility. The department shall determine the necessary maintenance requirements for the long-term care of an approved hazardous waste disposal facility after the termination of the owner's responsibility. The department shall comply with s. 16.75, Stats., when applicable, for contracting services for the required long-term care maintenance of hazardous waste disposal facilities.

2. Payments of related costs. The department shall comply with s. 144.441 (6) (f), Stats., prior to making any expenditures from the waste management fund under s. 144.441 (6) (e), Stats.

3. Other payments. The department may expend monies from the waste management fund in accordance with s. 144.441 (6) (g) to (i), Stats.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. and recr. (10), Register, September, 1981, No. 309, eff. 10-1-81; reprinted to correct formulas in sub. (10), Register, November, 1981, No. 311; am. (10) (c) 4., (10) (d) 1. a. and 2. a., Register, June, 1982, No. 318, eff. 7-1-82; am. (10) and (12), Register, May, 1984, No. 341, eff. 5-1-84; am. (intro.), (1) (a), (c) 3., (d) 1., (e) 3. and 6., (g), (l), (m) 2.b., (2) (a) and (c), (3) (a) (intro.), (4) (a) 1., 2.a., 3., 4.a. and d., f. and 6., (b) 2. intro., 3., (c) 1. intro., b. and i., 3.h., (6) (a) 3., 4.f., 5.d. and e., (b) 1.a., f. and h., (c) 1.f., 2.g. and 3., (7) (b) 4., (8), (9) (a) and (b), (10) (b) 2., (12) (a) 2. and table VIII, cr. (1) (m) 3., (4) (c) 3.i, (6) (a) 7., (9) (d) to (j) and (10) (j), r. and recr. (11), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.43 Storage facility standards. (1) GENERAL. Except as otherwise provided in sub. (2), no person may maintain or operate a hazardous waste storage facility unless the person has obtained an interim license, operating license, variance or waiver from the department, in accordance with the requirements of s. NR 181.53 or 181.55.

(2) EXEMPTIONS. The requirements of this section do not apply to the following, except to the extent they are specifically made applicable:

(a) A generator accumulating hazardous waste on-site in containers or above-ground tanks in compliance with s. NR 181.21 (5), except to the

extent that the requirements of this section are made applicable under s. NR 181.08.

(b) A generator accumulating waste on-site in underground tanks used for spill or leak containment, provided that the generator complies with s. NR 181.21 (6).

(c) A licensed transporter accumulating manifested shipments of waste at a transfer facility in compliance with s. NR 181.395.

(d) The owner or operator of a small quantity accumulation facility which is operated in compliance with s. NR 181.13 (9).

(e) The owner or operator of a solid waste disposal facility licensed under ch. NR 180, provided that the only hazardous waste the facility stores is excluded from regulation under this subchapter by s. NR 181.13 and the facility has been approved under s. NR 181.13 (7) to accept small quantities of hazardous waste.

(f) The owners or operators of facilities used for the storage of metallic mining wastes resulting from a mining operation as defined in s. 144.81 (5), Stats.

Note: Metallic mining wastes are regulated under ch. NR 182.

(g) The owner or operator of a facility operating under an interim license, except to the extent that the requirements are listed in s. NR 181.53 (4), (5) or (6).

(h) The owner or operator of a wastewater treatment unit, provided that the owner or operator complies with the requirements specified in s. NR 181.42 (1) (a) 1.

(i) The owner or operator of a POTW storing spent pickle liquor, prior to recycling at the POTW, in a tank which is approved under s. 144.04, Stats.

(3) FEASIBILITY REPORT. (a) Unless specifically exempted in sub. (2), no person shall establish, construct or expand a hazardous waste storage facility or be issued an initial operating license under s. NR 181.55 without first obtaining written approval of a feasibility report and subsequently obtaining approval of a plan of operation from the department. The purpose of the feasibility report is to determine whether the site has potential for use as a hazardous waste storage facility and to identify any conditions which the applicant shall include in the plan of operation. Favorable feasibility determination does not guarantee plan of operation approval and licensure. The feasibility report shall be submitted in accordance with the requirements of s. 144.44, Stats., and s. NR 181.51 and shall contain the applicable material required by s. NR 181.44 (6) (a) 1. through 15. The applicant is encouraged to submit an initial site report as outlined in s. NR 181.44 (5) (b) 1. through 6. The department may waive in writing any of the complete feasibility report requirements specified in s. NR 181.44 (6) (a) 1. through 15. Feasibility report requirements for small storage facilities, as defined in s. NR 181.435 (1), are specified in s. NR 181.435 (2). The feasibility report shall also contain the following information:

1. For container and above ground tank storage, a description of the containment system to demonstrate compliance with sub. (6) (d), including:

a. Basic design parameters, dimensions, and materials of construction.

b. How the design promotes drainage or how containers or above ground tanks are kept from contact with standing liquids in the containment system.

c. Capacity of the containment system relative to the number and volume of containers or above ground tanks.

d. Provisions for preventing or managing run-on.

e. How accumulated liquids can be analyzed and removed to prevent overflow.

2. For tank storage, a description of the design and operation of the tank which demonstrates compliance with sub. (7) (a), (b), (c), (d), (e), (f), (g), (h) and (l) including:

a. References to design standards or other available information used, or to be used, in the design and construction of the tank.

b. A description of design specifications, including identification of tank construction and lining materials for tanks and double walled tanks, secondary containment barriers and piping and doubled walled piping and the pertinent characteristics such as corrosion and erosion resistance.

c. If a synthetic liner will be used to meet the requirement of a secondary containment barrier for an underground storage tank, then a demonstration that this liner will meet the requirements of s. NR 181.44 (6) (a) 7. and (7) (b) 2.b.2) and 3) shall be made.

d. If a clay liner will be used to meet the requirement of a secondary containment barrier for an underground storage tank, then a demonstration that this liner will meet the requirements of s. NR 181.44 (6) (a) 8. and (7) (b) 2.b.2) and 3) shall be made.

e. Tank dimensions, capacity and shell thickness.

f. A diagram of piping, instrumentation, and process flow.

g. Description of feed systems, safety cutoff, bypass overflow protection systems and pressure controls, such as vents.

3. For waste pile storage, detailed plans and an engineering report describing how the requirements of sub. (9) (a) will be met, and if applicable, of how sub. (9) (a) 1. through 11. will be met if an exemption from certain requirements of ss. NR 181.44 (10) and 181.49 is sought.

(b) Within 60 days after a feasibility report is submitted, the department shall either determine that the report is complete or notify the applicant in writing that the report is not complete, specifying the information which the applicant shall submit before the report is deemed complete. The department will determine whether or not the feasibility report is complete by determining whether or not the minimum requirements specified in par. (a) have been met. Additional feasibility information may be required of the applicant after a determination that the feasibility report is complete only if the department establishes that a detailed review of the feasibility report indicates that site feasibility cannot be determined in the absence of such additional information.

(c) If no hearing has been conducted under s. 144.44, Stats., the department shall issue the final determination of feasibility within 60 days after the 45 day notice period required under s. 144.44 (2) (l) and (m), Stats., has expired. If an informational hearing is conducted under s. 144.44 (2g), Stats., the department shall issue a final determination of feasibility within 60 days after the hearing is adjourned. If a contested case hearing is conducted under s. 144.44 (2r), Stats., a final determination of feasibility shall be issued within 90 days after the hearing is adjourned.

(4) PLAN OF OPERATION. (a) Unless specifically exempted in sub. (2), no person may establish, construct or expand a hazardous waste storage facility or be issued an initial operating license under s. NR 181.55 until a plan of operation has been submitted in accordance with the requirements of s. 144.44, Stats., and s. NR 181.51 and has been approved in writing by the department. The plan shall contain the applicable material required by s. NR 181.44 (7). The department may waive in writing any of the plan requirements of s. NR 181.44 (7) depending on the specific site or facility as outlined in the approved feasibility report for the facility. Plan of operation report requirements for small storage facilities as defined in s. NR 181.435 (1), are specified in s. NR 181.435 (3). The plan of operation shall also contain the following information:

1. For container and tank storage, a description of how s. NR 181.42 (1) (m)2. will be complied with to meet the requirements of subs. (6) (e), (6) (f), (7) (j), (8) (f) and (8) (g).

2. For container, tank and waste pile storage, sketches, drawings or data demonstrating, compliance with the buffer zone requirements of subs. (7) (k), (8) (d), (8) (e) and (9) (e)1.

3. For underground tank storage, a description of the testing program to meet the requirements of sub. (7) (n).

4. For waste pile storage, a description of:

a. How wind dispersal of particulate matter will be controlled in order to meet the requirements of sub. (9) (b);

b. How sub. (9) (e)2. will be complied with if incompatible wastes or materials are to be managed; and

c. The details of the process carried out and equipment used if treatment occurs in or on the pile, including the nature and quality of the residuals.

(b) Within 30 days after a plan of operation is submitted, the department shall notify the applicant in writing that the plan is either complete or not complete, specifying the information which the applicant shall submit before the report is deemed complete. The department will determine if the plan of operation is complete by determining whether or not the minimum requirements specified in par. (a) have been met. Additional plan of operation information may be required of the applicant after a determination that the plan of operation is complete only if the department establishes that a detailed review of the plan of operation indicates that the plan of operation is insufficient in the absence of such additional information.

(c) The department may not approve or disapprove a plan of operation until a favorable determination of feasibility has been issued for the

facility. Upon submission of a complete plan of operation, the department shall either approve or disapprove the plan in writing within 90 days or within 60 days after a favorable determination of feasibility is issued for the facility, whichever is later.

(5) CONSTRUCTION OBSERVATION REPORT. (a) The department may require submission by the applicant of a construction observation report in accordance with the requirements of s. NR 181.51. Factors that the department will consider before requiring the submission of a construction observation report include the types and quantities of hazardous wastes to be stored, the methods of storage and the potential for degradation of the environment and possible adverse human health effects should a discharge of hazardous waste occur.

(b) The department may require that a registered professional engineer document facility construction and render an opinion whether the facility has been constructed in substantial conformance with the plan of operation. The department shall review, and approve, deny or deem incomplete the request for approval of facility construction documentation within 65 business days after receiving the request. Operation of the facility may not commence until the construction documentation report is approved by the department, and, if necessary, a license to operate the facility is issued by the department.

(6) GENERAL OPERATIONAL REQUIREMENTS. (a) The owner or operator of a storage facility shall inspect all above ground tanks and containers used for storing hazardous waste at least weekly for evidence of leakage, or corrosion or deterioration of the containers, tanks, or discharge confinement structures, such as dikes.

(b) Storage of hazardous waste shall be conducted in such a manner that no discharge of hazardous waste occurs.

(c) Under s. NR 181.08, an owner or operator of a storage facility may be required by the department to comply with all or part of the requirements of this subchapter, including the groundwater and leachate monitoring requirements of s. NR 181.49, if the department determines that there is a potential for discharge of the hazardous waste or hazardous constituents to the environment.

(d) Each storage area for above ground tanks and containers shall be designed and constructed to have a continuous base which is free of cracks or gaps and is impervious to the material to be stored, and will contain any hazardous waste discharges, leaks or spills and precipitation until the collected material is detected and can be removed. The base of such storage areas shall be sloped or the containment system shall be otherwise designed and operated to drain and remove liquids resulting from hazardous waste discharges, leaks, spills and any precipitation, unless the containers or tanks are elevated or are otherwise protected from contact with accumulated liquids. Such storage areas shall have a discharge confinement structure with a minimum capacity equal to the contents of the largest tank or container, or 10% of the total amount of stored waste, whichever is greater. If the storage area is not enclosed, the discharge confinement structure shall also provide sufficient freeboard to allow for containment of precipitation resulting from a 24-hour, 25-year storm. Surface water run-on to the containment system shall be prevented. Spilled, leaked, or discharged waste and accumulated precipitation shall be removed from a sump or the collection area in an expedient

manner and quickly enough to prevent an overflow of the confinement system.

(e) Incompatible wastes or materials may not be placed in the same tank, container or pile unless s. NR 181.42 (1) (m)2. is complied with.

(f) Hazardous waste may not be placed in an unwashed tank or container that previously held an incompatible waste or material unless s. NR 181.42 (l) (m)2. is complied with.

(g) The identity and location of all stored hazardous waste shall be known throughout the entire storage period.

(h) Final disposal of hazardous waste may not be permitted at a hazardous waste storage facility, unless the facility has a separate license for disposal.

(7) TANK STANDARDS. (a) 1. Tanks shall have sufficient shell strength, and for closed tanks, pressure controls, such as vents, to assure that they do not collapse or rupture.

2. The department will review the design of the tanks, including the foundation, support, seams and pressure controls. The department shall require that a minimum shell thickness be maintained at all times to ensure sufficient shell strength. Factors to be considered in establishing minimum thickness include the width, height, and materials of construction of the tank, and the specific gravity of the waste which will be placed in the tank. In reviewing the design of the tank and establishing a minimum thickness, the department shall rely upon appropriate industrial design standards and other available information.

3. Storage tanks which contain volatile waste shall comply with s. NR 154.13 regarding the control of organic compound emissions.

4. All tanks, whether shop built or field erected, shall be strength tested before they are placed in service in accordance with the applicable requirements of the building code or specifications under which they were built. All tanks and connections shall be tested for tightness by the owner of the tank.

(b) Underground tanks shall be:

1. Constructed of cathodically protected steel, glass fiber-reinforced plastic, steel clad with glass fiber-reinforced plastic or other equivalent material approved by the department. The tank material shall be compatible with the waste contained, and not subject to physical or chemical deterioration which may cause leaks;

2. Equipped with a strike plate beneath the fill pipe and gauge opening;

3. Anchored in those instances where tanks may become buoyant due to a rise in the level of the water table or due to location in an area that may be subject to flooding; and

4. Equipped with an overflow protection system consisting of level sensing devices and indicators, high level alarms and an automatic shut-off control system, or equivalent means of stopping flow to the tank.

(c) Underground tanks shall be protected by a secondary containment system. The type of secondary containment required depends on the sea-

sonal high water table, soil conditions, the type of tank and the type of waste to be stored at the proposed tank facility, as follows:

1. Where the seasonal high water table is above the bottom of the tank excavation, a double walled tank shall be installed to meet the requirement of secondary containment. A double walled tank shall include a functioning leak detection system allowing for monitoring of the lowest point in the tank's interstitial space.

2. Where the soil is well drained and the seasonal high water table is below the bottom of the tank excavation, a synthetic liner or clay liner system shall be used to meet the secondary containment requirement. This system shall meet the following minimum requirements:

a. The liner shall be installed under the tank along the excavation base as well as extending along the sidewalls to the surface. The sidewalls shall be keyed in with the cap as required in subd. 6. If the liner is constructed of clay, it shall meet the requirements of s. NR 181.44 (10) (h)1. and 4. for a secondary clay liner, except the minimum thickness shall be 92 cm (3 feet). If the liner is constructed of a synthetic material, it shall meet the requirements of s. NR 181.44 (10) (h)1. for a primary liner;

b. The liner shall be sloped at least 1% (⅛ inch per foot) to a sump;

c. The sump shall be designed and located such that any leakage from the tank will be directed towards it solely through the action of gravity;

d. An observation well or other equivalent method shall be positioned from this sump to the surface of the excavation for the purpose of sampling for any leakage and pumping out any accumulated water or waste;

e. A sensor shall be situated in the well or sump which can continuously detect any leakage of the waste stored in the tank. The sensor shall be connected to a control device which can continuously indicate the site condition; and

f. The site shall be capped with a clay or synthetic liner, which is sloped to drainways leading away from the storage tank. If constructed of clay, the cap shall meet the minimum requirements specified in s. NR 181.44 (13) (a) 5. If a synthetic cap is provided, it shall meet the minimum requirements specified in s. NR 181.44 (13) (a) 4. The cap shall be covered with a top cover which meets the minimum requirements of s. NR 181.44 (13) (a) 2.

3. Where an existing uncovered in-ground tank is required to meet this paragraph, the department will consider a liner installed inside the tank as an acceptable alternative to meet the requirements of this paragraph, depending on the condition of the existing tank, the seasonal high groundwater table, soil conditions and the type of waste to be stored. If such an installation is allowed, the system shall meet the following requirements:

a. The primary liner installed inside the tank shall be constructed of synthetic material which meets the requirements of s. NR 181.44 (10) (h)1. for a primary liner;

b. The bottom of the existing tank shall be sealed using an acceptable sealing material such as a grout, or sealed with another synthetic liner which meets the requirements of subpar. a;

c. The bottom of the existing tank shall be sloped at least 1% (⅛ inch per foot) to a sump; and

d. The requirements of subd. 2.c. through e. shall be met.

(d) Excavations for underground tanks shall meet the following minimum requirements:

1. The excavation for underground tanks shall extend at least 1 foot in all directions from the in-place tank profile;

2. The base of the excavation shall be laid with a backfill bed of at least 30 cm (1 foot) of non-corrosive inert pea gravel, sand, or number 8 crushed stone;

3. The backfill shall extend to at least 30 cm (1 foot) above the top of the buried tank; and

4. Double walled tanks shall be covered by at least 2 feet of earth. If the surface will be subjected to traffic, this depth shall be increased to at least 90 cm (3 feet) of earth.

(e) Underground pipes, fittings and connections shall be:

1. Constructed of double walled piping or other equivalent means of secondary containment;

2. Constructed of corrosion resistant materials or be protected against corrosion by the use of cathodic protection; and

3. Designed, constructed and installed with access points to permit periodic testing without the need for extensive excavation.

(f) Uncovered tanks shall be operated to ensure at least 2 feet of freeboard, or sufficient freeboard to prevent over topping by wave or wind action, or by precipitation, whichever is greater.

(g) Storage of hazardous waste in tanks shall comply with s. NR 181.42 (1) (m) 2.

(h) 1. Hazardous wastes may not be placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode or otherwise fail before the end of its intended life.

2. Wastes and other materials such as treatment reagents, which are compatible with the material of construction of the tank may not be placed in the tank unless the tank is protected from accelerated corrosion, erosion or abrasion through the use of:

a. An inner liner or coating which is compatible with the waste or material and which is free of leaks, cracks, holes or other deterioration; or

b. Alternative means of protection, such as cathodic protection or corrosion inhibitors.

(i) In addition to the waste analysis required by s. NR 181.42 (1) (d), whenever a tank is to be used to store a hazardous waste which is substantially different from waste previously stored in that tank, the owner or operator of the storage facility shall:

1. Conduct waste analyses and storage tests; or

2. Obtain written, documented information on storage of similar waste under similar operating conditions.

(j) Ignitable or reactive waste may not be placed in a tank, unless:

1. The waste is treated, rendered, or mixed before or immediately after placement in the tank so that:

a. The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under s. NR 181.15 (2) or (4); or

b. Compliance with s. NR 181.42 (1) (m)2. is ensured; or

2. The waste is stored or treated in such a way that it is protected from any conditions which may cause the waste to ignite or react; or

3. The tank is used solely for emergencies.

(k) The owner or operator of a facility which stores ignitable or reactive waste in covered tanks shall comply with the buffer zone requirements for tanks set forth in ch. Ind 8.

(l) Where hazardous waste is continuously fed into a tank, the tank shall be equipped with a means to stop this inflow, such as a waste feed cutoff system or a bypass system to a stand-by tank.

(m) Tanks used to store hazardous wastes shall be inspected at least once each operating day for the following:

1. Overfilling control equipment, such as waste feed cutoff systems and bypass systems, to ensure it is in good working order.

2. Data gathered from monitoring equipment, such as pressure or temperature gauges, to ensure the tank is being operated according to its design.

3. For uncovered tanks, the level of waste to ensure compliance with par. (f).

4. The area immediately surrounding the tank, to detect obvious signs of discharges or leakage, such as wet spots and dead vegetation.

(n) 1. Underground storage tanks and piping shall be tested to determine tightness in accordance with subd. 3. when any of the following conditions exist:

a. As part of routine inspection and maintenance requirements when there is a suspicion of discharges or leaks because of stock inventory losses;

b. When leakage is detected in the secondary containment system, but the actual cause is not determined from surface observation;

c. When there is an accumulation of water in the tank;

d. Upon completion of construction; or

e. Prior to placing the tank back into service after repair or after a period of one year or more during which the tank is not used for any purpose.

2. Underground storage tanks and piping which do not meet the requirements of pars. (b) through (e) shall be tested to determine tightness in accordance with subd. 3. within one year of July 1, 1985 and at least once every year thereafter.

3. The underground storage tank leak test shall be capable of detecting a tank or piping leak as small as 0.05 gallons in one hour accounting for all variables including vapor pockets, thermal expansion of the waste, temperature, stratification, evaporation, pressure and end deflection. The final test of the national fire protection association, recommended practice number 329-1977 or other test of equivalent or superior accuracy as approved by the department shall be used to comply with the testing requirement. The department may grant an exemption from this testing requirement or allow a test of lesser accuracy for uncovered inground tanks. Such requests shall be submitted in writing to the department. The department shall review and approve, deny or deem incomplete request for an exemption within 65 business days after receiving the request.

Note: The publication containing this standard may be obtained from:
The National Fire Protection Association
Batterymarch Park
Quincy, Mass. 02269

The publication containing these standards is available for inspection at the offices of the department, the secretary of the state and the revisor of statutes.

(o) As part of the inspection schedule is required in s. NR 181.42 (7) (b) and in addition to the requirements of par. (m), the owner or operator shall develop a schedule and procedure for assessing the condition of the tank. When the tank or associated piping is equipped with cathodic protection, a schedule and procedure for assessing the cathodic protection system shall be developed. A schedule for assessing the leak detection system shall also be established. The schedule and procedure shall be adequate to detect cracks, leaks, corrosion or erosion which may lead to cracks or leaks or wall thinning to less than the thickness required under par. (a). Procedures for emptying a tank to allow entry and inspection of the interior shall be established when necessary to detect corrosion or erosion of the tank sides and bottom. The frequency of these assessments shall be based on the material of construction of the tank, type of corrosion or erosion protection used, rate of corrosion or erosion observed during previous inspections and the characteristics of the waste being treated or stored.

(p) The owner or operator shall establish, as part of the contingency plan required under s. NR 181.42 (4) (a), the procedures to respond to tank discharges or leaks, including procedures and timing for expeditious removal of leaked or spilled waste and contaminated soil and repair of the tank. Before placing a repaired underground tank back into service, a test for tightness shall be conducted. The test shall meet the requirements of par. (o).

(q) The owner or operator shall use appropriate controls and practices to prevent tank overfilling. These shall include:

1. Controls to prevent overfilling such as a waste feed cutoff system or bypass system to a standby tank; and

2. For uncovered tanks, maintenance of sufficient free board to comply with par. (b).

(8) CONTAINER STANDARDS. (a) If a container is not in good condition or if the contents of a storage container begin to leak, the hazardous waste in the container shall be recontainerized in a storage container in good condition.

(b) A container holding hazardous waste shall always be closed during storage, except when it is necessary to add or remove waste.

(c) A container holding hazardous waste may not be opened, handled or stored in a manner which may rupture the container or cause it to leak.

(d) Containers holding ignitable or reactive waste shall be located at least 50 feet from the facility's property line.

(e) Storage containers holding a hazardous waste which is incompatible with any waste or other materials stored nearby in other containers, waste piles, open tanks or surface impoundments shall be separated from other wastes or materials or protected from them by means of a dike, berm, wall or other device.

(f) Hazardous waste may not be placed in an unwashed container that previously held an incompatible waste or material, or in a container that holds incompatible waste or material, unless s. NR 181.42 (1) (m)2. is complied with.

(g) The container shall be made or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored so that the ability of the container to contain the waste is not impaired.

(9) WASTE PILE REQUIREMENTS. (a) *General.* Unless specifically exempt under sub. (2), the owner or operator of a waste pile shall meet the applicable design, construction and operational requirements in pars. (b) through (e), s. NR 181.44 (8), (9) and (10) and the applicable monitoring requirements in s. NR 181.49. The department may, in accordance with s. NR 181.05, exempt the owner or operator of a waste pile from the requirements of s. NR 181.44 (10), except ss. NR 181.44 (10) (c), and 181.49 if the owner or operator of the waste pile proposes to design, construct, operate and monitor the waste pile in accordance with the following minimum practices:

1. The waste pile shall be located inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated.

2. Liquids or materials containing free liquids are not placed in the pile.

3. The pile is protected from surface water run-on by the structure or in some other manner.

4. The pile is designed and operated, by means other than wetting, to prevent dispersal of waste by wind.

5. The pile will not generate leachate through decomposition or other reactions.

6. The pile, including its underlying liner shall be located entirely above the seasonal high groundwater table.

7. The pile shall be underlain by a liner that is designed, constructed and installed to prevent any migration of wastes out of the pile into the liner or adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the waste pile. The liner shall be:

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

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

c. Installed to cover all surrounding earth likely to be in contact with the waste.

8. The wastes in the pile shall be removed periodically, and the liner shall be inspected for deterioration, cracks, or other conditions that may result in leaks. The frequency of inspection will be specified in the inspection plan required in s. NR 181.42 (7) and shall be based on the potential for the liner to crack or otherwise deteriorate under the conditions of operation, such as waste type, rainfall, loading rates, and subsurface stability.

9. The liner shall be of sufficient strength and thickness to prevent failure due to puncture, cracking, tearing, or other physical damage from equipment used to place waste in or on the pile or to clean and expose the liner surface for inspection.

10. If deterioration, a crack, or other condition is indentified that is causing or could cause a leak, the owner or operator shall:

a. Notify the department of the condition in writing within 7 days after detecting the condition; and

b. Repair or replace the liner and obtain a certification from a registered professional engineer that, to the best of the engineer's knowledge and opinion, the liner has been repaired and leakage will not occur; or if a detection monitoring program pursuant to s. NR 181.49 (6) has already been established in the plan of operation approval to be complied with only if a leak occurs, begin to comply with that program and any other applicable requirements of s. NR 181.49 within a period of time specified in the plan of operation approval.

11. The department will specify in the plan of operation approval all design and operating practices that are necessary to ensure that the requirements of this paragraph are satisfied.

(b) *Protection from wind.* If a pile containing hazardous waste may be subject to dispersal by wind, the owner or operator of the facility shall cover the pile so that wind dispersal does not occur.

(c) *Waste analysis.* In addition to the waste analysis required by s. NR 181.42 (1) (d), the owner or operator shall analyze a representative sample of waste from each incoming waste shipment before adding the waste to a existing pile if the compatibility of the incoming waste with the existing pile is not known. The analysis conducted shall be capable of differ-

entiating between the types of hazardous waste the owner or operator places in piles, so that mixing of incompatible wastes does not inadvertently occur. The analysis shall include a visual comparison of color and texture.

(d) *Containment.* If leachate or run-off from a pile is a hazardous waste then either:

1. The pile shall be placed on an impermeable base that is compatible with the waste under the conditions of storage, run-on shall be diverted away from the pile, and any leachate and run-off from the pile shall be collected and managed as a hazardous waste; or

2. The pile shall be protected from precipitation by some other means; and

3. No liquids or wastes containing free liquids may be placed in the pile.

(e) *Special requirements for incompatible wastes.* 1. A pile of hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks or surface impoundments shall be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.

2. Hazardous waste may not be piled on the same area where incompatible wastes or materials were previously piled, unless the area has been decontaminated sufficiently to ensure compliance with s. NR 181.42 (1) (m)2.

(10) CLOSURE. Unless specifically exempted under sub. (2), the owner or operator of a hazardous waste storage facility shall meet the requirements specified in s. NR 181.42 (8) and the following requirements for each applicable storage method:

(a) The owner or operator of a facility which stores hazardous waste in containers shall, at completion of closure, remove all hazardous waste and hazardous waste residues from the containment system. Remaining liners, bases, soil and related equipment or structures containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed. All wastes or material which is decontaminated or removed shall be managed as a hazardous waste in accordance with the requirements of this chapter, unless s. NR 181.12 (3) applies.

(b) The owner or operator of a facility which stores hazardous waste in tanks shall, at completion of closure, remove all hazardous waste and hazardous waste residues from the tanks, discharge control equipment and discharge confinement structures. Remaining tanks, liners, bases, soil and related equipment or structures containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed. All wastes or material which is decontaminated or removed shall be managed as a hazardous waste in accordance with the requirements of this chapter, unless s. NR 181.12 (3) applies.

(c) Prior to removal of underground storage tanks the owner or operator shall comply with the requirements of par. (b) and undertake the following successive steps:

1. Disconnect and remove insofar as possible the suction, inlet, gauge and vent lines;

2. Cap or plug open ends of remaining lines; and

3. Close all openings in the tank, except for a ⅛ inch hole for venting, with pipe plugs before the tank is removed from the ground.

(d) Abandonment in place of underground storage tanks, rather than removal, may be approved by the department if the owner complies with the requirements of par. (b) and undertakes the following successive steps:

1. Disconnect the suction, inlet, gauge and vent lines of the tank;

2. Demonstrate through a precision test that the tank is tight; and

3. Cap remaining underground piping. The tank may not be used for any other purpose until closure is complete and the intended use is approved by the department.

(e) The owner or operator of a facility which stores hazardous waste in waste piles shall comply with the following:

1. The owner or operator shall, at completion of closure, remove all waste residues, contaminated containment system components, liners, contaminated subsoils and structures and equipment contaminated with hazardous waste, hazardous waste residues or leachate, and manage them as a hazardous waste in accordance with the requirements of this chapter, unless s. NR 181.12 (3) applies.

2. The owner or operator may propose to leave some contaminated subsoils in place in lieu of removing all of this material as required in subd. 1. Such proposals shall be submitted to the department for approval prior to completion of closure, as a modification to the closure plan required under s. NR 181.42 (8). The owner or operator shall also submit a post-closure plan that meets the requirements of s. NR 181.42 (9) with the proposal. The department will consider such proposals on a case-by-case basis. If any contaminated subsoil is to remain in place, the department may require that the owner or operator comply with the applicable requirements for closure, monitoring and long term care under ss. NR 181.42 (9) and 181.44 (11), (12), (13) and (14) and 181.49.

3. The department may require that the owner or operator comply with the applicable requirements for closure, monitoring and long-term care under ss. NR 181.42 (9) and 181.44 (11), (12), (13) and (14) and 181.49 if the department determines that hazardous waste or hazardous waste constituents have been discharged at the facility, where compliance with such requirements is necessary to protect public health, safety or welfare or the environment, even if the owner or operator chooses to remove all contaminated subsoils and complies with subd. 1.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.435 Small storage facilities. (1) APPLICABILITY. The feasibility report and plan of operation submittal requirements of this section may be met in lieu of the requirements of s. NR 181.43 (3) and (4) for hazardous waste storage facilities that have the following characteristics:

(a) Hazardous waste storage is entirely in an enclosed and roofed structure having access limited or restricted to employes or other authorized personnel;

(b) Hazardous waste storage is confined to a floor area of 1500 sq. ft. or less;

(c) Hazardous waste storage does not exceed 10,000 gallons at any time;

(d) Hazardous waste is stored generally for the purpose of accumulating a sufficient quantity for a more economical transfer for treatment or disposal; and

(e) All hazardous waste is stored in either containers or above ground tanks.

(2) EXEMPTIONS. (a) Except as provided in par. (c), the owner or operator of a hazardous waste storage facility having the characteristic specified in sub. (1) is exempt from the feasibility and plan of operation report requirements in sub. (3) for that facility, provided that:

1. The owner or operator has been issued a permit for storage of hazardous waste at the facility under 42 USC 6925 (c); and

2. The facility is in compliance with the permit required under subd. 1.

(b) Any person exempt from sub. (3) under par. (a) shall obtain an operating license as required under s. NR 181.55.

(c) Any person proposing to obtain an initial operating license for a facility that stores only wastes that do not contain free liquids shall first obtain written approval of the information required under sub. (3) (a)7. This information shall be submitted in accordance with s. NR 181.51 (1) (b) and (c).

(3) FEASIBILITY AND PLAN OF OPERATION REPORT. (a) Except as provided in sub. (2), any person proposing to establish, construct, expand or obtain an initial operating license under s. NR 181.55 for a hazardous waste storage facility that has the characteristics specified in sub. (1) shall first obtain written approval of a feasibility and plan of operation report from the department. The feasibility and plan of operation report shall be submitted in accordance with s. 144.44, Stats., and s. NR 181.51, and shall at a minimum, contain the following information:

1. A narrative description of the area proposed for storage of hazardous waste;

2. A general floor plan of the storage area and any pertinent adjacent areas;

3. A description of any existing or proposed fire prevention or control systems, communication equipment and security systems or arrangements at the facility;

4. A description of the hazardous or solid wastes, that will be stored at the proposed facility, along with projected volumes or weights and accumulation times;

5. An evaluation of the storage area's capability of containing spills;

6. A description of any past experience with storage of hazardous wastes at the facility;

7. For container and tank storage, a description of the containment system to demonstrate compliance with s. NR 181.43 (6) (d), including:

a. Basic design parameters, dimensions, and materials of construction.

b. How the design promotes drainage or how containers or tanks are kept from contact with standing liquids in the containment system.

c. Capacity of the containment system relative to the number and volume of containers or tanks.

d. Provisions for preventing or managing run-on.

e. How accumulated liquids can be analyzed and removed to prevent overflow;

8. For tank storage, a description of the design and operation of the tank which demonstrate compliance with s. NR 181.43 (7) (a), (f), (g), (h) and (l) including:

a. References to design standards or other available information used, or to be used, in the design and construction of the tank.

b. A description of design specifications, including identification of construction and lining materials and the pertinent characteristics such as corrosion and erosion resistance.

c. Tank dimension, capacity and shell thickness.

d. A diagram of piping, instrumentation, and process flow.

e. Description of feed systems, safety cutoff, bypass systems and pressure controls, such as vents;

9. Storage and waste management procedures, including a description of how s. NR 181.42 (1) (m)2. will be complied with to meet the requirements of s. NR 181.43 (6) (e), (6) (f), (7) (j), (8) (f) and (8) (g);

10. An explanation of recordkeeping and container labeling procedures;

11. A contingency plan, as required by s. NR 181.42 (4);

12. A plan sheet, sketch or other data which demonstrates compliance with the buffer zone requirements in ss. NR 181.43 (7) (k), and (8) (d) and (e);

13. A closure plan for the facility, as required by ss. NR 181.42 (8) and 181.43 (10); and

14. The most recent closure cost estimate for the facility prepared in accordance with s. NR 181.42 (10) (d).

(b) Within 60 days after a feasibility and plan or operation report is submitted, the department shall either determine that the report is complete or notify the applicant in writing that the report is not complete, specifying the information which the applicant shall submit before the report is deemed complete. The department will determine whether or not the feasibility and plan of operation report is complete by determin-

ing whether or not the minimum requirements in par. (a) have been met. Additional information may be required of the applicant after a determination that the report is complete only if the department establishes that a detailed review of the report indicates that feasibility cannot be determined or the report is insufficient in the absence of such additional information.

(c) If no hearing has been conducted under s. 144.44, Stats., the department shall issue the final determination for the feasibility and plan of operation report within 60 days after the 45 days notice period required under s. 144.44 (2) (l) and (m), Stats., has expired. If an informational hearing is conducted under s. 144.44 (2g), Stats., the department shall issue a final determination for the feasibility and plan of operation report within 60 days after the hearing is adjourned. If a contested case hearing is conducted under s. 144.44 (2r), Stats., a final determination for the feasibility and plan of operation report shall be issued within 90 days after the hearing is adjourned.

(d) The department may conduct a site visit with the permission of the applicant.

(e) Based on the site visit under par. (d), the department may require additional information for the feasibility and plan of operation report as provided in s. NR 181.44 (5) and (6), or 181.44 (7).

(4) OPERATION. A storage facility approved under this section shall meet all of the substantive and operating requirements of s. NR 181.43 (6) through (8).

(5) CLOSURE. Closure requirements specified under ss. NR 181.42 (8) and 181.43 (10) are applicable to storage facilities approved under this section.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.44 Landfill and surface impoundment standards. (1) GENERAL. Except as otherwise provided in sub. (2), no person shall operate or maintain a hazardous waste landfill or surface impoundment unless the person has obtained an interim license, operating license, variance or waiver from the department, in accordance with the requirements of s. NR 181.53 or 181.55.

(2) EXEMPTIONS. The requirements of this section do not apply to the following except to the extent they are specifically included:

(a) The owner or operator of a surface impoundment which has its discharges regulated under ch. 147, Stats., is excluded from the requirements of this section, provided that the owner or operator complies with ss. NR 181.42 (1) (a)3. and 181.47.

(b) The owner or operator of a solid waste disposal facility that is licensed under ch. NR 180 provided that the only hazardous waste the facility disposes of is excluded from regulation under this subchapter by s. NR 181.13 and the facility has been approved under s. NR 181.13 (7) to accept small quantities of hazardous waste.

(c) The owners or operators of facilities used for the disposal of metallic mining wastes resulting from a mining operation as defined in s. 144.81 (5), Stats., except where requirements in this section are refer-

enced in the rules adopted by the department under s. 144.435 (lm), Stats.

Note: Metallic mining wastes are regulated under ch. NR 182.

(d) The owner or operator of a facility operating under an interim license, except to the extent that the requirements of this section are listed in s. NR 181.53 (4), (5) and (6).

(3) LOCATION CRITERIA. (a) In addition to general site selection criteria in s. NR 181.42 (2), no person shall establish, construct, operate, or maintain a hazardous waste landfill or surface impoundment, or permit the use of property for a hazardous waste landfill or surface impoundment, within the following areas:

1. Within 1,000 feet of any navigable lake, pond or flowage.

2. Within 300 feet of a navigable river or stream.

3. Within 1,000 feet of the nearest edge of the right-of-way of any state trunk highway, interstate or federal aid primary highway or the boundary of any public park, unless the site is screened by natural objects, plantings, fences or other appropriate means so as to not be visible from the highway or park.

4. Within an area where the department after investigation finds that there is a reasonable probability that disposal of hazardous waste within such an area will have a detrimental effect on any surface water or groundwater quality or will cause a violation of groundwater standards adopted under ch. 160, Stats.

Note: Groundwater standards adopted under ch. 160, Stats., should be effective September 1, 1985.

5. Within 10,000 feet of any airport runway used or planned to be used by turbojet aircraft or within 5,000 feet of any airport runway used only by piston type aircraft or within such other areas where a substantial potential bird hazard to aircraft may exist, unless a waiver is granted by the federal aviation administration.

6. Within 1,200 feet of any public or private water supply well as specified in ch. NR 112.

7. The active portion of a facility shall be located a minimum of 200 feet away from the property line of the facility.

8. Within areas which do not meet the following requirements:

a. Consist of clay soils which extend at least 30 feet beneath the proposed base of the facility.

b. Contain no extensive deposits of coarse grained soils within the clay soils. This shall be determined based on an interpretation of soil stratigraphy after consideration is given to the deposition and origin of the deposits and their engineering classification under the unified soil classification system specified in ASTM standard D-2487-69 (1975).

Note: The publication containing this standard may be obtained from:
American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
The publication containing this standard is available for inspection at the offices of the department, the secretary of the state and the revisor of statutes.

c. Have a median infield permeability of 1×10^{-6} cm/sec as determined by single well response tests.

(b) An applicant for an initial operating license or for approval of the expansion of an existing hazardous waste landfill or surface impoundment shall demonstrate to the department that the proposed site will be in compliance with all of the locational standards of this section for which no exemption has been granted. No exemptions from compliance with par. (a)4. will be granted by the department. Pursuant to s. NR 181.05, exemptions from compliance with par. (a)1., 2., 3., 5., 6., 7. and 8. may be granted only upon demonstration by the applicant of circumstances which warrant such an exemption. The factors which will be considered by the department in determining whether or not to grant an exemption include waste types and characteristics, site or facility design and operational considerations, availability or other environmentally suitable alternatives, compliance with other state and federal regulations and the public health, safety and welfare.

(4) INITIAL SITE INSPECTION. Unless specifically exempted in sub. (2), any person proposing to establish a hazardous waste landfill or surface impoundment or expand such an existing facility shall contact the department to arrange for an initial site inspection.

(5) INITIAL SITE REPORT. (a) Any person, prior to submitting a feasibility report, may submit an initial site report to the department in accordance with s. NR 181.51. The purpose of submitting this report is to obtain a preliminary opinion from the department on the potential of the site for development and the advisability of spending additional time and funds to prepare a feasibility report. The department shall review and respond to the initial site report within 65 business days of receipt. A favorable opinion under this section does not guarantee a favorable determination of site feasibility.

(b) An initial site report may be as detailed as the applicant chooses to make it. For guidance purposes, the following indicates the type and extent of information that may be submitted in an initial site report. If the information outlined below, with the exception of subd. 5., is not submitted, the department cannot guarantee that an opinion on the feasibility of the site can be given.

1. General site information. Identify project title; name, address and phone number of primary contact persons for department correspondence; the consultant; present property owner; proposed facility owner and operator; site location by quarter section; total acreage of property and proposed licensed acreage; proposed site life and design capacity; municipalities, industries and collection and transportation agencies to be served; estimated waste types and characteristics and estimated weekly quantities to be disposed; anticipated base grades; preliminary design configuration; anticipated covering frequency and mode of operation.

2. Regional geotechnical information. Include a discussion of the regional site setting to provide a basis for comparison and interpretation to site specific information obtained through field investigations and for analyzing siting and environmental considerations. Limit the discussions to information available from publications, although some field verification and updating may be desirable. The term "regional" as utilized herein is intended to include that area which may affect or be affected by

the proposed site. In most instances, this will be the proposed site and the area within a one-mile radius. Supplement discussions by maps and cross-sections. Address the following items:

a. Topography, including predominant topographic features.

b. Hydrology, including surface water drainage patterns and significant hydrologic features such as surface waters, springs, drainage basins and divides and wetlands.

c. Geology, including the nature and distribution of bedrock and unconsolidated deposits.

d. Hydrogeology, including depth to groundwater, groundwater flow direction, recharge and discharge areas, groundwater divides, aquifers and the identification of the aquifers use by public and private wells beneath the facility property and within one half mile of the proposed site.

e. Ground and surface water quality as described in available regional literature.

f. Climatology.

g. Identification of adjacent landowners.

h. Zoning.

i. Present land uses with particular emphasis on known recreational, historic or archaeological areas.

j. Present or proposed access roads and weight restrictions.

k. Factors identified in the locational criteria in sub. (3).

3. Site specific geotechnical information:

a. Perform field investigations to define the site specific topography, soil types, and depth to bedrock and groundwater. Include the following:

1) A topographic survey of the area. On this map show the proposed fill area, property boundaries, proposed site boundary, soil borings performed and wells installed. The minimum scale should be one inch = 500 feet with the contour interval sufficient to show site relief. It is recommended that this map consist of a blowup of a USGS map, 7½ or 15-minute topographical, with supplemental information added as appropriate.

2) Soil borings extending to bedrock, unless depth to bedrock is 100 feet or more below the anticipated facility base grade, or 30 feet below the anticipated facility base grade, whichever is greater. The borings should be distributed in a grid pattern throughout the area. At least one boring per 5 acres with a minimum of 5 borings is required.

3) Soil borings shall be converted to water table observation wells and well nests in accordance with the following schedule:

a) Three wells nests consisting of a water table observation well and a piezometer in the unconsolidated material.

b) One piezometer within the competent bedrock at one of the well nest locations.

4) Analyze each significant soil layer encountered during boring investigations for grain-size distribution and classify according to the unified soil classification system.

5) A minimum of one laboratory permeability test shall be conducted for each significant soil layer above and below the water table. Single well response tests shall be performed on all on-site wells.

6) A summary of the groundwater monitoring data obtained under s. NR 181.49 (4) and (5), where applicable.

b. Summarize the results of the subsurface investigations utilizing a series of geologic sections which connect the soil borings performed. In each section show present topography, soil borings, soil classification and other properties, interpreted soil stratigraphy, bedrock, well construction permeability results and stabilized water level readings for each well.

c. Prepare a water table contour map based on stabilized water level readings. The topographic map shall be used as a base for this map.

d. A summary of all groundwater, gas, surface water and physical features monitoring previously performed for the facility, including all monitoring required under this chapter.

e. A description of any plume of contamination that has entered the groundwater from any treatment, storage or disposal unit at the time the initial site report is submitted that:

1) Delineates the extent of the plume on the map required under subpar. a.1); and

2) Identifies the concentration of each hazardous constituent in table VI of s. NR 181.16 (4), throughout the plume or identifies the maximum concentrations of each table VI of s. NR 181.16 (4) hazardous constituent in the plume.

4. Data analysis. From the results of the field investigations, regional geotechnical information and land use information, analyze and make preliminary conclusions and recommendations on site development. Include a discussion of the potential for the site to meet the locational requirements in sub. (3) and potential limitations on site development.

5. Preliminary liner assessment. a. One or more potential alternatives for a primary liner meeting the requirements of sub. (10) (h) 1. shall be identified.

b. A description of the proposed testing program for the primary liner shall be submitted which outlines the proposed procedures for performing the tests required in par. (a) 7. and the number of samples necessary to obtain representative results. All proposed testing shall meet or exceed the requirements of the national sanitation foundation standard 54 for flexible membrane liners. The definitions of terms or words in section 2 of the national sanitation foundation standard 54 for flexible membrane liners shall apply to terms or words used in this subparagraph where a dictionary definition does not exist or is not applicable. The description of the proposed testing program shall include:

1) Liner compatibility including:

a) The effect of soil pH.

b) The effect of chemical contaminants within the soil.

c) Short-term testing to evaluate the ability of the liners to contain the waste and waste leachate.

d) Long-term testing including samples of the delivered liner and actual field constructed seams.

2) Susceptability to attack by bacteria and fungi.

3) Physical suitability including:

a) Tear resistance.

b) Puncture resistance.

c) Creep resistance.

d) Elongation potential.

e) Membrane thickness.

Note: The publication containing these standards may be obtained from:
National Sanitation Foundation
P.O. Box 1468
Ann Arbor, Michigan 48106
The publication containing these standards is available for inspection at the offices of the department, the secretary of state and revisor of statutes.

c. A description of the proposed testing program for the secondary liner shall be submitted which outlines the proposed procedures for performing the tests required in par. (a) 8. and describes the number of samples necessary to obtain representative results. The description of the proposed testing program shall include:

1) For short and long-term permeability testing the:

a) Types of permeant;

b) Proposed pressure gradients;

c) Number of pore volumes to be passed through the samples;

d) Chemical analysis of the influent through time; and

e) Chemical analysis and volume measurements of effluent being discharged through time.

2) A description of the physical testing program of the samples before and after permeability testing to meet the requirements of par. (a) 8.b.

6. Appendix. Show the site boundaries on all maps included in the appendix. In the appendix include:

a. All new data such as boring logs, soil tests, well construction data, water level measurements and test data and results.

b. A plat map of the area.

c. A USGS quadrangle of the area, updated with locations of applicable wells installed after preparation of the quadrangle.

d. A soil conservation service soil map and interpretation, if available.

e. References.

(6) FEASIBILITY REPORT. (a) Unless specifically exempted in sub. (2), no person may establish, or construct a hazardous waste landfill or surface impoundment, expand an existing facility, or be issued an initial operating license under s. NR 181.55 without first obtaining approval of a feasibility report describing the physical conditions of the proposed facility and subsequently obtaining approval of a plan of operation from the department. The purpose of the feasibility report is to determine whether the facility has potential for use as a hazardous waste landfill or surface impoundment and to identify any conditions which the applicant is required to include in the plan of operation. The feasibility report shall be submitted in accordance with s. 144.44, Stats., and s. NR 181.51.

1. All information specified in sub. (5) (b) shall be submitted.

a. Even if an initial site report has been submitted, the applicant is required to include the pertinent information in the feasibility report.

b. If an initial site report has been reviewed by the department, additional information addressing all department review comments shall be included.

2. An existing site condition topographic plan shall be prepared. This shall be a detailed topographic survey of the facility area and all area within a distance of 1500 feet of the facility. The minimum scale of this plan shall be one inch = 200 feet with a maximum 2-foot contour interval. The contour interval shall be sufficient to clearly show the pattern of surface water flow in the vicinity of and from each operating unit of the facility. All elevations shall be related to USGS datum. More than one plan sheet shall be prepared to show the required information if one sheet will be too detailed to be clear. The plan or plans shall clearly show:

a. 100-year floodplain area.

b. Surface waters, including intermittent streams.

c. Homes, buildings, man-made features and utility lines.

d. Surrounding land uses, such as residential, commercial, argricultural and recreational.

e. Property boundaries, facility or waste management boundaries and fill areas, including any previous fill area.

f. Access control, such as fences and gates.

g. Water supply wells and any other wells, such as irrigation wells.

h. Well boring locations and observation well locations.

i. A wind rose, which show prevailing wind speed and direction.

j. Buildings, treatment, storage, or disposal operations; or other structures such as recreation areas, runoff control systems, access and internal roads, storm, sanitary, and process sewerage systems, loading and unloading areas, fire control facilities, etc.

k. Barriers for drainage or flood control.

l. Location of operational units within the facility where hazardous waste is or will be treated, stored, or disposed of, including equipment cleanup areas.

3. Field and laboratory investigations shall be performed to further define site physical characteristics including soils, bedrock and groundwater. At a minimum, these investigations shall include:

a. Sufficient soil borings to adequately define the soil and bedrock, conditions at the site. At a minimum, 5 soil borings for the first 5 acres and 3 borings for each additional 5 acres or portion thereof shall be performed. The borings shall be located in a grid pattern such that there is a minimum of one boring in each major geomorphic feature, such as ridges, lowlands and drainage swales. All borings shall extend a minimum of 30 feet below the anticipated facility base grade or to bedrock, unless depth to bedrock is 100 feet or more below the facility base grade, whichever is greater.

b. Soil samples shall be collected utilizing standard undisturbed soil sampling techniques. Samples may not be composited for testing purposes. Soil samples shall be collected on a continuous basis from the ground surface to at least 30 feet below the anticipated base of the facility. After that point, soil samples shall be collected from each soil layer encountered and at maximum 5-foot intervals. All soil samples shall be described and saved for the duration of the project.

c. Boring logs accurately recording soil and bedrock conditions encountered at the site shall be submitted for all borings. Each log shall include soil and rock descriptions, method of sampling, sample depth, date of boring, water level measurements and dates, and soil test data. All elevations shall be corrected to USGS datum.

d. For each significant soil layer encountered, at least 3 soil samples shall be analyzed for grain size distribution, either mechanically or hyrometrically as appropriate to the soil type, and classified according to the unified soil classification system.

e. A minimum of 3 laboratory permeability tests shall be conducted for each significant soil layer above and below the water table. Single well response tests shall be performed on all on-site wells.

f. Estimates and, when necessary, field and laboratory tests shall be provided for porosity, effective porosity, transmissivity, storage capacity, secondary permeability, diffusion coefficient and dispersion coefficients, cation exchange capacity, soil buffering capacity, and any other physical or chemical soil characteristics that may be necessary to assess the environmental feasibility of the site.

g. Soil borings within the unconsolidated material shall be converted to water table observation wells and well nests in accordance with the following schedule at a minimum:

1) Five water table observation wells and 3 well nests for the first 5 acres or portion thereof.

2) Three water table observation wells and one well nest for each additional 5 acres or portion thereof.

h. Soil borings to the competent bedrock surface shall be converted to piezometers in accordance with the following minimum schedule:

1) Three piezometers for the first 5 acres or portion thereof.

2) One piezometer for each additional 10 acres or portion thereof.

i. Well construction information shall include the elevations of the ground surface, top and bottom elevation of well pipe, the bottom of the boring, and well seals; length of screened interval; diameter of boring; a description of well construction and backfill materials and boring logs as specified in subd. 3.c. Where observation wells are intended to be used for future monitoring wells, conditions specified in s. NR 181.49 (4) for monitoring wells shall be fulfilled.

j. Upon completion, each well shall be properly developed. A minimum of 3 rounds of chemical testing for field conductivity (adjusted to 25°C), field pH, COD and TOC shall be performed to help determine if all the wells are properly developed. Additional development and chemical testing shall be performed as needed until all wells are chemically stablilized and produce representative samples of groundwater quality.

k. Once developed, all wells shall be pumped and successive water level measurements shall be made until stabilized readings are obtained.

l. Where public or private wells are present within one half mile of the proposed site, the groundwater aquifer shall be evaluated based on well logs, well construction reports and available pump test results along with details on well location, ownership and well driller. The department may require the owner or operator to attempt to obtain stabilized water level readings from these wells.

m. The department may require the owner or operator to attempt to sample all public or private wells within one half mile of the proposed site and analyze for the parameters and characteristics specified in s. NR 181.49.

4. Data shall be presented as follows:

a. All raw data such as boring logs, well logs, well construction diagrams, soil tests, permeability tests and calculations, water quality and water level measurements shall be included in the report appendix.

b. A series of geologic cross-sections passing through all borings shall illustrate existing topography, soil borings, soil classification and other properties, interpreted soil stratigraphy, bedrock, well construction and stabilized water level readings for each well.

c. A minimum of 2 water table contour maps representing yearly high and low water table conditions shall be constructed based on stabilized water level readings. The existing site conditions plan shall be used as a base for this map. Seasonal changes in groundwater levels shall be recorded by measuring water levels in all on-site wells at least monthly from the time the initial wells are installed.

d. Groundwater flow net sections shall be prepared to illustrate horizontal and vertical flow directions. This information shall be illustrated on geologic sections.

5. The anticipated types, amounts and characteristics of the hazardous and solid waste to be disposed at the site shall be described and evaluated with respect to design, operation, and to impacts on the air, surface water and groundwater quality. Chemical and physical tests shall be

done on representative waste samples and on representative or simulated leachate samples using approved procedures. All testing shall be documented.

6. A water balance shall be prepared for the periods of time before construction, during active operations and after site closure. Factors to be considered in preparation of the water balance are precipitation, evapotranspiration, infiltration, runoff, soil and waste moisture holding capacity, the physical and chemical characteristics of the waste, surface water and groundwater conditions, and proposed design concepts. The water balance analysis shall address leachate generation rates and the effect of the site on surface water and groundwater levels, quantity, and quality for worst, average and best case conditions.

7. The following items shall be evaluated and discussed in accordance with procedures outlined in the national sanitation foundation standard 54 for flexible membrane liners or as otherwise approved in writing by the department to justify the type of primary liner being proposed. The definitions of terms or words in section 2 of the national sanitation foundation standard 54 for flexible membrane liners shall apply to terms or words used in this subdivision where a dictionary definition does not exist or is not applicable. This information includes but is not limited to the following:

a. A complete description of the proposed liner material including:

1) Manufacturers name, address and telephone number.

2) Thermal properties.

3) Chemical resistance including the results of all waste compatibility studies.

4) Material formulation including additives such as:

a) Antioxidants.

b) Antistatic agents.

c) Colorants.

d) Fillers such as extenders, carriers and reinforcing agents.

e) Fibers.

f) Lubricants.

g) Plasticizers.

h) Stabilizers.

5) Sheet size as delivered.

b. An evaluation of the compatibility of the primary liner with the existing and projected environment. This testing shall determine if the on-site soils, imported soils, waste and waste leachate are compatible with the proposed liner so that the liner does not fail before its estimated service life is reached. This testing includes:

1) A determination of the organic content of the underlying soils and plans for removing them from subgrade.

2) The effect of soil pH on the proposed liner.

3) Liner compatibility and tolerance to chemical contaminants within the soil.

4) Short-term compatibility testing to evaluate the liner's ability to contain the waste and waste leachate.

5) Long-term compatibility testing including samples of the as-delivered liner material and actual samples of field constructed seams.

c. The liner's susceptibility to attack by micro-organisms and macro-organisms shall be evaluated including:

1) The liner's resistance to bacteria and fungi.

2) A general discussion on:

a) The proposed method for preventing vegetation from growing through the membrane liner.

b) The proposed method for eliminating attack by insects, rodents, and burrowing animals.

c) How the liner will be protected from puncture by hoofed animals.

d. The physical suitability of the liner shall be determined by securing representive samples of the fabricated liner and from samples used for compatibility testing. Testing shall be undertaken to determine the following properties:

1) Tear resistance.

2) Puncture resistance.

3) Creep resistance.

4) Elongation potential.

5) Membrane thickness.

e. Discussion of the following areas:

1) Material properties of the proposed liner including:

a) Workability of the liner.

b) Repairability of the liner.

c) Ability to withstand objects falling directly on the liner.

2) The type of factory and field seams to be utilized.

3) The type of seam testing to be performed including:

a) Non-destructive.

b) Destructive.

4) Bedding and drainage material to protect the liner from:

a) Vehicular traffic; and

b) Objects driven through the drainage layer.

5) Proposed anchoring details to ensure liner stability.

f. A description of the constraints and limitations on working conditions under which the liner can be installed including:

1) Maximum and minimum temperature ranges.

2) Humidity.

3) Rainfall.

4) Direct sunlight.

g. The potential for gas generation beneath the liner shall be evaluated and a system for venting gas shall be proposed if necessary.

h. The potential for frost heaving and subsequent damage to the liner or subgrade shall be evaluated.

i. A description of where the liner will be stored prior to construction and an estimate on the length of time under which storage can take place.

j. Details shall be provided on the methods to be used for joining the liner to concrete structures or pipes, if penetrations of the liner are proposed.

k. Detailed information concerning quality control and quality assurance of the liner material, factory and field seaming and construction operations related to the integrity of the liner system is required. The minimum information shall include:

1) Persons or organizations responsible for liner manufacturing, delivery, storage, installation and testing shall be identified.

2) The tests utilized in the quality control and quality assurance program shall be detailed. The number and location of the tests shall be indicated.

Note: The publication containing these standards may be obtained from:
National Sanitation Foundation
P.O. Box 1468
Ann Arbor, MI 48106
The publication containing these standards is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

8. The following test shall be performed in accordance with procedures approved in writing by the department, to document that the secondary liner is compatible with the expected or actual leachate:

a. Short and long term tests to determine:

1) The saturated variable head permeability of the clay samples with both distilled water and leachate.

2) Chemical analysis of the permeants through time.

3) Chemical analysis and volume measurements of the effluent being discharged through time.

b. Physical testing of the clay samples before and after permeability testing including:

1) Particle size, as specified in ASTM standard D-422-63 (1972).

2) Particle size for material finer than number 200 sieve, as specified in ASTM standard D-1140-54 (1971).

3) Liquid limit, as specified in ASTM standard D-423-66 (1972).

4) Plasticity index, as specified in ASTM standard D-424-59 (1971).

Note: The publications containing these standards may be obtained from:
American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

The publications containing these standards are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

9. On the topographic map required under subd. 2., a delineation of the waste management area, the property boundary, the proposed "point of compliance" as defined under s. NR 181.49, the proposed location of groundwater monitoring wells as required under s. NR 181.49, and, to the extent possible, the information required in sub. (5) (b) 2.d.

10. If the presence of hazardous constituents has not been detected in the groundwater at the time of feasibility report submittal, the owner or operator shall submit sufficient information, supporting data, and analysis to establish a detection monitoring program which meets the requirements of s. NR 181.49 (4) and (6). This submission shall address the following items specified under s. NR 181.49 (4) and (6):

a. A proposed list of indicator parameters, waste constituents, or reaction products that can provide a reliable indication of the presence of hazardous constituents in the groundwater;

b. A proposed groundwater monitoring system;

c. Background values for each proposed monitoring parameter or constituent, or procedures to calculate such values; and

d. A description of proposed sampling, analysis and statistical comparison procedures to be utilized in evaluating groundwater monitoring data.

11. If the presence of hazardous constituents has been detected in the groundwater at the point of compliance at the time of feasibility report submittal, the owner or operator shall submit sufficient information, supporting data, and analyses to establish a compliance monitoring program which meets the requirements of s. NR 181.49 (4) and (6). The owner or operator shall also submit an engineering feasibility plan for a corrective action program necessary to meet the requirements of s. NR 181.49 (6). To demonstrate compliance with s. NR 181.49 (6), the owner or operator shall address the following items:

a. A description of the wastes previously handled at the facility;

b. A characterization of the contaminated groundwater, including concentrations of hazardous constituents;

c. A list of hazardous constituents for which compliance monitoring will be undertaken in accordance with s. NR 181.49 (4) and (6);

d. Proposed concentration limits for each hazardous constituent, based on the criteria set forth in s. NR 181.49 (6), including a justification for establishing any alternate concentration limits;

e. Detailed plans and an engineering report describing the proposed groundwater monitoring system in accordance with the requirements of s. NR 181.49 (4) and (6); and

f. A description of proposed sampling, analysis and statistical comparison procedure to be utilized in evaluating groundwater monitoring data.

12. If hazardous constituents have been measured in the groundwater which exceed the concentration limits established under table X in s. NR 181.49 (6) (d), or if groundwater monitoring conducted at the time of feasibility report submittal under s. NR 181.49 (4) and (5) at the waste boundary indicates the presence of hazardous constituents from the facility in groundwater over background concentrations, the owner or operator shall submit sufficient information, supporting data, and analyses to establish a corrective action program which meets the requirements of s. NR 181.49 (6). However, an owner or operator is not required to submit information to establish a corrective action program if the owner or operator demonstrates to the department that alternate concentration limits will protect human health and the environment after considering the criteria listed in s. NR 181.49 (6) (c)2. An owner or operator who is not required to establish a corrective action program for this reason shall instead submit sufficient information to establish a compliance monitoring program which meets the requirements of s. NR 181.49 (6) and subd. 10. To demonstrate compliance with s. NR 181.49 (6), the owner or operator shall address, at a minimum, the following items:

a. A characterization of the contaminated groundwater, including concentrations of hazardous constituents;

b. The concentration limit for each hazardous constituent found in the groundwater as set forth in s. NR 181.49 (6);

c. Detailed plans and an engineering report describing the corrective action to be taken; and

d. A description of how the groundwater monitoring program will demonstrate the adequacy of the corrective action.

13. Recommendations on design constraints for development of the site considering all available data, shall be made and reasons given for such recommendations. This shall include a discussion of the potential for the site to meet locational requirements in sub. (3). Particular attention shall be given to assessing the results of the compatibility testing on the primary and secondary liners. For expansion of existing facilities, the report shall include sufficient information to assess the effectiveness of the existing facility design and operation in protecting air, surface water and groundwater quality.

14. Based on the conclusions resulting from site analysis, a proposed site design shall be prepared. This shall consist of preliminary engineering plans and a general discussion of proposed operating procedures. This section of the report shall include, at a minimum, the following information:

a. A plan sheet showing proposed access, lateral extent of filling, and phases of site development. The existing site conditions map shall be utilized as a base for this sheet.

b. A series of north-south and east-west cross-sections showing present topography, proposed base grades and final grades. This information shall be displayed on the geological sections.

c. Preliminary cover balance calculations.

d. Proposed methods for leachate and gas control including collection, containment and treatment. Preliminary agreements with wastewater treatment plants shall be included when applicable.

e. Proposed operating procedures including method of site development, method of access control, control of surface water, screening, covering frequency as applicable and other special design features.

f. Evaluation of proposed facility location and operation in terms of environmental soundness, safety and potential for accidental spills and other failures of environmental concern.

g. Detailed plans and an engineering report describing the proposed groundwater monitoring program to be implemented to meet the requirements of s. NR 181.49.

h. Proposed groundwater, leachate, surface water, gas, air, unsaturated zone and other monitoring.

i. Proposed contingency plan and method of correcting accidents or potential failures of the proposed facility that may affect air, surface water and groundwater quality.

j. Proposed closure sequence.

k. Proposed final use.

l. Proposed method of demonstrating financial responsibility and long-term care requirements.

15. To aid in completing an environmental assessment and in determining the need for an environmental impact report or environmental impact statement, the feasibility report shall include a brief discussion of the following:

a. The purpose and need for the proposed project and for the recommended site.

b. The probable adverse and beneficial physical, biological, social, economic and other impacts of proposed site development.

c. The probable adverse impacts of site development that cannot be avoided.

d. The irreversible or irretrievable commitments of resources if the site is developed as proposed.

e. The alternatives to the proposed site development and alternate methods of waste disposal or recycling.

f. The direct, indirect and cumulative effects of the proposed site development.

g. Estimated construction, operation and long-term care costs for the entire project.

16. An environmental impact statement is required under s. 1.11 (2), Stats., for a new hazardous waste disposal facility if one or both of the following conditions exist:

a. The total area committed to solid and hazardous waste disposal exceeds 80 acres.

b. The total volume of solid and hazardous waste intended for disposal under the plan of operation exceeds one million cubic yards.

(b) Within 60 days after a feasibility report is submitted, the department shall either determine that the report is complete or notify the applicant in writing that the report is not complete, specifying the information which the applicant shall submit before the report is deemed complete. The department shall determine whether or not the feasibility report is complete by determining whether or not the minimum requirements of this subsection have been met. Additional feasibility information may be required of the applicant after a determination that the feasibility report is complete only if the department establishes that a detailed review of the feasibility report indicates that site feasibility cannot be determined in the absence of such additional information.

(c) If no hearing has been conducted under s. 144.44, Stats., the department shall issue the final determination of feasibility within 60 days after the 45 day notice period required under s. 144.44 (2) (1) and (m), Stats., has expired. If an informational hearing is conducted under s. 144.44 (2g), Stats., the department shall issue a final determination of feasibility within 60 days after the hearing is adjourned. If a contested case hearing is conducted under s. 144.44 (2r), Stats., a final determination of feasibility shall be issued within 90 days after the hearing is adjourned.

(7) PLAN OF OPERATION. (a) *General.* Unless specifically exempted in sub. (2), no person may establish or construct a hazardous waste landfill or surface impoundment, expand an existing site or facility, or be issued an initial operating license under s. NR 181.55 until a plan of operation has been submitted in accordance with s. NR 181.51 and s. 144.44, Stats., and approved in writing by the department. No person may establish, construct, operate, maintain, close, provide long-term care for, or terminate a hazardous waste landfill or surface impoundment except in accordance with this section and with the approved plan of operation. Only persons who have obtained a favorable determination of site feasibility from the department may submit a plan of operation for review and approval.

(b) *Content.* All plans of operation for hazardous waste landfills or surface impoundments shall contain complete plans and specifications necessary for the construction, operation, monitoring, closing, long-term care and termination of the project and any additional information the department may require for the analysis of environmental impacts of the project. Because these documents are to be used for the day to day operation of the site, it is imperative that the information be presented in a manner that is clear and understandable. The plan of operation shall contain, at a minimum, the following information:

1. Engineering plans consisting of the following:

a. A title sheet indicating the project title, who prepared the plans, the person for whom the plans were prepared, a table of contents, and a loca-

tion map showing the location of the site and if applicable the area to be served.

b. An existing conditions plan sheet indicating site conditions prior to development. The details and extent of coverage shall be the same as that required for the existing site conditions map in sub. (6) (a)2.

c. A base grade plan sheet indicating site base grades or the appearance of the site if it were excavated in its entirety to the base elevation, before installation of any engineer modifications or the beginning of any filling.

d. An engineering modifications plan sheet indicating the appearance of the site after installation of the secondary liner. More than one plan sheet may be required for complicated sites.

e. A fabrication plan sheet indicating how each panel of the primary liner will be located and installed. The panels shall be numbered in the order they will be installed. All side slope seams shall run from top to bottom of the slope, the full length of the slope.

f. A final site topography plan sheet indicating the appearance of the site at closing including the details necessary to prepare the site for long-term care.

g. A series of phasing plan sheets showing the progression of site development through time. At a minimum, a separate plan shall be provided for initial site preparations and for each subsequent major phase or new area where substantial site preparation shall be performed. Each such plan shall include a list of construction items and quantities necessary to prepare the phase indicated.

h. A site monitoring plan sheet showing the location of all devices for the monitoring of the unsaturated zone, leachate production, groundwater quality, surface water quality, and gas production and venting. This plan shall include a table indicating the parameters to be monitored for and the frequency of monitoring before, during and after site development.

i. A long-term care plan sheet showing the site at the completion of closing and indicating those items anticipated to be performed during the period of long-term care for the site as applicable. The plan shall include a table listing the items and the anticipated schedule for monitoring and maintenance. In many instances this information can be presented on the final site topography sheet.

j. The following information shall be presented on the plan sheets:

1) All information required for the existing site conditions map as described in sub. (6) (a) 2., unless including this information leads to confusion with the data intended for display. However, in all instances, existing site topography shall be sketched lightly or otherwise indicated on the plan sheets required in subds. 1.c., 1.d., 1.e., 1.f. and 1.g.

2) A survey grid with base lines and monuments to be used for field control.

3) Limits of filling for each major or special waste type or fill area.

4) All drainage patterns and surface water drainage control structures both within the actual fill area and at the site perimeter. Such structures

may include berms, ditches, sedimentation basins, pumps, sumps, culverts, pipes, inlets, velocity breaks, sodding, erosing matting, or other methods of erosion control.

5) The direction and sequence of filling within each phase.

6) Ground surface contours at the time represented by the drawing. Spot elevations shall be indicated for key features.

7) Areas to be cleared, grubbed and stripped of topsoil.

8) Borrow areas for liner materials, gas venting materials, berms, roadway construction, and cover materials.

9) All soil stockpiles including cover materials, topsoil, liner materials, gas venting materials and other excavation.

10) Access roads and traffic flow patterns to and within the active fill area.

11) All temporary and permanent fencing.

12) The methods of screening such as berms, vegetation or special fencing.

13) Leachate collection, control and treatment systems which may include pipes, manholes, trenches, berms, collection sumps or basins, pumps, risers, lines and liner splices. Invert elevations shall be provided as often as necessary to allow for proper construction of these systems.

14) Gas, leachate and groundwater monitoring devices and detection systems.

15) Severe weather operation plans.

16) Support buildings, scale, utilities, gates and signs.

17) Special waste handling areas.

18) Construction notes and references to details.

19) Other appropriate site features.

k. A series of site cross-sections shall be drawn perpendicular and parallel to the site base line through each major phase and at points of grade break and important construction features. The location of the cross-sections shall be shown on the appropriate plan sheet and the sections labeled using the site grid system. Each cross-section shall show existing and proposed base and final grades; soil borings and monitoring wells which the section passes through or is adjacent to; soil types, bedrock and water table; leachate control, collection and monitoring systems; gas venting and monitoring systems; limits of filling for each major or special waste type; drainage control structures; access roads and ramps on the site perimeter and within the active fill area; the filling sequence or phases; and other appropriate site features.

1. Detailed drawings and typical sections, as appropriate, for drainage control structures, access roads, fencing, leachate and gas control systems and monitoring devices, final cover design, buildings and other construction details.

2. An operations manual consisting of the following information:

a. The manual shall identify the project title; engineering consultant; site owner, licensee and operator; proposed licensed acreage; site life and design capacity; municipalities, industries and collection and transportation agencies served; waste types and quantities to be disposed; and any exemptions applied for.

b. Specifications for site construction and operation shall be presented, including detailed instructions to the site operator and any contractors for all aspects of site construction and operation. References to specifications on the plan sheets shall be pointed out as well as additional instructions included, where appropriate. The specifications shall include, as applicable, the following information:

1) Initial site preparations including specifications for clearing and grubbing, topsoil stripping, other excavations, berm construction, drainage control structures, access roads and entrance, screening, fencing and other special design features.

2) A plan for initial site preparations including a discussion of the field measurements, photographs to be taken and sampling and testing procedures to be utilized to verify that the infield conditions encountered were the same as those defined in the feasibility report.

3) A proposed testing schedule to document that the secondary liner and the compacted clay portion of the final cover are constructed in accordance with the requirements of sub. (10) (h) 4. and sub. (12) (a) 3.c.2) respectively. At a minimum, this program shall include testing to document the following:

a) Thickness, both overall and of each lift.

b) Undisturbed saturated variable head permeability.

c) Dry density, as specified in ASTM standards D-1556-82, D-2922-81 and D-2937-71 (1976).

d) Moisture-unit weight relations, as specified in ASTM standards D-698-78 or D-1557-78.

e) Moisture content, as specified in ASTM standard D-2216-80.

f) Liquid limit, as specified in ASTM standard D-423-66 (1972).

g) Plasticity index, as specified in ASTM standard D-424-59 (1971).

h) Particle size, as specified in ASTM standard D-422-63 (1972).

i) For the secondary liner, particle size for material finer than 200 sieve, as specified in ASTM standard D-1140-54 (1971).

Note: The publications containing these standards may be obtained from:
American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
The publications containing these standards are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

4) A proposed testing and inspection program to document that the primary liner has been constructed in accordance with the requirements of sub. (10) (h) and the feasibility approval. All necessary testing shall meet or exceed the requirements of the national sanitation foundation standard 54 for flexible membrane liners. The definition of terms or

words in section 2 of the national sanitation foundation standard 54 for flexible membrane liners shall apply to terms or words used in this subparagraph where a dictionary definition does not exist or is not applicable. At a minimum, a proposal for documenting the following items shall be included:

a) Type of membrane.

b) Membrane thickness, both as delivered and as installed.

c) Testing to ensure the "as-delivered" membrane is the same material tested during the feasibility study.

d) Identification of the fabricators role during membrane installation.

e) Methods for field inspection and testing of all joints, factory seams, field seams and mechanical seals.

f) Identification of the person or persons responsible for performing the inspections and a listing of their qualifications.

g) Location and number of tests necessary to document factory seam strength.

h) Location and number of tests necessary to document field seam strength.

i) All repairs made to the liner.

Note: The publication containing these standards may be obtained from:
National Sanitation Foundation
P.O. Box 1468
Ann Arbor, MI 48106
The publication containing these standards is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

5) A proposed testing program for the drainage layers above the primary and secondary liners and in the final cap to document the following:

a) Thickness.

b) Saturated variable or constant head permeability.

c) Particle size, as specified in ASTM standard D-422-63 (1972).

d) Density, as specified in ASTM standards D-1556-82, D-1922-81 and D-2937-71 (1976).

Note: The publications containing these standards may be obtained from:
American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
The publications containing these standards are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

6) A proposal for groundwater, surface water, gas, unsaturated zone and leachate monitoring. In addition to the requirements of s. NR 181.49, the proposal for groundwater, unsaturated zone and leachate monitoring shall be based on the results from the liner compatibility testing.

7) Daily operations including, as appropriate, a discussion of the timetable for development, waste types accepted or excluded, typical waste handling techniques, hours of operation, traffic routing, drainage and erosion control, windy, wet and cold weather operations, fire protection

equipment, manpower, methods for handling of unusual waste types and incompatible waste, methods for vector, dust and odor control, daily clean-up, direction of filling, recordkeeping, parking for visitors and employes, monitoring, abandonment of filled areas, gas and leachate control methods, methods for managing leachate which is collected, backup equipment with names and telephone numbers where equipment may be obtained and other special design features. This may be developed as a removable section to improve accessibility for the site operator.

8) Development of subsequent phases consisting of a discussion of those items in subds. 2.b. 1), 2.b. 2), 2.b. 3), 2.b.4), 2.b.5) and 2.b.7) as related to the development of subsequent phases of the site.

9) Site closing information consisting of a discussion of the anticipated sequence of events for site closing to meet the requirements of sub. (12) and a discussion of those actions necessary to prepare the site for long-term care and final use taking into account the following factors: type and amount of hazardous waste and hazardous waste constituents in the landfill or surface impoundment; the mobility and expected rate of migration of the hazardous waste and hazardous waste constituents; site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration, such as proximity to groundwater, surface water, and drinking water sources; climate, including amount, frequency, and pH of precipitation; characteristics of the cover including material, final surface contours, thickness, porosity and permeability, slope, length of run of slope, and type of vegetation on the cover; and geological and soil profiles and surface and subsurface hydrology of the site.

10) Long-term care information including a discussion of the procedures to be utilized for the inspection and maintenance of run-off control structures, settlement, erosion damage, gas and leachate control feasibilities, monitoring for gas, leachate and groundwater, and other long-term care measures as required by sub. (14), taking into account factors specified in sub. (5).

11) An economic analysis including an engineer's cost estimate for the construction of each major phase of site development and daily operation, site closing, and long-term care.

c. A description of how the requirements of sub. (10) will be met.

3. A design report shall be submitted which shall include supplemental discussions and design calculations to facilitate department review and provide supplemental information on financial responsibility for closure and long-term care as required by ss. 144.44 and 144.441, Stats., including the following information:

a. A closure plan as required by s. NR 181.42 (8) and sub. (12) or (13), whichever is appropriate.

b. A long-term care plan as required by s. NR 181.42 (9) and sub. (14).

c. A discussion of the reasoning and logic behind the design of the major features of the site or facility as appropriate, such as traffic routing, base grade and relationships to subsurface conditions, anticipated waste types and characteristics, phases of development, liner design, facility monitoring, and similar design features shall be provided. A list of the conditions of site development as stated in the department determina-

tion of the feasibility and the measures taken to meet the conditions shall be included. A discussion of all calculations, cover balance computations, stockpile sizing estimates, estimate of site life and surface water run-off and leachate volume estimates shall be included. The calculations shall be summarized with the detailed equations presented in the appendix.

d. A detailed analysis in accordance with s. NR 181.42 (10) shall be made of the financial responsibility for closure and for long-term care from the time of site or facility closing to termination.

4. A contingency plan as specified in s. NR 181.42 (4).

5. An an appendix shall be submitted which shall include any additional data not previously presented, calculations, material specifications, operating agreements, leachate treatment agreements, documents related to long-term care funding and other appropriate information.

(c) *Completeness.* Within 30 days after a plan of operation is submitted, the department shall notify the applicant in writing that the plan is either complete or not complete, specifying the information which shall be submitted before the report is deemed complete. The department will determine if the plan of operation is complete by determining whether or not the minimum requirements of this subsection have been met. Additional plan of operation information may be required of the applicant after a determination that the plan of operation is complete only if the department establishes that a detailed review of the plan of operation indicates that the plan of operation is insufficient in the absence of such additional information.

(d) *Approval or disapproval of plan of operation.* The department may not approve or disapprove a plan of operation until a favorable determination of feasibility has been issued for the facility. Upon submission of a complete plan of operation, the department shall either approve or disapprove the plan in writing within 90 days or within 60 days after a favorable determination of feasibility is issued for the facility, whichever is later.

(8) CONSTRUCTION IN SUBSTANTIAL CONFORMANCE WITH PLAN OF OPERATION. (a) The construction of all landfills and surface impoundments for the disposal, treatment or storage of hazardous waste shall be documented by a registered professional engineer. The engineer shall also render an opinion, based on testing results and actual field inspection, whether the facility has been constructed in substantial conformance with the plan of operation. A construction documentation report verifying and documenting all aspects of facility construction shall be prepared following the construction of each major area. The department shall review and approve, deny or deem incomplete the request for approval of construction documentation within 65 business days after receiving the request. Operation of the facility may not commence until the construction documentation report is approved by the department, and, if necessary, a license to operate the facility has been issued by the department. At a minimum the reports shall include the following information:

1. Plan sheets documenting: the location of the leachate collection trenches, all groundwater, gas, resistivity unsaturated zone and leachate monitoring devices, the sub-base and base grade elevations of the primary liner, secondary liners and drainage liners including spot elevations, the location and types of testing performed at a given location and

the location of culverts, drainage ditches, manholes, dikes, stockpiles, access roads, and any other pertinent information. In addition, invert elevations shall be provided on all leachate collection pipes, cleanouts, manholes and culverts.

2. Engineering and geologic cross-sections shall be prepared to document the construction work. These drawings shall consist of cross-sections every 100 feet perpendicular to the leachate collection lines and along the centerline of the pipes. Data to be presented on the cross-sections shall include: existing topography, soil borings, soil classification under the unified soil classification system, soil stratigraphy based on field documentation, well construction details, water level readings, the location and invert elevations of the leachate collection system, extraction points, cleanouts and any other information as appropriate.

3. A comprehensive narrative explaining how construction of the project was accomplished along with an analysis of the data provided. This report should also include an appendix containing all the raw data from soil testing work.

4. A series of 35mm slides or color prints documenting all major aspects of facility construction.

5. A letter under the seal of a registered professional engineer which certifies whether the facility has been constructed in substantial compliance with the approved plans. Any deviations from the approved plans shall be noted.

(b) A construction documentation report shall be prepared following closure of each major sequence of operation. At a minimum, the reports shall contain the following information:

1. A plan sheet or sheets showing: the portions of the facility which were properly closed, the final grades of those areas with spot elevations as necessary and the location of grassed waterways, drainage ditches, gas vents, leachate head wells and other information as appropriate.

2. A minimum of 2 cross-sections, one north-south and one east-west through the closed portion every 100 linear feet.

3. All raw data from the soil testing performed along with a narrative analyzing the results.

4. A series of 35mm slides or color prints documenting proper closure of the sequence.

5. A letter under the seal of a registered professional engineer certifying that the final cap was placed and documented in substantial compliance with the approved plans. Any deviations from the approved plans shall be noted.

(9) RECORDING OF NOTICE. Prior to licensing, the owner or operator shall submit proof that a notation of the existence of the site has been recorded for the property on which the facility is located, in the office of the register of deeds in each county in which a portion of the facility is located, that will in perpetuity notify any potential purchaser of the property that:

(a) The land has or will be used to dispose of, treat or store hazardous waste; and

(b) Its use is restricted under s. NR 181.42 (9) (c).

(10) MINIMUM DESIGN AND OPERATIONAL REQUIREMENTS. (a) Unless specifically exempted in sub. (2), no person may operate or maintain a new or existing landfill or surface impoundment except in conformance with the approved plan of operation and the minimum requirements of this subsection, in addition to the applicable general facility standards in s. NR 181.42.

(b) Only waste types and sources listed on the license or contained in the plan of operation approval shall be accepted. Any new waste stream shall be properly characterized and tested for compatibility with both the primary and secondary liners. An evaluation shall also be made to determine what effects the additional waste would have on leachate treatability. The results of these studies shall be submitted to the department in writing. If the department determines that the waste is compatible with the design of the site, written approval will be given for acceptance of the waste. Additional conditions of approval may be specified.

(c) The following wastes may not be placed in a landfill or a surface impoundment:

1. Ignitable waste (D001), corrosive waste (D002), or reactive waste (D003) as defined by s. NR 181.15.

2. The following wastes listed in s. NR 181.16 (2): F001, F002, F003, F004, F005, F024, F500, K001, K009, K010, K015, K016, K017, K018, K019, K020, K021, K028, K029, K030, K032, K033, K034, K042, K073, K085, K095, K096, K097, K098 or K105.

3. The following wastes listed in s. NR 181.16 (2) (a), unless the owner or operator can demonstrate that the wastes do not exhibit the chrarcteristic of reactivity as defined in s. NR 181.15 (4): F007, F008, F009, F010, or F011.

4. All wastes listed in s. NR 181.16 (3), tables IV and V, except spill residue or contaminated soil, water or other debris as defined in s. NR 181.16 (3) (a) 4.

(d) Incompatible wastes or materials shall not be placed in the same landfill cell or surface impoundment, unless s. NR 181.42 (1) (m) is complied with.

(e) Bulk or non-containerized liquid waste or waste containing free liquids shall not be placed in a landfill, unless:

1. The landfill has a liner which is chemically and physically resistant to the added liquid, and a functioning leachate collection and removal system with a capacity sufficient to remove all leachate produced; and

2. Before placement in the landfill, the liquid waste or waste containing free liquids is treated or stabilized, chemically or physically, such as by mixing with an absorbent solid, so that free liquids are no longer present.

(f) 1. An empty container shall be crushed flat, shredded, or otherwise reduced in volume to the maximum practical extent before it is buried beneath the surface of a landfill.

2. A container holding waste may not be placed in a landfill, unless:

a. The placement of containers is specifically allowed in the plan of operation approval.

b. The container is designed to hold liquids or free liquids for a use other than storage, such as a battery or capacitor;

c. The container is very small, such as an ampule; or

d. The container is a lab pack as defined in subd. 3. and is disposed of in accordance with subd. 3. and pars. (b) and (c).

3. Lab packs, which are small containers of hazardous waste in overpacked drums, may be placed in a landfill if the following requirements are met:

a. Hazardous waste shall be packaged in non-leaking inside containers. The inside containers shall be of a design and constructed of a material, that will not react dangerously with, be decomposed by, or be ignited by the contained waste. Inside containers shall be tightly and securely sealed. The inside containers shall be of the size and type specified in the DOT hazardous materials regulations specified in 49 CFR Parts 173, 178 and 179, October 1, 1983, if those regulations specify a particular inside container for the waste.

b. The inside containers shall be overpacked in an open head DOT — specification metal shipping container specified in 49 CFR Parts 173, 178 and 179, October 1, 1983, of no more than 416-liter (110 gallon) capacity specified in and surrounded by, at a minimum, a sufficient quantity of absorbent material to completely absorb all of the liquid contents of the inside containers. The metal outer container shall be full after packing with inside containers and absorbent material.

c. The absorbent material used may not be capable of reacting dangerously with, being decomposed by, or being ignited by the contents of the inside containers in accordance with s. NR 181.42 (1) (m).

d. Incompatible wastes may not be placed in the same outside container.

Note: The publications containing these standards may be obtained from:
The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
The publications containing these standards are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(g) In addition to the waste analysis required by s. NR 181.42 (1) (d), whenever a surface impoundment is to be used to chemically treat a hazardous waste which is substantially different from waste previously treated in that impoundment or is to be used to chemically treat hazardous waste with a substantially different process than any previously used in that impoundment, the owner or operator shall, before treating the different waste or using the different process:

1. Conduct waste analyses as specified in s. NR 181.42 (1) (e) and trial treatment tests, such as bench scale or pilot plant scale tests; or

2. Obtain written, documented information on similar treatment of similar waste under similar operating conditions to show that this treatment can be accomplished in an environmentally sound manner and will comply with the requirements of this chapter.

(h) All landfills and surface impoundments for the treatment, storage or disposal of hazardous waste shall:

1. Have double liner system that is designed, constructed, and installed to prevent any migration of wastes out of the facility to the adjacent subsurface soil or groundwater or surface water at any time during the active life, including the entire long-term care period. The primary liner shall be constructed of materials that prevent wastes from passing into the liner during the active life of the facility. The secondary liner shall be constructed with recompacted clay meeting the specifications outlined in subd. 4. Both liners shall be:

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

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

c. Installed to cover all surrounding earth which will be in contact with the waste or leachate; and

d. Compatible with all of the waste to be contained.

2. For landfills, have a leachate collection and removal system immediately above both liners that is designed, constructed, maintained, and operated to collect and remove leachate from the facility. The applicant shall submit all the necessary calculations using the appropriate analytical models to justify that the proposed design will limit the leachate head level over both the primary and secondary liner to 30 cm (1 foot) or less. For the purposes of designing the backup leachate collection system, the applicant shall assume that the primary liner is not present and all recharge is moving directly downward to the secondary liner. The leachate collection and removal system shall be:

a. Constructed of materials that are:

1) Chemically resistant to the waste managed in the facility and the leachate expected to be generated; and

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

b. Designed and operated to function without clogging through the scheduled closure of the facility.

3. Have a soil drainage layer above the primary liner and between the primary and secondary liners which meets the following specifications:

a. A minimum thickness of 60 cm (2 feet).

b. A saturated variable or constant head permeability of greater than or equal to 1×10^{-8} cm/sec.

c. Be classified as SP or SW under the uniform soil classification system specified in ASTM standard D-2487-69 (1975).

4. Have a recompacted clay secondary liner which meets the following minimum specifications:

a. A minimum thickness of 150 cm (5 feet).

b. A saturated undisturbed variable head permeability of 1×10^{-7} cm/sec or less.

c. At least 50% of material by weight passing the number 200 sieve, as determined by the test methods specified in ASTM standards D-422-63 (1972) and D-1140-54 (1971).

d. Have at least 25% of material by weight finer than .002 mm particle size, as determined by the test method specified in ASTM standard D-1140-54 (1971).

e. Be classified as CL or CH under the unified soil classification system, specified in ASTM standard D-2487-69 (1975).

f. Have a liquid limit of 30% or greater, as determined by the test specified in ASTM standard D-423-66 (1972).

g. Have a plasticity index of 15% or greater, as determined by the test specified in ASTM standard D-424-59 (1971).

h. Be compacted to 90% modified proctor density, as determined by the test method specified in ASTM D-1557-78.

1. Be constructed in lifts which do not exceed 20 cm (8 inches) after compaction.

Note: The publications containing these standards may be obtained from:
American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
The publications containing these standards are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

5. Have the primary liner designed and constructed entirely above the seasonal high water table.

6. Have a backup leachate collection system that is designed, constructed, maintained and operated to detect any migration of liquid into the space between the liners and to allow for removal of the liquid for treatment. If liquid leaks into the backup leachate collection system, the owner or operator shall:

a. Notify the department of the leak in writing within 7 days after detecting the leak; and

b. Remove the accumulated liquid as it is generated in order to limit the leachate head to 30 cm (1 foot) or less. The liquid shall be disposed of in accordance with the approved plan of operation.

7. Have a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 24-hour, 25-year storm.

8. Be inspected, during construction or installation of liners and cover systems, such as membrane sheets or coatings, for uniformity, damage and imperfections, such as holes, cracks, thin spots or foreign materials. Immediately after construction or installation:

a. Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

b. Soil-based and admixed liners and covers shall be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

(i) The exact location and the dimensions of each cell including depth with respect to permanently surveyed bench marks shall be recorded and placed on a map. The contents of each cell and approximate location of each hazardous waste type shall also be recorded. These records shall be handled as specified in s. NR 181.42 (6) (b).

(j) Diversion structures shall be constructed such that surface water run-on will be prevented from entering the facility.

(k) At a minimum, all surface water drainage ditches, culverts, sedimentation basins and other drainage control structures shall be designed, constructed, operated and maintained to collect and control at least the water volume from for a 25-year, 24-hour rainfall event. All appropriate calculations justifying the proposed design shall be included in the appendix of the plan of operation. Collection and holding facilities (e.g., tanks or basins) associated with run-off control systems shall be emptied or otherwise managed expeditiously after rainfall events to maintain the design capacity of the system. The freeboard maintained in a surface impoundment shall be sufficient to prevent any overtopping of the dike by overfilling, wave action or a storm and shall be capable of containing a rainfall from a 24-hour, 25-year storm but shall be no less than 2 feet. The owner and operator shall inspect the freeboard level at least once each operating day to ensure compliance.

(l) Surface water which has been in contact with the active portions of a landfill shall be collected and treated or disposed of as a hazardous waste in accordance with requirements of ch. NR 181 unless it is analyzed and found not to be hazardous waste as identified or listed in subch. II or it is collected and discharged into a navigable water in compliance with a WPDES permit issued by the department.

(m) Provisions shall be made for leachate treatment for all facilities.

(n) Where gases are generated within a site or facility, a gas collection and control system shall be installed to control the vertical and horizontal escape of gases.

(o) All access roads shall be constructed with a maximum grade no greater than 8%. The intersection of the access road with an existing highway shall be designed to provide sufficient sight distance and provide for minimum interference with traffic on existing highways. All access roads to the active area of an operation shall be of all weather construction and shall be maintained in good condition.

(p) All topsoil within the site of facility construction limits shall be salvaged and stored on-site in a nuisance-free manner for use in facility closure. Topsoil in borrow areas shall also be salvaged. It shall be stripped off borrow areas and placed in stockpiles in sufficient quantities to cover all the surfaces of excavated borrow areas to a depth of from 4 to 6 inches, except where the depth of the topsoil in the borrow area was originally less than 4 inches, in which case, the topsoil shall be replaced to

the original depth. After the topsoil has been replaced, excavated borrow areas and disturbed areas adjacent to them shall be fertilized and seeded.

(q) All earthen dikes shall have a protective cover of grass to minimize wind and water erosion and to preserve their structural integrity. The owner or operator shall inspect a surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect any leaks, deterioration, or failures in the impoundment. The integrity of the liner system installed in a landfill or surface impoundment shall be maintained and repaired, if physically possible, immediately upon detection of any failure, such as a liner puncture.

(r) Facility closure shall be accomplished in accordance with the approved plan of operation and sub. (13) or, for those facilities with no approved plan of operation, in accordance with sub. (12).

(s) The facility shall be surrounded with rapidly growing trees or shrubbery, fencing, or with other appropriate means to screen it from the surrounding area and to provide a wind break.

(t) All facilities shall have a final cover designed to minimize infiltration and subsequent leachate production.

(u) Facility monitoring shall be performed in accordance with s. NR 181.49 and the plan of operation approval.

(v) All soil borings and monitoring wells shall be backfilled with a chemically and physically stable sealant when such borings or wells are abandoned.

(w) All base grades for a landfill shall be designed and constructed with a minimum slope of 2%.

(x) A minimum of 6 inches of cover material shall be applied daily on active portions of a landfill. Active portions which will not have additional waste placed on them for at least one week shall be covered with 12 inches of cover material. Wind dispersal of hazardous waste or any particulate matter shall be controlled by covering or other means.

(y) During construction, installation and testing of the primary liner, the secondary liner, the drainage layers, the leachate collection systems and all 3 phases of the final cover system, a registered professional engineer shall be present on the site at all times. It shall be the responsibility of the professional engineer to ensure that all construction, documentation and testing are carried out in accordance with this chapter and the plan of operation approval.

(z) 1. While a landfill is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

a. Deterioration, malfunctions, or improper operation of run-on and run-off control systems;

b. The presence of liquids in leak detection systems;

c. Proper functioning of wind dispersal control systems, where present; and

d. The presence of leachate in and proper functioning of leachate collection and removal systems.

2. While a surface impoundment is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

a. Deterioration, malfunctions, or improper operation of overtopping control systems;

b. Sudden drops in the level of the impoundment's contents;

c. The presence of liquids in leak detection systems; and

d. Severe erosion or other signs of deterioration in dikes or other containment devices.

(za) Prior to the issuance of an operating license, and after any extended period of time (at least 6 months) during which a surface impoundment was not in service, the owner or operator shall obtain a certification from a registered professional engineer that the impoundment's dike, including that portion of any dike which provides freeboard, has structural integrity. The certification shall establish in particular that the dike:

1. Will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the impoundment; and

2. Will not fail due to scouring or piping, without dependence on any liner system included in the surface impoundment construction.

(zb) A surface impoundment shall be removed from service in accordance with par. (zc) when:

1. The level of liquids in the impoundment suddenly drops and the drop is not known to be caused by changes in the flows into or out of the impoundment; or

2. The dike leaks.

(zc) When a surface impoundment is removed from service as required by par. (zb), the owner or operator shall:

1. Immediately shut off the flow or stop the addition of wastes into the impoundment;

2. Immediately contain any surface leakage which has occurred or is occurring;

3. Immediately stop the leak;

4. Take any other necessary steps to stop or prevent catastrophic failure;

5. If a leak cannot be stopped by any other means, empty the impoundment; and

6. Notify the department of the problem in writing within 7 days after detecting the problem.

(zd) As part of the contingency plan, the owner or operator shall specify a procedure for complying with the requirements of par. (zc).

(ze) No surface impoundment that has been removed from service in accordance with the requirements of this subsection may be restored to

service unless the portion of the impoundment which was failing is repaired and the following steps are taken:

1. If the impoundment was removed from service as the result of actual or imminent dike failure, the dike's structural integrity shall be recertified in accordance with par. (za);

2. If the impoundment was removed from service as the result of a sudden drop in the liquid level then:

a. For any existing impoundments without an operating license under s. NR 181.55, the owner or operator who desires to continue to operate the impoundment shall submit the necessary reports or plans to meet the requirements of this section and obtain an operating license in accordance with s. NR 181.55 prior to maintaining or operating the impoundment; or

b. For any other impoundments, the repaired liner system shall be certified by a registered professional engineer as meeting the design specifications approved in the plan of operation.

(zf) A surface impoundment that has been removed from service in accordance with the requirements of this subsection and that is not being repaired shall be closed in accordance with the provisions of s. NR 181.44 (12) or (13), whichever is applicable.

(zg) A surface impoundment shall be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error.

(zh) A surface impoundment shall have dikes that are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes. In ensuring structural integrity it may not be presumed that the liner system will function without leakage during the active life of the unit.

(11) MONITORING. (a) *Gas monitoring.* The department may require the installation of gas monitoring devices and sampling and analysis programs for protection against potential detrimental effects of gas production and to monitor the effectiveness of gas venting systems. Sample collection and analysis techniques shall be in accordance with standard methods.

(b) *Surface water monitoring.* The department may require monitoring of surface water runoff, leachate seeps, sump pumpings, sedimentation ponds and other surface water discharges resulting from facility operation and of surface waters which may be affected by such discharges. Sampling times and parameters shall be as specified by the department.

(c) *Monitoring of physical features.* The department may require monitoring of air quality, landfill settlement, berm stability, vegetation growth, drainage control structures, or other aspects of site or facility operation. Such a requirement will be based upon facility characteristics and design features.

(d) *Operations report.* The department may request the owner or operator of any landfill or surface impoundment, to submit an operations re-

port to assess the effectiveness and environmental acceptability of site operations. The contents of the report may include a discussion and analysis of entrance and access roads, confinement of active area, analysis of gas and leachate and other monitoring, cover to waste ratios, surface water control and erosion control, revegetation, settlement, volume utilized, site users, leachate quantity and quality, slope stablility, equipment performance and volume and type of waste accepted.

(12) CLOSURE OF FACILITIES WITHOUT OPERATING LICENSES. (a) In addition to the closure requirements in s. NR 181.42 (8), unless specifically exempted in sub. (2), any person who maintains or operates a hazardous waste landfill or surface impoundment, without an operating license under s. NR 181.55, or who permits use of property for such a facility shall, when the fill area or a portion thereof reaches final grade or when the department determines that closure is required, cease to accept waste and close the facility or portion thereof in accordance with any plan approval issued by the department and the following requirements:

1. Within 60 days after ceasing to accept waste, weather permitting, closure shall be accomplished in the following manner:

a. The entire area previously used for disposal purposes shall be covered with at least 2 feet of compacted earth, sloped adequately to allow surface water runoff. Specific fine grain soil types needed to minimize infiltration may be required by the department for this 2-foot layer. Slopes shall be no less than 2% and no steeper than 33%.

b. Surface water shall be diverted to limit the potential for erosion and sedimentation. Wherever possible, surface water shall be diverted around previously filled areas. Where it is necessary to divert drainage over previously filled areas, drainage shall be conveyed by lined drainage swales having a minimum of 2 feet of clay.

c. The finished surface of the filled area shall be covered with a minimum of 6 inches of topsoil.

2. Within 90 days after ceasing to accept waste, seeding, fertilizing and mulching of the finished surface shall be accomplished in accordance with the final site use. The seed type and amount of fertilizer shall be selected depending on the type and quality of topsoil and compatibility with native vegetation.

3. Following closure, the facility shall be inspected and maintained by the owner or operator until it becomes stabilized or until the responsibility of the owner or operator terminates. The department may require installation of groundwater and leachate monitoring wells or other devices, groundwater and leachate quality sampling and analysis programs, gas monitoring and sampling and provisions for the protection against detrimental effects of leachate and gas migration from any landfill and surface impoundment in accordance with sub. (11) and s. NR 181.49.

4. Upon final closure, all hazardous waste and hazardous waste residues including standing liquids, the liner underlying and surrounding contaminated soil and structures and equipment contaminated with waste or leachate shall be removed from surface impoundments not approved for final disposition of such wastes and shall be disposed of in accordance with this chapter. Closure of these facilities shall be accomplished in accordance with the provisions of the approved plan of opera-

tion and with all applicable requirements of this section. If necessary to support the final cover specified in the approved closure plan, the owner or operator shall treat remaining liquids, residues, and soils by removal of liquids, drying, or other means.

(b) Closure plans may be required by the department for any hazardous waste facility without an approved closure plan, including facilities which are no longer in operation, but which were in existence on August 1, 1981. The department may require that the plan address any or all of the information outlined in par. (a), subs. (6), (7), (10), (11) and s. NR 181.49.

(13) CLOSURE OF FACILITIES WITH OPERATING LICENSES. In addition to the closure requirements in s. NR 181.42 (8), unless specifically exempted in sub. (2), any person who maintains or operates a hazardous waste landfill or surface impoundment, with an operating license under s. NR 181.55, or who permits use of property for such a facility shall, when the fill area or a portion thereof reaches final grade or when the department determines that closure is required, cease to accept waste and close the facility or poriton therof in acordance with the plan approval issued by the department and the following requirements:

(a) Within 60 days after ceasing to accept waste, weather permitting, closure shall be accomplished in the following manner:

1. At final closure of the facility or upon closure of any cell, the owner or operator shall cover the facility or cell with a final cover designed and constructed to:

a. Provide long-term minimization of migration of liquids through the closed facility.

b. Function with minimum maintenance.

c. Promote drainage and minimize erosion or abrasion of the cover.

d. Accommodate settling and subsidence so that the cover's integrity is maintained, and

e. Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

2. The facility or cell shall be closed with final cover consisting of a vegetated top cover, a middle drainage layer and a low permeability bottom layer. The vegetated top cover shall:

a. Be at least 60 cm (2 feet) thick.

b. Support vegetation that will effectively minimize erosion without the need for continuing application of fertilizers, irrigation, or other man-applied materials to ensure viability and persistence.

c. Be planted with persistent species that will effectively minimize erosion, but does not have a root system that will penetrate beyond the vegetative top cover and middle drainage layer.

d. Have a minimum slope of between 3-5% after allowance for settlement and subsidence and slopes no steeper than 25%.

3. The drainage layer shall:

a. Be at least 30 cm (12 inches) thick with a saturated variable or constant head permeability not less than 1×10^{-3} cm/sec.

b. Have a final bottom slope of at least 3%, after allowing for settling and subsidence.

c. Be overlain by a graded granular filter or synthetic filter fabric to prevent clogging from fines.

d. Be designed so that discharge flows freely in the lateral direction to minimize head on and flow through the low permeability layer.

4. The low permeability layer shall have 2 components. The upper component shall:

a. Consist of material which is designed, constructed and installed to prevent the migration of any liquid in the material during the entire long-term care period.

b. Be protected from damage by at least 15 cm (6 inches) of bedding material classified as SP under the unified soil classification system specified in ASTM standard D-2487-69 (1975), both above and below the low permeability layer. The bedding material shall be free of rock, fractured stone, angular grains, debris, cobbles, rubbish, roots or any other materials which could potentially damage the low permeability layer. The middle drainage layer may also serve as the upper bedding material if it meets the specifications contained herein.

c. Have a final upper slope (in contact with the bedding material) of at least 3% after allowances for settling.

d. Be located at least one foot below the maximum recorded depth of frost penetration in the area.

5. The lower component shall:

a. Consist of at least 60 cm (2 feet) of clay.

b. Have a saturated undistributed hydraulic conductivity of not more than 1×10^{-7} cm/sec.

c. Be compacted to 90% modified proctor density, as determined by the test method specified in ASTM D-1557-78.

d. Be constructed in lifts which do not exceed 20 cm (8 inches) after compaction.

Note: The publications containing these standards may be obtained from:
American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
The publications containing these standards are available for inspection at the offices of the department, the secretary of state and the revisor of statues.

6. Surface water shall be diverted to limit the potential for erosion and sedimentation. Wherever possible, surface water shall be diverted around previously filled areas. Where it is necessary to divert drainage over previously filled areas, drainage shall be conveyed by lined drainage swales having a minimum of 60 cm (2 feet) of clay.

(b) Within 90 days after ceasing to accept waste, seeding, fertilizing and mulching of the finished surface shall be accomplished in accordance with par. (a)2. and the final site use. Seed type and amount of fertilizer

shall be selected depending on the type and quality of topsoil and compatibility with native vegetation.

(c) Following closure, the facility shall be inspected and maintained by the owner or operator until it becomes stabilized or until the responsibility of the owner or operator terminates. The department may require installation of groundwater and leachate monitoring wells or other devices, groundwater and leachate quality sampling and analysis programs, gas monitoring and sampling provisions for the protection against detrimental effects of leachate and gas migration from any landfill and surface impoundment in accordance with sub. (11) and s. NR 181.49.

(d) Upon final closure, all hazardous waste and hazardous waste residues including standing liquids, the liner, underlying and surrounding contaminated soil and structures and equipment contaminated with waste and leachate shall be removed from surface impoundments not approved for final disposition of such wastes and shall be disposed of in accordance with this chapter. Closure of these facilities shall be accomplished in accordance with the provisions of the approved plan of operation and with all applicable requirements of this section. If necessary to support the final cover specified in the approved closure plan, the owner or operator shall treat remaining liquids, residues, and soils by removal of liquids, drying, or other means.

(14) LONG-TERM CARE. (a) The department may grant a written exemption from any of the requirements of this subsection and s. NR 181.42 (9) as part of a closure plan or plan of operation approval or modification thereof for surface impoundments, provided that no hazardous waste residues including standing liquids, the liner, underlying and surrounding contaminated soil and structures and equipment contaminated with waste and leachate are left in place at final closure.

(b) After final closure, the owner or operator shall comply with all long-term care requirements contained in s. NR 181.42 (9) and any plan of operation approval, including maintenance and monitoring throughout the long-term care period. At a minimum, the owner or operator shall;

1. Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events.

2. Maintain and monitor the back-up leachate collection system in accordance with the approved plan of operation.

3. Continue to operate the leachate collection and removal system until leachate is no longer detected.

4. Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of s. NR 181.49.

5. Prevent run-on and run-off from eroding or otherwise damaging the final cover, and

6. Protect and maintain all surveyed benchmarks, including benchmarks used in complying with sub. (10) (i) for the entire period of long-term care.

7. Implement measures needed to correct contamination caused by leachate or gases generated within the landfill.

(c) Except as provided in s. NR 181.51 (2) (k), within 90 days after completion of closure, the owner or operator of a landfill or surface impoundment shall file with the office of the register of deeds in each county in which a portion of the facility was located, a survey plat, indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat shall be prepared and certified by a professional land surveyor. The plat filed in the office of the register of deeds shall contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the site as specified in sub. (9). In addition, the owner or operator shall submit to the department, and to the office of the register of deeds, a record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility. For wastes disposed of before these rules were promulgated, the owner or operator shall identify the type, location, and quantity of the wastes to the best of their knowledge, and in accordance with any records kept.

(15) WASTE MANAGEMENT FUND. The owners and operators of landfills and surface impoundments utilized for disposal are required to contribute to the waste management fund as specified in s. NR 181.42 (12), unless specifically exempted in sub. (2).

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (1), (2) (3) (a)4. and 6., (3) (b), (5), (6), (7) (a) and (b)1.d., (7) (b)2.b., (9) (a), (10) (a) and (b), (10) (e)2., (f)1. and 2., (10) (i) to (k), (m), (o) to (u), (w) and (x) and (15), r. (10) (intro.) and (11) (a), renum. (7) (b)1.e. to k. to be 1.f. to l and am. 1.h., j. intro. and l) and 13), k. and l., (7) (b)3.a. and b. to be 3.c. and d. and am. 3.c., (11) (b) to (e) to be (11) (a) to (d) and am. (b) and (c), (12) to be (12) (a) and am., (13) to be (12) (b) and am., (14) (b) to be (14) (c) and am., cr. (3) (a) 8., (7) (b)1.e., 2.c., 3.a. and b., (10) (f)3., (10) (y) to (zh), (13) and (14) (b), r. and recr. (7) (d), (8), (10) (c) and (h) and (14) (a), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.45 Incineration standards. (1) GENERAL. (a) Except as otherwise provided in par. (b), no person may operate or maintain an incinerator for the purpose of burning hazardous wastes unless the person has obtained an interim license, operating license, variance or waiver from the department in accordance with the requirements of s. NR 181.53 or 181.55. Any person intending to establish or construct an incinerator for the purpose of burning hazardous waste shall contact the department to arrange for an initial site inspection.

(b) As provided in s. NR 181.19 (1) and (4), a person burning hazardous waste may be exempt from the requirements of this section if a written exemption is obtained from the department.

(2) FEASIBILITY AND PLAN OF OPERATION REPORT. (a) Unless specifically exempted in sub. (1) (b), no person may establish or construct a hazardous waste incinerator or be issued an initial operating license under s. NR 181.55 without first obtaining approval of a feasibility and plan of operation report. The purpose of a feasibility and plan of operation report is to determine whether the site has potential for use as a hazardous waste incinerator and to identify and address any operating conditions which are necessary for the proper operation of the facility. Favorable feasibility determination and plan approval under this subsection does not guarantee final licensure. During the review of the feasibility and plan of operation report, the department shall establish operating conditions for a new hazardous waste incinerator to be effective during the shakedown period, the trial burn period, the post-trial period

and preliminary operating conditions to be effective during the final operating period. The feasibility and plan of operation report for a hazardous waste incinerator shall be submitted in accordance with s. 144.44, Stats., and s. NR 181.51 and shall contain, at a minimum, the following information:

1. A map or aerial photograph of the area showing land use and zoning within 400 meters (¼ mile) of the site. The map or aerial photograph shall be of sufficient scale to show all homes, industrial buildings, roads, and other applicable details and such details shall be identified and indicated on the map or aerial photograph.

2. A plot plan of the hazardous waste incinerator site including means of limiting access such as fencing, gates, natural barriers; method of acceptably screening the facility from the surrounding area; general layout of equipment and flow pattern; road access; location of existing and proposed utilities serving the incinerator.

3. A report which shall include the following information:

a. Population, area and entities to be served by the incinerator.

b. Persons responsible for incinerator construction and operations.

c. Estimated quantities and characteristics of wastes resulting from facility operations and methods for their treatment or disposal.

d. Names and locations of all hazardous waste disposal sites and facilities at which hazardous and solid wastes resulting from incinerators operation will be disposed.

e. Incinerator specifications including the manufacturer, model, capacity, incinerator dimensions, expected combustion temperature, the flue gas flow rate, monitoring methods used to comply with s. NR 181.45 (4) (m) and any air pollution control devices that will be used.

f. Expected operating schedule.

4. For the purpose of determining the feasibility of compliance with the performance standards of this section and determining adequate operating conditions, applicants shall propose a trial burn plan, which includes the following information.

a. An analysis of each waste or mixture of waste to be burned during the trial burn and during normal operation which includes:

1) Heat value of the waste in the form and composition in which it will be burned.

2) Viscosity (if applicable) or description of physical form of the waste.

3) Composition and quantity of hazardous waste or mixtures of hazardous waste to be incinerated. The composition of each waste or mixture of wastes shall include an analysis for heating value, chlorine, sulfur content, ash content and any hazardous constituent listed in table VI in s. NR 181.16.

b. An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physi-

cal/Chemical Methods, SW-846" or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002".

Note: These publications are available from:
The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
The second publication is available from:
The National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22161

These publications are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

c. A detailed engineering description of the incinerator, including:

1) Manufacturer's name and model number of incinerator (if available).

2) Type of incinerator.

3) Linear dimensions of the incinerator unit including the cross sectional area of the combustion chamber.

4) Description of the auxiliary fuel system (type/feed).

5) Capacity and type of prime mover.

6) Description of automatic waste feed cut-off systems.

7) Stack gas monitoring pollution control equipment.

8) Nozzle and burner design.

9) Construction materials.

10) Location and description of temperature, pressure, and flow indicating and control devices.

d. A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, sampling and monitoring equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

e. A detailed test schedule for each waste for which the trial burn is planned including dates, duration, quantity of waste to be burned, and other factors relevant to the department's decision under par. (c).

f. A detailed trial burn protocol, including for each waste identified, the ranges of combustion temperature, waste feed rate expected, carbon monoxide level in the exhaust gas, combustion gas velocity use of auxiliary fuel, and any other relevant parameters that will be varied to affect the destruction and removal efficiency of the incinerator.

g. A description of, and planned operating conditions for, any pollution and emission control equipment which will be used.

h. Procedures for rapidly stopping waste feed, shutting down the incinerator and controlling emissions in the event of an equipment malfunction.

i. The department, in reviewing the trial burn plan, shall evaluate the sufficiency of the information provided and may require the applicant to

supplement this information, if necessary, to ahcieve the purposes of this subsection.

5. In lieu of the trial burn requirements in subd. 4., the applicant may submit the following information:

a. An analysis of each waste or mixture of wastes to be burned including:

1) Heat value of the waste in the form and composition in which it will be burned.

2) Viscosity (if applicable), or description of physical form of the waste.

3) An identification of any hazardous organic constituents listed in table VI in s. NR 181.16, which are present in the waste to be burned, except that the applicant need not analyze for constituents listed in table VI which would reasonably not be expected to be found in the waste. The constituents excluded from analysis shall be identified and the basis for their exclusion stated. The waste analysis shall rely on analytical techniques specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846" or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002".

Note: These publications are available from:
The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
The second publication is available from:
The National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22161

These publications are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

4) An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW 846".

5) A quantification of those hazardous constituents in the waste which may be designated as principal organic hazardous constituents (POHCs) based on data submitted from other trial or operational burns which demonstrate compliance with the performance standards of this section.

b. A detailed engineering description of the incinerator, including:

1) Manufacturer's name and model number of incinerator.

2) Type of incinerator.

3) Linear dimensions of incinerator unit including cross sectional area of the combustion chamber.

4) Description of auxiliary fuel system (type/feed).

5) Capacity of prime mover.

6) Description of automatic waste feed cutoff systems.

7) Stack gas monitoring and pollution control monitoring system.

8) Nozzle and burner design.

9) Construction materials.

10) Location and description of temperature, pressure, and flow indicating devices and control devices.

c. A description and analysis of the waste to be burned compared with the waste for which data from operational or trial burns are provided to support the contention that a trial burn is not needed. The data should include those items listed in subd. 5.a. This analysis should specify the POHCs which the applicant has identified in the waste for which an operating license is sought, and any differences from the POHCs in the waste for which burn data are provided.

d. The design and operating conditions of the incinerator unit to be used, compared with that for which comparative burn data are available.

e. A description of the results submitted from any previously conducted trial burns including:

1) Sampling and analysis techniques used to calculate performance standards in sub. (4) (m).

2) Methods and results of monitoring temperatures, waste feed rates, carbon monoxide, and an appropriate indicator of combustion gas velocity, including a statement concerning the precision and accuracy of this measurement.

f. The expected incinerator operational information to demonstrate compliance with sub. (4), including:

1) Expected carbon monoxide (CO) level in the stack exhaust gas.

2) Waste feed rate.

3) Combustion zone temperature.

4) Indication of combustion gas velocity.

5) Expected stack gas volume, flow rate, and temperature.

6) Computed residence time for waste in the combustion zone.

7) Expected hydrochloric acid removal efficiency.

8) Expected fugitive emissions and their control procedures.

9) Proposed waste feed cut-off based on the identified significant operating parameters.

g. Such supplemental information as the department finds necessary to achieve the purposes of this subparagraph.

h. Waste analysis data, including that submitted in subd. 5.a., sufficient to allow the department to specify as licensed POHCs those constituents for which destruction and removal efficiencies will be required.

6. The department may approve a feasibility and plan of operation report without a trial burn plan if the information submitted under subpar. 5. is provided and if it is found that:

a. The wastes are sufficiently similar; and

b. The incinerator units are sufficiently similar, and the data from other trial burns are adequate to specify operating conditions that will ensure that the performance standards of sub. (4) (m) will be met by the incinerator.

7. Appurtenances and procedures intended to store hazardous waste beyond the end of the working day and to control dust, odors, and fire outside the burning chamber.

8. Waste changing methods during incinerator operation.

9. Provisions for interim waste storage or disposal when the incinerator is unavailable, including:

a. Type of storage or disposal.

b. Location of storage or disposal facility.

c. Capacity of the storage facility.

d. Daily clean-up procedures.

e. Incinerator inspection, maintenance and monitoring plans and procedures.

f. Detailed drawings and specifications of all structures, equipment and the facility.

g. A report which includes furnace design criteria and expected performance data, including emission data.

h. A waste analysis plan that will ensure compliance as specified in s. NR 181.42 (1) (f).

i. A contingency plan as specified in s. NR 181.42 (4) (a).

j. Proposed site closure plans addressing the items specified in s. NR 181.46 (5).

10. A statement which suggests operating conditions necessary to operate in compliance with the performance standards of sub. (4) (m) during both the shakedown period and the post-trial burn period in accordance with sub. (3) (a) and (c).

(b) Based on the waste analysis data in the trial burn plan, the department shall specify as trial principal organic hazardous constituents (POHCs), those constituents for which destruction and removal efficiencies shall be calculated during the trial burn. These trial POHCs shall be specified by the department based on an estimate of the difficulty of incineration of the constituents identified in the waste analysis, their concentration or mass in the waste feed, and for hazardous constituents listed in table VI in s. NR 181.16.

(c) The department shall approve a trial burn plan if it finds that:

1. The trial burn is likely to determine whether the incinerator performance standards required in sub. (4) can be met;

2. The trial burn itself will not present an imminent hazard to human health or the environment;

3. The trial burn will help the department to determine operating requirements to be specified under sub. (3); and

4. The information sought in subds. 1. and 3. cannot reasonably be developed through other means.

(d) For the purposes of determining compliance with the performance standards of this section and determining adequate operating conditions under this section, any person who will be submitting a feasibility and plan of operation report for an existing hazardous waste incinerator operating under an interim license or a variance may prepare and submit a trial burn plan and perform a trial burn in accordance with pars. (a) 4., (b) and (c) and sub. (3) (b). Persons who submit trial burn plans and receive approval before submission of a feasibility and plan of operation report shall complete the trial burns and submit the results, specified in sub. (3) (b), with the feasibility and plan of operation report. If completion of this process conflicts with the date set for submission of the feasibility and plan of operation report, the department shall be notified and may establish a later date for submission of the feasibility and plan of operation report or the trial burn results. If the trial burn plan is to be included with the feasibility and plan of operation report, the trial burn shall be conducted and the results submitted within a time period to be specified by the department.

(e) Within 60 days after a feasibility and plan of operation report is submitted, the department shall either determine that the report is complete or notify the applicant in writing that the report is not complete, specifiying the information which the applicant shall submit before the report is deemed complete. The department will determine whether or not the feasibility and plan of operation report is complete by determining whether or not the minimum requirements of this subsection have been met. Additional feasibility and plan of operation information may be required of the applicant after a determination that the feasibility and plan of operation report is complete only if the department establishes that a detailed review of the feasibility and plan of operation report indicates that feasibility cannot be determined and report is insufficient in the absence of such additional information.

(f) If no hearing has been conducted under s. 144.44, Stats., the department shall issue the final determination for the feasibility and plan of operation report within 60 days after the 45 day notice period required under s. 144.44 (2) (l) and (m), Stats., has expired. If an informational hearing is conducted under s. 144.44 (2g), Stats., the department shall issue a final determination for the feasibility and plan of operation report within 60 days after the hearing is adjourned. If a contested case hearing is conducted under s. 144.44 (2r), Stats., a final determination for the feasibility and plan of operation report shall be issued within 90 days after the hearing is adjourned.

(3) INCINERATOR LICENSES AND FINAL PLAN APPROVAL. Once the feasibility determination and initial plan of operation approval have been made and all other necessary requirements in s. NR 181.55 (2) (a) have been met, an application for a hazardous waste incinerator license may be submitted. The incinerator license shall cover the shakedown period following construction of a proposed facility, the trial burn period, the post-trial burn period and the final operational period. The department shall review the feasibility and plan of operation report and initial plan

approval to ensure that the final incinerator plan approval and license includes the following information:

(a) *Shakedown period.* 1. For the purposes of determining operational readiness following completion of physical construction, the department shall establish operating plan approval conditions, including but not limited to allowable waste feeds and operating conditions, in the plan approval for a new hazardous waste incinerator. These plan approval conditions shall be effective for the minimum time required to bring the incinerator to a point of operational readiness sufficient to conduct a trial burn, not to exceed 720 hours operating time for treatment of hazardous waste. The department may extend the duration of this operational period once, for up to 720 additional hours, at the request of the applicant when good cause is shown. The plan approval may be modified to reflect the extension.

2. Applicants shall include a statement, with the feasibility and plan of operation report, which suggests the conditions necessary to operate in compliance with the performance standards of sub. (4) during this period. This statement shall include, at a minimum, restrictions on waste constituents, waste feed rates and the operating parameters identified in sub. (4).

3. The department shall review this statement and any other relevant information submitted with the feasibility and plan of operation report and specify requirements for this period sufficient to meet the performance standards of sub. (4) based on its engineering judgment.

(b) *Trial burn period.* The trial burn shall be conducted as specified in the approved trial burn plan in the feasibility and plan of operation report. Any deviations from the approved trial burn plan shall be carefully noted and the reason for the deviation fully explained. In order for the department to evaluate the trial burn, the following information shall be submitted to the department:

1. During each approved trial burn, or as soon after the burn as is practicable, the applicant shall make the following determinations and shall submit them to the department:

a. A quantitative analysis of the trial POHCs in the waster feed to the incinerator.

b. A quantitative analysis of the exhaust gas for the concentration and mass emissions of the trial POHCs, oxygen (O_2) and hydrogen chloride (HC).

c. A quantitative analysis of the scrubber water, if any, ash residues, and other residues, for the purpose of estimating whether the trial POHCs were destroyed, removed, transformed or unchanged.

d. A computation of destruction and removal efficiency (DRE), in accordance with the DRE formula specified in sub. (4) (m).

e. A computation of HCl removal showing the HCl emission rate does not exceed 1.8 kilograms of HCl per hour (4 pounds per hour) or showing the HCl removal efficiency is 99% or greater.

f. A computation of particulate emissions, in accordance with the formula specified in sub. (4) (m).

g. An identification of sources of fugitive emissions and their means of control.

h. A measurement of average, maximum, and minimum temperatures and combustion gas velocity.

i. A continuous measurement of carbon monoxide (CO) in the exhaust gas.

j. All sampling and analysis shall be done in accordance with 40 CFR Part 60, Appendix A - Reference Methods or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002".

Note: The publication containing the regulation may be obtained from:
The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
The second publication may be obtained from:
The National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22161
These publications are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

2. The applicant shall submit such other information as the department may specify as necessary to ensure that the trial burn will comply with the performance standards in this section and to establish the operating conditions necessary to meet these performance standards.

3. The applicant shall submit to the department a certification that the trial burn has been carried out in accordance with the approved trial burn plan, and shall submit the results of all the determinations required. This submission shall be made within 90 days of completion of the trial burn or later if approved by the department.

4. All data collected during any trial burn shall be submitted to the department following the completion of the trial burn.

5. All submissions required by this subsection shall be certified on behalf of the applicant by the signature of a person authorized to sign a license application in accordance with s. NR 181.55 (3).

6. Based on the results of the trial burn, the department shall set the operating requirements in the final plan approval.

(c) *Post-trial burn period.* 1. For the purposes of allowing operation of a new hazardous waste incinerator following completion of the trial burn and prior to final modification of the plan approval conditions to reflect the trial burn results, the department may establish plan approval conditions, including but not limited to allowable waste feeds and operating conditions sufficient to meet the requirements of this section, in the plan approval for a hazardous waste incinerator. These plan approval conditions shall be effective for the minimum time required to complete sample analysis, data computation and submission of the trial burn results by the applicant, and modification of the incinerator plan approval by the department.

2. Applicants shall submit a statement, in a plan approval modification request, which identifies the conditions necessary to operate in compliance with the performance standards of sub. (4) during this period. This statement shall include, at a minimum, restrictions on waste con-

stituents, waste feed rates and the operating parameters identified in this section.

3. The department shall review this statement and any other relevant information submitted with the modification request and specify those operating conditions for this period most likely to meet the performance standards of this chapter based on its engineering judgment.

(d) *Final operation period.* The department shall take action on the plan approval modification request if the modification request is supported by the results of the trial burn and other relevant information. The modification request shall be incorporated into the plan approval. Following modification, the plan approval shall specify final operating conditions for the final hazardous waste incinerator license.

(4) OPERATIONAL REQUIREMENTS. No person shall operate or maintain an incinerator except in conformance with the following minimum requirements and with the terms and conditions of any plan approval for the facility:

(a) The incinerator shall be so situated, equipped, operated, and maintained as to minimize interference with other activities in the area.

(b) A sign shall be posted at the entrance to the facility, which indicates the name, license number, and hours of operation of the facility.

(c) All hazardous waste shall be confined to the designated storage area.

(d) Hazardous waste, except for that in the process line, shall be stored only in storage tanks or containers in accordance with s. NR 181.43.

(e) Before adding hazardous waste, the owner or operator shall bring the incinerator to steady state, normal conditions of operation, including steady state temperature and air flow, using auxiliary fuel or other means.

(f) Records shall be maintained for a minimum of 3 years, including records of the weights of material incinerated, the quantity of resulting residue, hours of plant operation and other pertinent information.

(g) Records shall be kept detailing all training required by employes who are involved with the operation of the incinerator. These records shall include:

1. Required training; and

2. Courses attended.

(h) Adequate equipment shall be provided in the storage and charging areas and elsewhere as needed to allow cleaning after each day of operation or as may be required in order to maintain the plant in a sanitary condition.

(i) The charging openings, as well as all equipment throughout the plant, shall be provided with adequate safety equipment as prescribed in ch. Ind 1.

(j) Upon completion of construction of a new incinerator and at least 10 days prior to initial operation, the department shall be notified to al-

low inspection of the incinerator both prior to and during any performance tests and initial operation.

(k) The owner or operator shall conduct, at a minimum, the following monitoring and inspections when incinerating hazardous waste:

1. Combustion temperature, waste feed rate and the indicator of combustion gas velocity shall be monitored on a continuous basis.

2. Carbon monoxide (CO) shall be monitored on a continuous basis at a point downstream of the combustion zone and prior to release to the atmosphere.

3. Upon request by the department sampling and analysis of the waste and exhaust gas to verify the operating conditions required by par. (o).

4. The complete incinerator and associated equipment, such as pumps, valves, conveyors and pipes, shall be inspected at least daily for leaks, spills and fugitive emissions, and all emergency shutdown controls and system alarms shall be checked to assure proper operation.

5. Equipment identified in subpars. a. through i. shall be inspected on a weekly basis unless it is shown less frequent inspection will be adequate. At a minimum, this equipment shall be inspected monthly. Records documenting these inspections shall be maintained for:

a. Waste flow monitors and records.

b. Auxiliary fuel flow monitors.

c. Combustion gas flow monitors.

d. Temperature monitors.

e. Flame sensors.

f. Co-monitors and records.

g. Pressure differential indicators.

h. Pressure sensors.

i. Ammeters for measuring blowers current draw.

6. The monitoring and inspection data shall be recorded and placed in an operating log as required by s. NR 181.42 (6) (b).

(l) The incinerator shall be operated with a functioning device to automatically cut off waste feed to the incinerator when there is a deviation from or the limits are exceeded for flame combustion temperature, combustion gas velocity, excess CO level, increased waste feed rate, or scrubber water pressure, as specified in the approved plan of operation.

(m) 1. An incinerator which burns a waste which contains a hazardous constituent listed in table VI in s. NR 181.16 (4), shall be designed, constructed, and operated to maintain a destruction and removal efficiency of 99.99% as defined in the following equation:

$$DRE = \frac{W_{in} - W_{out}}{W_{in}} \times 100$$

Where: DRE = destruction and removal efficiency

W_{in} = mass feed rate of the principal organic hazardous constituent (POHC) designated pursuant to s. NR 181.45 (2) (b) or of waste going into the incinerator

W_{out} = mass emissions rate of the same POHC in the exhaust emission prior to waste exiting from release to the atmosphere.

2. An incinerator burning hazardous waste and producing stack emissions of more than 1.8 kilograms per hour (4 pounds per hour) of hydrogen chloride (HCl) shall control HCl emissions such that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or 1% of the HCl in the stack gas prior to entering any pollution control equipment.

3. An incinerator shall be operated in such a manner that emissions of particulate matter do not exceed 180 milligrams per dry standard cubic meter, when corrected for the amount of oxygen in the stack gas according to the formula:

$$Pc = Pm * \frac{14}{21-y}$$

Where Pc is the corrected concentration of particulate matter, Pm is the measured concentration of particulate matter, and y is the measured concentration of oxygen in the stack gas, using the Orsat method for oxygen analysis of dry flue gas. This correction procedure is to be used by all hazardous waste incinerators except those operating under conditions of oxygen enrichment.

4. An incinerator shall be operated in such a manner that emissions of particulate matter do not exceed the limits specified in s. NR 154.11 (5) (a).

(n) An incinerator shall be operated in accordance with the operating requirements specified in the license and any plan approval. Each set of operating requirements will specify the composition of waste to which the operating requirements apply.

(o) Based upon the results of the analysis and trial burns required by par. (p) the department shall specify acceptable operating limits including the following conditions:

1. Carbon monoxide (CO) level in the stack exhaust gas;

2. Waste feed rate;

3. Combustion temperature;

4. An appropriate indicator of combustion gas velocity;

5. Allowable variations in incinerator design or operating procedures; and

6. Such other operating requirements as are necessary to ensure compliance with this subsection. All sampling and analysis shall be done in accordance with 40 CFR Part 60 Appendix A, Reference Methods, or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-200".

Note: The publication containing the regulation may obtained from:

Register, June, 1985, No. 354

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
The second publication is available from:
The National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22161
These publications are available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(p) For any new wastes or mixtures of wastes not previously incinerated, the owner or operator shall fulfill the following requirements:

1. The owner or operator shall supply the following information to the department for any hazardous waste or mixture of hazardous waste not previously burned;

a. The heat value of the waste in the form and composition in which it will be burned;

b. Identification and quantification of any hazardous constituent listed in table VI in s. NR 181.16 (4) except for any constituent which would not reasonably be expected to be present. Any constituent excluded from the analysis must be identified and the reason for its exclusion stated.

2. Based on the information submitted in accordance with subd. 1, the department shall specify the principal hazardous constituents for which the destruction and removal efficiency must be calculated as required in par. (m)1.

3. Either:

a. The owner or operator shall conduct a trial burn to demonstrate compliance with s. NR 181.45 (4) (m) 1. Prior to the trial burn, the owner or operator shall submit for departmental approval a trial burn plan specifying how the following required information will be obtained from the trial burn:

1) A quantitative analysis in the waste feed for any principal hazardous constituents designated by the department pursuant to subd. 2.

2) A quantitative analysis of the exhaust gas for the concentration and mass emissions of the principal hazardous constituents, carbon monoxide and oxygen.

3) A computation of the destruction and removal efficiency for each principal hazardous constituent.

4) A measurement of average, maximum and minimum combustion temperature and the combustion gas velocity and waste feed rates.

5) A continuous measurement of carbon monoxide in the exhaust gas.

6) Any other information the department deems necessary to document compliance with s. NR 181.45 (4) (m) 1., or

b. Submit for departmental approval the results of a trial burn conducted on a similar waste burned under conditions the owner or operators incinerator can maintain. The trial burn must meet the requirements of subd. a.

(q) During start-up and shut-down of an incinerator, hazardous waste shall not be fed into the incinerator unless the incinerator is operating within the conditions of operation (temperature, air feed rate, etc.) specified in the license or plan approval.

(r) Fugitive emissions from the combustion zone shall be controlled by:

1. Keeping the combustion zone totally sealed against fugitive emissions;

2. Maintaining a combustion zone pressure lower than atmospheric pressure; or

3. An alternate means of control demonstrated to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

(s) An incinerator shall cease operation when changes in waste feed, incinerator design, or operating conditions exceed limits designated in its license or plan approval.

(t) An incinerator shall be designed and operated to meet the applicable design and operational requirements specified in s. NR 181.46 (5).

(5) CLOSURE. Unless specifically exempt under sub. (1) (b), the owner or operator of a hazardous waste incinerator shall meet the requirements specified in s. NR 181.42 (8) and shall, at the completion of closure, remove from the facility all hazardous waste and hazardous waste residues, including, but not limited to, ash, scrubber waters and scrubber sludges.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (1), (2) (a) (intro.) and 1. and (4) (d), r. (2) (a) 3.b., renum. (2) (a) 3.c. to g. to be 3.b. to f. and am. 3.e., (2) (b) to be (2) (e) and am., (4) (g) to (o) to be (4) (h) to (p) and am. (4) (i), (k), (l), (m) 1. and 3., (n), (o) (intro.), 4. and 6., (p) (intro.), 2., 3.a. intro., 4) and 6), r. and recr. (3), (4) (m) 2. and (5), cr. (2) (a) 4. to 10., (2) (b) to (d) and (f), (4) (g) and (m) 4., (4) (q) to (t), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.46 Treatment facility standards. (1) GENERAL. Except as provided in s. NR 181.45 (4) (q), treatment facility standards apply to facilities that thermally treat hazardous waste in devices other than incinerators and to facilities that treat hazardous wastes by some chemical, physical or biological means in other than surface impoundments. Except as provided in sub. (2), no person may operate or maintain a hazardous waste treatment facility unless the person has obtained an interim license, operating license, variance or waiver from the department, in accordance with the requirements of s. NR 181.53 or 181.55. Any person intending to establish or construct a hazardous waste treatment facility shall contact the department to arrange for an initial site inspection.

(2) EXEMPTIONS. The requirements of this section do not apply to the following, except to the extent they are specifically made applicable:

(a) The owner or operator of a POTW provided that the owner or operator complies with the requirements specified in s. NR 181.42 (1) (a)2.

(b) The owner or operator of a wastewater treatment unit, provided that the owner or operator complies with the requirements specified in s. NR 181.42 (1) (a)1.

(c) The owner or operator of a totally enclosed treatment facility as defined in s. NR 181.04 (99) is exempt from the requirements of this section.

(d) The owner or operator of a recycling facility provided that the owner or operator complies with the requirements specified in s. NR 181.19.

(e) The owners or operators of facilities used for the treatment of metallic mining wastes resulting from a mining operation as defined in s. 144.81 (5), Stats., are exempt from the requirements of this section.

Note: Metallic mining wastes are regulated under ch. NR 182.

(f) The owner or operator of an elementary neutralization unit is exempt from the requirements of this section, providing s. NR 181.42 (1) (a)9. is complied with.

(g) A generator who combines absorbent material with a waste generated on-site in a container for the purpose of eliminating free liquids, provided that the generator complies with s. NR 181.21 (7).

(h) The owner or operator of a facility operating under an interim license, except to the extent that the requirements are listed in s. NR 181.53 (4), (5) and (6).

(3) FEASIBILITY REPORT. (a) Unless specifically exempted in sub. (2), no person may establish, construct or expand a hazardous waste treatment facility or be issued an initial operating license under s. NR 181.55 without first obtaining approval of a feasibility report and subsequently obtaining approval of a plan of operation from the department, or obtaining approval of a feasibility and plan of operation report from the department. A feasibility and plan of operation report shall contain the minimum information required in this paragraph and sub. (4) (a) and shall be submitted in accordance with s. 144.44, Stats., and s. NR 181.51. The purpose of the feasibility report is to determine whether the site has potential for use as a hazardous waste treatment facility and to identify any conditions which the applicant shall address in the plan of operation. Favorable feasibility determination under this subsection does not guarantee plan of operation approval and licensure if the reports are submitted separately. The feasibility report shall be submitted in accordance with s. 144.44, Stats., and s. NR 181.51 and shall contain, at a minimum, the following information:

1. A narrative describing:

a. Legal description of the site.

b. Present ownership of the site.

c. Proposed site size and boundaries and present land use of the site and the area within ½ mile of the site. Particular note shall be made of parks, hospitals, nursing homes and areas of archaeological and historical significance.

d. Area served, including population and major industries.

e. A complete material balance for the facility, specifying the amounts and characteristics of hazardous waste to be received and the amounts

and characteristics of products and wastes which will be generated by the facility.

f. Types of vehicles and access routes used to transport hazardous waste into and out of the site or facility, an analysis of estimated traffic flow patterns on access routes and within the site or facility, and an analysis of increased quantities of traffic on access routes into and out of the site or facility.

g. Estimated quantities and characteristics of wastes resulting from facility operations and methods of treatment or disposal.

h. Person responsible for plant construction and operation.

i. Quality and quantity of air discharge expected from plant operation.

j. Appurtenances and procedures for the storage of hazardous waste beyond the end of the processing day, for the control of dust, odors, fire, windblown materials and potential explosions and for the handling of hazardous waste in the case of major treatment facility breakdown.

k. Names and locations of all hazardous and solid waste disposal sites and facilities at which hazardous and solid wastes from the treatment plant will be disposed.

l. Overall site or facility layout including conceptual building design, sizing of receiving area, methods of processing, and sizing of major process equipment or process areas.

m. A timetable for site or facility construction, start up and operation.

n. Operating schedule.

o. Provisions for protection of groundwater and surface waters during site or facility construction and operation.

p. Conceptual design of equipment indicating its capacity and dimensions.

2. The narrative shall be supplemented by the following maps or plans:

a. USGS quandrangle map. This shall be a 7-½ minute, topographic map, if available. The radius of coverage shall be sufficient to show sources of waste for a minimum of 3 miles. If impractical to show the site or facility locations relative to the source of waste, a separate location map displaying this information shall be provided.

b. Plat map. This shall indicate property boundaries and zoning within ½ mile of the proposed facility and anticipated traffic routes within 2 miles of the site or facility.

c. Existing site conditions map. The extent of coverage shall be the entire site and the area within ½ mile of the site boundaries. The minimum scale shall be one inch = 200 feet. Map details shall include proposed site boundary, property lines, easements and rights-of-way; buildings, foundations, roads, utilities and other structures, topography, for site only unless needed to define drainage patterns around facility, drainage swales, surface wastes, wetlands, floodplains and similar drainage features; wooded areas; location of soil borings and test pits; features of historical and archaeological significance; and other physical site features as appropriate.

d. Proposed facility plan. This plan shall include proposed site or facility access roads and traffic patterns, buildings, scales, utility lines, drainage diversion, screening, means of access control, final topography, areas to be cleared of vegetation, and other design features. The extent of coverage and scale shall be the same as that for the existing site conditions map.

e. Proposed process layout. The extent of coverage shall include the receiving, processing, and loadout areas. The minimum scale shall be one inch = 200 feet. Plan details shall include conceptual design for receiving area configuration and traffic flow patterns, treatment area and equipment configuration, loadout area and equipment configuration, traffic flow patterns, and other pertinent design features.

f. Cross-sections. At least one cross-section shall be drawn through the treatment, each process line where applicable, area indicating existing topography, limits of excavation, proposed final grades, conceptual design of building foundations and structure, major soil types, the water table and other pertinent design features. More cross-sections may be necessary depending on complexity of site or facility design.

(b) Within 60 days after a feasibility report is submitted, the department shall either determine that the report is complete or notify the applicant in writing that the report is not complete, specifying the information which the applicant shall submit before the report is deemed complete. The department will determine whether or not the feasibility report is complete by determining whether or not the minimum requirements of this subsection have been met. Additional feasibility information may be required of the applicant after a determination that the feasibility report is complete only if the department establishes that a detailed review of the feasibility report indicates that site feasibility cannot be determined in the absence of such additional information.

(c) If no hearing has been conducted under s. 144.44, Stats., the department shall issue the final determination of feasibility within 60 days after the 45 day notice period required under s. 144.44 (2) (l) and (m), Stats., has expired. If an informational hearing is conducted under s. 144.44 (2g), Stats., the department shall issue a final determination of feasibility within 60 days after the hearing is adjourned. If a contested case hearing is conducted under s. 144.44 (2r), Stats., a final determination of feasibility shall be issued within 90 days after the hearing is adjourned.

(d) Within 60 days after a feasibility and plan of operation report is submitted, the department shall either determine that the report is complete or notify the applicant in writing that the report is not complete, specifying the information which the applicant shall submit before the report is deemed complete. The department will determine whether or not the feasibility and plan of operation report is complete by determining whether or not the minimum requirements in par. (a) and sub. (4) (a) have been met. Additional information may required of the applicant after a determination that the report is complete only if the department establishes that a detailed review of the report indicates that feasibility cannot be determined or the report is insufficient in the absence of such additional information.

(e) If no hearing has been conducted under s. 144.44, Stats., the department shall issue the final determination for the feasibility and plan of

operation report within 60 days after the 45 day notice period required under s. 144.44 (2) (l) and (m), Stats., has expired. If an informational hearing is conducted under s. 144.44 (2g), Stats., the department shall issue a final determination for the feasibility and plan of operation report within 60 days after the hearing is adjourned. If a contested case hearing is conducted under s. 144.44 (2r), Stats., a final determination for the feasibility and plan of operation report shall be issued within 90 days after the hearing is adjourned.

(4) PLAN OF OPERATION. (a) Unless specifically exempted in sub. (2), no person may establish, construct or expand a treatment facility or be issued an initial operating license under s. NR 181.55 prior to obtaining approval in writing from the department of a plan of operation or a feasibility and plan of operation report as described in sub. (3) (a) for the facility. The plan of operation for the treatment facility shall be submitted in accordance with s. 144.44, Stats., and s. NR 181.51 and shall contain, at a minimum, the following information:

1. Complete construction plans and specifications detailing the exact configurations, locations, elevations, dimensions and construction and installation procedures for all structures, equipment and site modifications. Where practical the minimum scale utilized shall be one inch = 20 feet for buildings, equipment, and structures, and one inch = 100 feet for site plans. To facilitate review, the construction plans and specifications shall include separate engineering drawings for the following:

a. Existing site conditions. The extent of coverage and plan details shall be the same as required for an existing site conditions map in sub. (3) (a) 2.c.

b. Construction conditions. A plot plan shall be submitted which indicates the appearance of the site during facility construction. The extent of coverage and scale shall be identical to those required for an existing site conditions map in sub. (3) (a) 2.c. The plot plan shall show limits of construction areas to be cleared of vegetation and topsoil, demolition of existing structures, areas of borrow and fill, temporary or permanent drainage diversion, soil erosion protection measures, construction access roads, soil and stripped vegetation stockpiles or storge areas, equipment storage areas, and other details necessary to determine the impacts during facility construction.

c. Facility plan. A plot plan shall be submitted showing the facility at completion of construction. The extent of coverage and scale shall be the same as required for an existing site conditions map in sub. (3) (a) 2.c. Plan details shall include those required for the existing site conditions map and any modifications thereto, plus means of limiting access such as fencing, gates or natural barriers; methods of screening the facility from the surrounding area; general layout of receiving, processing and loadout areas and equipment; traffic flow patterns; access roads; and location of discrete air contaminant discharges.

2. Design report. The construction plans and specifications shall be supplemented with a design report providing a discussion of design features and logic not previously discussed in the feasibility report. The report shall discuss and, where applicable, show calculations for size and configuration of receiving area; size, configuration, and capacity of process treatment equipment, conveyors, blowers, or other transport equipment, air pollution control units and associated duct work, methods of

handling liquid wastes resulting from operations such as floor drains, sewers and water treatment facilities; heat balances, residence time and process temperature, digestors, or other thermal processing equipment; size and configuration of loadout and storage facilities for process outputs; sizing of surface water drainage control structures; traffic queuing and flow patterns; design life of facility equipment, buildings and appurtenances; timetable for construction; methods of controlling windblown materials; and methods of screening the facility from the surrounding area.

3. Operations and maintenance manual. A manual shall be prepared with separate sections specifying operating and maintenance procedures for the following:

a. Facility startup and process line shakedown. This shall include a discussion of personnel training, quantities and characteristics of hazardous waste to be processed; process line startup procedures and equipment performance evaluations; fire, dust, and vapor control systems; performance evaluations; process raw materials on hand at startup; process outputs testing; and other appropriate startup procedures.

b. Normal operations. This shall include a discussion of operating personnel responsibilities; hours of operation; daily processing schedule; routine process monitoring including monitoring quantity and quality of hazardous waste input; process output testing; equipment maintenance schedules; methods of controlling explosions, fire, odors, and windblown materials; special waste handling procedures; method of controlling access; daily cleanup procedures; facility bypass procedures during major breakdowns and alternative means of disposal; person responsible for operation; site or facility licensee and owner; recordkeeping; emergency procedures for handling of freezeup during cold weather; methods to prevent hazardous waste from burning; and other pertinent information.

4. A contingency plan as required in s. NR 181.42 (4) (a).

5. A closure plan as required in s. NR 181.42 (8).

(b) Within 30 days after a plan of operation is submitted, the department shall notify the applicant in writing that the plan is either complete or not complete, specifying the information which must be submitted before the report is deemed complete. The department will determine if the plan of operation is complete by determining whether or not the minimum requirements of this subsection have been met. Additional plan of operation information may be required of the applicant after a determination that the plan of operation is complete only if the department establishes that a detailed review of the plan of operation indicates that the plan of operation is insufficient in the absence of such additional information.

(c) The department may not approve or disapprove a plan of operation until a favorable determination of feasibility has bee issued for the facility if the reports are submitted separately. Upon submission of a complete plan of operation, the department shall either approve or disapprove the plan in writing within 90 days or within 60 days after a favorable determination of feasibility is issued for the facility, whichever is later.

(5) MINIMUM REQUIREMENTS FOR FACILITY DESIGN AND OPERATION. (a) The materials used in construction of the treatment facility shall be

compatible, under expected operating conditions, with the hazardous waste and any treatment chemicals or reagents used in the treatment process.

(b) Waste analyses for thermal treatment processes. In addition to the waste analysis required by s. NR 181.42 (1) (d), the owner or operator shall sufficiently analyze any waste which has not been previously treated in the thermal process to enable the establishment of steady state, or other appropriate, operating conditions for a non-continuous process, including waste and auxiliary fuel feed, and to determine the type of pollutants which may be emitted. At a minimum, the analyses shall determine:

1. The heating value of the hazardous waste;

2. Halogen and sulfur content of the waste; and

3. Concentrations of heavy metals, such as lead, mercury, cadmium, and chromium, unless the owner or operator has written documented data to show that the element is not present.

(c) Waste analyses for chemical, physical or biological treatment processes. In addition to the waste analysis required by s. NR 181.42 (1) (d), whenever a hazardous waste which is substantially different from waste previously treated in a treatment process or equipment at the facility is to be treated in that process or equipment, or a substantially different process than any previously used at the facility is to be used to chemically treat hazardous waste, the owner or operator shall:

1. Conduct waste analyses and trial treatment tests, such as bench scale or pilot plant scale tests; or

2. Obtain written, documented information on similar treatment of similar waste under similar operating conditions to show that this proposed treatment will meet all applicable requirements of sub. (5) (a) and s. NR 181.42 (1) (m).

(d) All uncovered reaction vessels shall be sized to provide no less than 2 feet freeboard at any time to prevent splashing or spillage of hazardous waste during the treatment.

(e) A facility shall have the capacity to remove and store the emergency transfer of reactor contents, or shall have emergency storage capacity to be used in the event of an equipment breakdown or malfunction.

(f) Where hazardous waste is continuously fed into a treatment process or equipment, the process or equipment shall be equipped with an automatic waste feed cutoff or a by-pass system which is activated when a malfunction in the treatment process occurs.

(g) All residuals or by-products from a treatment process shall be analyzed to determine whether they are a hazardous waste as identified in subch. II or they shall be assumed to be a hazardous waste.

(h) All hazardous waste, with the exception of that in the process line, shall be stored in conformance with s. NR 181.43.

(i) Unloading of hazardous waste shall take place only in approved, designated areas.

(j) If for any reason the treatment facility is rendered inoperable or is not able to completely process the hazardous waste, an approved alternative method shall be used for hazardous waste disposal.

(k) Before adding hazardous waste to a thermal treatment process, the owner or operator shall bring the system to steady state, or normal, conditions of operation, including steady state operating temperature, using auxiliary fuel or other means, unless the process is a noncontinuous, or batch, thermal treatment process which requires a complete thermal cycle to treat a discrete quantity of hazardous waste.

(l) Thermal treatment facilities shall be designed and operated to provide adequate temperature and residence time in the combustion chamber to assure complete processing and be equipped with necessary air pollution control equipment to produce a noncombustible residue, result in an odor free operation and meet state air pollution control regulations found in ch. NR 154.

(m) Inspections and monitoring. 1. The owner or operator of a facility that chemically, physically or biologically treats hazardous waste shall inspect, where present:

a. Discharge control and safety equipment, such as waste feed cut-off systems, by-pass systems, drainage systems, and pressure relief systems, at least once each operating day, to ensure that it is in good working order;

b. Data gathered from monitoring equipment, such as pressure and temperature gauges, at least once each operating day, to ensure that the treatment process or equipment is being operated according to its design;

c. The construction materials of the process equipment, at least weekly, to detect corrosion or leaking of fixtures or seams; and

d. The construction materials of, and the area immediately surrounding, discharge confinement structures, such as dikes, at least weekly, to detect erosion or obvious signs of leakage, such as wet spots or dead vegetation.

2. The owner or operator shall conduct, as a minimum, the following monitoring and inspections when thermally treating hazardous waste:

a. Instruments which relate to temperature and emission control shall be monitored at least every 15 minutes; appropriate corrections to maintain steady state or other appropriate thermal treatment conditions shall be made immediately either automatically or by the operator. Instruments which relate to temperature and emission control would normally include those measuring waste, feed, auxiliary fuel feed, treatment process temperature, and relevant process flow and level controls.

b. The stack plume, emissions, where present, shall be observed visually at least hourly for normal appearance, color and opacity. The operator shall immediately make any indicated operating corrections necessary to return any visual emissions to their normal appearance.

c. The complete thermal treatment process and associated equipment, such as pumps, valves, conveyors, pipes, shall be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls, and system alarms shall be checked to assure proper operation.

(n) Records of operating conditions shall be retained as specified in s. NR 181.42 (6) (b).

(o) Chemical, physical, or biological treatment of hazardous waste, shall comply with the general requirements for ignitable, reactive, or incompatable wastes in s. NR 181.42 (1) (m)2.

(p) Incompatible wastes shall not be placed in the same process or equipment used for chemical, physical or biological treatment.

(q) Ignitable or reactive waste shall not be placed in a process or equipment used to chemically, physically or biologically treat a hazardous waste unless:

1. The waste is treated, rendered or mixed before or immediately after placement in the process or equipment so that the resulting mixture or dissolution of material no longer meets the definition of ignitable or reactive waste in s. NR 181.15 (2) or (4), and s. NR 181.42 (1) (m)2. is complied with, or;

2. The waste is treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react.

(6) CLOSURE. Unless specifically exempted in sub. (2), the owner or operator of hazardous waste treatment facility shall meet the closure requirements specified in s. NR 181.42 (8), and shall, at completion of closure, remove all hazardous waste and hazardous waste residues, including, but not limited to, ash and sludges, from the treatment process or equipment, discharge control equipment and discharge confinement structures. The department may require monitoring of ground or surface waters, if the operation or design of the facility in relation to the hazard of wastes handled at the facility warrants such monitoring.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (1), (2), (3) (a) (intro.) and (b), (4) (a), (intro.), (5) (q) 1. and (6), cr. (3) (c), (d) and (e), and (4) (c), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.47 Standards for surface impoundments with discharges regulated under ch. 147, Stats. (1) GENERAL. Except as otherwise provided in sub. (2), no person may operate or maintain a surface impoundment unless the person has obtained an interim license, operating license, variance or waiver from the department in accordance with the requirements of s. NR 181.53 or 181.55.

(2) EXEMPTIONS. The requirements of this section do not apply to the following, except to the extent that they are specifically made applicable:

(a) The owner or operator of a facility used for the disposal of metallic mining wastes resulting from a mining operation as defined in s. 144.81 (5), Stats., is exempt from the requirements in this section.

Note: Metallic mining wastes are regulated under ch. NR 182.

(b) The owner or operator of a facility operating under an interim license is exempt from the requirements in this section, except to the extent that the requirements are listed in s. NR 181.53 (4), (5) and (6).

(3) REGULATORY INTEGRATION. The department shall integrate the regulation of surface impoundments under this section with the plan approval process under s. 144.04, Stats., and the permitting process under

ch. 147, Stats., if these processes are applicable, to avoid, if practicable, duplicate or contradictory actions or requirements.

(4) GENERAL FACILITY STANDARDS. Unless specifically exempt under sub. (2), the owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall comply with all of the following requirements:

(a) The notification and identification number requirements specified in s. NR 181.42 (1) (b).

(b) The notice requirements specified in s. NR 181.42 (1) (c).

(c) The waste analysis requirements specified in s. NR 181.42 (1) (d).

(d) The waste analysis plan requirements specified in s. NR 181.42 (1) (e).

(e) The requirements of subch. III if the owner or operator removes hazardous waste from the facility.

(f) The requirements for ignitable, reactive, or incompatible wastes specified in s. NR 181.42 (1) (m).

(g) The site selection and locational criteria specified in ss. NR 181.42 (2) and 181.44 (3).

(i) The contingency plan and emergency procedures requirements specified in s. NR 181.42 (4).

(j) The personnel training requirements specified in s. NR 181.42 (5).

(k) The manifest system, recordkeeping, and reporting requirements specified in s. NR 181.42 (6).

(l) The general inspection requirements specified in s. NR 181.42 (7).

(m) The closure requirements specified in s. NR 181.42 (8).

(n) The long-term care requirements specified in s. NR 181.42 (9).

(o) The financial requirements for closure and long-term specified in s. NR 181.42 (10).

(p) The following facility liability requirements:

1. 'Definitions.' The definitions contained in s. NR 181.42 (11) (a) apply to this paragraph. In addition, the following definitions shall apply:

a. "Assets" means all existing and all probable future economic benefits obtained or controlled by a particular entity.

b. "Current assets" means cash or other assets or resources commonly identified as those which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business.

c. "Current liabilities" means obligations whose liquidation is reasonably expected to require the use of existing resources properly classifiable as current assets or the creation of other current liabilities.

d. "Independently audited" refers to an audit performed by an independent certified public accountant in accordance with generally accepted auditing standards.

e. "Liabilities" means probable future sacrifices of economic benefits arising from present obligations to transfer assets or provide services to other entities in the future as a result of past transactions or events.

f. "Net working capital" means current assets minus current liabilities.

g. "Net worth" means total assets minus total liabilities and is equivalent to owner's equity.

h. "Tangible net worth" means the tangible assets that remain after deducting liabilities; such assets would not include tangibles such as goodwill and rights to patents or royalties.

2. 'Coverage for sudden accidental occurrences.' The owner or operator of a hazardous waste surface impoundment with discharges regulated under ch. 147, Stats., or group of such facilities, except facilities owned and operated by a state agency or a federal agency, department or instrumentality, shall demonstrate financial responsibility for bodily injury and property damage to third parties caused by sudden accidental occurrences arising from operations of the facility or group of facilities. The owner or operator shall have and maintain liability coverage for sudden accidental occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million, exclusive of legal defense costs. This liability coverage may be demonstrated in one of 3 ways, as follows:

a. The owner or operator may demonstrate the required liability coverage by having liability insurance as specified in this subparagraph. Each insurance policy shall be amended by attachment of the hazardous waste facility liability endorsement or evidenced by a certificate of liability insurance. The wording of the endorsement shall be identical to the wording specified in s. NR 181.42 (11) (h)1. The wording of the certificate of insurance shall be identical to the wording specified in s. NR 181.42 (11) (h)2. The owner or operator shall submit a signed duplicate original of the endorsement or the certificate of insurance to the department. If requested by the department, the owner or operator shall provide a signed duplicate original of the insurance policy. The owner or operator of a facility which has obtained or applied for an interim license shall submit the signed duplicate original of the hazardous waste facility liability endorsement or the certificate of liability insurance within 180 days after July 1, 1985. An owner or operator of a proposed facility shall submit the signed duplicate original of the hazardous waste facility liability endorsement or the certificate of liability insurance to the department at least 60 days before the date on which hazardous waste is first received for treatment, storage or disposal. The insurance shall be effective before this initial receipt of hazardous waste. Each insurance policy shall be issued by an insurer which, at a minimum, is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more states.

b. The owner or operator may meet the requirements of this paragraph by passing a financial test for liability coverage as specified in subd. 7.

c. The owner or operator may demonstrate the required liability coverage through use of both the financial test and insurance as these mechanisms are specified in this paragraph. The amounts of coverage demonstrated shall total at least the minimum amounts required by this subdivision.

3. 'Coverage for nonsudden accidental occurrences.' The owner or operator of a hazardous waste surface impoundment with discharges regulated under ch. 147, Stats., or group of such facilities, except facilities owned and operated by a state agency or a federal agency, department or instrumentality, shall demonstrate financial responsibility for bodily injury and property damage to third parties caused by nonsudden accidental occurrences arising from operations of the facility or group of facilities. The owner or operator shall have and maintain liability coverage for nonsudden accidental occurrences in the amount of at least $3 million per occurrence with an annual aggregate of at least $6 million, exclusive of legal defense costs. This liability coverage may be demonstrated in one of 3 ways, as follows:

a. The owner or operator may demonstrate the required liability coverage by having liability insurance as specified in this subparagraph. Each insurance policy shall be amended by attachment of the hazardous waste facility liability endorsement or evidenced by a certificate of liability insurance. The wording of the endorsement shall be identical to the wording specified in s. NR 181.42 (11) (h)2. The owner or operator shall submit a signed duplicate original of the endorsement or the certificate of insurance to the department. If required by the department, the owner or operator shall provide a signed duplicate original of the insurance policy. An owner or operator of a proposed facility shall submit the signed duplicate original of the hazardous waste facility liability endorsement or the certificate of liability insurance to the department at least 60 days before the date on which hazardous waste is first received for treatment, storage or disposal. The insurance shall be effective before this initial receipt of hazardous waste. The owner or operator of a facility which has obtained or applied for an interim license shall submit the signed duplicate original of the hazardous waste facility liability endorsement or the certificate of liability insurance within 180 days after July 1, 1985. At a minimum, the agent or broker shall be licensed as a surplus lines insurance agent or broker.

b. The owner or operator may meet the requirements of this paragraph by passing a financial test for liability coverage as specified in subd. 7.

c. The owner or operator may demonstrate the required liability coverage through use of both the financial test and insurance as these mechanisms are specified in this paragraph. The amounts of coverage shall total at least the minimum amounts required by this subdivision.

4. 'Request for variance.' If an owner or operator can demonstrate to the satisfaction of the department that the levels of financial reasponsibility required by subd. 2. or 3. are not consistent with the degree and duration of risk associated with treatment, storage or disposal at the facility or group of facilities, the owner or operator may obtain a variance from the department. The request for a variance shall be submitted to the department as part of the interim or operating license application for a facility that does not have an interim or operating license, or pursuant to the procedures for a plan modification under subch. VI. For existing facilities with interim licenses or variances, the request shall be submit-

ted within 90 days after July 1, 1985. The time periods for department review specified in s. NR 181.55 (10) (e) shall apply to these requests. If granted, the variance will take the form of an adjusted level of required liability coverage, such level to be based on the department's assessment of the degree and duration of risk associated with the ownership or operation of the facility or group of facilities. The department may require an owner or operator who requests a variance to provide such technical and engineering information as is deemed necessary by the department to determine a level of financial responsibility other than that required by subd. 2. or 3.

5. 'Adjustments by the department.' If the department determines that the levels of financial responsibility required by subd. 2. or 3. are not consistent with the degree and duration of risk associated with treatment, storage or disposal at the facility or group of facilities, the department may adjust the level of financial responsibility required under subd. 2. or 3. as may be necessary to protect human health and the environment. This adjusted level will be based on the department's assessment of the degree and duration of risk associated with the ownership or operation of the facility or group of facilities. An owner or operator shall furnish to the department, within a reasonable time, any information which the department requests to determine whether cause exists for such adjustments of level or type of coverage.

6. 'Period of coverage.' The owner or operator shall continuously provide liability coverage for a facility as required by this paragraph until certifications of closure of the facility, as specified in s. NR 181.42 (8), are received by the department. The owner or operator who fulfills the requirements of this paragraph by obtaining an insurance policy will be deemed to be without the required liability coverage if the insurance company becomes bankrupt or insolvent or if the company receives an unfavorable evaluation under s. 618.41 (6) (d), Stats. If such an event occurs, the owner or operator shall, within 60 days after receiving written notice thereof, deliver to the department demonstration of liability coverage as required by subd. 2.

7. 'Financial test for liability coverage.' The owner or operator may satisfy the requirements of this paragraph by demonstrating that the owner or operator passes a financial test as specified in this subparagraph. To pass this test the owner or operator shall meet the criteria of subpar. a. or b.:

a. The owner or operator shall have:

1) Net working capital and tangible net worth each at least 6 times the amount of liability coverage to be demonstrated by this test;

2) Tangible net worth of at least $10 million; and

3) Assets in the United States amounting to either: at least 90% of the owner's or operator's total assets; or at least 6 times the amount of liability coverage to be demonstrated by this test.

b. The owner or operator shall have:

1) A current rating for the most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's, or Aaa, Aa, A, or Baa as issued by Moody's;

2) Tangible net worth of at least $10 million;

3) Tangible net worth at least 6 times the amount of liability coverage to be demonstrated by this test; and

4) Assets in the United States amounting to either: at least 90% of the owner's or operator's total assets; or at least 6 times the amount of liability coverage to be demonstrated by this test.

c. The phrase "amount of liability coverage" as used in this subparagraph refers to the annual aggregate amounts for which coverage is required under subd. 2. or 3.

d. The owner or operator shall submit the following 3 items to the department to demonstrate that this test is met:

1) A letter signed by the owner's or operator's chief financial officer as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Letter from Chief Financial Officer
(to demonstrate liability coverage).
[Address to the department]

I am the chief financial officer of [owner's or operator's name and address]. This letter is in support of the use of the financial test to demonstrate financial responsibility for liability coverage as specified in s. NR 181.49 (4) (p).

[Fill out the following paragraph regarding facilities and liability coverage. For each facility, include its EPA identification Number, name and address.]

The owner or operator identified above is the owner or operator of the following facilities for which liability coverage is being demonstrated through the financial test specified in Section NR 181.49 (4) (p), Wis. Adm. Code.

This owner or operator [insert "is required" or "is not required"] to file a Form 10K with the Securities and Exchange Commission (SEC) for the lastest fiscal year.

The fiscal year of this owner or operator ends on [month,day]. The figures for the following items marked with an asterisk are derived from this owner's or operator's independently audited, year-end financial statements for the latest completed fiscal year ended [date].

Liability Coverage for Accidental Occurrences

[Fill in Alternative I if the criteria of Section NR 181.49 (4) (p) 7.a., Wis. Adm. Code are used. Fill in Alternative II if the criteria of Section NR 181.49 (4) (p) 7.b., Wis. Adm. Code are used].

ALTERNATIVE I

1.	Amount of annual aggregate liability coverage to be demonstrated	$_____
*2.	Current assets	$_____
*3.	Current liabilities	$_____
4.	Net working capital (line 2 minus line 3)	$_____
*5.	Tangible net worth	$_____

*6.	If less than 90% of assets are located in the U.S., give total U.S. assets	$_____	
		YES	NO
7.	Is line 5 at least $10 million?	____	____
8.	Is line 4 at least 6 times line 1?	____	____
9.	Is line 5 at least 6 times line 1?	____	____
*10.	Are at least 90% of assets located in the U.S.? If not, complete line 11.	____	____
11.	Is line 6 at least 6 times line 1?	____	____

ALTERNATIVE II

1.	Amount of annual aggregate liability coverage to be demonstrated	$_____	
2.	Current bond rating of most recent issuance and name of rating service	_____	
3.	Date of issuance of bond	_____	
4.	Date of maturity of bond	_____	
*5.	Tangible net worth	$_____	
*6.	Total assets in U.S. (required only if less than 90% of assets are located in the U.S.)	$_____	
		YES	NO
7.	Is line 5 at least $10 million?	____	____
8.	Is line 5 at least 6 times line 1?	____	____
*9.	Are at least 90% of assets located in the U.S.? If not, complete line 10.	____	____
10.	Is line 6 at least 6 times line 1?	____	____

I hereby certify that the wording of this letter is identical to the wording specified in Section NR 181.49 (4) (p) 7.d.1), Wis. Adm. Code, as such regulations were constituted on the date shown immediately below.

[Signature]
[Name]
[Title]
[Date]

2) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year.

3) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that the accountant has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and in connection with that procedure, no

matter came to the accountant's attention which caused the accountant to believe that the specified data should be adjusted.

e. The owner or operator of a proposed facility shall submit the items specified in subpar. d. at least 60 days before the date on which hazardous waste is first received for treatment, storage or disposal.

f. After the initial submission of items specified in subpar. d., the owner or operator shall send updated information to the department within 90 days after the close of each succeeding fiscal year. This information shall consist of all 3 items specified in subpar. d.

g. If the owner or operator no longer meets the requirements of subpar. a. or b., the owner or operator shall obtain insurance for the entire amount of required liability coverage as specified in this paragraph. Evidence of insurance shall be submitted to the department within 90 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the test requirements.

h. The department may disallow use of this test on the basis of qualifications in the opinion expressed by the independent certified public accountant in the accountant's report on examination of the owner's or operator's financial statements. An adverse opinion or a disclaimer of opinion will be cause for disallowance. The department will evaluate other qualifications on an individual basis. The owner or operator shall provide evidence of insurance for the entire amount of required liability coverage as specified in this section within 30 days after notification of disallowance.

8. 'Bankruptcy notification.' The owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall notify the department by certified mail of the commencement of a voluntary or involuntary proceeding under the bankruptcy code, II USC s. 101, et seq., naming the owner or operator as debtor, within 10 days after commencement of the proceeding.

(5) INITIAL SITE INSPECTION. Unless specifically exempted under sub. (2), any person proposing to establish a hazardous waste surface impoundment with discharges regulated under ch. 147, Stats., or expand such an existing facility shall contact the department to arrange for an initial site inspection.

(6) INITIAL SITE REPORT. Unless specifically exempted under sub. (2), any person wishing to establish a hazardous waste surface impoundment with discharges regulated under ch. 147, Stats., or expand such an existing facility, shall comply with requirements of s. NR 181.44 (5) if the person wishes to submit an initial site report.

(7) FEASIBILITY REPORT. Unless specifically exempted under sub. (2), any person wishing to establish a hazardous waste surface impoundment with discharges regulated under ch. 147, Stats., or expand such an existing facility shall comply with the requirements of s. NR 181.44 (6).

(8) PLAN OF OPERATION. Unless specifically exempted under sub. (2), any person wishing to establish a hazardous waste surface impoundment with discharges regulated under ch. 147, Stats., or expand such an existing facility shall comply with all the requirements of s. NR 181.44 (7), except as follows:

(a) In lieu of compliance with s. NR 181.44 (7) (b) 1.g., j., k. and 1. and 2., except s. NR 181.44 (7) (b) 2.b.9), 10) and 11), the following may be submitted:

1. Detailed plans and engineering report describing how the surface impoundment will be constructed to meet the requirements of s. NR 181.47 (11). The submission shall address the following items as specified in s. NR 181.47 (11):

a. The construction of the liner system;

b. Prevention of overtopping, and

c. Structural integrity of the dikes.

2. Description of how each surface impoundment, including the liner and cover systems and appurtenances for control of overtopping, will be inspected in order to meet the requirements of s. NR 181.44 (10) (z). This information may be included in the inspection plan submitted under s. NR 181.51 (2) (e).

3. A description of the procedure to be used in removing a surface impoundment from service, as required under s. NR 181.44 (10) (zb), (zc), (zd), (ze) and (zf). This information shall be included in the contingency plan submitted under s. NR 181.44 (7) (b)4.

4. If ignitable or reactive wastes are to be placed in a surface impoundment, an explanation of how s. NR 181.47 (11) (a) will be complied with.

5. If incompatible wastes, or incompatible wastes and materials will be placed in a surface impoundment, an explanation of how s. NR 181.44 (10) (d) will be complied with.

(9) CONSTRUCTION IN SUBSTANTIAL COMPLIANCE WITH THE PLAN OF OPERATION. Unless specifically exempt under sub. (2), the construction of all surface impoundments with discharges regulated under ch. 147, Stats., shall be certified by a qualified engineer as follows:

(a) For existing units, the certification which attests to the structural integrity of each dike, as required under s. NR 181.44 (10) (za), shall be submitted with the plan of operation under sub. (8).

(b) For new units, the owner or operator shall submit a statement by a qualified engineer that the engineer will provide the certification required under par. (a) upon completion of construction in accordance with the plans and specifications, with the plan of operation under sub. (8).

(10) RECORDING OF NOTICE. Unless specifically exempt under sub. (2), the owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall comply with all the requirements of s. NR 181.44 (9).

(11) MINIMUM DESIGN AND OPERATIONAL REQUIREMENTS. Unless specifically exempt under sub. (2), the owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall comply with all the requirements of s. NR 181.44 (10), except as follows:

(a) In lieu of compliance with s. NR 181.44 (10) (c), the owner or operator may comply with the following:

1. Ignitable or reactive waste may not be placed in a surface impoundment, unless the waste is placed in a surface impoundment that is used solely for emergencies or unless the waste is treated, rendered, or mixed before or immediately after placement in the surface impoundment so that:

a. The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under s. NR 181.15 (2) or (4); and

b. Section NR 181.42 (1) (m)2. is complied with.

(b) In lieu of compliance with s. NR 181.44 (10) (e), (f), (h), (i), (j), (k), (l), (m), (n), (o), (p), (w), (x) and (y), the owner or operator may comply with the following:

1. A surface impoundment shall have a double liner system that is designed, constructed, and installed to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil or groundwater or surface water at any time during the active life, including the closure period of the impoundment. The primary and secondary liners shall be:

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

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

c. Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

2. The owner or operator may be exempted from the requirements of subd. 1. if the department finds, based on a demonstration by the owner or operator, that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the groundwater or surface water at any future time. Such exemption requests shall be made by the owner or operator, in accordance with s. NR 181.05, in the feasibility report. In deciding whether to grant an exemption, the department shall consider:

a. The nature and quantity of the wastes;

b. The proposed alternate design and operation;

c. The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the impoundment and groundwater or surface water, and

d. All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

3. A surface impoundment shall be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on;

malfunctions of level controllers, alarms, and other equipment; and human error.

4. A surface impoundment shall have dikes that are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes. In ensuring structural integrity it may not be presumed that the liner system will function without leakage during the active life of the unit.

5. The department shall specify in the plan of operation approval all design and operating practices that are necessary to ensure that the requirements of this paragraph are satisfied.

6. During construction and installation, liners and cover systems (e.g. membranes, sheets or coatings) shall be inspected for uniformity, damage and imperfections (e.g. holes, cracks, thin spots or foreign materials). Immediately after construction or installation:

a. Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures or blisters; and

b. Soil-based and admixed liners and covers shall be inspected for imperfections including lenses, cracks, channels, root holes or other structural non-uniformities that may cause an increase in the permeability of the linear or cover.

(12) GROUNDWATER AND LEACHATE MONITORING. The owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall comply with all the requirements of s. NR 181.49, unless specifically exempt under s. NR 181.49 (2).

(13) SPECIAL MONITORING. Unless specifically exempt under sub. (2), the owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall comply with all the requirements of s. NR 181.44 (11), when required by the department.

(14) CLOSURE. Unless specifically exempt under sub. (2), the owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall comply with all of the requirements of s. NR 181.44 (12) or (13), whichever is applicable.

(15) LONG-TERM CARE. Unless specifically exempt under sub. (2), the owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall comply with all the requirements of s. NR 181.44 (14).

(16) WASTE MANAGEMENT FUND. Unless specifically exempt under sub. (2), the owner or operator of a surface impoundment with discharges regulated under ch. 147, Stats., shall, if the surface impoundment is utilized for disposal of hazardous waste, contribute to the waste management fund as specified in s. NR 181.42 (12).

History: Cr. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.48 Standards for other facilities not specifically covered by this subchapter. Before any method of hazardous waste treatment or disposal not otherwise provided for in this subchapter is established, the department shall require the applicant to conduct a feasibility study. If the proposal is determined by the department to be feasible, a plan of operation including complete plans, specifications, and design data for

the project detailing such information as site preparation, operation, monitoring closure and long-term care shall be submitted to and be approved in writing by the department prior to construction or operation. An initial plan review fee and operating license fee as specified in s. NR 181.55 (5) shall be submitted for each proposal. Prior to operation of such a facility, an operating license variance or waiver is required. The facility and its operation shall conform to any department approved plan.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; renum. from NR 181.47 and am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.49 Groundwater and leachate monitoring standards. (1) GENERAL. Except as provided in sub. (2), the requirements of this section apply to all hazardous waste landfills and surface impoundments as specified in sub. (3) and to any other facility where required under s. NR 181.08 or 181.43.

(2) EXEMPTIONS. The requirements of this section do not apply to the following:

(a) The owner or operator of a solid waste disposal facility that is licensed under ch. NR 180, provided that the only hazardous waste the facility disposes of is excluded from regulation under this subchapter by s. NR 181.13 and the facility has been approved under s. NR 181.13 (7) to accept small quantities of hazardous waste.

(b) The owner or operator of a facility used for the disposal of metallic mining wastes resulting from the mining operation as defined in s. 144.81 (5), Stats.

Note: Metallic mining wastes are regulated under ch. NR 182.

(3) APPLICABILITY TO LANDFILLS AND SURFACE IMPOUNDMENTS. (a) The installation and maintenance of a groundwater and leachate monitoring system is required at all hazardous waste landfills and surface impoundments, consisting of wells, well nests, lysimeters, moisture probes, and similar water quality monitoring devices, and a water quality sampling and analysis program to detect the effects of leachate on groundwater. The location of such monitoring devices and the water quality monitoring program shall be approved in writing by the department.

(b) All landfills and surface impoundments which accepted hazardous wastes after November 19, 1980 but not after January 25, 1983 shall be subject to the monitoring requirements of subs. (4) and (5). All landfills and surface impoundments which accepted or are proposing to accept hazardous wastes after January 25, 1983 shall be subject to the monitoring requirements of subs. (4) and (6).

(4) GENERAL MONITORING REQUIREMENTS. The following monitoring requirements apply to all hazardous waste landfills and surface impoundments and to other facilities where required under s. NR 181.08 or 181.43.

(a) The number of required wells and other sampling devices shall be approved by the department based on the site size, waste type, site design and the hydrogeologic and geologic setting of the site and shall be capable of yielding groundwater samples for analysis. At a minimum, the system shall consist of:

1. Two or more upgradient monitoring points at locations and depths sufficient to yield groundwater samples that are representative of background water quality in the uppermost aquifer near the facility and not affected by the facility.

2. Four or more downgradient monitoring points at locations and depths to ensure immediate detection of any statistically significant amounts of hazardous wastes or leached constituents from the facility in the uppermost aquifer. These monitoring points shall be located between the hazardous waste boundary and the property boundary as close as practical to the compliance point and shall include 2 monitoring points in a well nest configuration.

3. Two or more pore water sampling devices located vertically below the hazardous waste and in the unsaturated zone, provided that an unsaturated zone is present, in such a way to ensure that they immediately detect any statistically significant amounts of leached hazardous wastes or leached constituents from the facility.

4. All groundwater wells and other groundwater sampling devices shall be properly developed in accordance with s. NR 181.44 (6) (b) 3.i.

(b) A leachate monitoring system shall be installed, when required, within the fill area and in such a manner so as to provide accurate measurements of leachate levels and a means of obtaining representative samples of leachate quality, and shall be located and protected to minimize accidental damage during the operation.

(c) All groundwater and leachate monitoring wells and other sampling devices shall be constructed of suitable inert and non-contaminating material and in such a manner as to prevent vertical movement of liquid along the well pipe, and shall be properly protected, secured and permanently labeled. All monitoring wells shall have a minimum 2-inch inside diameter. All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space (i,e., the space between the bore hole and well casing) above the sampling depth shall be sealed to prevent contamination of samples and the groundwater.

(d) The methods of groundwater and leachate sample collection, preservation, and analysis utilized by the owner or operator shall be in accordance with standard methods for the examination of water and wastewater or other methods approved in writing by the department.

(e) Elevation of the groundwater surface at each monitoring well shall be determined on a quarterly basis and each time a sample is obtained. Leachate level elevations for any leachate monitoring system shall, at a minimum, be measured monthly and each time a sample is obtained.

(f) The department may require the operator to attempt to sample public or private wells as part of regular monitoring program or to determine the extent or groundwater contamination.

(g) If for any reason a monitoring well or other monitoring device is destroyed or otherwise fails to properly function, the site operator shall immediately notify the department in writing. All such devices shall be properly abandoned in accordance with s. NR 181.44 (10) (v) and

replaced, weather permitting, with another sampling device in accordance with this section within 60 days of notification to the department unless the operator is notified otherwise in writing by the department.

(h) Sampling and analysis. The owner or operator shall obtain and analyze samples from the installed groundwater monitoring system. The owner or operator shall develop and follow a groundwater sampling and analysis plan and shall keep this plan at the facility. The plan shall include procedures and techniques for:

1. Sample collection;

2. Sample preservation and shipment;

3. Analytical procedures; and

4. Chain of custody control.

(5) EXISTING FACILITY MONITORING REQUIREMENTS. The following monitoring requirements apply to all landfills and surface impoundments which accepted hazardous wastes after November 19, 1980, but not after January 25, 1983 and to other facilities where required under s. NR 181.08 or 181.43.

(a) At a minimum, the owner or operator shall determine the concentration or value of the following parameters in groundwater samples in accordance with pars. (b) and (c).

1. Parameters characterizing the suitability of the groundwater as a drinking water supply, as specified in table X;

Table X

EPA Interim Primary Drinking Water Standards

Parameter	Maximum Level (mg/1)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Fluoride	1.4-2.4
Lead	0.05
Mercury	0.002
Nitrate (as N)	10
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
2,4-D	0.1
2,4,5-TP Silvex	0.01
Radium	5 pCi/l
Gross Alpha	15 pCi/l
Gross Beta	4 millirem/yr
Coliform Bacteria	1/100 ml

2. Parameters establishing groundwater quality including chloride, iron, manganese, phenols, sodium, and sulfate.

3. Parameters used as indicators of groundwater contamination, including pH, specific conductance, total organic carbon, and total organic halogen.

4. In all cases, the physical characteristics of the water sample including odor, color, and turbidity shall be recorded.

5. Any other parameters required by the department, based on the waste types accepted or other factors as appropriate.

(b) At a minimum, initial background water quality shall be established as follows:

1. For all monitoring devices, the owner or operator shall establish initial background concentrations or values of all parameters specified in par. (a). The owner or operator shall do this by sampling each device quarterly for one year and analyzing samples for all parameters.

2. For each of the indicator parameters specified in par. (a)3. at least 4 replicate measurements shall be obtained from each quarterly sample. The initial background arithmetic mean and variance shall be determined for each indicator parameter by pooling the replicate measurements for the respective parameter concentrations or values in samples obtained from ungradient wells during the first year.

(c) After the first year, all monitoring wells and other sampling devices shall be sampled and the samples analyzed with the following minimum frequencies:

1. Samples collected to establish groundwater quality shall be obtained and analyzed for the parameters specified in par. (a)2., 4. and 5. at least quarterly.

2. Samples collected to indicate groundwater contamination shall be obtained and analyzed for the parameters specified in par. (a)3., 4. and 5. at least quarterly.

(d) Preparation, evaluation, and response. For each indicator parameter specified in par. (a)3, the owner or operator shall calculate the arithmetic mean and variance, based on at least 4 replicate measurements on each sample, for each device monitored in accordance with par. (c)2. and compare these results with the initial background arithmetic mean for that parameter. The owner or operator shall use the student's t-test to determine statistically significant changes in the concentration or value of an indicator parameter in periodic groundwater samples when compared to the initial background concentration or value of that indicator parameter. The comparison shall consider individually each of the wells in the monitoring system. For 3 of the indicator parameters, specific conductance, total organic carbon, and total organic halogen, a single-tailed student's t-test shall be used to test at the 0.01 level of significance for significant increases over background. The difference test for pH shall be a 2-tailed student's t-test at the overall 0.01 level of significance. The department may require different statistical tests and levels of significance based on site specific hydrogeologic conditions, groundwater quality, waste characteristics and site design and operation.

(e) At a minimum, the comparisons for the downgradient and upgradient wells made under par. (d) shall be submitted to the department by the owner or operator annually.

(f) If the comparisons for downgradient and for upgradient wells made under par. (d) show a statistically significant increase, or pH change, the owner or operator shall then immediately obtain additional groundwater samples from the downgradient wells where a significant difference was detected, split the samples in 2, and obtain analyses of all additional samples to determine whether the significant difference was a result of laboratory error.

(g) If the analyses performed under par. (f) confirm the statistically significant increase or pH change, the owner or operator shall provide written notice with appropriate documentation to the department within 7 days of the date of such confirmation that the facility may be affecting groundwater quality.

(h) Within 15 days after the notification under par. (g), the owner or operator shall develop and submit to the department a specific plan certified by a qualified geologist or geotechnical engineer, for a groundwater quality assessment program at the facility, based on determining: whether hazardous waste or hazardous waste constituents have entered the groundwater; the rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater; and the concentrations of hazardous waste or hazardous waste constituents in the groundwater.

(i) The plan to be submitted under par. (h) shall specify the number, location and depth of wells; the number and analysis frequency of water quality parameters for those hazardous wastes or hazardous waste constituents in the facility; evaluation procedures and groundwater quality, sampling, and analytical methods to be used for determining the source or cause of contamination, including use of any previously-gathered groundwater quality information; site design and construction reports, operating procedures and site history; and a schedule of implementation.

(j) The owner or operator shall implement within 15 days of the department's response to this plan the groundwater quality assessment plan which satisfies the requirements of par. (i) and department concerns and, at a minimum, determine: the source or cause of the contamination; the rate and extent of migration of the hazardous waste and hazardous waste constituents in the groundwater; the concentrations of the hazardous waste or hazardous waste constituents in the groundwater; and short and long-term potential impacts to drinking water supplies and the environment, and proposed conceptual solutions and action to bring under control and correct the environmental damage.

(k) The owner or operator shall make the first determination under par. (j) in accordance with the time schedule approved by the department, and, within 15 days after that determination, submit to the department a written report containing an assessment of the groundwater quality, cause and effect of contamination and conceptual solutions.

(l) If the owner or operator determines, based on the results of the first determination under par. (j), that no hazardous waste or hazardous

waste constituents from the facility have entered the groundwater, then the owner may reinstate the indicator evaluation program described in sub. (4) (e), (g) and (h) and pars. (a), (c) and (d). If the owner or operator reinstates the indicator evaluation program, the department shall be notified in the report submitted under par. (k).

(m) If the owner or operator determines, based on the first determination under par. (j) that hazardous waste or hazardous waste constituents from the facility have entered the groundwater, then the owner or operator shall continue to make the determinations required under par. (j) on a quarterly basis until the end of the long-term care period for the facility, or until the groundwater quality problems at the site have been corrected as provided for in the final plans; shall submit a final plan for solutions and corrective action to control and correct the environmental damage within 30 days after the department's review of submittals under par. (k) and shall implement the final plans for solutions and corrective actions and other emergency procedures including department review comments within 15 days after the department's review of the final plans.

(n) Notwithstanding any other provision of sub. (3) (a) any groundwater quality assessment to satisfy the requirements of par. (j) which is initiated prior to final closure of the facility shall be completed and reported in accordance with par. (k).

(o) At least annually the owner or operator shall evaluate the data on groundwater surface elevations obtained under sub. (4) (e) to determine whether the requirements under sub. (4) (a) and (b) for locating the monitoring wells continue to be satisfied. If the evaluation shows that sub. (4) (a) and (b) are no longer satisfied, the owner or operator shall immediately notify the department and modify the number, location, or depth of the monitoring wells to bring the groundwater monitoring system into compliance with this requirement.

(p) The owner or operator of the site or facility shall be required to periodically submit a report analyzing the effectiveness of the groundwater monitoring system and changes in groundwater quality during site operation and until termination of the long-term care period. The frequency of reporting shall be established as a part of the plan approval process and shall be at a minimum 5-year interval.

(q) An owner or operator of a site or facility shall be required to retain, until the end of the long-term care period, all records of monitoring and analytical activities and data, including all original strip chart recordings and instrumentation, calibration, and maintenance records. The owner or operator shall inform the department prior to discarding any groundwater information.

(6) NEW FACILITY MONITORING REQUIREMENTS. The following monitoring requirements apply to all landfills and surface impoundments which accepted hazardous wastes or are proposing to accept wastes after January 25, 1983 and to other facilities where required under s. NR 181.08 or 181.43.

(a) *Required programs.* 1. Owners and operators subject to this subsection shall conduct a monitoring and response program as follows:

a. Except as provided in par. (i)9., whenever hazardous constituents specified under par. (c) from a regulated unit are detected at or beyond the boundary of the design management zone under par.(e), the owner or operator shall institute a compliance monitoring program under par. (j);

b. Except as provided in par. (j)10., whenever the groundwater protection standard under par. (b) is exceeded, the owner or operator shall institute a corrective action program under par. (k);

c. Except as provided in par. (j)10., whenever hazardous constituents under par. (c) from a regulated unit exceed concentration limits under par. (d) in groundwater at or beyond the boundary of the design management zone under par. (e), the owner or operator shall institute a corrective action program under par. (k); or

d. In all other cases, the owner or operator shall institute a detection monitoring program under par. (i).

2. The regulations under this subsection apply during the active life of the regulated unit (including the closure period). After closure of the regulated unit, the regulations in this subsection:

a. Apply during the long-term care period if the owner or operator is conducting a detection monitoring program under par. (i); or

b. Apply during the compliance period under par. (f) if the owner or operator is conducting a compliance monitoring program under par. (j) or a corrective action program under par. (k).

3. The department shall specify the specific elements of the monitoring and response program, which may include one or more of the programs identified in subd. 1. as may be necessary to protect human health and the environment. In deciding whether to require the owner or operator to be prepared to institute a particular program, the department shall consider the potential adverse effects on human health and the environment that might occur before final administrative action on a plan modification application to incorporate such a program could be taken. The department shall specify the circumstances under which each of the programs will be required.

(b) *Groundwater protection standard.* The owner or operator shall comply with conditions specified by the department that are designed to ensure that hazardous constituents under par. (c) entering the groundwater from a regulated unit do not exceed the concentration limits under par. (d) in any aquifer underlying the waste management area at or beyond the boundary of the design management zone under par. (e) during the compliance period under par. (f). The department shall establish this groundwater protection standard when hazardous constituents have entered the groundwater from a regulated unit. In no case may a standard established under this subsection be less stringent than that established by rule under ch. 160, Stats.

Note: As of July 1, 1985, groundwater standards had not been adopted under ch. 160, Stats.

(c) *Hazardous constituents.* 1. The department shall specify the hazardous constituents to which the groundwater protection standard of par. (b) applies. Hazardous constituents are constituents identified in table VI of s. NR 181.16 (4) that have been detected in groundwater in any aquifer underlying a regulated unit and that are reasonably expected

to be in or derived from waste contained in a regulated unit, unless the department has excluded them under subd. 2.

2. The department may exclude a table VI constituent from the list of hazardous constituents specified in subd. 1 if it finds that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment. In deciding whether to exclude a constituent, the department shall consider the following:

a. Potential adverse effects on groundwater quality, considering:

1) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

2) The hydrogeological characteristics of the facility and surrounding land;

3) The quantity of groundwater and the direction of groundwater flow;

4) The proximity and withdrawal rates of groundwater users;

5) The current and future uses of groundwater in the area;

6) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

7) The potential for health risks causes by human exposure to waste constituents;

8) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

9) The persistence and permanence of the potential adverse effects; and

b. Potential adverse effects on hydraulically-connected surface water quality, considering:

1) The volume and physical and chemical characteristics of the waste in the regulated unit;

2) The hydrogeological characteristics of the facility and surrounding lands;

3) The quantity and quality of groundwater, and the direction of groundwater flow;

4) The patterns of rainfall in the region;

5) The proximity of the regulated unit to surface waters;

6) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

7) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

8) The potential for health risks caused by human exposure to waste constituents;

9) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

10) The persistence and permanence of the potential adverse effects.

c. In no case may an exemption be granted to allow a violation of ch. 160, Stats., or rules adopted by the department under that chapter.

3. In making any determination under subd. 2. about the use of groundwater in the area around the facility, the department may consider the uses and potential uses of any aquifers which could be impacted and the maintenance of the quality of the aquifers so those uses or potential uses are not threatened.

(d) *Concentration limits.* 1. The department shall specify concentration limits in the groundwater for the hazardous constituents identified under par. (c). The concentration that is specified for a hazardous constituent:

a. May not exceed the background level of the constituent in the groundwater at the time that limit is specified in the department approval;

b. For any of the constituents listed in table XI, may not exceed the respective value given in that table if the background level of the constituent is below the value given in table XI; or

c. May not exceed an alternate concentration limit established by the department under subd. 2; and

d. May not exceed the standards established by rule under ch. 160, Stats.

Note: As of July 1, 1985, groundwater standards had not been adopted under ch. 160, Stats.

Table XI — MAXIMUM CONCENTRATION OF CONSTITUENTS FOR GROUNDWATER PROTECTION

Constituent	Maximum concentration[1]
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin (1,2,3,4,10, 10-hexachloro- 1,7-epoxy-1,4,4a,5,6,7,8,9a-octahydro-1, 4-endo, endo-5,8,-dimethano naphthalene)	0.0002
Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.004
Methoxychlor (1,1,1-Trichloro-2,2-bis (p-methoxyphenylethane)	0.1
Toxaphene ($C_{10}H_{10}C_6$, Technical chlorinated camphene, 67-69 percent chlorine)	0.005
2, 4-D (2,4-Dichlorophenoxyacetic acid)	0.1
2,4,5-TP Silvex (2,4,5-Trichlorophenoxy-propionic acid)	0.01

[1] Miligrams per liter.

2. The department may establish an alternate concentration limit for a hazardous constituent if it finds that the constituent will not pose a substantial present or potential hazard to human health or the environment provided that the alternate concentration limit is not exceeded. In establishing alternate concentration limits, the department shall consider the factors listed under par. (c)2. In no case may an alternate concentration limit be established which is inconsistent with ch. 160, Stats., or rules adopted by the department under that chapter.

(e) *Design management zone.* 1. The department shall specify the boundary of the design management zone at or beyond which the groundwater protection standard of par. (b) applies and at which monitoring shall be conducted. The boundary of the design management zone is a vertical surface located at the limit of the waste management area that extends down through any aquifer underlying any regulated unit.

2. The waste management area is the area which waste will be placed on during the active life of a regulated unit projected in the horizontal plane.

3. The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit.

4. If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

(f) *Compliance period.* 1. The department shall specify the compliance period during which the groundwater protection standard of par. (b) applies. The compliance period is the number of years equal to the active life of the waste management area, including any waste management activity prior to permitting and the closure period. The compliance period begins when the owner or operator initiates a compliance monitoring program meeting the requirements of par. (j).

2. If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in subd. 1., the compliance period is extended until the owner or operator can demonstrate that the groundwater protection standard of par. (b) has not been exceeded for a period of 3 consecutive years.

3. If the compliance period ends before the long-term care period is completed, the owner or operator shall return to detection monitoring as outline in par. (1).

(g) *Determining background water quality.* Where appropriate, the groundwater monitoring program shall establish background groundwater quality for each of the hazardous constituents or monitoring parameters or constituents specified in the plan approval or license.

1. In the detection monitoring program under par. (i), background groundwater quality for a monitoring parameter or constituent shall be based on data from quarterly sampling of all wells for one year prior to accepting waste.

2. In the compliance monitoring program under par. (j), background groundwater quality for a hazardous constituent shall be based on data from upgradient wells that:

a. Is available before the plan approval or license is issued;

b. Accounts for measurement errors in sampling and analysis; and

c. Accounts, to the extent feasible, for seasonal fluctuations in background groundwater quality if such fluctuations are expected to affect the concentration of the hazardous constituent.

3. Background quality may be based on sampling of wells that are not upgradient from the waste management area where:

a. Hydrogeologic conditions do not allow the owner or operator to determine what wells are upgradient; or

b. Sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells.

4. In developing the data base used to determine a background value for each parameter or constituent, the owner or operator shall take a minimum of one sample from each well and a minimum of 4 samples from

the entire system used to determine background groundwater quality, each time the system is sampled.

(h) *Statistical procedures.* The owner or operator shall use the following statistical procedure in determining whether background values or concentration limits have been exceeded:

1. If, in a detection monitoring program, the level of a constituent at or beyond the boundary of the design management zone is to be compared to the constituent's background value and that background value has a sample coefficient of variation less than 1.00:

a. The owner or operator shall take at least 4 portions from a sample at each well at or beyond the design management zone and determine whether the difference between the mean of the constituent at each well (using all portions taken) and the background value for the constituent is significant at the 0.05 level using the Cochran's approximation to the Behrens-Fisher student's t-test. If the test indicates that the difference is significant, the owner or operator shall repeat the same procedure (with at least the same number of portions as used in the first test) with a fresh sample from the monitoring well. If this second round of analyses indicates that the difference is significant, the owner or operator shall conclude that a statistically significant change has occurred; or

b. The owner or operator may use an equivalent statistical procedure for determining whether a statistically significant change has occurred. The department will specify such a procedure if it finds that the alternative procedure reasonably balances the probability of falsely identifying a noncontaminating regulated unit and the probability of failing to identify a contaminating regulated unit in a manner that is comparable to that of the statistical procedure described in subpar. a.

2. In all other situations in a detection monitoring program and in a compliance monitoring program, the owner or operator shall use a statistical procedure providing reasonable confidence that the migration of hazardous constituents from a regulated unit into and through the aquifer will be indicated. The department shall specify a statistical procedure that it finds:

a. Is appropriate for the distribution of the data used to establish background values or concentrations limits; and

b. Provides a reasonable balance between the probability of falsely identifying a noncontaminating regulated unit and the probability of failing to identify a contaminating regulated unit.

(i) *Detection monitoring program.* An owner or operator required to establish a detection monitoring program under this paragraph shall, at a minimum, have the following responsibilities:

1. The owner or operator shall monitor for parameters listed under sub. (5)(a), waste constituents, or reaction products, such as products produced by reactions between waste types and between leachate and soil, that provide a reliable indiction of the presence of hazardous constituents in groundwater. The department shall specify the paramters or constituents to be monitored after considering the following factors:

a. The types, quantities, and concentrations of constituents in wastes managed at the regulated unit;

b. The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

c. The detectability of indicator parameters, waste constituents, and reaction products in groundwater; and

d. The concentrations or values and coefficients of variation of proposed monitoring parametes or constituents in the groundwater background.

2. The owner or operator shall install a groundwater monitoring system at the boundry of the design management zone as specified under par. (e). The groundwater monitoring system shall comply with sub. (4).

3. The owner or operator shall establish a background value for each monitoring parameter or constituent specified in the plan of operation approval pursuant to par. (i)1. The plan of operation approval will specify the background values for each parameter or specify the procedures to be used to calculate the background values.

a. The owner or operator shall comply with par. (g) in developing the data base used to determine background values.

b. The owner or operator shall tabulate background values for the determination of statistically significant increases under par. (h).

c. In taking samples used in the determination of background values, the owner or operator shall use a groundwater monitoring system that complies with sub. (4).

4. The owner or operator shall determine groundwater quality at each monitoring well at least quarterly during the active life of a regulated unit (including the closure period) and the long-term care period. The owner or operator shall tabulate the groundwater quality at each monitoring well for the determination of statistically significant increases under par. (h).

5. The owner or operator shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

6. The owner or operator shall use procedures and methods for sampling and analysis that meet the requirements of sub. (4)(d) and (h).

7. The owner or operator shall determine whether there is a statistically significant increase over background values for any parameter of constituent specified in the plan of operation approval each time the owner or operator determines groundwater quality under par. (i)4.

a. In determining whether a statistically signficant increase has occurred, the owner or operator shall compare the groundwater quality at each monitoring well for each parameter or constituent to the background value for that parameter or constituent, according to the statistical procedure specified in the plan approval or license under par. (h).

b. The owner or operator shall determine whether there has been a statistically significant increase at each monitoring well within 30 days after completion of sampling. The department may specify a different time period after considering the complexity of the statistical test and

the availability of laboratory facilities to perform the analysis of groundwater samples through a plan modification.

8. If the owner or operator determines, pursuant to par. (g)1., that there is a statistically significant increase for parameters or constituents specified pursuant to par. (i)1. at any monitoring well, the owner or operator shall:

a. Notify the department of this finding in writing within 7 days. The notification shall indicate what parameters or constituents have shown statistically significant increases;

b. Immediately sample the groundwater in all monitoring wells and determine the concentration of all constituents identified in table VI of s. NR 181.16(4) that are present in groundwater;

c. Establish a background value for each table VI constituent that has been found under subpar. b. as follows:

1) The owner or operator shall comply with par. (g) in developing the data base used to determine background values;

2) The owner or operator shall tabulate background values for the determination of statistically significant increases under par. (h); and

3) The owner or operator shall use a groundwater monitoring system that complies with sub. (4) in taking samples used in the determination of background values;

d. Within 90 days, submit to the department an application for a plan modification to establish a compliance monitoring program meeting the requirements of par. (j). The application shall include the following information:

1) An identification of the concentration of any table VI constituents found in the groundwater at each monitoring well;

2) Any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of par. (j), including wells, monitoring frequency, sampling and analysis procedures or methods, or statistical procedures.

3) For each hazardous constituent found in groundwater, a proposed concentration limit under par. (d)1.a. or b. or a notice of intent to seek an alternative concentration limit under par. (d)2. and

e. Within 180 days, submit to the department all data necessary to justify an alternative concentration limit sought under par. (d)2. and an engineering feasibility plan for a corrective action program necessary to meet the requirements of par. (k) unless:

1) All hazardous constituents identified under subpar. b. are listed in table XI and their concentrations do not exceed the respective values given in that table; or

2) The owner or operator has sought an alternative concentration limit under par. (d)2. for every hazardous constituent identified under subpar. b.

9. If the owner or operator determines, pursuant to subd. 7., that there is a statistically significant increase of parameters or constituents speci-

fied pursuant to subd. 1. at any monitoring well, the owner or operator may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. While the owner or operator may make a demonstration under this subdivision in addition to, or instead of, submitting a plan modification application under subd. 8.d., the owner or operator is not relieved of the requirement to submit a plan modification application within the time specified in subd. 8.d. unless the demonstration made under this subdivision successfully shows that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis or evaluation. In making a demonstration under this subdivision the owner or operator shall:

a. Notify the department in writing that the owner or operator intends to make a demonstration under this subdivision, within 7 days after determining that a statistically significant increase of parameters or constituents occurred at a monitoring well;

b. Submit, within 90 days, a report to the department which demonstrates that a source other than a regulated unit caused the increased, or that the increase resulted from the error in sampling, analysis, or evaluation;

c. Submit, within 90 days, to the department an application for a plan modification to make any appropriate changes to the detection monitoring program at the facility; and

d. Continue to monitor in accordance with the detection monitoring program established under this paragraph.

10. If the owner or operator determines that the detection monitoring program no longer satisfies the requirements of this paragraph, the owner or operator shall, within 90 days, submit an application for a plan modification to make any appropriate changes to the program.

11. The owner or operator shall assure that monitoring and corrective action measures necessary to achieve compliance with the groundwater protection standard under par. (b) are taken during the term of any plan approval.

(j) *Compliance monitoring program.* An owner or operator required to establish a compliance monitoring program under this paragraph shall, at a minimum have the following responsibilities:

1. The owner or operator shall monitor the groundwater to determine whether regulated units are in compliance with the groundwater protection standard under par. (b). The department shall specify the groundwater protection standard including:

a. A list of the hazardous constituents under par. (c).

b. Concentration limits under par. (d) for each of those hazardous constituents;

c. The boundary of the design management zone under par. (e); and

d. The compliance period under par. (f).

2. The owner or operator shall install a groundwater monitoring system at the boundary of the design management zone as specified under par. (e). The groundwater monitoring system shall comply with sub. (4).

3. Where a concentration limit established under subpar. b. is based on background groundwater quality, the department shall specify the concentration limit as follows:

a. If there is a high temporal correlation between upgradient and downgradient concentrations of the hazardous constituents, the owner or operator may establish the concentration limit through sampling at upgradient wells each time groundwater is sampled. The department may specify the procedures used for determining the concentration limit in this manner. In all other cases, the concentration of the hazardous constituents shall be the mean of the pooled data on the concentration of the hazardous constituent.

b. If a hazardous constituent is identified on table XI under par. (d) and the difference between the respective concentration limit in table XI and the background value of that constituent under par. (g) is not statistically significnt, the owner or operator shall use the background value of the constituent as the concentration limit. In determining whether this difference is statistically significant, the owner or operator shall use a statistical procedure providing reasonable confidence that a real difference will be indicated. The statistical procedure shall:

1) Be appropriate for the distribution of the data used to establish background values; and

2) Provide a reasonable balance between the probability of falsely identifying a significant difference and the probability of failing to identify a significant difference.

c. The owner or operator shall:

1) Comply with par. (g) in developing the data base used to determine background values;

2) Tabulate background values for the determination of statistically significant increases under par. (h); and

3) Use a groundwater monitoring system that complies with sub. (4).

4. The owner or operator shall determine the concentration of hazardous constituents in groundwater at each monitoring well at least quarterly during the compliance period. The owner or operator shall tabulate the concentration at each monitoring well for the determination of statistically significant increases under par. (h).

5. The owner or operator shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

6. The owner or operator shall analyze samples from all monitoring wells for all constituents contained in table VI of s. NR 181.16(4) at least annually to determine whether additional hazardous constituents are present in the uppermost aquifer. If the owner or operator finds table VI constituents in the groundwater that are not identified in the plan approval or license as hazardous constituents, the owner or operator shall report the concentrations of these additional constituents to the department within 7 days after completion of the analysis.

7. The owner or operator shall use procedures and methods for sampling and analysis that meet the requirements of sub. (4)(d) and (h).

8. The owner or operator shall determine whether there is a statistically significant increase over the concentration limits for any hazardous constituent specified under subd. 1. each time the owner or operator determines the concentration of hazardous constituents in groundwater.

a. In determining whether a statistically significant increase has occurred, the owner or operator shall compare the groundwater quality at each monitoring well for each hazardous constituent to the concentration limit for that constituent according to the statistical procedures specified in the plan approval or license under par. (h).

b. The owner or operator shall determine whether there has been a statistically significant increase at each monitoring well within 30 days after the completion of sampling. The department may specify a different time period after considering the complexity of the statistically test and the availability of laboratory facilities to perform the analysis of groundwater samples through a plan modification.

9. If the owner or operator determines, pursuant to subd. 8., that the groundwater protection standard is being exceeded at any monitoring well, the owner or operator shall:

a. Notify the department of this finding in writing within 7 days. The notification shall indicate what concentration limits have been exceeded.

b. Submit to the department an application for a plan modification to establish a corrective action program meeting the requirements of par. (k) within 180 days, or within 90 days if an engineering feasibility study has been previously submitted to the department under par. (i)8.e. The application shall at a minimum include the following information:

1) A detailed description of corrective actions that will achieve compliance within the groundwater protection standard specified in the permit under subd. 1.; and

2) A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of this paragraph.

10. If the owner or operator determines, pursuant to subd. 8., that the groundwater protection standard is being exceeded at any monitoring well, the owner or operator may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis or evaluation. While the owner or operator may make a demonstration under this subdivision in addition to, or instead of, submitting a plan modification application under subd. 9.b., the owner or operator is not relieved of the requirement to submit a plan modification application within the time specified in subd. 9.b., unless the department finds that the demonstration made under this subdivision does in fact show that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under this subdivision, the owner or operator shall:

a. Notify the department in writing that the owner or operator intends to make a demonstration under this subdivision within 7 days after determining that the groundwater protection standard is being exceeded;

b. Submit, within 90 days, a report to the department which demonstrates that a source other than a regulated unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation;

c. Submit, within 90 days, to the department an application for a plan modification to make any appropriate changes to the compliance monitoring program at the facility; and

d. Continue to monitor in accordance with the compliance monitoring program established under this paragraph.

11. If the owner or operator determines that the compliance monitoring program no longer satisfies the requirements of this paragraph, the owner or operator shall, within 90 days, submit an application for a plan modification to make any appropriate changes to the program.

12. The owner or operator shall assure that monitoring and corrective action measures necessary to achieve compliance with the groundwater protection standard under par. (b) are taken during the term of the department approval.

(k) *Corrective action program.* An owner or operator required to establish a corrective action program under this paragraph shall, at a minimum have the following responsibilities:

1. The owner or operator shall take corrective action to ensure that regulated units are in compliance with the groundwater protection standard under par. (b). The department shall specify the groundwater protection standard including:

a. The list of the hazardous constituents identified under par. (c).

b. The concentration limits under par. (d) for each of those hazardous constituents;

c. The boundary of the design management zone under par. (e); and

d. The compliance period under par. (f).

2. The owner or operator shall implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the boundary of the design management zone by removing the hazardous waste constituents or treating them in place. The department may specify the specific measures that will be taken.

3. The owner or operator shall begin corrective action within a reasonable time period after the groundwater protection standard is exceeded. The department may specify that time period. If a department approval includes a corrective action program in addition to a compliance monitoring program, the department shall specify when the corrective action program will begin and such a requirement will operate instead of par. (j)9.b.

4. In conjunction with a corrective action program, the owner or operator shall establish and implement a groundwater monitoring program

to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for a compliance monitoring program under par. (j) and shall be as effective as that program in determining compliance with the groundwater protection standard under par. (b) and in determining the success of a corrective action program under subd. 5 where appropriate.

5. In addition to the other requirements of this section, the owner or operator shall conduct a corrective action program to remove or treat in place any hazardous constituents under par. (c) that exceed concentration limits under par. (d) in groundwater at or beyond the boundary of the design management zone under par. (e). The department will specify the measures to be taken.

a. Corrective action measures under this paragraph shall be initiated and completed within a reasonable period of time considering the extent of contamination.

b. Corrective action measures under this paragraph may be terminated once the concentration of hazardous constituents under par. (c) is reduced to levels below their respective concentration limits under par. (d).

6. The owner or operator shall continue corrective action measures during the compliance period to the extent necessary to ensure that the groundwater protection standard is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, the owner or operator shall continue that corrective action for as long as necessary to achieve compliance with the groundwater protection standard. The owner or operator may terminate corrective action measures taken beyond the period equal to the active life of the waste management area (including the closure period) if the owner or operator can demonstrate, based on data from the groundwater monitoring program under par. (k)4., that the groundwater protection standard of par. (b) has not been exceeded for a period of 3 consecutive years.

7. The owner or operator shall report in writing to the department of the effectiveness of the corrective action program. The owner or operator shall submit these reports semi-annually.

8. If the owner or operator determines that the corrective action program no longer satisfies the requirements of this section, the owner or operator shall, within 90 days, submit an application for a plan modification to make any appropriate changes to the program.

History: Cr. Register, June, 1985, No. 354, eff. 7-1-85.

Subchapter VI

Plan Submittal and Licensing

NR 181.51 General report and plan submittal requirements. (1) GENERAL REQUIREMENTS. Unless otherwise specified, all submittals for review and approval of any initial site report, feasibility report, plan of operation, construction observation report or closure plan shall include the following:

(a) The review fees specified in s. NR 181.55 (5) in check or money order payable to the department, to be sent to the appropriate district or area office of the department.

(b) A letter detailing the desired department action or response.

(c) Five copies of the plan or report prepared pursuant to the appropriate code section. Two copies shall be submitted to the appropriate department district or area office and 3 copies shall be submitted to the department's bureau of solid waste management. Review time starts when copies are received by the bureau. The plans and reports and all methods and procedures used to prepare them, shall conform to the following:

1. *Preparation.* The submittal shall be under the seal of a registered professional engineer, unless a written exemption is granted by the department.

2. *Investigation.* All technical procedures used to investigate a hazardous waste facility shall be the current standard procedures as specified by the ASTM or the USGS, standard methods for the examination of water or wastewater, or other equivalent or appropriate methods approved by the department. Test procedures used shall be specified. Any deviation from a standard method shall be explained in detail, with reasons provided.

3. *Format.* All submittals shall include:

a. The required technical information as specified in this chapter.

b. Maps, figures, photographs and tables, where applicable, to clarify information or conclusions. The visuals shall be legible. All maps, plan sheets, drawings, isometrics, cross-sections and aerial photographs shall meet the following requirements:

1) Be of appropriate scale to show all required details in sufficient clarity.

2) Be numbered, referenced in the narrative, titled, have a legend of all symbols used, contain horizontal and vertical scales where applicable, and specify drafting or origination dates.

3) Use uniform scales as much as practical.

4) Contain a north arrow.

5) Use USGS datum as basis for all elevations.

6) Plan sheet showing site construction, operation or closure topography shall also show original topography.

7) Plan sheets for hazardous waste facilities shall indicate a survey grid based on monuments established in the field specifically for that purpose.

8) Plan sheets shall be no smaller than 24 inchex × 36 inches. All other information shall be no longer than 24 inches × 36 inches and no smaller than 8½ inches by 11 inches.

9) All cross-sections shall show survey grid location and be referenced to major plan sheets.

c. An appendix listing names of all references, all necessary data, procedures and calculations.

(2) GENERAL FEASIBILITY REPORT REQUIREMENTS. Unless otherwise specified, the following information shall be included in any feasibility report or feasibility and plan of operation report, in addition to the applicable requirements specified in subch. V:

(a) A general description of the facility and a newly completed part A of the application for an EPA hazardous waste permit as required in s. NR 181.53 (3)(a).

(b) Chemical and physical analyses of the hazardous waste to be handled at the facility. At a minimum, these analyses shall contain all the information which must be known to treat, store, or dispose of the wastes properly in accordance with subch. V.

(c) A copy of the waste analysis plan required by s. NR 181.42 (1) (e).

(d) A description of the security procedures and equipment required by s. NR 181.42(3) or a justification demonstrating the reasons for requesting a waiver of this requirement.

(e) A copy of the general inspection schedule required by s. NR 181.42 (7) (b).

(f) A description of procedures, structures, or equipment used at the facility to:

1. Prevent hazards in unloading operations through the use of such equipment as ramps, special forklifts;

2. Prevent runoff from hazardous waste handling areas to other areas of the facility or environment, or to prevent flooding such as berms, dikes, trenches;

3. Prevent contamination of water supplies;

4. Mitigate effects of equipment failure and power outages; and

5. Prevent undue exposure of personnel to hazardous waste such as protective clothing.

(g) A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with s. NR 181.42 (1)(m) including documentation demonstrating compliance with s. NR 181.42 (1) (m)3.

(h) Traffic pattern, estimated volume and control. If applicable, show turns across traffic land and stacking lanes, describe access road and bearing capacity and traffic control signals.

(i) Facility location information:

1. Owners and operators of all facilities shall provide an identification of whether the facility is located within a 100-year floodplain. This identification shall indicate the source of data for such determination and include a copy of the relevant federal insurance administration (FIA) flood map, if used, or the calculations and maps used where an FIA map is not available. Information shall also be provided identifying the 100-year flood level and any other special flooding factors (e.g., wave action)

which shall be considered in designing, constructing, operating, or maintaining the facility to withstand washout from a 100-year flood.

2. Owners and operators of facilities operating under an interim license, variance or waiver located in the 100-year floodplain shall provide the following information:

a. Engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as consequence of a 100-year flood.

b. Structural or other engineering studies showing the design of operational units and flood protection devices such as floodwalls and dikes at the facility and how these will prevent washout.

c. If applicable, and in lieu of subpars. a. and b., a detailed description of procedures to be followed to remove hazardous waste to safety before the facility is flooded, including:

1) Timing of such movement relative to flood levels, including estimated time to move the waste, to show that such movement can be completed before floodwaters reach the facility.

2) A description of the location to which the waste will be moved and demonstration that those facilities will be eligible to receive hazardous waste in accordance with the requirements of this chapter.

3) The planned procedures, equipment, and personnel to be used and the means to ensure that such resources will be availble in time for use.

4) The potential for accidental discharges of the waste during movement.

3. Owners and operators of facilities operating under an interim license, variance or waiver not in compliance with subd. 2. shall provide a plan showing how the facility will be brought into compliance and a schedule for compliance.

Note: As provided in s. NR 181.42 (2)(a), proposed facilities may not be located in the floodplain.

4. Information to demonstrate that the facility meets the locational requirements of s. NR 181.42 (2)(b), (c) and (d) or, if appropriate, a request for an exemption from these requirements according to s. NR 181.05.

(j) An outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the facility in a safe manner as required to demonstrate compliance with s. NR 181.42(5) and a brief description of how training will be designed to meet actual job tasks in accordance with requirements in s. NR 181.42 (5) (a)2.

(k) For facilities where hazardous wastes were disposed of before the submittal of the feasibility report, a copy of the survey plat and record of the type, location and quantity of those wastes, and documentation that this was submitted to the register of deeds, as required by s. NR 181.42 (9)(h).

(l) An existing site condition topographic plan sheet which meets the requirements of s. NR 181.44 (6) (a)2.

(3) RETENTION OF RECORDS. Any person who submits any reports or plans under this section shall keep records of all data used to complete the reports or plans and any supplemental information submitted for a period of at least 3 years from the date the reports or plans are signed under s. NR 181.55(3), sealed under s. NR 181.51 (1) (c)1. or submitted to the department, whichever is later.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; r. (3) (c) 2.a., renum. (intro.) to (3) to be (1) (intro) to (c), cr. (1) (c) 3.b.8), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.52 Termination of regulated activity. Any person who owns or operates a hazardous waste facility and who wishes or is required to terminate the regulated activity shall submit and implement a closure plan which meets the requirements specified in s. NR 181.42(8), as well as the requirements of s. NR 181.43(9) for storage facilities, s. NR 181.44(12) for landfills and surface impoundments, s. NR 181.45(6) for incinerators, s. NR 181.46(6) for treatment facilities, or s. NR 181.47(14) for surface impoundments.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.53 Application for interim license. (1) GENERAL. Except as provided in sub. (2), any person who operates a hazardous waste facility which was in existence on November 19, 1980, which may be authorized by the department, under s. 144.64 (2)(c), Stats., to receive hazardous waste pending the issuance of a hazardous waste facility operating license, may continue the regulated activity prior to the issuance of an operating license only if an interim license application was submitted to the department on or before October 29, 1981.

(2) LATE APPLICATIONS. (a) Except as provided in par. (d), the department may, by granting a written exemption under par. (b), allow a person who did not terminate a regulated activity under s. NR 181.52 and did not complete, sign or submit an interim license application to the department by October 29, 1981 to complete, sign and submit an interim license application to the department after that date, provided that the following conditions are met:

1. The facility for which the application is prepared was in existence on November 19, 1980; and

2.a. Prior to July 1, 1985, the owner and operator of the facility for which the application is prepared have submitted, to the EPA, part A of the application for an EPA hazardous waste permit, as required under the resource conservation and recovery act and have qualified for interim status, or have been allowed to continue to operate by a compliance order issued by EPA under 42 USC 6928 (a);

b. The facility for which the application is prepared is exempt from permitting or has a final permit under the resource conservation and recovery act; or

c. The requirements of par. (c) are met.

(b) The department shall grant or deny any request for an exemption under par. (a) within 45 business days of receipt of such a request. If the department denies the exemption request under par. (a), the owner or operator of the facility shall terminate the regulated activity in accordance with s. NR 181.52. If the department grants the exemption under

par. (a), the owner and operator of the exempted facility shall complete, sign and submit an interim license application to the department, in accordance with sub. (3), within 30 days after the owner or operator is notified that the exemption is granted, and the owner or operator of the exempted facility shall:

1. Submit to the department proof of financial responsibility for closure, and if applicable, long term care, as required by s. NR 181.42(10), within 60 days after the owner or operator is notified that the exemption is granted;

2. Submit to the department a signed duplicate original of the hazardous waste facility liability endorsement or a certificate of liability insurance, for each insurance policy, as required by s. NR 181.42 (11), within 180 days after the owner or operator is notified that the exemption is granted.

(c) Facilities which do not meet the conditions of par. (a)2.a. or b. shall be required to submit the reports and plans needed for the issuance of an operating license as specified in subch. V according to a compliance schedule established by the department as a condition of an interim license, if the interim license application submitted under par. (b) is approved.

(d) Except as provided in s. NR 181.21(6), the owner and operator of an underground storage tank facility which was exempt from the requirement to be licensed as a storage facility under s. NR 181.21(5) as that section existed prior to July 1, 1985 shall sign and submit an interim license application to the department in accordance with sub. (3), by October 1, 1985, provided that the facility was in existence on November 19, 1980, or submit a variance application in accordance with NR 181.55 (10)(a) and (d). The owner or operator of such a facility shall:

1. Submit to the department proof of financial responsibility for closure, and if applicable, long term care, as required by s. NR 181.42 (10), by October 1, 1985; and

2. Submit to the department a signed duplicate original of the hazardous waste facility liability endorsement of a certificate of liability insurance, for each insurance policy, as required by s. NR 181.42(11), by January 1, 1986.

(3) The interim license application shall contain the following:

(a) Two current part A forms of the application for an EPA hazardous waste permit, as required under the resource conservation and recovery act, including all the required maps, drawings and photographs.

Note: The part A application form and instructions may be obtained from the department of natural resources district offices at no charge.

(b) Two copies of the facility's closure plan as required in s. NR 181.42 (8) and the most recent closure cost estimate as required in s. NR 181.42 (10) (d).

(c) Two copies of the facility's long term care plan as required in s. NR 181.42 (9) and the most recent long term care cost estimate as required in s. NR 181.42 (10) (d).

(d) Two copies of the facility's contingency plan as required in s. NR 181.42 (4).

(e) The required fee as specified in s. NR 181.55 (5).

(f) The department may require that the owner or operator submit copies of all available drawings, specifications, any prior plan approval letters, any applicable solid waste licenses and license applications, monitoring data, including groundwater monitoring, waste analysis, waste analysis plans and any other existing information which is necessary to complete the interim license application. The department shall request such information in writing at the time the application is requested under sub.(2), or after the application is received. The department shall specify a reasonable amount of time for the owner or operator to submit such information.

(g) The department may require that the interim license application include a description of how the facility meets the interim license requirements of sub. (4). The department may also gather the necessary information to make a determination of how the facility complies through an inspection.

(h) The application shall be submitted under the signature of the owner and operator as specified in s. NR 181.55(3).

(4) INTERIM LICENSE REQUIREMENTS. No person may operate or maintain a hazardous waste facility after an interim license application has been submitted to the department under this section, or after an interim license has been granted to the facility under s. NR 181.54, unless the facility meets the following requirements which shall apply until an operating license under s. NR 181.55 is issued, where applicable to the type of hazardous waste management that takes place at the facility:

(a) Environmental and health standards in s. NR 181.41.

(b) Underground injection and land treatment requirements in s. NR 181.415.

(c) Identification number requirements in s. NR 181.42 (1) (b).

(d) Notice requirements in s. NR 181.42 (1) (c).

(e) General waste analysis requirements in s. NR 181.42 (1) (d).

(f) Waste analysis plan requirements in s. NR 181.42 (1) (e).

(g) Open burning and detonation requirements in s. NR 181.42 (1) (f).

(h) Generation and removal requirements in s. NR 181.42 (1) (i).

(i) Closure of noncomplying portions requirement in s. NR 181.42 (1) (j).

(j) General requirements for ignitable, reactive or incompatible wastes in s. NR 181.42 (1) (m) except s. NR 181.42 (1) (m)3.

(k) General site selection requirements in s. NR 181.42 (2).

(l) Security requirements in s. NR 181.42 (3).

(m) Contingency plan requirements in s. NR 181.42 (4).

(n) Personnel training requirements in s. NR 181.42 (5).

(o) Manifest, recordkeeping and reporting requirements in s. NR 181.42 (6).

(p) General inspection requirements in s. NR 181.42 (7).

(q) Closure requirements in ss. NR 181.42 (8), 181.43 (10), 181.45 (6), 181.46 (6) and 181.49 (14).

(r) Long term care requirements in ss. NR 181.42 (9), 181.44 (14) and 181.49 (15).

(s) Proof of financial responsibility for closure, and if applicable, long term care requirements in s. NR 181.42 (10), except as provided in sub. (5).

(t) Facility liability requirements in s. NR 181.42 (11), except as provided in sub. (6).

(u) General storage standards in s. NR 181.43 (6), except s. NR 181.43 (6) (d).

(v) Tank storage standards in s. NR 181.43 (7), except s. NR 181.43 (7) (a)2. and 4. and (b) through (e).

(w) Container storage standards in s. NR 181.43 (8).

(x) Waste pile storage standards in s. NR 181.43 (9), except s. NR 181.43 (9) (a) and, notwithstanding this exception, s. NR 181.44 (10) (c).

(y) Landfill and surface impoundment operational requirements in s. NR 181.44 (9) and (10), except as provided in par. (ze) for surface impoundments with discharges regulated under ch. 147, Stats. In addition, landfills and surface impoundments are not required to comply with s. NR 181.44 (10) (h), (y), (zg) and (zh).

(z) Landfill and surface impoundment closure requirements in s. NR 181.44 (12) and (13).

(za) Landfill and surface impoundment long-term care requirements in s. NR 181.44 (14).

(zb) Landfill and surface inpoundment groundwater, leachate and other monitoring requirements in s. NR 181.49. Pursuant to s. NR 181.08, the department may require the owner or operator of other hazardous waste facilities, including treatment and storage facilities, to comply with all or part of the requirements of s. NR 181.49.

(zc) Incinerator operational requirements in s. NR 181.45 (4) (c), (d), (e) and (k)4.

(zd) Treatment facility operational requirements in s. NR 181.46 (5), except s. NR 181.46 (5) (a), (d) and (e). For the purpose of this subsection, these treatment facility operational requirements shall apply to incinerators.

(ze) For surface impoundments with discharges regulated under ch. 147, Stats., surface impoundment operational requirements in s. NR 181.47 (4), (10) and (11), except s. NR 181.47 (11) (b). In addition, such

facilities are not required to comply with s. NR 181.44 (10) (e), (f), (g), (h), (i), (j), (k), (l), (m), (n), (o), (p), (w), (x) and (y).

(5) PROOF OF FINANCIAL RESPONSIBILITY. Except as provided in sub. (2), an owner or operator who submits an interim license application to the department, shall submit to the department proof of financial responsibility for closure, and if applicable, long-term care, as required by s. NR 181.42 (10), by November 28, 1981.

(6) LIABILITY INSURANCE. Except as provided in sub. (2), an owner or operator who has submitted an interim license application to the department shall submit to the department a signed duplicate original of the hazardous waste facility liability endorsement or a certificate of liability insurance, for each insurance policy, as required by s. NR 181.42 (11), within 180 days after July 1, 1985, or within the time periods specified in s. NR 181.47 (4) (p) for surface impoundments with discharges regulated under ch. 147, Stats.

(7) The submission of an interim license application to the department, by October 29, 1981 shall allow an existing hazardous waste facility to continue to operate until the applicant is advised that the interim license application has been approved or disapproved.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (1), r. and recr. (2) and (3) (a) to (h), renum. (4) and (5) to be (5) and (7) and am. (7), cr. (4) and (6), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.54 Advisement of interim license. (1) The department shall advise the applicant of the receipt of a complete interim license application within 20 business days and shall notify the applicant that the application has been approved or disapproved within 130 business days of the date on which a complete application is received by the department.

(2) Advisement of the approval of an interim license application shall signify the beginning of the interim license period, and shall, unless the interim license is later revoked, allow an operator of an existing hazardous waste facility or operational unit within a facility to operate the facility until a final determination on the issuance of an operating license under s. NR 181.55 is made by the department. The owner or operator of a hazardous waste facility or operational unit within a facility shall terminate the regulated activity and close the facility or operational unit in accordance with s. NR 181.52 if its interim license application is disapproved, if its interim license is revoked prior to the issuance of an operating license under s. NR 181.55, if any of the reports or plans required under sub. (4) or s. NR 181.53 (2) (c) are disapproved or an application for an operating license is denied. The department may issue an interim license for one or more operational units within a facility without affecting the license status of any other operational unit within that facility.

(3) The owner or operator of a hazardous waste disposal facility operating under an interim license shall pay to the department waste management fund fees as specified in s. NR 181.42 (12).

(4) Except as provided in s. NR 181.53 (2) (c), dates for the submission of reports and plans needed for the issuance of an operating license as specified in subch. V may be established by the department in a compliance schedule at any time during the interim license period. However, the department shall provide at least 6 months notice for the submission of all plans and reports required in the compliance schedule.

(5) The owner or operator of a hazardous waste facility operating under an interim license shall submit to the department a signed duplicate original of the hazardous waste facility liability endorsement or a certificate of liability insurance, for each insurance policy, as required by s. NR 181.42 (11), within 180 days after July 1, 1985, or within the time periods specified in s. NR 181.47 (4) (p) for surface impoundments with discharges regulated under ch. 147, Stats.

(6) The owner or operator of a facility which has not obtained an interim license due to the withdrawal or denial of the interim license application or which no longer has an interim license or a variance and has not received a written determination from the department that closure was completed in accordance with s. NR 181.52 shall either:

(a) Submit the signed duplicate original of the hazardous waste facility liability endorsement or the certificate of liability insurance, within 180 days after June 1, 1985, or within the time periods specified in s. NR 181.47 (4) (p) for surface impoundments with discharges regulated under ch. 147, Stats.; or

(b) Apply for department authorization to cancel the liability insurance requirement in accordance with s. NR 181.42 (11) (e), provided that closure has been completed in accordance with s. NR 181.52 within 180 days after July 1, 1985.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (1), (2) and (4), cr. (5) and (6), Register, June, 1985, No. 354, eff. 7-1-85.

NR 181.55 License requirements. (1) APPLICATION FOR A HAZARDOUS WASTE TRANSPORTATION SERVICE LICENSE. (a) An application for a transportation service license shall be submitted on forms supplied by the department and shall be accompanied by the fee specified in sub. (5).

(b) Each location at which a person transporting hazardous waste bases transport vehicles, such as one generation site at which transport vehicles are based which will transport hazardous wastes to or from other generation sites owned by the same person, or a centralized transport vehicle terminal, shall be licensed as a separate transportation service. An application form and fee shall be submitted to the district office of the department in the district where the transportation service is located. A person who transports hazardous waste into or through Wisconsin, but whose operation is based out-of-state, shall submit an application form and fee for a transportation service license in the district where the hazardous waste transportation activity is concentrated.

(c) The department shall notify the applicant that the application for a hazardous waste transportation service license has been approved or denied within 65 business days after the application is received by the department.

(2) APPLICATION FOR A HAZARDOUS WASTE TREATMENT, STORAGE OR DISPOSAL FACILITY OPERATING LICENSE. (a) The initial operating license for a facility or operational unit within a facility may not be issued until all of the plans, reports and requirements of subch. V have been satisfied and approved by the department. Such plans, reports and requirements include, but are not limited to, items such as initial site reports, feasibility reports, plans of operation, construction observation reports, closure and long-term care plans, contingency plans and emergency procedures, financial requirements for closure and long-term care and facility liabil-

ity requirements. The department may issue an initial operating license for one or more operational units within a facility without affecting the license status of any other operational unit within that facility.

(b) An application for an operating license shall be submitted on forms supplied by the department and shall be accompanied by the fee specified in sub. (5).

Note: Application forms for licenses may be obtained from the Department of Natural Resources, Bureau of Solid Waste Management, 101 S. Webster St., P.O. Box 8094, Madison, Wisconsin 53708, at no charge.

(3) SIGNATORIES TO LICENSE APPLICATIONS AND REPORTS. (a) All license applications including interim license applications, shall be signed as follows, by both the operator and the owner where a facility is operated by one person and owned by another:

1. For a corporation, by a responsible corporate officer. For the purpose of this subdivision a responsible corporate officer means:

a. A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decisionmaking functions for the corporation; or

b. The manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: The department does not require specific assignments or delegations of authority to responsible corporate officers identified in subpar. 1.a. The department will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the department to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under subpar. 1.b. rather than to specific individuals.

2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

3. For a municipality, state, federal or other public agency, by either a principal executive officer or ranking elected official. For the purposes of this subdivision, a principal executive officer of a federal agency includes:

a. The chief executive officer of the agency; or

b. A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

(b) All reports required by the department, other than manifests, shall be signed by a person designated in par. (a), or by a duly authorized representative of such person if:

1. The authorization is made in writing by the person designated under par. (a);

2. The authorization specifies an individual or position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, superintendent, or position of equivalent responsibility; and

3. The written authorization is submitted to the department.

(c) If an authorization under par. (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of par. (b) shall be submitted to the department prior to or together with any reports to be signed by an authorized representative.

(d) Except as provided in par. (e), any person signing a document under par. (a) or (b) shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted, is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(e) Any person signing a hazardous waste transportation service license application form under sub. (1) (a) shall make the following certification: "I hereby certify that the above information and attachments are accurate and complete."

(4) EFFECT OF A LICENSE; TRANSFER OF LICENSES. (a) The issuance of a license does not authorize any injury to persons or private property, any invasion of other private rights, or any infringement of federal, state, or local law.

(b) Compliance with a license during its term constitutes compliance with ss. 144.60 through 144.74, Stats. However, a license may be revoked during its term or its renewal may be denied for any of the reasons set forth in sub. (7) (a), (b) and (c). A license or a plan approval may be modified for cause, as set forth in sub. (6) (c).

(c) Whenever rights of ownership, possession or operation in a licensed hazardous waste transportation service, or licensed hazardous waste facility, including facilities with interim licenses, are transferred, licensing shall be in accordance with s. 144.444, Stats.

(5) LICENSE PERIODS AND FEES. (a) This subsection is not applicable to interim licenses issued under ss. NR 181.53 and 181.54 except for the fees specified in Table IX and the provisions of par. (e). The applicant shall pay the fee specified for an interim license or a variance under sub. (10) prior to its issuance. These fees shall be paid in addition to any plan review fee required.

(b) The license period shall be 2 years beginning on October 1 and terminating on September 30, 2 years later. The license period for disposal facilities shall begin on October 1 of even-numbered years. The license period for storage or treatment facilities, transportation services and incinerators shall begin on October 1 of odd-numbered years.

(c) Application for initial licensing of a new hazardous waste facility may be submitted at any time during the year. Fees for initial licensing are proratable. The license period is divided into 4, 6-month periods, with ¼ of the 2-year license fee applied to each period. The applicant for initial licensing of a facility shall submit the appropriate fees as shown in Table IX, "Fee Schedule". Proof of financial responsibility as specified in

s. NR 181.42 (10) shall be included with the initial license application for hazardous waste facilities with plans of operation approved under this chapter.

(d) Application for renewal of a license shall be submitted to the department by June 1 preceding the license period being applied for. Applicants failing to submit the renewal application by June 1 shall pay a late processing fee equal to 50% of the renewal fee or $150.00 whichever is less, in addition to the renewal fee. The department shall transmit application forms to renewal applicants by April 1. The department shall review and approve or deny the request for renewal of a license within 90 days after receiving the request or by the date of expiration of the current license, whichever occurs later.

(e) License fees for hazardous waste facilities are not refundable.

(f) Following closure of a hazardous waste disposal facility, the owner or any successor in interest shall be required to have a license during the period of owner responsibility indicated in s. 144.441, Stats. The license shall be issued in accordance with sub. (5) (a) through (e), except that the fee shall be $100.00 per license period.

(g) Except as provided in par. (h), plan approvals and licenses shall be effective for a fixed duration term not to exceed 10 years from the date of the initial operating license issuance. If the licensee chooses to operate or maintain a hazardous waste facility after the duration term ends, then the licensee shall submit, at least 180 days before the end of the duration term, all of the plans and reports which are required before an application for a new operating license may be submitted, as specified in sub. (2) (a) and subch. V. The department may modify the license to change this date under sub. (6) (c).

(h) The department may modify a license to extend the duration term if the licensee has submitted, in a timely and complete manner, all of the reports and plans specified in par. (g). The terms and conditions of the license shall remain in force during the extension period.

(i) The plan review fee specified in table XII shall accompany all plans submitted to the department for approval. Plan review fees are not transferable, proratable or refundable.

Table XII

FEE SCHEDULE

NR 181	Facility Type	License Required	Plan Review Required	Plan Review Fees (1)				License Fees Operating License					
				Feasibility Report and Feasibility and plan of operation report (4)	Plan of Operation	Site Construction Documentation	Closure Plan (5)	0-6 months	6-12 months	12-18 months	18-24 months and 2 yr renewals	Interim License	Variance
.43	Storage	Yes	Yes	500	500	200	200	175	350	525	700	700	350
.435	Small Storage	Yes	Yes	500		200	200	175	350	525	700	700	350
Part IV	Transportation	Yes	No					100	200	300	400		
.44	Landfill	Yes	Yes	10000	10000	1900	1500	5000	10000	15000	20000	20000	
.44 and .47	Surface Impoundment	Yes	Yes	10000	10000	1000	1500	5000	10000	15000	20000	20000	
.45	Incineration (2)	Yes	Yes	1400		300	200	450	900	1350	1800	1800	900
.46	Treatment (2)	Yes	Yes	1400	1400	300	200	450	900	1350	1800	1800	900
	Plan Modification (3)	No	Yes	500	500		500						
.48	Other	Yes	Yes	1400	1400	300		450	900	1350	1800	1800	900

(1) The plan review fees specified in Table XII cover the department's review from initial submittal through approval or denial of the report or plan. An applicant may revise or supplement a report or plan deemed incomplete and resubmit it without paying an additional review fee. The applicant shall pay a plan review fee as specified in Table XII for resubmittal of a plan which has been previously denied or withdrawn after having been determined to be complete. The department may waive any plan review fee if it determines that the total review time is not likely to exceed 4 hours.

(2) The department shall waive the plan review fees and license fees for a recycling facility which is exempt under s. NR 181.19.

(3) A plan modification, as referred to in Table XII, is a submittal which proposes to modify a feasibility report, plan of operation, interim license, variance or closure plan previously approved by the department.

(4) Certain small storage facilities may not be required to submit a feasibility and plan of operation report in accordance with s. NR 181.435 (2). Applicants who submit a feasibility and plan of operation report at the same time for treatment and storage facilities, but not for landfills, surface impoundments and waste piles, shall only pay the feasibility report plan review fee.

(5) Applicants submitting a closure plan with a plan of operation or a feasibility and plan of operation report may not be required to pay the closure plan review fee.

(6) MODIFICATION OF LICENSES AND PLAN APPROVALS; DISTINGUISHING FACILITY MODIFICATIONS FROM EXPANSIONS. (a) No person may expand a hazardous waste facility without first obtaining written approval of the necessary plans and reports required in subch. V. As provided in par. (c)1., all changes which do not constitute expansion are modifications. Pursuant to sub. (8) (e), the department shall advise the owner or operator of an existing facility, in writing, of the receipt and the department's findings on any request for a determination of whether a proposed change constitutes a modification or expansion. The department shall advise the owner or operator, in writing, of whether the request is complete or incomplete within 65 business days after receipt of the request. The department shall advise the owner or operator of its findings within 65 business days after finding the request complete.

(b) Changes which are expansions include, but are not limited to, the following:

1. Material and substantial alterations or additions to a facility or activity, including the addition of any new treatment, storage and disposal process or unit.

2. Increases in the design capacity of any treatment, storage or disposal process or unit.

3. Any addition of any new hazardous waste to the list of hazardous wastes that the facility is authorized by the department to manage. This change may not be considered an expansion if the department determines that the new waste to be managed is not substantially different than any of the wastes which the facility is already authorized to manage, and the addition of the new waste will not significantly affect the facility's operation any other way.

4. Increases in the maximum inventory of waste specified in the facility's closure plan, if the increase causes an increase in the design capacity of any treatment, storage or disposal process or unit.

(c) Licenses, including interim licenses, and plan approvals may be modified either at the request of any interested person, including the licensee, or upon the department's initiative. All requests filed by interested persons shall be in writing and shall contain facts or reasons supporting the request. The department shall review, and approve, deny or deem incomplete, modification requests within 65 business days after receiving the request. The department shall advise, in writing, the person who files the request, and the licensee, if the licensee is a different person, of the receipt of the request and its findings. Licenses and plan approvals may only be modified for the following reasons:

1. The owner or operator proposes to change the facility's operation in such a way so as to not constitute an expansion.

2. The department determines that good cause exists for modification of a compliance schedule at the licensee's request, such as an act of God, strike, flood, or materials shortage or other events over which the licensee has little or no control and for which there is no reasonably available remedy.

3. The department has established that one or more of the conditions in s. 144.44 (3) (d), Stats., exists, necessitating a modification of the design or construction requirements of the facility's plan approval.

4. The operational requirements on which the license, plan approval or interim license were based have been changed by promulgation of amendments or revisions to this chapter.

5. The department has received new information that was not available previously, such as information revealed in monitoring results, reports, plans, submittals, records and inspection results, provided that the cause specified in subd. 6. also exists.

6. The department determines that a modification is necessary in order for the licensee to meet the conditions of the facility's plan approval, the requirements of this chapter, or any of the additional requirements specified in sub. (8) (a).

7. Transference of responsibility has occurred under sub. (4) (c).

(7) REVOCATION OR DENIAL OF LICENSES. (a) A hazardous waste facility operating license may be revoked during its term, or its renewal may be denied, for any one of the following reasons:

1. Failure of the licensee to pay the waste management fees specified in s. NR 181.42 (12) or the license fees specified in sub. (5).

2. Failure to operate the facility in accordance with the facility's approved plan of operation.

3. Failure to comply with the requirements of this chapter.

(b) A hazardous waste transportation service license may be revoked during its term, or its renewal may be denied, for grievous and continuous failure to comply with the requirements of subch. IV.

(c) An interim license may be revoked during its term for any of the following reasons:

1. Failure to comply with the applicable interim license requirements set forth in s. NR 181.53 (4).

2. Failure to submit complete plans or reports required by a compliance schedule within 14 days following the date on which they are due under the schedule.

3. Failure to pay the waste management fund fees specified in s. NR 181.42 (12).

(d) Any person who owns or operates a hazardous waste facility which has had its operating license or interim license denied or revoked under par. (a) or (c) shall close the facility in accordance with s. NR 181.52.

(e) The department may deny or revoke a license, including an interim license for one or more operational units within a facility, without affecting the license status of other operational units.

(f) The department shall review each license, other than interim licenses, every 2 years to determine whether the license shall be revoked for one or more of the reasons listed in par. (a) or (b).

(8) CONDITIONS APPLICABLE TO ALL LICENSES. All of the conditions applicable to a license shall be incorporated into the license either expressly or by reference. The following conditions shall apply to all licenses, including interim licenses:

(a) The licensee shall comply with all conditions of the license, the provisions of ch. 144, Stats., the applicable requirements of this chapter, any plan approval and modifications thereof and any special order and modifications thereof issued by the department, except as otherwise authorized by the department under sub. (9) or (10).

(b) If a licensee wishes to continue an activity regulated by a license after the expiration date of the license, the licensee shall apply for a new license. Section 227.14, Stats., provides: "When a licensee has made timely and sufficient application for the renewal of a license or a new license with reference to any activity of a continuing nature, the existing license does not expire until the application has been finally acted upon by the agency, and, if the application is denied or the terms of the new license are limited, until the last day for seeking review of the agency decision or a later date fixed by order of the reviewing court."

(c) It shall not be a defense for a licensee in an enforcement action that it would have been necessary to halt or reduce the licensed activity in order to maintain compliance with the conditions of the license.

(d) All renewal applications, and all reports or other information submitted to the department by the licensee shall be signed and certified as specified in sub. (3).

(e) For a new facility, the licensee may not commence treatment, storage, or disposal of hazardous waste, and for a facility being modified or expanded the licensee may not treat, store or dispose of hazardous waste in the modified or expanded portion of the facility, until the licensee has received written approval from the department. Changes in the types of hazardous wastes handled or changes in the processes used to treat, store or dispose of hazardous wastes may constitute a facility modification or expansion. The owner or operator shall give prior written notice to the department of any plans to change facility operation so the department can determine whether such a change constitutes a facility modification or expansion. The licensee may not treat, store or dispose of hazardous waste in any newly constructed, modified or expanded portion of a facility, if the department has determined that the construction requires a plan submittal and subsequent approval, until:

1. The requirements of sub. (2) are met for a newly constructed facility;

2. The licensee has submitted to the department, by certified mail or hand delivery, a construction observation report signed by the licensee and sealed by a registered professional engineer, documenting that the construction is in compliance with the license and any department plan approval; and

3.a. The department has inspected the newly constructed, modified or expanded portion of the facility and finds it in compliance with the license and any department plan approval; or

b. The department has notified the licensee in writing that the inspection requirement under subpar. a. is waived.

(f) The licensee shall at all times maintain in good working order and operate efficiently all facilities and systems of treatment or control and related appurtenances which are installed or used by the licensee to achieve compliance with the terms and conditions of the license. Proper

operation and maintenance includes, but is not limited to, effective performance based on designed facility removals, adequate funding, effective management, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.

(g) The licensee shall, upon the request of any officer or employe of the department, allow departmental personnel, at reasonable times and with notice no later than upon arrival, to:

1. Enter the licensee's premises where a regulated facility or activity is located or conducted or where hazardous waste records are kept;

2. Have access to, and copy at reasonable times, records or labels that are being kept;

3. Inspect at reasonable times any facility's equipment, including monitoring equipment, or operations regulated under the license; and

4. Sample or monitor any substance or parameters at any location where a regulated facility or activity is located or conducted, in compliance with the requirements of s. 144.69, Stats.

(h) The licensee shall report to the department any noncompliance which may endanger human health or the environment. The information which is required to be included in a written report under this paragraph shall be provided orally to the appropriate district office of the department within 24 hours from the time the licensee becomes aware of the circumstances. A written report shall be submitted within 5 days of the time the licensee becomes aware of the circumstances. The department may allow the licensee up to 15 days to submit a written report if an extension is requested by the licensee. The written report shall contain:

1. Name, address, and telephone number of the owner or operator.

2. Name, address, and telephone number of the facility.

3. A description of the noncompliance and the period of noncompliance, including exact date and time, and if the noncompliance has not been corrected, the anticipated time the noncompliance is expected to continue.

4. Name and quantity of material involved.

5. The extent of injuries, if any.

6. An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable, including information concerning the release of any substance which may cause contamination of a drinking water supply.

7. Estimated quantity and disposition of recovered material that resulted from the incident.

8. The known or suspected causes of the noncompliance and a statement describing the measures taken to investigate the noncompliance to determine its cause.

9. Steps taken, or planned, to reduce or eliminate and prevent recurrence of the noncompliance.

(i) The licensee shall notify the division of emergency government and comply with the requirements of s. NR 181.42 (4) (c), s. 144.76, Stats., and ch. NR 158 if a discharge of hazardous waste or hazardous substance, or a fire or explosion occurs at the licensed facility.

(j) In the event of noncompliance with the license, the licensee shall take all necessary steps to minimize discharges to the environment, and shall take all necessary steps to minimize any adverse impacts on human health or the environment.

(k) 1. Monitoring results shall be reported at the intervals and format specified in the plan of operation or license.

2. The licensee shall meet all requirements specified in the plan of operation or license concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, including biological monitoring methods, when appropriate.

3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

4. The licensee shall retain records of all monitoring information, including all cablibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this license, and records of all data used to complete the application for this license, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the department at any time. The licensee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations, for the active life of the facility, and for disposal facilities for the long-term care period as well.

5. Records for monitoring information shall include;

a. The date, exact place, and time of sampling or measurements;

b. The individuals who performed the sampling or measurements;

c. The dates analyses were performed;

d. The individuals who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

6. The licensee shall report, at the time monitoring results are submitted, all instances of noncompliance not reported under par. (h). Such reports shall contain the information required in par. (h)1. through 9.

(l) Reports of compliance with, and any progress on, interim and final requirements contained in any compliance schedule under the license shall be submitted no later than 14 days following each schedule date.

(m) The licensee shall furnish information needed to determine whether cause exists to modify, revoke, or to determine compliance with, the license. The licensee shall also furnish to the department, upon request, copies of records required by the license.

(n) The license does not convey any property rights of any sort, or any exclusive privilege.

(o) The following reports required in subch. V shall be submitted to the department:

1. Manifest discrepancy report. If a significant discrepancy in a manifest is discovered, the licensee shall attempt to reconcile the discrepancy. If not resolved within 15 days, the licensee shall submit a report, including a copy of the manifest, to the department as required by s. NR 181.42 (6) (a)6.

2. Unmanifested waste report. An unmanifested waste report shall be submitted to the department within 15 days of receipt of unmanifested waste as required by s. NR 181.42 (6) (c)2.

3. Quarterly report. A quarterly report shall be submitted covering facility activities during the previous reporting quarter as specified in s. NR 181.42 (6) (c)1.

4. Additional reports. Additional reports as specified in s. NR 181.42 (6) (c)3. shall be submitted if necessary.

(p) The licensee shall submit required documentation and take any action which is necessary to ensure protection of human health and the environment. The department may require such documentation or action after inspecting the facility or reviewing any submittals, reports or plans.

(q) The license may be modified or revoked for the reasons outlined in sub. (6) or (7). The submittal of a request by the licensee for license modification or termination, or a notification of planned changes or anticipated noncompliance, does not stay the effectiveness of any license condition.

(r) Where the licensee becomes aware that there was a failure to submit relevant facts in any reports, plans or other information submittal, or that incorrect information was submitted, the licensee shall promptly submit such facts or information to the department.

(s) In addition to the conditions required for all licenses, the department may establish conditions, as required on a case-by-case basis, to ensure compliance with all applicable requirements of this chapter.

(9) WAIVER. Notwithstanding any other provision in this chapter, in the event of an emergency condition threatening public health, safety or welfare or the environment, the department may issue a waiver to an unlicensed facility or a facility licensed under ch. NR 180 or this chapter, to allow treatment, storage or disposal of hazardous waste not covered by a license, to waive compliance with any requirement of ss. 144.60 to 144.74, Stats., or to shorten any time period provided under ss. 144.60 to 144.74, Stats. Such waiver:

(a) May be oral or written. If oral, it shall be followed within 5 business days by written authorization. The applicant who submits a written request for emergency authorization shall be advised, in writing, by the department of approval or disapproval of the request within 15 business days after receipt of the request.

(b) Shall not exceed 90 days in duration.

(c) Shall clearly specify wastes to be received, and the manner and location of their treatment, storage or disposal.

(d) May be revoked by the department at any time if it is determined that revocation is appropriate to protect human health and the environment.

(e) Shall incorporate, to the extent possible and not inconsistent with the emergency situation, all applicable requirements of this chapter.

(10) VARIANCES. (a) Notwithstanding any other provisions of this chapter, where the application for, or compliance with the terms or conditions of, any license issued under this chapter would in the judgment of the department cause undue or unreasonable hardship to any person, the department may issue a variance from the requirements of this chapter and s. 144.64, Stats., if the variance does not result in undue harm to human health or the environment. Such a variance:

1. Shall be issued in written form.

2. May not exceed 5 years in duration.

3. May be renewed or extended only after opportunity for a public hearing on each variance renewal or extension.

4. May be revoked by the department at any time if it is determined that revocation is appropriate to protect human health and the environment.

5. May not be issued for waste piles, surface impoundments, landfills or land treatment facilities.

6. The department may require that the person to whom a variance is issued comply with any appropriate requirements of this chapter, as a condition of issuance, in order to protect human health or the environment.

(b) Except as provided in par. (d), a person who wishes to apply for a variance shall submit to the department a variance application which contains the following minimum information:

1. A statement explaining why the person believes that compliance with a required license would cause undue or unreasonable hardship to any person. For the purposes of this section, "undue or unreasonable hardship" means a hardship which is a result of unusual circumstances, which are not self-created. The delay, inconvenience or expense which are inherent to the facility approval process under s. 144.44, Stats., are not considered to be unusual.

2. A feasibility and plan of operation report, submitted pursuant to s. NR 181.51, which meets the applicable requirements of s. NR 181.435 (3) for small storage facilities which meet the characteristics described in s. NR 181.435 (1) or 181.45 (2) for incinerators.

3. A plan of operation, submitted pursuant to s. NR 181.51, which meets the applicable requirements of s. NR 181.43 (4) for storage facilities or s. NR 181.46 (4) for treatment facilities.

(c) The department may require that the variance application contain the information required in a feasibility report, which meets the applicable requirements of s. NR 181.43 (3) for storage facilities or s. NR 181.46 (3) for treatment facilities. The department may also require that the application contain any additional information which is necessary to

document compliance with any of the apppropriate requirements of subch. V. The applicant is encouraged to contact the department in advance for a determination of what is required under this subdivision. However, the certainty of the department's response will depend on how much information the applicant can provide at the time of the contact.

(d) Except as provided in s. NR 181.21 (6), the owner and operator of an underground storage tank facility which was exempt from the requirement to be licensed as a storage facility under s. NR 181.21 (5) as that section existed prior to July 1, 1985, but was not in existence on November 19, 1980 shall submit a variance application which contains the minimum information required in s. NR 181.53 (3) by October 1, 1985 and shall comply with s. NR 181.53 (2) (d)1. and 2.

(e) The department shall advise the applicant in writing of the receipt and approval or disapproval of any variance application. The department shall advise the applicant for a variance, in writing, of whether the variance application is complete or incomplete within 65 business days after receipt of the variance application. The department shall advise the applicant of the approval or disapproval of the variance within 65 business days after finding the application complete.

History: Cr. Register, July, 1981, No. 307, eff. 8-1-81; am. (5) (a) and r. and recr. table 9, Register, March, 1984, No. 339, eff. 4-1-84; renum. table 9 to be table 12 and am., (8) (p) to be (8) (s), (10) (intro.) to be (10) (a) and am. (a) 2., cr. (1) (c), (3) (e), (4) (c), (5) (g) to (i), (7) (d) to (f), (8) (p) to (r), (9) (e), (10) (a) 5. and 6. and (b) to (e), am. (2) (a), (3) (a) (intro.), 1. and 3. and (d), (4) (a) and (b), (5) (a), (c) and (d), (7) (a) and (c) 1. and 2., (8) (a), (e), (g) 2., h. intro. and 6., (i) to (k), (m) and (n), (9) (intro.) and (a), r. and recr. (6), Register, June, 1985, No. 354, eff. 7-1-85.

APPENDIX I

REPRESENTATIVE SAMPLING METHODS

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Samples collected using the sampling protocols listed below, for sampling waste with properties similar to the indicated materials, will be considered by the department to be representative of the waste:

(1) For extremely viscous liquid — ASTM Standard D140-70

(2) For crushed or powdered material — ASTM Standard D346-75

(3) For soil or rock-like material — ASTM Standard D420-69

(4) For soil-like material — ASTM Standard D1452-65

(5) For fly ash-like material — ASTM Standard D2234-76

Note: The publications containing these standards may be obtained from the:
American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
These publications are available for inspection at the offices of the department, the secretary of state, and the revisor of statutes.

(6) For containerized liquid wastes — "COLIWASA" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846).

(7) For liquid waste in pits, ponds, lagoons, and similar reservoirs. — "Pond Sampler" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846).

Note: This publication may be obtained from:
Superintendent of Documents
Government Printing Office
Washington, DC 20402

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

APPENDIX II

BASIS FOR LISTING HAZARDOUS WASTES

Hazardous Waste Number	Hazardous Constituents for Which Listed
F001	tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorinated fluorocarbons, carbon tetrachloride
F002	tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, o-dichlorobenzene, trichlorofluoromethane
F003	N.A.
F004	cresols and cresylic acid, nitrobenzene
F005	toluene, methyl isobutyl ketone, carbon disulfide, isobutanol, pyridine
F006	cadmium, hexavalent chromium, nickel, cyanide (complexed)
F007	cyanide (salts)
F008	cyanide (salts)
F009	cyanide (salts)
F010	cyanide (salts)
F011	cyanide (salts)
F012	cyanide (complexed)
F019	hexavalent chromium, cyanide (complexed)
F024	chloromethane, dichloromethane, trichloromethane, carbon tetrachloride, chloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, trans-1-2-dichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, pentachloroethane, hexachloroethane, allyl chloride (3-chloropropene), dichloropropane, dichloropropene, 2-chloro-1,3-butadiene, hexachloro-1,3-butadiene, hexachlorocyclopentadiene, benzene, chlorobenzene, dichlorobenzene, 1,2,4-trichlorobenzene,

	tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene
F500	Same as F001 and F002
K001	benz(a)anthracene, benzo(a)pyrene, chrysene, naphthalene, phenol, 2-chlorophenol, 2,4-dimethylphenyl, trichlorphenols, pentachlorophenol, tetrachlorophenols, p-chloro-m-cresol, 2,4-dinitrophenol, creosote, fluoranthene, benzo(b)fluoranthene, indeno (1,2,3-cd) pyrene, dibenz(a)anthracene, acenaphthalene, pentachlorophenol
K002	hexavalent chromium, lead
K003	hexavalent chromium, lead
K004	hexavalent chromium
K005	hexavalent chromium, lead
K006	hexavalent chromium
K007	cyanide (complexed), hexavalent chromium
K008	hexavalent chromium
K009	chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid
K010	chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid, chloroacetaldehyde
K011	acrylonitrile, acetonitrile, hydrocyanic acid
K013	hydrocyanic acid, acrylonitrile, acetonitrile
K014	acetonitrile, acrylamide
K015	benzyl chloride, chlorobenzene, toluene, benzotrichloride
K016	hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene
K017	epichlorohydrin, chloroethers (bis(chloromethyl) ether and bis (2-chloroethyl) ethers), trichloropropane, dichloropropanols
K018	1, 2-dichloroethane, trichloroethylene, hexachlorobutadiene, hexachlorobenzene
K019	ethylene dichloride, 1, 1, 1-trichloroethane, 1, 1, 2-trichloroethane, tetrachloroethanes (1, 1, 2, 2-tetrachloroethane and 1, 1, 1, 2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride
K020	ethylene dichloride, 1, 1, 1-trichloroethane, 1, 1, 2-trichloroethane, tetrachloroethanes (1, 1, 2, 2-tetrachloroethane and 1, 1, 1, 2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride
K021	antimony, carbon tetrachloride, chloroform

K022	phenol, tars (polycyclic aromatic hydrocarbons)
K023	phthalic anhydride, maleic anhydride
K024	phthalic anhydride, 1,4 napthoquinone
K025	meta-dinitrobenzene, 2, 4-dinitrotoluene
K026	paraldehyde, pyridines, 2-picoline
K027	toluene diisocyanate, toluene-2,4-diamine
K028	1, 1, 1-trichloroethane, vinyl chloride
K029	1, 2-dichloroethane, 1, 1, 1-trichloroethane, vinyl chloride, vinylidene chloride, chloroform
K030	hexachlorobenzene, hexachlorobutadiene, hexachloroethane, 1, 1, 1, 2-tetrachloroethane, 1, 1, 2, 2-tetrachloroethane, ethylene dichloride
K031	arsenic
K032	hexachlorocyclopentadiene
K033	hexachlorocyclopentadiene
K034	hexachlorocyclopentadiene
K035	creosote, benzo(b)fluoroanthene, benzo(a)pyrene, chrysene, naphthalene, fluoranthene, indeno(1,2,3-cd)pyrene, benzo(a)anthracene, dibenzo(a)anthracene, acenaphthalene
K036	toluene, phosphorodithioic and phosphorothioic acid esters
K037	toluene, phosphorodithioic and phosphorothioic acid esters
K038	phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters
K039	phosphorodithioic and phosorothioic acid esters
K040	phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters
K041	toxaphene
K042	hexachlorobenzene; ortho-dichlorobenzene
K043	2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol
K044	N.A.
K045	N.A.
K046	lead
K047	N.A.
K048	chromium (VI), lead
K049	chromium (VI), lead
K050	chromium (VI)
K051	chromium (VI), lead
K052	lead
K060	cyanide, naphthalene, phenolic compounds, arsenic
K061	chromium (VI), lead, cadmium
K062	chromium (VI), lead

K069	chromium (VI), lead, cadmium
K071	mercury
K073	chloroform, carbon tetrachloride, hexachloroethane, trichloroethane, tetrachlorethylene, dichloroethylene, 1,1,2,2-tetrachloroethane
K083	aniline, nitrobenzene, diphenylamine, phenylenediamine
K084	arsenic
K085	benzene, dichlorobenzenes, trichlorobenzenes, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, benzyl chloride
K086	chromium (VI), lead
K087	phenol, naphtalene
K093	Phthalic anhydride, maleic anhydride
K094	Phthalic anhydride
K095	1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane
K096	1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane
K097	Chlordane, heptachlor
K098	Toxaphene
K099	2,4-dichlorophenol, 2,4,6-trichlorophenol
K100	Hexavalent chromium, lead, cadmium
K101	Arsenic
K102	Arsenic
K103	Aniline, nitrobenzene, phenylenediamine
K104	Aniline, benzene, diphenylamine, nitrobenzene, phenylenediamine
K105	Benzene, monochlorobenzene, dichlorobenzene, 2,4,6-trichlorophenol
K106	Mercury

N.A. — Waste is hazardous because it meets either the ignitability, corrosivity or reactivity characteristics.