

## Chapter NR 655

## WASTE PILE AND CONTAINMENT BUILDINGS STANDARDS

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**NR 655.01 Purpose.** The purpose of this chapter is to specify the requirements that apply to hazardous waste piles.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91.

**NR 655.02 Applicability.** Except as otherwise provided, this chapter applies to owners and operators of storage or treatment facilities that store or treat hazardous waste in waste piles and in containment buildings. This chapter does not apply to solid waste facilities that store or treat only:

- (1) Non-hazardous solid waste,
- (2) Metallic mining wastes resulting from a mining operation as defined in s. 293.01 (9), Stats., or
- (3) A combination of wastes described in subs. (1) and (2).

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; correction made under s. 13.93 (2m) (b) 1., Stats., Register, August, 1992, No. 440; am. (intro.), (2), r. (3), renum. (4) to (3) and am., Register, May, 1995, No. 473, eff. 6-1-95; **correction made under s. 13.93 (2m) (b) 7., Register, May, 1998, No. 509.**

**NR 655.03 Definitions.** The definitions in s. NR 600.03 apply to this chapter.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91.

**NR 655.05 General.** (1) Except as otherwise provided in s. NR 630.04, no person may maintain or operate a hazardous waste facility that stores or treats hazardous waste in waste piles or in containment buildings unless the person has obtained an interim license, operating license, variance or waiver from the department, in accordance with the requirements of s. NR 600.09 or ch. NR 680.

(2) Unless specifically exempt under s. NR 630.04, the owner or operator of a waste pile or a containment building shall meet the design, construction and operational requirements in ss. NR 655.07 (4) and (5), 655.10, 660.16, 660.17 and 660.18 and the monitoring requirements in ch. NR 635. The department may, in accordance with s. NR 680.04, exempt the owner or operator of a waste pile or a containment building from the requirements of s. NR 660.18, except s. NR 660.18 (3) and ch. NR 635 if the owner or operator of the waste pile or the containment building proposes to design, construct, operate and monitor the waste pile or the containment building in accordance with the following minimum practices:

(a) 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. Containment buildings shall be completely enclosed, self supporting structures that are designed and constructed of manmade materials of sufficient strength and thickness to support the building, the waste contents and any personnel and heavy equipment that operate within the unit and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the waste to which they are exposed; climatic conditions; and the stresses of daily operation, including the movement of equipment and contact of equipment within the containment building walls.

(b) Liquids or materials containing free liquids are not placed in the pile or the containment building.

(c) The pile or the containment building is protected from surface water run-on by the structure or in some other manner.

(d) The pile or the containment building is designed and operated, by means other than wetting, to prevent dispersal of waste by wind.

(e) The pile or the containment building may not generate leachate through decomposition or other reactions.

(f) The pile or the containment building, including its underlying liner, shall be located entirely above the seasonal high groundwater table.

(g) The pile or the containment building shall be underlain by a liner that is designed, constructed and installed to prevent any migration of wastes out of the pile or the containment building into the liner or adjacent subsurface soil or groundwater or surface water at any time during the active life of the waste pile or the containment building, including the closure period. The liner shall be:

1. 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;

2. 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;

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

4. Constructed and operated to provide secondary containment for the waste pile or containment building. No waste pile or containment building may be constructed or operated without secondary containment for the entire unit. The only free liquids allowed in a waste pile or containment building unit are dust suppression liquids required to meet occupational health and safety requirements.

(h) The wastes in the pile or the containment building 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 shall be specified in the inspection plan required in s. NR 630.15 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.

(i) 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 the containment building or to clean and expose the liner surface for inspection.

(j) Throughout the active life of the waste pile or containment building, if the owner or operator detects a condition that could lead to or has caused a release of hazardous waste, the owner or

operator shall repair the condition promptly in accordance with the following procedures:

1. Upon detection of a condition that has led to a release of hazardous waste, the owner or operator shall:

a. Enter a record of the release into the facility operating record;

b. Immediately remove the portion of the waste pile or containment building affected by the release from the service;

c. Determine what steps are needed to repair the containment system, and establish a schedule for accomplishing the repairs; and

d. Notify the department of the condition in writing within 7 days after detecting the condition, and within 14 days, provide a written notice to the department with a description of the steps taken to repair the unit and the schedule for accomplishing the work.

2. The department shall review the information submitted, make a determination regarding whether the containment building must be removed from service completely or partially until repairs and cleanup are complete, and notify the owner or operator of the determination and the underlying reasons in writing.

3. Upon completion of all repairs and cleanup, the owner or operator shall notify the department in writing and provide a verification report signed by a qualified professional engineer that the repairs and cleanup have been completed according to the written plan submitted to the department in accordance with subd. 1.

4. Inspect and record in the facility's operating record, at least every 7 days, data gathered from monitoring or leak detection equipment as well as the waste pile or containment building and the area immediately surrounding the waste pile or containment building to detect signs of releases of hazardous waste. In addition, if a detection monitoring program pursuant to ch. NR 635 has already been established in the plan of operation approval to be complied with only if a leak occurs, the facility shall begin to comply with that program and any other applicable requirements of ch. NR 635 within a period of time specified in the plan of operation approval.

(k) The containment building shall have sufficient controls to prevent fugitive dust emissions to meet the no visible emission standard in s. NR 655.07 (5).

(L) The waste pile or containment building shall be designed and operated to ensure containment and to prevent tracking of materials from the unit by personnel or equipment.

(m) 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 subsection are satisfied.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; am., Register, May, 1995, No. 473, eff. 6-1-95.

#### NR 655.06 Feasibility and plan of operation report.

Unless specifically exempted in s. NR 630.04, no person may establish, construct or expand a hazardous waste pile or containment building or be issued an initial operating license under ch. NR 680 without first obtaining written approval of a feasibility and plan of operation report from the department. The purpose of the feasibility and plan of operation report is to determine whether the site has potential for use as a hazardous waste facility 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 section does not guarantee final licensure. The feasibility report and plan of operation report for a waste pile shall be submitted in accordance with the requirements of ss. 289.24 and 289.30, Stats., and ss. NR 680.05 (1) and 680.06 (3) and shall contain the applicable material required by s. NR 660.09 (1) to (15). The applicant is encouraged to submit an initial site report as outlined in s. NR 660.08 (2). Feasibility and plan of operation report requirements for small storage facilities, that meet the criteria in s. NR 640.07 (1), are specified in s. NR

640.07 (3). The feasibility report shall also contain the following information:

(1) For waste piles and containment buildings, detailed plans and an engineering report describing how the requirements of ss. NR 655.05, 655.06 (2), 655.07 and 655.08 shall be met, and if applicable, of how ss. NR 655.05 and 655.08 shall be met if an exemption from certain requirements of s. NR 660.18 and ch. NR 635 is sought.

(2) The feasibility and plan of operation report shall also contain the following information:

(a) Sketches, drawings or data demonstrating compliance with the buffer zone requirements of s. NR 655.10 (1) (a).

(b) How wind dispersal of particulate matter shall be controlled in order to meet the requirements of s. NR 655.07 (5);

(c) How s. NR 655.09 (2) shall be complied with if incompatible wastes or materials are to be managed; and

(d) The details of the process carried out and equipment used if treatment occurs in or on the pile or the containment building, including the nature and quality of the residuals.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; correction in (intro.) made under s. 13.93 (2m) (b) 7., Stats., Register, March, 1993, No. 447; am. (intro.), (1), (2) (intro.), (d), Register, May, 1995, No. 473, eff. 6-1-95; correction made under s. 13.93 (2m) (b) 7., Register, May, 1998, No. 509.

#### NR 655.07 Design and operating requirements.

(1) In accordance with s. NR 630.31 (1) and (2), the identity and location of all stored or treated hazardous waste shall be known throughout the entire period when the waste is stored or treated on-site.

(2) The pile shall be underlain by a double liner system 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 of the waste pile including the closure period. The double liner system shall meet all of the requirements for landfills contained in s. NR 660.18.

(3) A waste pile shall 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.

(4) If leachate or run-off from a pile or a containment building unit is a hazardous waste then:

(a) The pile or the unit 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 or the unit, and any leachate and run-off from the pile shall be collected and managed as a hazardous waste; or

(b) The pile or unit shall be protected from precipitation by some other means and no liquids or wastes containing free liquids may be placed in the pile or the unit.

(5) 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. Containment buildings shall have measures to control fugitive dust emissions from any openings and shall exhibit no visible emissions. In addition, all associated particulate collection devices shall be operated and maintained with sound air pollution control practices. The state of no visible emissions shall be maintained effectively at all times during routine operating and maintenance conditions, including when vehicles and personnel are entering and exiting the unit.

(6) In addition to the above listed design and operating requirements, the following requirements shall be met for all containment buildings:

(a) The containment building shall be completely enclosed with a floor, walls and a roof to prevent exposure to the elements, and to assure containment of managed wastes.

(b) The floor and containment walls of the unit, including the secondary containment system if required under sub. (2), shall be designed and constructed of materials of sufficient strength and

thickness to support themselves, the waste contents and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls. The unit shall be designed so that it has sufficient structural strength to prevent collapse or other failure. All surfaces to be in contact with hazardous wastes shall be chemically compatible with those wastes. In judging whether or not a unit has met the structural integrity requirements of this paragraph, the department shall apply standards established by professional organizations generally recognized by the industry, including the American Concrete Institute (ACI) and the American Society of Testing Materials (ASTM). If appropriate to the nature of the waste management operation to take place in the unit, an exception to the structural strength requirement may be made for light-weight doors and windows that meet these criteria:

1. They provide an effective barrier against fugitive dust emissions under sub. (5); and

2. The unit is designed and operated in a fashion that assures that wastes will not actually come in contact with these openings.

(c) Incompatible hazardous wastes or treatment reagents may not be placed in the unit or its secondary containment system if they could cause the unit or secondary containment system to leak, corrode or otherwise fail.

(d) A containment building shall have a primary barrier designed to withstand the movement of personnel, waste and handling equipment in the unit during the operating life of the unit and appropriate for the physical and chemical characteristics of the waste to be managed.

(7) The owner or operator shall develop a construction quality assurance program for each unit at the facility which meets the requirements contained in s. NR 660.13 (6) to (9). A construction documentation report meeting the requirements of s. NR 660.16 shall be submitted to and approved by the department before operations may commence.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; am. (1), (2) (intro.) (d), (3), (4), (5), r. (2) (a), (b), (c), r. and recr. (6), cr. (7), Register, May, 1995, No. 473, eff. 6-1-95.

**NR 655.08 Monitoring and inspection.** (1) During construction or installation, liner systems, except exempt from s. NR 655.07 (2), and cover systems shall be inspected for uniformity, damage and imperfections. Immediately after construction or installation:

**Note:** Examples of cover systems are membranes, sheets or coatings. Examples of imperfections are holes, cracks, thin spots or foreign materials.

(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.

(2) While a waste pile or containment building 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) Proper functioning of wind dispersal control systems, where present; and

(c) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

(3) An owner or operator required to have a leak detection system under s. NR 655.07 shall record the amount of liquids

removed from each leak detection system sump at least once a week during the active life and closure period.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; am. (1) (intro.), (2) (intro.), cr. (3), Register, May, 1995, No. 473, eff. 6-1-95.

**NR 655.09 Special requirements for ignitable or reactive waste.** Ignitable or reactive waste may not be placed in a waste pile or a containment building unless the waste and waste pile or containment building satisfy all applicable requirements of ch. NR 675 and:

(1) The waste is treated, rendered or mixed before or immediately after placement in the pile or containment building so that:

(a) The resulting waste, mixture or dissolution of material no longer meets the criteria of ignitable or reactive waste under s. NR 605.08 (2) or (4); and

(b) The precautions contained in s. NR 630.17 (2) are complied with; or

(2) The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; am. (intro.), Register, August, 1992, No. 440, eff. 9-1-92; am. (intro.), (1) (intro.), Register, May, 1995, No. 473, eff. 6-1-95.

**NR 655.10 Special requirements for incompatible wastes.** (1) Incompatible wastes or materials may not be placed in the same waste pile or containment building unit unless s. NR 630.17 (2) is complied with.

(a) 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.

(b) Hazardous waste may not be piled or placed in a containment building on the same area where incompatible wastes or materials were previously managed, unless the area has been decontaminated sufficiently to ensure compliance with s. NR 630.17 (2).

(2) In addition to the waste analysis required by s. NR 630.12, the owner or operator shall analyze a representative sample of waste from each incoming waste shipment before adding the waste to a existing pile or containment building unit if the compatibility of the incoming waste with the existing pile or unit is not known. Owners and operators of waste piles or containment buildings shall accept only wastes that are compatible with each other and to the pile or unit to which they are to be added. The analysis conducted shall be capable of differentiating between the types of hazardous waste the owner or operator places in piles or units, so that mixing of incompatible wastes does not inadvertently occur. The analysis shall include a visual comparison of color and texture.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; am. (1) (intro.), (b), (2), Register, May, 1995, No. 473, eff. 6-1-95.

**NR 655.11 Closure and long term care.** (1) Final disposal of hazardous waste in a waste pile or containment building may not be permitted at a hazardous waste storage facility, unless the facility has a separate license for disposal.

(2) The owner or operator of a facility which treats or stores hazardous waste in waste piles or containment buildings shall comply with the following:

(a) The owner or operator shall, at completion of final or partial 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 chs. NR 600 to 685, unless s. NR 605.04 (3) applies. The department may require monitoring of ground or surface water if the operation or design of the facility

in relation to the hazard of wastes handled at the facility warrants monitoring.

(b) The owner or operator may propose to leave some contaminated subsoils in place in lieu of removing all of this material as required in par. (a). Proposals shall be submitted to the department for approval prior to completion of closure, as a modification to the closure plan approval in accordance with s. NR 685.05. The owner or operator shall also submit a post-closure plan that meets the requirements of s. NR 685.06 with the proposal. The department shall consider proposals on a case-by-case basis. If any contaminated subsoil is approved by the department to remain in place, the department shall require that the owner or operator comply with the applicable requirements for closure, monitoring and long term care under ss. NR 660.19 to 660.22 and 685.06. The department may not approve proposals unless it determines that not all contaminated subsoils can be practicably removed or decontaminated. The department may compare the costs and relative environmental and public health risks of removal or decontamination versus leaving contaminated subsoils in place when determining which subsoils are practicable to remove or decontaminate. The department may require some contaminated subsoils to be removed or decontaminated at the same time other contaminated subsoils are approved to remain in place, depending on the department's determination of which subsoils are practicable to remove or decontaminate. The department shall consider, at a minimum, the following criteria when making a determination on which subsoils can be practicably removed or decontaminated:

1. The depth of contamination;
2. The depth to the nearest aquifer;
3. Current site uses;

**Note:** For example, excavations next to certain buildings or structures may cause a structural failure.

4. The feasibility of decontamination technologies for the type of contamination present;
5. The soil types present; and
6. The feasibility of excavation technologies.

(c) The department may require that the owner or operator comply with the applicable requirements for closure, monitoring and long-term care under ss. NR 660.19 to 660.22 and 685.06 if the department determines that hazardous waste or hazardous waste constituents have been discharged at the facility, where compliance with the 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 par. (a).

(d) 1. The owner or operator of a waste pile that does not comply with the liner requirements of s. NR 655.07 (2) and is not exempt from them in accordance with s. NR 655.05 (2), shall:

a. Include in the closure plan for the pile under s. NR 685.05 both a plan for complying with par. (a) and a contingent plan for complying with par. (b) in case not all contaminated subsoils can be practicably removed at closure; and

b. Prepare a contingent long term plan under s. NR 685.06 for complying with par. (b) in case not all contaminated subsoils can be practicably removed at closure.

2. The cost estimates calculated under s. NR 685.07 for closure and long term care of a pile subject to this paragraph shall include the cost of complying with the contingent closure plan and the contingent long term care plan, but are not required to include the cost of expected closure under par. (a).

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91; am. (1), (2) (intro.), Register, May, 1995, No. 473, eff. 6-1-95; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, May, 1995, No. 473.

**NR 655.12 Special requirements for hazardous wastes F020, F021, F022, F023, F026 and F027.** (1) Hazardous wastes F020, F021, F022, F023, F026 and F027 may not be placed in a waste pile unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the department pursuant to the standards set out in this section and in accord with all other applicable requirements in chs. NR 600 to 685. The factors to be considered are:

(a) The volume and physical and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(b) The attenuative properties of underlying and surrounding soils or other materials;

(c) The mobilizing properties of other materials co-disposed with these wastes; and

(d) The effectiveness of additional treatment, design or monitoring techniques.

(2) The department may determine that additional design, operating and monitoring requirements are necessary for waste piles managing hazardous wastes F020, F021, F022, F023, F026 and F027 in order to reduce the possibility of migration of these wastes to groundwater, surface water or air so as to protect human health and the environment.

**History:** Cr. Register, February, 1991, No. 422, eff. 3-1-91.