CHAPTER 7035
MINNESOTA POLLUTION CONTROL AGENCY
GROUNDWATER AND SOLID WASTE DIVISION
SOLID WASTE

7035.0300 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7035.0300 to 7035.2915, the following terms have the meanings given them in this part.

[For text of subps 2 to 4, see M.R.]

Subp. 5. **Ash.** "Ash" means the incombustible material that remains after a fuel or solid waste is combusted.

[For text of subps 6 and 7, see M.R.]

Subp. 7a. **Bottom ash.** "Bottom ash" means the residues that remain in a combustion chamber after combustion. An owner or operator may include ash which is carried out of a combustion chamber by the flow of gases and captured by boiler tubes, economizers, or other equipment which captures particulate matter before gases enter air pollution control equipment.

[For text of subps 8 to 15, see M.R.]

Subp. 15a. **Combined ash.** "Combined ash" means ash which consists of a mixture of fly ash and bottom ash.

[For text of subparts 16 to 34, see M.R.]

Subp. 35. **Energy recovery facility.** "Energy recovery facility" means a facility used to capture the heat value of solid waste for conversion to steam, electricity, or immediate heat by direct combustion or by first converting it into an intermediate fuel product. Municipal solid waste combustors are included in the definition of energy recovery facilities.

Subp. 35a. **EPA Method 1311.** "EPA Method 1311" means the Toxicity Characteristic Leaching Procedure issued by the United States Environmental Protection Agency as EPA Method 1311 as provided by the Federal Register, volume 55, number 126, June 29, 1990.

Subp. 35b. **EPA Method 1312.** "EPA Method 1312" means the Synthetic Precipitation Leach Test for Soils, which is incorporated by reference in part 7035.0605.

Subp. 35c. **EPA SW-846.** "EPA SW-846" means Test Methods for Evaluat-

ing Solid Waste, EPA SW-846, Third Edition, which is incorporated by reference in part 7035.0605.

[For text of subps 36 to 38, see M.R.]

Subp. 38a. **Fly ash.** "Fly ash" means ash generated by a combustion facility which is carried out of the combustion chamber by the flow of gases and collected by air pollution control equipment before exhaust gases leave the facility. An owner or operator may include ash which is captured by boiler tubes, economizers, or other equipment which captures particulate matter before gases enter air pollution control equipment.

[For text of subps 39 to 43, see M.R.]

Subp. 43a. **Household hazardous waste.** "Household hazardous waste" has the meaning given in Minnesota Statutes, section 115A.96, subdivision 1, paragraph (b).

[For text of subp 44, see M.R.]

Subp. 45. **Industrial solid waste.** "Industrial solid waste" means all solid waste generated from an industrial or manufacturing process and solid waste generated from nonmanufacturing activities such as service and commercial establishments. Industrial solid waste does not include office materials, restaurant and food preparation waste, discarded machinery, demolition debris, municipal solid waste combustor ash, or household refuse.

[For text of subps 46 to 48, see M.R.]

Subp. 49. **Intermittent cover.** "Intermittent cover" means cover material that is spread and compacted on the top and side slopes of compacted solid waste at least as often as the end of each operating week unless less frequent placement is approved according to part 7035.2885, subpart 10, item A, in order to control fire, infiltration, dust emissions, and erosion.

[For text of subps 50 to 62, see M.R.]

Subp. 62a. **Maximum leachable contaminant levels.** "Maximum leachable contaminant levels" means the numerical standards for the levels in leachate of substances listed in part 7035.2885, subpart 5. They are used to determine design and operational requirements which apply to a municipal solid waste combustor ash land disposal facility.

[For text of subps 63 to 67, see M.R.]

Subp. 67a. **Municipal solid waste combustor ash.** "Municipal solid waste combustor ash" means ash from combustion of mixed municipal solid waste or refuse-derived fuel at a waste combustor. Municipal solid waste combustor ash does not include ash from waste combustors which accept hazardous waste except in household quantities as allowed by part 7045.0120, item A. Municipal solid waste combustor ash which is managed according to parts 7035.2885 to 7035.2915 is a solid waste, and is not subject to regulation under chapter 7045. Ash from a facility that burns a mixture of mixed municipal solid waste or refuse-derived fuel and infectious waste or other nonhazardous wastes such that 20 percent or more of its heat input is from mixed municipal solid waste or refuse-derived fuel is considered municipal solid waste combustor ash. Ash from a facility that burns a mixture of mixed municipal solid waste or refuse-derived fuel with coal or other fuels is considered municipal solid waste combustor ash if the percentage of mixed municipal solid waste or refuse-derived fuel is such that the facility is considered a waste combustor under applicable state and federal rules and statutes.

Subp. 67b. **Municipal solid waste combustor ash land disposal facility.** "Municipal solid waste combustor ash land disposal facility" means a facility used to dispose of municipal solid waste combustor ash in or on the land.

[For text of subps 68 to 88, see M.R.]

Subp. 89. **Refuse.** "Refuse" means putrescible and nonputrescible solid wastes, including garbage, rubbish, ashes, incinerator ash, incinerator residue, waste combustor ash, street cleanings, and market and industrial solid wastes, and including municipal treatment wastes which do not contain free moisture.

[For text of subps 90 to 93, see M.R.]

Subp. 93a. **Rolling data set.** "Rolling data set" means a set of data, such as test results, which represents a specified period of time; at a specified frequency the data set changes to include more recent data and exclude data which are older than the beginning of the specified time period.

[For text of subps 94 to 96, see M.R.]

Subp. 96a. **Segregated household hazardous waste.** "Segregated household hazardous waste" means household hazardous waste that is separated from other solid waste or arrives at a solid waste management facility separated from other solid waste.

[For text of subps 97 to 111, see M.R.]

Subp. 111a. **Treatment.** "Treatment" means the physical or chemical change of a waste for the purpose of reducing or controlling pollution or the release of contaminants into the environment.

[For text of subps 112 to 115, see M.R.]

Subp. 115a. **Waste combustor.** "Waste combustor" means any stationary source, emissions unit, or emission facility where waste or refuse-derived fuel is combusted, and includes incinerators, energy recovery facilities, or other combustion devices.

[For text of subps 116 to 121, see M.R.]

Statutory Authority: *MS s 115A.97; 116.07*

History: *15 SR 2106; 16 SR 2321*

7035.0400 GENERAL REQUIREMENTS.

All solid waste must be stored, collected, transferred, transported, used, processed, and disposed of, or reclaimed in a manner consistent with requirements of parts 7035.0300 to 7035.2915. The agency is responsible for enforcement of these parts and encourages cooperation of municipalities which may adopt these parts for use in local laws, ordinances, or regulations.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.0600 VARIANCES.

Any person who applies for a variance from any requirement of parts 7035.0300 to 7035.2915 shall comply with part 7000.0700. An application for a variance must be acted upon by the agency according to Minnesota Statutes, section 116.07, subdivision 5, and part 7000.0700. However, no variance may be granted that would result in noncompliance with applicable federal rules and regulations for solid waste.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.0605 AVAILABILITY OF REFERENCES.

The documents needed for analyzing and classifying soils as required in parts 7035.0300 to 7035.2915 may be obtained by contacting the Engineering Library of the University of Minnesota, through the Minitex interlibrary loan system, and requesting the standards from the American Society for Testing and Material, in the Annual Book of ASTM Standards, 1916 Race Street, Philadelphia, Pennsylvania 19103.

The publication for classification of wetlands, titled "Classification of Wetlands and Deep Water Habitats of the United States," may be obtained through the Minitex interlibrary loan system or by requesting the publication from the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402.

Test Methods for Evaluating Solid Waste, EPA SW-846, Third Edition, November 1986, issued by the United States Environmental Protection Agency (EPA), is incorporated by reference. Sections of this document which are directly relevant to parts 7035.2885 to 7035.2915 are available through the Minitex interlibrary loan system. The entire document is available from EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268. It is not subject to frequent change.

The document Standard Number 54: Flexible Membrane Liners, May 1990, issued by the National Sanitation Foundation, is incorporated by reference. It is available through the Minitex interlibrary loan system. It is not subject to frequent change.

EPA Document 600/4-79-020 Methods for Chemical Analyses of Water and Wastes, appearing in Code of Federal Regulations, title 40, section 136, 1990, is incorporated by reference. The document is available through the Minitex interlibrary loan system and EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268. It is not subject to frequent change.

EPA Method 1312: the Synthetic Precipitation Leach Test for Soils (draft document, no date available) is incorporated by reference. The method is available through the Minitex interlibrary loan system. A copy of the method may also be obtained from the commissioner. The draft method is not subject to frequent change.

EPA Method 8290, November 1990, is incorporated by reference. The method is available through the Minitex interlibrary loan system and EPA Office of Solid Waste, Characterization and Assessment Division, Technical Assessment Branch, 0S-331, Washington, D.C., 20460. The method is not subject to frequent change.

American Society of Testing and Materials (ASTM) Methods D3173 and D3174 are incorporated by reference. These methods are published in the Annual Book of ASTM Standards: Part 26, Gaseous Fuels; Coal and Coke; Atmospheric Analysis, 1981 Edition. This publication is available through the Minitex interlibrary loan system. The methods are not subject to frequent change.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.0700 STORAGE OF SOLID WASTE AT INDIVIDUAL PROPERTIES.

[For text of subps 1 to 5, see M.R.]

Subp. 6. **Municipal solid waste combustor ash.** Municipal solid waste combustor ash must be stored in a manner which minimizes the emission of fugitive dust and escape of liquid which has been in contact with ash. Liquid that drains from the ash must be collected and reused at the facility, unless the commissioner finds that reuse of the liquid is not feasible based on the design of the facility, in which case the commissioner may approve another management method. Floor

or surface drains serving ash collection, storage, and handling areas must not be connected to uncontaminated storm water run-off drams. Except for ash samples collected and stored according to part 7035.2910, a municipal solid waste combustor may not store ash for more than five calendar days after the date the ash was generated. The maximum amount of ash stored at the facility must not exceed five days of daily production. The commissioner shall approve storage of a larger quantity of ash or storage for a longer period of time if the waste is kept in a contained area meeting the requirements of a solid waste storage facility under part 7035.2885.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.0800 COLLECTION AND TRANSPORTATION OF SOLID WASTE.

[For text of subpart 1, see M.R.]

Subp. 2. **Containers or vehicles.** Vehicles or containers used for the collection and transportation of garbage and similar putrescible wastes, or refuse containing such materials, must be covered, leakproof, durable, and of easily cleanable construction. They must be cleaned to prevent nuisances, pollution, or insect breeding, and must be maintained in good repair.

Vehicles or containers used for the transportation of municipal solid waste combustor ash must be covered to prevent fugitive dust emissions and constructed to prevent leaking of fluid which has been in contact with ash.

[For text of subp 3, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2525 SOLID WASTE MANAGEMENT FACILITIES GOVERNED.

Subpart 1. **General requirements.** Parts 7035.2525 to 7035.2915 apply to owners and operators of all facilities that treat, transfer, store, process, or dispose of solid waste except as specifically provided otherwise in this part.

Subp. 2. **Exceptions.** Parts 7035.2525 to 7035.2915 do not apply to the following solid waste management facilities, except as indicated:

[For text of items A to D, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2535 GENERAL SOLID WASTE MANAGEMENT FACILITY REQUIREMENTS.

[For text of subpart 1, see M.R.]

Subp. 2. **Required notices.** The owner or operator of a solid waste management facility must notify the agency before transferring ownership or operation of a solid waste management facility during its operating life or during the postclosure care period. The owner or operator must also notify the new owner or operator in writing of the requirements of parts 7035.2525 to 7035.2915 and existing permit conditions. No ownership or operation transfer may occur without a permit modification as required in part 7001.0190, subpart 2. The facility must be in substantial compliance with all agency rules before the agency will approve a transfer.

Subp. 3. **Security.** During the active life of the solid waste management facility, the closure period, and postclosure care period, as required, the owner or operator must prevent, by use of a fence or similar device, the unauthorized entry

of persons or livestock onto the facility, unless the owner or operator demonstrates to the commissioner that:

[For text of item A, see M.R.]

B. disturbance of the waste or equipment will not cause a violation of parts 7035.2525 to 7035.2915.

[For text of subp 4, see M.R.]

Subp. 5. **Industrial solid waste management.** All industrial solid waste delivered to a solid waste management facility must be managed by the owner or operator to protect human health and the environment. The industrial solid waste management plan required under part 7001.3300 must address items A to C, except that the industrial solid waste management plan for a municipal solid waste combustor ash land disposal facility need not comply with items B and C.

[For text of items A to E, see M.R.]

Subp. 6. **Household hazardous waste management.** A solid waste management facility operator, not including a transfer facility operator, must develop a plan by June 30, 1992, addressing household hazardous wastes and must include in the plan an explanation of how it will comply with the requirements of items A to C.

A. The facility operator must provide a summary of the approved county plan for household hazardous waste education programs and management and a discussion of how the operator will participate in county activities and coordinate with that plan.

B. The facility operator shall participate with the operator's county in education programs or projects which will promote the identification and reduction of household hazardous waste in the home and which will promote the proper handling and disposal of this waste. Such projects undertaken by the facility operator must be coordinated with county projects whenever possible and literature or other public information must be consistent with the county's household hazardous waste public education programs. In addition to activities conducted in conjunction with the county's program, facility activities must include:

(1) providing public information on dates and times of household hazardous waste collections in the facility's service area;

(2) providing public information to help identify household hazardous waste; and

(3) providing public information on ways to reduce household hazardous waste generation.

The information in subitems (1) to (3) must be made available at the facility for public use, for the county, and for other entities that are associated with solid waste management in the facility's service area.

C. Household hazardous waste that is segregated from other solid waste and managed at the facility must be managed according to part 7045.0310 or applicable hazardous waste generator standards.

Statutory Authority: *MS s 115A.97; 116.07*

History: *15 SR 2106; 16 SR 2321*

7035.2545 PERSONNEL TRAINING.

Subpart 1. **General.** Solid waste management facility personnel must successfully complete a program of classroom instruction or on-the-job training. The program must prepare facility personnel to maintain compliance with parts 7035.2525 to 7035.2915. Personnel must complete all training within six months

after November 15, 1988, or within six months after the date of employment. The owner or operator must record all personnel training on the facility operating record and submit the dates of training in the annual report.

[For text of subps 2 to 4, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2555 LOCATION STANDARDS.

[For text of subpart 1, see M.R.]

Subp. 2. **Other location standards.** An owner or operator may not establish or construct a solid waste management facility in the following areas:

A. within a shoreland or wild and scenic river land use district governed by chapters 6105 and 6120;

[For text of items B and C, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2575 OPERATING RECORD.

[For text of subpart 1, see M.R.]

Subp. 2. **Record information.** The owner or operator of a solid waste management facility must record and maintain the following information in the operating record for a minimum of five years after closure of the facility or until any pending enforcement action is resolved:

[For text of items A to F, see M.R.]

G. For a municipal solid waste combustor ash land disposal facility, the amount by volume or weight of municipal solid waste combustor ash received for each day from each ash generator which delivers ash to the facility, and the date received.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2585 ANNUAL REPORT.

The owner or operator of a solid waste management facility shall prepare and submit a single copy of an annual report to the commissioner no later than February 1 for the preceding calendar year. A report form and instructions may be obtained from the commissioner. The annual report must cover all facility activities during the previous calendar year and must include the following information:

[For text of items A to G, see M.R.]

H. the summary evaluation of the groundwater monitoring program required under parts 7035.2815, subpart 14, item Q; and 7035.2885, subpart 16;

[For text of items I to K, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2625 CLOSURE.

Subpart 1. **Closure.** The owner or operator of a solid waste management facil-

ity must cease to accept waste and must immediately close the facility in compliance with this part and parts 7035.2635 and 7035.2815 to 7035.2915, when:

[For text of items A to I, see M.R.]

[For text of subp 2, see M.R.]

Subp. 3. **Submittal and contents of closure plan.** The owner or operator of a solid waste management facility shall submit a closure plan with the permit application, or as required by a closure document, or in order to establish financial assurance mechanisms in accordance with part 7035.2695. For unpermitted land disposal sites, the owner or operator shall submit a closure plan within 90 days after November 15, 1988. The agency shall approve the closure plan as part of the permit issuance procedure or as part of a submittal required by a closure document or other enforcement action. Compliance with the approved closure plan must be a condition of any permit, order, closure document, or stipulation agreement issued for the facility. Before approving the closure plan, the agency must ensure that the closure plan is consistent with subparts 2, 4, and 5, part 7035.2635, and the applicable closure requirements of parts 7035.2665; 7035.2815, subpart 16; and 7035.2825 to 7035.2915.

A copy of the approved closure plan and all revisions to the plan must be kept at the facility until closure is completed and certified under part 7035.2635. At the time of closure, the agency will issue a closure document in accordance with part 7001.3055. The plan must identify steps needed to close each fill phase, if appropriate, and the entire site at the end of its operating life. The closure plan must include:

A. A description of how and when each fill phase and the entire facility will be closed. The description must identify how the requirements of subparts 2 and 5, parts 7035.2635; and 7035.2815 to 7035.2915 will be complied with. The description must include the estimated year of closure and a schedule for completing each fill phase.

[For text of items B and C, see M.R.]

[For text of subps 4 and 5, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2635 CLOSURE PROCEDURES.

[For text of subpart 1, see M.R.]

Subp. 2. **Closure procedures.** If one or more of the conditions of part 7035.2625, subpart 1 exists, the owner or operator must:

A. Complete the appropriate activities outlined in the approved closure plan, closure document, stipulation agreement, and parts 7035.2815 to 7035.2915, as appropriate.

B. Complete final closure activities consisting of at least:

[For text of subitems (1) and (2), see M.R.]

(3) submitting to the county recorder and the commissioner a detailed description of the waste types, including mixed municipal, industrial, and demolition debris, accepted at the facility and what the facility was used for, together with a survey plat of the site. The plat must be prepared and certified by a land surveyor registered in Mmnesota. The landowner must record a notation on the deed to the property or on some other instrument normally examined during a title search, that will in perpetuity notify any potential purchaser of the

property of any special conditions or limitations for use of the site, as set out in the closure plan and closure document.

[For text of subp 3, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2645 POSTCLOSURE.

[For text of subpart 1, see M.R.]

Subp. 2. **Postclosure plan.** The landowner and the facility owner must keep a copy of the approved plan and amendments at the facility until the postclosure care period begins. During the postclosure care period, the plan must be kept by the contact person identified in item C. This plan must identify the activities to be carried on during the postclosure care period and the frequency of these activities, and must include at least:

A. A description, schedule, and estimated costs of planned monitoring activities to comply with parts 7035.2815, subparts 10 and 14, and 7035.2885, subpart 16, during the postclosure care period.

B. A description, schedule, and estimated costs of the inspection and maintenance activities planned to ensure the integrity of the final cover and other containment systems according to parts 7035.2815, subpart 13, and 7035.2885, subpart 15, and the function of the facility monitoring equipment according to parts 7035.2815, subpart 14, and 7035.2885, subpart 16.

[For text of item C, see M.R.]

[For text of subp 3, see M.R.]

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2655 POSTCLOSURE CARE AND USE OF PROPERTY.

Subpart 1. **Postclosure care requirements.** Postclosure care requirements are as follows:

[For text of item A, see M.R.]

B. During the postclosure care period, based on the results of sampling, analysis, and other pertinent information, the commissioner may reevaluate and modify the closure document to the extent postclosure care is needed at a facility based on compliance with the requirements of item C; subpart 2; parts 7035.2565, and 7035.2815 to 7035.2915; and gas, leachate, or ground and surface water monitoring results.

[For text of item C, see M.R.]

[For text of subp 2, see M.R.]

Statutory Authority: *MS s 115A 97*

History: *16 SR 2321*

FINANCIAL REQUIREMENTS

7035.2665 SCOPE.

Parts 7035.2685 to 7035.2805 apply to owners and operators of mixed municipal solid waste land disposal facilities and municipal solid waste combustor ash land disposal facilities.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2685 COST ESTIMATES FOR CLOSURE, POSTCLOSURE CARE, AND CORRECTIVE ACTION.

Subpart 1. **Cost estimate requirements.** The following provisions apply to cost estimates.

A. The owner or operator shall make a written estimate, in current dollars, of the cost of closing the facility in accordance with part 7035.2625 and applicable closure requirements in part 7035.2635. The estimate must be calculated according to subitems (1) and (2).

(1) The closure cost estimate must equal the cost of closure at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan.

(2) An owner or operator who establishes a trust under part 7035.2705 or 7035.2715 or a dedicated long-term care trust fund under part 7035.2720 may make the closure cost estimate in present value terms, provided that interest earned from investment becomes part of the fund.

The method used to calculate a present value for closure cost estimates must have the following form:

$$P = \frac{F}{(1 + i)^n}$$

in which: P = the present value,
F = the estimated cost of facility closure as calculated under subitem (1),
i = the interest rate, and
n = the time period in which the design capacity of the facility is filled, expressed as the number of years after the date on which the cost estimate is made.

The interest rate used must be the Federal Reserve Bank discount rate in effect at the Federal Reserve Bank in Minneapolis, Minnesota.

B. The owner or operator of a facility subject to postclosure monitoring or maintenance requirements shall make a written estimate, in current dollars, of the annual cost of monitoring and maintenance of the facility in accordance with the applicable postclosure requirements in part 7035.2645. The estimate must be calculated according to subitems (1) and (2).

(1) The owner or operator must calculate the postclosure cost estimate by multiplying the annual postclosure cost estimate by the number of years of postclosure care required under part 7035.2655. The postclosure cost estimate must include a contingency element that accounts for inflation expected to occur after site closure.

(2) An owner or operator who establishes a trust under part 7035.2705 or 7035.2715 or a dedicated long-term care trust fund under part 7035.2720 may make the postclosure cost estimate in present value terms, provided that interest earned from investment becomes part of the fund.

A present value must be reported for each year of the postclosure care period.

The time periods used must begin the year after facility closure. The method used to calculate a present value must have the following form:

$$P = \frac{F}{(1 + i)^n}$$

in which: P = the present value,
F = the estimated cost of postclosure care and maintenance during the year in which cost will be incurred as calculated under subitem (1),
i = the interest rate, and
n = the time period in which the cost will be incurred, expressed as the number of years after the date on which the cost estimate is made.

The interest rate used must be the Federal Reserve Bank discount rate in effect at the Federal Reserve Bank in Minneapolis, Minnesota.

[For text of item C, see M.R.]

[For text of subps 2 and 3, see M.R.]

Statutory Authority: *MS s 116.07*

History: *15 SR 2308*

7035.2885 MUNICIPAL SOLID WASTE COMBUSTOR ASH LAND DISPOSAL FACILITIES.

Subpart 1. **Scope.** The requirements of subparts 2 to 18 apply to landowners and owners and operators of facilities that dispose of municipal solid waste combustor ash in or on the land, except as provided in subpart 2.

Subp. 2. **Exemptions.** None.

Subp. 3. **Acceptable wastes.** Only municipal solid waste combustor ash and other wastes, excluding municipal solid waste, approved by the commissioner according to the procedures in this subpart may be disposed of in a waste combustor ash land disposal facility.

The owner or operator must submit requests for approval to codispose of other wastes to the commissioner in writing. Requests must state the physical and chemical characteristics of the waste, including results of EPA Method 1311 leach test, EPA Method 1312 leach test, and total composition analysis. The waste must be analyzed for total composition for the parameters in part 7035.2910, subpart 4, item A, tables (1) and (2). Leach test samples must be analyzed for all parameters detected by total composition analysis. The request must also include an assessment of the potential for the waste to affect the leaching potential of waste combustor ash and other wastes previously approved for codisposal. The commissioner shall approve a waste for codisposal in a municipal solid waste combustor ash disposal facility only if the commissioner determines that codisposal of that waste will not significantly increase the movement of leachate generated at the facility, which contaminates outside the codisposal ash phase by leakage, leaching, or fugitive dust emissions.

Subp. 4. **Limitation of leachable contaminants.** After January 1, 1993, the owner or operator of a waste combustor ash land disposal facility may not dispose of ash which exceeds the maximum leachable contaminant levels of subpart 5, unless the facility design either meets or exceeds the requirements of subparts 10,

item C, subitem (3); and 11, item O or P, or if the facility is a type II cell which meets or exceeds the requirements in part 7035.2915 and is approved prior to or during the nine-month period immediately following adoption of parts 7001.0040 to 7035.2915, whichever applies. Compliance with this subpart must be based on results of testing ash using EPA Method 1312 as required by part 7035.2910, except as provided by items B to D. Alternatively, the commissioner may approve treatment within the land disposal facility if treatment reduces contaminant mobility so that any pollutants detected in leachate will not exceed the maximum leachable contaminant levels of subpart 5. A request for approval of an in-place treatment method must include results of a pilot scale demonstration of the effectiveness of the treatment method.

A. For the purpose of this subpart, "results" means the upper 80 percent confidence limit of a rolling data set consisting of results of EPA Method 1312, or actual leachate according to items B and C, calculated as follows:

(1) the rolling data set must consist of results of the specified test for the preceding 12 months, or the time period since a change was made in waste combusted, waste combustor operations, or ash processing which significantly alters ash quality, whichever time period is shorter;

(2) if data from only one quarter are used to calculate results, the owner or operator must calculate the upper 80 percent confidence limit for the data using equations for random sampling shown in Table 9-1 of EPA SW-846. Part 7035.0605 incorporates this document by reference and establishes its availability; and

(3) if data from two or more quarters are used to calculate results, the owner or operator must calculate the upper 80 percent confidence limit for the data using equations for stratified random sampling shown in Table 9-1 of EPA SW-846, using each quarter as a stratum. The fraction of the population represented by each stratum (W_k) must be selected based on the number of quarters of data to be used and the relative amounts of ash produced during each quarter.

B. The owner or operator may calculate results as required by item A using actual leachate analyses rather than EPA Method 1312 analyses for ash from a given waste combustor for one or more quarters if the following conditions are all true:

(1) the leachate analyzed was from a land disposal facility phase which was filled to one-half or more of the phase capacity, where a phase is an area of a land disposal facility which is served by a leachate collection system which may be sampled independently;

(2) ash from the waste combustor makes up 90 percent or more of the waste in the phase;

(3) ash generated by the waste combustor during the quarter was disposed in the phase;

(4) the leachate analyzed was collected during the quarter;

(5) samples used to calculate results for consecutive quarters were collected at least 60 days apart; and

(6) the leachate samples were collected according to a water quality and leachate monitoring protocol approved by the commissioner as part of the operations manual required under parts 7001.3480, item G; and 7035.2815, subpart 14, item G.

C. If results of testing leachate as required by subpart 16, item B, exceed the maximum leachable contaminant levels of subpart 5, all new portions of the land disposal facility which accept ash from the same waste combustor or waste combustors must comply with the final cover requirements of subpart 10, item C, subitem (3), and the liner requirements of subpart 11, item O. If results of testing leachate as required by subpart 16, item B, exceed the maximum concentration of contaminants for characteristic of extraction procedure (EP) toxicity

established in part 7045.0131, subpart 8, all new portions of the land disposal facility which accept ash from the same waste combustor or waste combustors must comply with the final cover requirements of subpart 10, item C, subitem (3), and the liner requirements of subpart 11, item P. For the purpose of this item, "results" means the upper 80 percent confidence limit of a rolling data set consisting of results of leachate testing for the preceding 12 months. The upper 80 percent confidence limit must be calculated using the equations presented in subpart 3, item A, subitems (1) to (3). The commissioner may approve an exemption from this part if the owner or operator demonstrates that the leachate produced in a new portion of the facility may reasonably be expected to not exceed the limits cited in this subpart, based on changes made such as pretreatment of ash prior to disposal.

D. If an owner or operator demonstrates an inability to meet the requirements of this subpart, the commissioner may grant an extension of up to two years if the commissioner determines that the owner or operator has attempted to meet the requirements of this part, and the agency, through no fault of the owner or operator, has not taken final action on applications for permits or other agency approvals needed to comply with this part.

E. A municipal solid waste combustor ash land disposal facility which accepts ash from a waste combustor which has not completed four or more quarters of ash testing according to part 7035.2910, must place the ash over a liner that complies at a minimum with the design requirements of subpart 11, item P, unless:

(1) the waste combustor ash will be treated before disposal to reduce the leaching potential to such a degree that the treated ash will not exceed the maximum leachable contaminant levels established in subpart 5; or

(2) the owner or operator demonstrates, based on ash testing data from a similar waste combustor, where similarity is based on design, operation, and characteristics of waste combusted, that the ash which has not been tested is not likely to exceed the maximum leachable contaminant levels of subpart 5, and the ash is placed over a liner which complies with the design requirements of subpart 11, item L or N, whichever applies to the type of ash to be disposed of. If this subitem applies, the ash must be considered in storage and the commissioner shall not approve disposal of the ash until four quarters of ash and leachate testing have been completed. If results of ash or leachate testing for the four quarters exceed the maximum leachable contaminant levels, the ash must be removed from the land disposal facility. For the purpose of this subitem, results must be calculated according to subpart 4, item A, subitems (1) to (3).

Subp. 5. **Maximum leachable contaminant levels.** The maximum leachable contaminant levels are as follows:

Substance	Maximum leachable contaminant level (µg/l)
Arsenic	750
Barium	30,000
Boron	9,000
Cadmium	60
Chromium	1,500
Copper	15,000
Lead	300
Manganese	9,000
Mercury	30
Nickel	2,100
Selenium	300
Silver	300
Tin	60,000
Zinc	21,000

Subp. 6. **Location.** The owner or operator must locate a waste combustor ash land disposal facility according to parts 7035.2555 and 7035.2815, subpart 2.

Subp. 7. **Hydrogeologic evaluations.** The owner or operator must complete a hydrogeologic evaluation of the site according to part 7035.2815, subpart 3.

Subp. 8. **Groundwater performance standards.** The owner or operator must design, construct, operate, and maintain the facility to achieve compliance with part 7035.2815, subpart 4.

Subp. 9. **General design requirements.** A waste combustor ash land disposal facility must meet the design requirements of part 7035.2815, subpart 5, items A, B, D, E, F, and G in addition to the following general design requirements:

A. The fill area at a waste combustor ash land disposal facility must be located at least 200 feet from the nearest property line, unless a shorter distance is approved by the commissioner as sufficient for performing facility monitoring, performing any necessary remedial activities, and minimizing deposition of dust on adjacent property, based on filling procedures, facility design, facility geographic location, existing land restrictions and results of monitoring dust emissions at the facility or a similar existing facility.

B. The facility design must include:

(1) cover systems according to subpart 10;

(2) a liner system according to subpart 11;

(3) a leachate collection and treatment system according to subpart 13; and

(4) a water monitoring system according to subpart 16.

Subp. 10. **Cover system.** The owner or operator must design and maintain a cover system capable of minimizing infiltration of precipitation into the fill areas, preventing surface water ponding on fill areas, preventing erosion of surface and side slopes, minimizing the creation and movement of dust, retaining slope stability, reducing effects of freeze-thaw and other weather conditions, maintaining vegetative growth while minimizing root penetration of the low permeability cover layer, discouraging vector and burrowing animal intrusion into the site, and attenuating contaminants contained in leachate. A complete cover system must consist of intermittent, intermediate, and final covers as outlined in items A to C.

A. The owner or operator must place intermittent cover on all exposed ash according to the approved operation and maintenance manual for the site and subitems (1) to (4). In all cases, intermittent cover placement must be adequate to prevent fugitive dust emissions.

(1) The owner or operator of a facility which disposes of bottom ash or combined ash must place intermittent cover frequently enough so that the bottom ash or combined ash is not left uncovered for more than 48 hours. The percent moisture of exposed ash must not be less than ten percent at any time. In the active work area, newly delivered waste combustor ash may be used to cover previously placed ash.

(2) The owner or operator of a facility which disposes of fly ash must cover the fly ash immediately after it is placed and compacted. Fly ash must be treated to minimize emission of fugitive dust before it is placed in the land disposal facility.

(3) The commissioner may approve less frequent cover placement based on a demonstration by the owner or operator that the alternative frequency would not increase the potential for damage to human health or the environment. The commissioner, in approving the proposed alternative cover system, must consider the characteristics of the proposed cover material, the characteristics of the waste, the design and operation of the facility, moisture content of the ash, screening or other engineered methods for preventing dust production, and season of the year.

(4) The cover materials used and cover depth must be sufficient to cover the ash completely.

B. The owner or operator must place intermediate cover on all filled surfaces of the facility where no additional ash will be deposited within 30 days. The intermediate cover must be at least six inches deep if soil or similar material is used, cover the ash completely, and be graded to prevent surface water ponding.

C. The owner or operator must place final cover according to the requirements of subitems (1) to (3) and part 7035.2815, subpart 6, item D, subitems (1), (2), and (6) to (9). A final cover system must consist of at least three layers: a barrier layer, a drainage layer, and a top layer.

(1) If the final cover uses a barrier layer constructed of soils or similar materials, the barrier layer must be at least 24 inches thick. The barrier layer must have a maximum permeability no greater than $1x10^{-6}$ centimeters per second. At least the top six inches after compaction of a barrier layer must not contain waste products which could contaminate water collected by the drainage layer. The drainage layer must be at least six inches thick and have an in-place permeability no less than $1x10^{-2}$ centimeters per second. The top layer must be at least 42 inches thick, of which at least the top six inches is topsoil, and of sufficient depth to contain the vegetative roots and protect the barrier layer from freezing. The top layer must have an available water-holding capacity that will promote vegetative growth. An alternative cover system may be approved by the commissioner if the owner or operator demonstrates that the barrier layer will be at least 24 inches thick, constructed of soils or similar materials, and have a maximum permeability no greater than $1x10^{-7}$ centimeters per second. The top layer of the alternative cover system must be at least 18 inches thick.

(2) If the final cover uses a synthetic membrane as the barrier layer, the membrane must be at least 30/1000 of an inch thick and meet the physical property standards for the material type developed by National Sanitation Foundation, Standard Number 54, Flexible Membrane Liners, May 1990, Ann Arbor, Michigan. Part 7035.0605 incorporates this document by reference and establishes its availability. The drainage layer must be at least six inches thick and have an in-place permeability no less than $1x10^{-2}$ centimeters per second. The top layer must be at least 18 inches thick, of which at least the top six inches is topsoil, and of sufficient depth to contain the vegetative roots. The top layer must have an available water-holding capacity that will promote vegetative growth.

(3) According to subpart 4, if results of testing the specific combined, bottom, or fly ash which is placed in the land disposal facility phase to be covered or results of analysis of actual leachate from the phase exceed the maximum leachable contaminant levels established under subpart 5, the final cover system must consist of:

(a) a barrier layer consisting of at least 24 inches of compacted soils or similar materials with a permeability no greater than $1x10^{-6}$ centimeters per second, overlain by a synthetic membrane liner which is at least 30/1000 of an inch thick and meets the physical property standards developed by the National Sanitation Foundation, Standard Number 54, Flexible Membrane Liners, May 1990, Ann Arbor, Michigan;

(b) a drainage layer consisting of at least six inches with a permeability no less than $1x10^{-2}$ centimeters per second; and

(c) a top layer which is at least 42 inches thick, of which the top six inches is topsoil, and of sufficient depth to contain the vegetative roots and protect the barrier layer from freezing. The top layer must have an available water-holding capacity that will promote vegetative growth.

Subp. 11. **Liners.** All waste combustor ash land disposal facilities must be lined. A liner installed at a waste combustor ash land disposal facility after April 27, 1992, unless otherwise allowed by part 7035.2915, subpart 4, must meet the

requirements of items A to K and part 7035.2815, subpart 7, items B, C, F, G, I, K, L, M, and N. In addition, waste combustor ash land disposal facilities must comply with the design standards of item L, M, N, O, or P, based on the requirements identified in Table 1.

Table 1: Identification of Applicable Liner Design Standards

	Bottom Ash	Combined Ash	Fly Ash
Before Jan. 1, 1993:			
(1) Leach results<MLCL	L	N*	N
(2) MLCL<Leach Results<EP	M	N*	P
(3) Leach Results>EP	O	O*	P
After Jan. 1, 1993:			
(1) Leach results<MLCL	L	N*	N
(2) MLCL<Leach results<EP	O	P*	P
(3) Leach Results>EP	P	P*	P

*Leach results must be taken from fly ash only.

Key: Leach results must be determined according to subpart 4.

MLCL means the maximum leachable contaminant levels established in subpart 5.

EP means the maximum concentration of contaminants for the toxicity characteristic established in part 7045.0131, subpart 8, as tested according to subpart 4.

A. If a waste combustor ash land disposal facility is constructed adjacent to a mixed municipal solid waste land disposal facility, the waste combustor ash land disposal facility must be separated from the mixed municipal solid waste land disposal facility adequately to prevent leachate from the mixed municipal solid waste land disposal facility from entering the waste combustor ash land disposal facility.

B. The liner system must consist of at least the following (listed in order, starting from the lowest layer):

(1) a smooth, stable subgrade for placement of the barrier layer by means of the placement of protective material over the existing subgrade, the removal of abrasive objects, organic matter, and vegetation in the subgrade, and regrading;

(2) where required by items O and P, a secondary liner and leachate collection and leak detection system;

(3) a barrier layer capable of containing leachate generated at the facility and surface water that has come in contact with waste; and

(4) a drainage layer above the barrier layer to rapidly convey surface water and leachate from the fill area, and to protect the barrier layer from puncture or other disturbances that might disrupt the integrity of the barrier layer.

C. The liner system must minimize the amount of leachate leaving the fill site to the soil and groundwater below the site.

D. The liner system must be compatible with waste combustor ash and waste combustor ash leachate.

E. Synthetic membranes used as part of the liner system must meet the specifications of the National Sanitation Foundation, Standard Number 54, Flexible Membrane Liners, May 1990, Ann Arbor, Michigan. Part 7035.0605 incorporates this document by reference and establishes its availability.

F. The owner or operator must construct the facility in accordance with subpart 14 and certify construction in accordance with part 7035.2610.

G. The owner or operator must design, construct, and maintain synthetic membranes in direct continuous contact with the soil layers beneath them to the greatest extent feasible.

H. Drainage layers must consist of at least 12 inches of suitable soil or an equivalent synthetic material. Drainage layers must not contain sharp stones or other sharp objects which may puncture the synthetic membrane, and must be resistent to clogging.

I. The owner or operator must design the liner and leachate collection system to minimize the number of places where the liner is penetrated.

J. When calculating efficiency as required for compliance with items L to P, the owner or operator must consider the liner thickness, the liner slope, the saturated hydraulic conductivity of the liner and drainage layer, the drainage layer thickness, the permeability of the drainage layer and liner, the porosity of the drainage layer, the flow distance to collection pipes, and the amount of leachate to be generated and collected based on annual infiltration and groundwater inflow.

K. In the engineering report required in part 7001.3480, item E, the owner or operator must discuss the design of the liner system and address at least the following:

(1) the source and quantity of natural soils capable of meeting the requirements of this subpart;

(2) the likelihood and consequences of failures caused by puncture, tear, creep, freeze-thaw, thermal stress, abrasion, swelling, extraction, oxidative degradation, exposure to ultraviolet radiation, acidic and alkaline conditions, concentration of ions, organic constituents, pressure, and the presence of gases, rodents, microbes, and root penetration;

(3) the composition of the drainage layer and liner including the soil gradations, percent fines, mineral composition, and solubility under acidic to alkaline conditions; and

(4) the calculations and assumptions used in choosing the particular design proposed for the facility.

L. The liner of an ash land disposal facility, required by table 1 to meet the requirements of this item, must comply with subitems (1) to (3).

(1) The barrier layer must be a composite liner which includes a synthetic membrane which is at least 60/1000 of an inch thick placed over a layer of recompacted clay or other natural material with a permeability of no more than $1x10^{-7}$ centimeters per second which is at least one foot thick.

(2) The liner system must be designed to have a leachate collection efficiency of at least 95 percent of the precipitation falling on the fill area before final cover placement.

(3) The liner system in combination with the cover system must achieve an overall site efficiency of at least 98.5 percent collection or rejection of the precipitation that falls on the disposal area.

M. The liner of an ash land disposal facility, required by table 1 to meet the requirements of this item, must comply with subitems (1) to (3).

(1) The barrier layer must be a composite liner which includes a synthetic membrane which is at least 60/1000 of an inch thick placed over a layer of recompacted clay or other natural material with a permeability of no more than $1x10^{-7}$ centimeters per second which is at least two feet thick.

(2) The liner system must be designed to have a leachate collection efficiency of at least 95 percent of the precipitation falling on the fill area before final cover placement.

(3) The liner system in combination with the cover system must achieve an overall site efficiency of at least 98.5 percent collection or rejection of the precipitation that falls on the disposal area.

N. The liner of an ash land disposal facility, required by table 1 to meet the requirements of this item, which accepts ash which does not exceed the maxi-

mum leachable contaminant levels of subpart 5 must comply with subitems (1) to (3).

(1) The barrier layer must be a composite liner which includes a synthetic membrane which is at least 60/1000 of an inch thick placed over a layer of recompacted clay or other natural material with a permeability of no more than $1x10^{-7}$ centimeters per second which is at least three feet thick.

(2) The liner system must be designed to have a leachate collection efficiency of at least 98 percent of the precipitation falling on the fill area before final cover placement.

(3) The liner system in combination with the cover system must achieve an overall site efficiency of at least 99.5 percent collection or rejection of the precipitation that falls on the disposal area.

O. As provided by subpart 4, after January 1, 1993, the liner of a bottom ash or combined ash land disposal facility that accepts ash which exceeds the maximum leachable contaminant levels of subpart 5 must comply with subitems (1) to (3).

(1) The liner must be a double liner which includes at a minimum, from top to bottom:

(a) a drainage layer which complies with item H;

(b) a synthetic membrane which is at least 60/1000 of an inch thick;

(c) a secondary drainage layer which complies with item H;

(d) a synthetic membrane which is at least 30/1000 of an inch thick; and

(e) a compacted clay layer which is at least two feet thick with a permeability no greater than $1x10^{-7}$ centimeters per second.

(2) The liner system must be designed to have a leachate collection efficiency of at least 98.5 percent of the precipitation falling on the fill area before final cover placement.

(3) The liner system in combination with the cover system must achieve an overall site efficiency of at least 99.8 percent collection or rejection of the precipitation that falls on the disposal area.

P. The liner of a waste combustor ash land disposal facility that accepts fly ash which exceeds the maximum leachable contaminant levels of subpart 5, or bottom or combined ash which exceeds the maximum concentration of contaminants for characteristic of extraction procedure (EP) toxicity established in part 7045.0131, subpart 8, must comply with subitems (1) to (3).

(1) The liner must be a double liner which includes at a minimum, from top to bottom:

(a) a drainage layer which complies with item H;

(b) a synthetic membrane which is at least 60/1000 of an inch thick;

(c) a secondary drainage layer which complies with item H;

(d) a synthetic membrane which is at least 30/1000 of an inch thick; and

(e) a compacted clay layer which is at least three feet thick with a permeability no greater than $1x10^{-7}$ centimeters per second.

(2) The liner system must be designed to have a leachate collection efficiency of at least 99 percent of the precipitation falling on the fill area before final cover placement.

(3) The liner system in combination with the cover system must achieve an overall site efficiency of at least 99.9 percent collection or rejection of the precipitation that falls on the disposal area.

Subp. 12. **Cover and liner materials evaluation.** The owner or operator must evaluate soils intended for use as cover or liner material as appropriate for the properties shown in part 7035.2815, subpart 8.

Subp. 13. **Leachate detection, collection, and treatment.** The facility must include a leachate detection, collection, and on-site or off-site treatment system designed in accordance with the requirements of part 7035.2815, subpart 9.

Subp. 14. **Construction requirements.** The owner or operator must follow the construction requirements of items A to C and part 7035.2815, subpart 12. The owner or operator must incorporate all applicable construction requirements into project specifications for all major design features.

A. Clay barrier layers must be compacted in lifts which are not deeper than the feet on the equipment used to compact the liner, or six inches after compaction, whichever is less.

B. Clay barrier layers must be bladed and rolled smooth after the final lift is compacted.

C. An on-site inspector qualified by training and experience must be present during construction of liner systems and final cover.

Subp. 15. **Operation and maintenance requirements.** The owner or operator must operate the facility according to items A to V.

A. A waste combustor ash land disposal facility must be operated by a certified operator, as defined in parts 7048.0100 to 7048.1300. A certified operator must be present during the time that the facility is open to accept ash.

B. Ash must be spread and compacted in layers which are one foot or less in depth before compaction.

C. Appropriate compacting equipment must be used to achieve compaction adequate to prevent settlement.

D. To determine compliance with subpart 10, item A, subitem (1), the moisture content of ash in areas where intermittent cover has not been placed must be tested. The sampling procedures of subitems (1) to (4) must be followed.

(1) Ash moisture content must be tested at least monthly.

(2) Ash moisture content at six or more locations on the exposed ash surface must be tested using random methods to select the horizontal location of moisture testing samples.

(3) If the moisture content of ash samples is not analyzed immediately, samples must be protected from changes in composition due to exposure to precipitation, wind, sun, absorbent materials, and extremes of temperature.

(4) Testing must be performed by persons qualified by training and experience.

E. Ash must be placed and compacted at a moderate slope to promote drainage off the fill area while achieving good compaction.

F. Ash must be covered in accordance with the approved intermittent cover system required in subpart 10, item A.

G. When no ash will be placed on a fill area for 30 days or more, intermediate cover, as defined in subpart 10, item B, must be placed over the ash.

H. Each fill phase must be covered when it reaches final permitted waste elevations, according to subpart 10, item C, as soon as possible, considering limitations such as weather conditions.

I. Each fill phase must be outlined with grade stakes or another marking method before placing waste in the phase.

J. Resource recovery operations, including but not limited to ferrous metal recovery, must be confined to designated areas approved in the facility permit. Storage areas must be kept as small as practical; they must not interfere with normal disposal operations.

K. The facility must be inspected according to the schedule identified in the facility's operations manual and approved by the commissioner for at least the following items: dust emissions, uncontrolled vegetative growth, soil erosion on slopes and completed areas, vandalism on the monitoring systems, rodents and burrowing animals, malfunctions in the leachate detection and collection systems, and settlement in completed areas.

L. Leachate must be sampled and analyzed according to subpart 16.

M. The leachate collection system must be cleaned annually.

N. The amount of leachate collected must be monitored and recorded.

O. Corrective actions must be performed to repair any conditions not in compliance with parts 7035.2525 to 7035.2885.

P. Groundwater must be sampled and analyzed according to subpart 16.

Q. During wet weather conditions liners, covers, and other design features that might be disrupted by additional loads in a saturated condition must be protected.

R. The fill area must be surveyed annually before November 1 by a land surveyor registered in Minnesota. An updated existing conditions plan must be submitted with the annual report required in part 7035.2585. The plan must show the elevations of completed fill areas, areas partially filled, and all design features that changed in elevation due to facility operations or settlement. The remaining fill capacity must be calculated and its location shown on the plan.

S. All fill areas must be marked with permanent markers which clearly show the location of disposed ash.

T. The liner must be protected from freezing. At least three feet of ash or other approved material must be placed above the sand blanket on all lined areas by December 1 of each year to protect the liner from freezing. No disposal may take place after December 1 in areas which have not met this requirement without first testing the liner integrity and receiving approval from the commissioner for the disposal.

U. All closure costs expended under part 7035.2625, all postclosure care cost expenditures made under part 7035.2645, and all corrective action expenditures made under part 7035.2615 must be recorded in the operating record.

V. The sequence and direction of below-grade operations must be conducted to prevent surface water from entering the fill area.

Subp. 16. **Groundwater, surface water, and leachate sampling and analysis.** The owner or operator must design, install, and maintain a water monitoring system in compliance with part 7035.2815, subpart 10. The owner or operator must collect and analyze groundwater samples, leachate samples and, where required in permits, orders, or stipulation agreements, surface water samples, according to part 7035.2815, subpart 14, items A, B, and D to Q.

Until the commissioner has established facility-specific monitoring requirements as required by part 7035.2815, subpart 14, item B, the owner or operator must comply with the monitoring requirements of items A and B.

A. Groundwater quality monitoring points at the facility must be sampled at least three times per year at the times specified in the facility permit. For one of the three sampling events, the owner or operator must provide the field measurements, laboratory analysis, and field and laboratory observations listed in subitems (1) and (2). For the other two sampling events, the owner or operator must provide only the measurements and observations listed in subitem (1) for all groundwater monitoring points. Where existing monitoring points may be unsuitable for sampling some or all of the listed substances, the commissioner may make appropriate changes in the monitoring requirements.

(1) Routine list of groundwater parameters:

(a) Alkalinity, total as $CaCO_3$

(b) Aluminum, dissolved
(c) Ammonia Nitrogen
(d) Arsenic, dissolved
(e) Cadmium, dissolved
(f) Calcium, dissolved
(g) Chloride
(h) Copper, dissolved
(i) Dissolved Solids, total
(j) Iron, dissolved
(k) Lead, dissolved
(l) Magnesium, dissolved
(m) Manganese, dissolved
(n) Mercury, dissolved
(o) Nickel, dissolved
(p) Nitrate + Nitrite, as N
(q) Potassium, dissolved
(r) Selenium, dissolved
(s) Sodium, dissolved
(t) Sulfate
(u) Suspended Solids, total
(v) Zinc, dissolved
(w) Appearance (a)
(x) pH (b)
(y) Specific Conductance (b)
(z) Temperature (b)
(aa) Water Elevation (c)

In subitems (a) to (aa), (a) means visual observation, in field and laboratory, noting conditions such as the following, if present: color, cloudiness, floating films, other liquid or gas phases, odor; (b) means two measurements: in the field, immediately after obtaining the sample, and in the laboratory; (c) means as measured in the field before pumping or bailing, to the nearest 0.01 foot.

(2) Extended list of groundwater parameters:

(a) Barium, dissolved
(b) Boron
(c) Chromium, total dissolved
(d) Silver, dissolved
(e) Tin, dissolved
(f) Other parameters listed in item B required by the commissioner based on their detection in leachate

B. Leachate monitoring points at the facility must be sampled at least quarterly at the times specified in the facility permit. For one of the sampling events the owner or operator must provide the field measurements, laboratory analysis, and field and laboratory observations listed in subitems (1) and (2). For at least two years, and thereafter at least every other year or on a schedule determined by the commissioner based on results of previous analyses, the owner or operator must analyze leachate samples from one of the quarterly sampling events for the parameters listed in subitem (3). For the other sampling events, the owner or operator must provide only the measurements and observations listed in subitem (1).

(1) Routine list of leachate parameters:

(a) Alkalinity, total as $CaCO_3$
(b) Aluminum, total
(c) Ammonia Nitrogen
(d) Arsenic, total
(e) Boron
(f) Barium, total
(g) Biological Oxygen Demand (BOD)
(h) Cadmium, total
(i) Calcium, total
(j) Chloride
(k) Chromium, total
(l) Chemical Oxygen Demand (COD)
(m) Copper, total
(n) Dissolved solids, total
(o) Iron, total
(p) Lead, total
(q) Magnesium, total
(r) Manganese, total
(s) Mercury, total
(t) Nickel, total
(u) Nitrate + Nitrite, as N
(v) Potassium, total
(w) Selenium, total
(x) Silver, total
(y) Sodium, total
(z) Sulfate
(aa) Suspended Solids, total
(bb) Tin, total
(cc) Zinc, total
(dd) Appearance (a)
(ee) pH (b)
(ff) Specific Conductance (b)
(gg) Temperature (b)

In subitems (a) to (gg), (a) means visual observation, in field and laboratory, noting conditions such as the following, if present: color, cloudiness, floating films, other liquid or gas phases, odor; (b) means two measurements: in the field, immediately after obtaining the sample, and in the laboratory.

(2) Extended leachate sampling parameters:

(a) Benzo(a)pyrene
(b) Benzo(b)fluoranthene
(c) Benzo(k)fluoranthene
(d) Benzo(g,h,i)perylene
(e) Chrysene
(f) Hexachlorobenzene
(g) Indeno(1,2,3-cd)pyrene
(h) Pyrene
(i) Pentachlorophenol
(j) Acetone

(k) Vinyl Chloride

(3) Dioxins and Furans:

(a) 2,3,7,8-TCDD

(b) Tetrachlorodibenzodioxin

(c) Pentachlorodibenzodioxm

(d) Hexachlorodibenzodioxin

(e) Heptachlorodibenzodioxin

(f) Tetrachlorodibenzofuran

(g) Pentachlorodibenzofuran

(h) Hexachlorodibenzofuran

(i) Heptachlorodibenzofuran

Subp. 17. **Contingency action.** The owner or operator must implement actions necessary to repair site features or to control, recover, or treat polluted ground or surface waters and explosive or toxic gases according to part 7035.2815, subpart 15.

Subp. 18. **Closure and postclosure care.** The owner or operator must comply with the closure and postclosure care requirements of part 7035.2815, subpart 16.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2910 MUNICIPAL WASTE COMBUSTOR ASH TESTING REQUIREMENTS.

Subpart 1. **Definitions.** As used in subparts 1 to 12, the following terms have the meaning given them in this subpart.

A. "Analysis sample" means a sample which is to be delivered to a laboratory for analysis.

B. "Composite sample" means a sample that is formed by mixing two or more samples together to create a sample which is representative of a longer time period or a greater amount of material.

C. "Grab sample" refers to a sample collected at one time or location.

Subp. 2. **Scope.** Subparts 1 to 12 apply to owners and operators of municipal solid waste combustors.

Subp. 3. **Frequency.** The owner or operator must collect ash samples at least quarterly. Sample collection must be begun within seven days of January 15, April 15, July 15, and October 15, unless otherwise approved by the commissioner. Quarterly samples and an annual composite sample formed from equal portions of the quarterly samples must be analyzed according to subpart 5. Quarterly samples must be analyzed within appropriate sample holding times, or 45 days after sample collection is completed, whichever is less.

Subp. 4. **Test methods.** The owner or operator must analyze samples for total composition, leaching potential, and physical characteristics for the following testing parameters, using test methods issued by the United States Environmental Protection Agency or the American Society of Testing and Materials unless the method is approved as provided by item D. The test methods must obtain detection limits equal to or less than those specified in this subpart.

A. Total composition:

(1) Table 1: Quarterly Testing Parameters:

Parameter	Maximum Detection Limit	
(a) Aluminum	2.0	mg/kg
(b) Arsenic	1.7	mg/kg

(c) Cadmium	0.16	mg/kg
(d) Lead	0.8	mg/kg
(e) Manganese	2.4	mg/kg
(f) Mercury	0.08	mg/kg
(g) Nickel	5.6	mg/kg
(h) Selenium	1.3	mg/kg
(i) Zinc	56	mg/kg
(j) Other parameters listed in subitem (2) or (3) which are required by the commissioner based on results of previous testing.		

(2) Table 2: Annual Testing Parameters:

Parameter	Maximum Detection Limit	
(a) Barium	4	mg/kg
(b) Boron	4	mg/kg
(c) Calcium	40	mg/kg
(d) Chloride	40	mg/kg
(e) Chromium	0.72	mg/kg
(f) Copper	0.8	mg/kg
(g) Iron	0.4	mg/kg
(h) Magnesium	0.4	mg/kg
(i) Silver	0.8	mg/kg
(j) Sodium	4	mg/kg
(k) Strontium	2.0	mg/kg
(l) Sulfate	40	mg/kg
(m) Tin	1.2	mg/kg

(3) Table 3: Special Annual Testing Parameters:

Parameter	Method	Maximum Detection Limit	
(a) Dioxins	EPA 8290	10	ng/kg
(b) Furans	EPA 8290	10	ng/kg

(4) EPA Method 3050 for metals digestion must be used for total composition analysis.

B. Leaching potential: use EPA Method 1312, the Synthetic Precipitation Leach Test for Soils, with extraction fluid no. 2 (pH=5.0) to satisfy the leaching potential testing requirements of this part.

(1) Table 1: Quarterly Testing Parameters:

Parameter	Maximum Detection Limit	
(a) Aluminum	1000	µg/l
(b) Arsenic	25	µg/l
(c) Cadmium	4	µg/l
(d) Lead	20	µg/l
(e) Manganese	20	µg/l
(f) Mercury	2	µg/l
(g) Nickel	20	µg/l
(h) Selenium	20	µg/l
(i) Zinc	20	µg/l
(j) pH of ash and of leachate produced by the leach test	+/-0.1 pH units	

(k) Other parameters listed in subitem (2) which are required by the commissioner based on results of previous testing.

(2) Table 2: Annual Testing Parameters:

Parameter	Maximum Detection Limit
(a) Alkalinity	1000 µg/l
(b) Barium	100 µg/l
(c) Boron	100 µg/l
(d) Calcium	1000 µg/1
(e) Chemical Oxygen Demand	4000 µg/l
(f) Chloride	1000 µg/l
(g) Chromium	18 µg/l
(h) Copper	20 µg/l
(i) Iron	10 µg/l
(j) Magnesium	10 µg/l
(k) Silver	20 µg/l
(l) Sodium	100 µg/l
(m) Strontium	50 µg/l
(n) Sulfate	1000 µg/l
(o) Tin	30 µg/l

(3) EPA SW-846 Method 3050 must be used for metals digestion.

C. Physical characteristics:

Parameter	Method
(1) Moisture content	ASTM D3173
(2) Percent combustible	ASTM D3174

D. The owner or operator may propose alternative test methods for the commissioner's review and approval. The owner or operator must demonstrate that the proposed alternative methods are equivalent in terms of accuracy and precision to the methods required by this subpart.

E. The owner or operator may move a parameter from the quarterly parameter lists of item A, subitem (1), and item B, subitem (1), to the annual parameter lists of item A, subitem (2), and item B, subitem (2), if the parameter has not been detected above the detection limits specified in this subpart for eight or more consecutive sampling events. The owner or operator must report changes in the parameter lists as part of the annual report required by subpart 10.

Subp. 5. **Number of analyses.** The owner or operator must collect and analyze fly ash and bottom ash samples separately according to item A. In cases where bottom and fly ash are mixed, collect and analyze samples of combined ash according to item B, and fly ash samples according to item A. If ash treatment occurs prior to disposal, collect samples after treatment.

A. Owners and operators of facilities which manage bottom and fly ash separately must test ash quarterly according to subitem (1), and annually according to subitem (2).

(1) At a minimum the following number of samples must be analyzed: four samples of bottom ash and two samples of fly ash for total composition for the parameters listed in subpart 4, item A, subitem (1); three samples of bottom ash and three samples of fly ash for leaching potential for the parameters listed in subpart 4, item B, subitem (1); and three samples of bottom ash and three

samples of fly ash for the physical characteristics tests listed in subpart 4, item C.

(2) At a minimum the following number of analyses of the annual composite samples must be performed: four samples of bottom ash and two samples of fly ash for total composition for the parameters listed in subpart 4, item A, subitem (2); two samples of fly ash for total composition for the parameters listed in subpart 4, item A, subitem (3); three samples of bottom ash and three samples of fly ash for leaching potential for the parameters listed in subpart 4, item B, subitem (2), and three samples of bottom ash and three samples of fly ash for moisture content in accordance with subpart 4, item C, subitem (1). For at least the first two years of sampling and analyses performed in accordance with this part, annual composite samples must be analyzed for the quarterly testing parameters listed in subpart 4, item A, subitem (1), and item B, subitem (1), in addition to the annual parameters required by this subitem.

B. Owners and operators of facilities which manage combined ash must test ash quarterly according to subitem (1), and annually according to subitem (2).

(1) At a minimum the following number of samples must be analyzed: six samples for total composition for the parameters listed in subpart 4, item A, subitem (1); six samples for leaching potential for the parameters listed in subpart 4, item B, subitem (1); and six samples for the physical characteristics tests listed in subpart 4, item C.

(2) At a minimum the following number of analyses of the annual composite sample must be performed: six samples for total composition for the parameters listed in subpart 4, item A, subitem (2); two samples for total composition for the parameters listed in subpart 4, item A, subitem (3); six samples for leaching potential for the parameters listed in subpart 4, item B, subitem (2), and six samples for moisture content in accordance with subpart 4, item C, subitem (1). For at least the first two years of sampling and analyses performed in accordance with this part, analyze annual composite samples for the quarterly testing parameters listed in subpart 4, item A, subitem (1) and item B, subitem (1), in addition to the annual parameters required by this subitem.

Subp. 6. **Ash sampling plan.** The owner or operator must perform ash sampling according to an ash sampling plan approved by the commissioner. Proposed changes to sampling equipment or procedures must be submitted to the commissioner for review and approval. The plan must contain at least the following information:

A. specification of the training and experience qualifications of persons who collect ash samples;

B. description of equipment used to collect, process, and store ash samples;

C. identification of sampling equipment cleaning procedures and other actions taken to prevent sample contamination;

D. identification of the location or locations where ash samples are collected;

E. description of procedures used to collect grab samples;

F. description of procedures used to process grab samples to form composite samples;

G. description of chain-of-custody and sample storage procedures; and

H. identification of ash sampling quality assurance and quality control measures.

Subp. 7. **Sampling equipment requirements.** Equipment used for ash sampling must comply with items A to D.

A. Sampling equipment must be constructed of materials which are compatible with ash and will not contaminate samples.

B. Containers which are used to hold analysis samples must be prepared according to standard laboratory procedures identified in EPA SW-846, chapter three, for metallic analytes and chapter four for organic analytes, and EPA Document 600/4-79-020 "Methods for Chemical Analyses of Water and Wastes." Part 7035.0605 incorporates these documents by reference and establishes their availability.

C. Sampling equipment must be cleaned before use each quarter. During the sampling event, equipment must be cleaned before each use or cover it to protect it from exposure between uses.

D. Sampling equipment must be used which is large enough to collect a reasonably complete range of ash particle sizes. The size of the opening of sampling equipment used before screening ash samples must be at least three times the diameter of the largest ash particle or 12 inches, whichever is smaller. Equipment used after samples have been screened must have an opening size of at least two inches.

Subp. 8. **Sample collection methods.** Methods used to collect samples to satisfy the requirements of this part must comply with items A to H.

A. Samples must be collected that represent the average quality of ash produced at the waste combustor during the sampling event. Factors which affect the content of samples, such as timing of fly ash addition to bottom ash and sample collection locations must be considered.

B. Samples must be collected at times and locations which have been selected before sample collection begins for that quarter.

C. Samples must be collected by persons who meet the training and experience qualifications specified in the approved sampling plan.

D. Samples must be protected from changes in composition due to exposure to precipitation, wind, sun, absorbent or reactive materials, and extremes of temperature. Samples must be stored in covered containers.

E. The circulation of air through sampling equipment must be minimized to prevent the loss of fines and moisture. If a cement mixer or similar equipment is used to mix samples as required by subpart 9, items A and G, cover the equipment during mixing.

F. Grab samples must be collected according to subitems (1) to (3). Analysis samples must be taken from composite samples formed by processing and mixing grab samples according to subpart 9.

(1) Samples must be collected over a time period of at least one week. Samples must be collected every day that a facility operates during a week unless the commissioner approves otherwise. If the waste combustor is unable to operate for the entire week, sample collection must be resumed after operation begins so that the final composite sample includes ash collected on each day of the operating week.

(2) Grab samples must be collected at least eight times per day at evenly-spaced intervals of no less than one hour if samples are collected from a conveying system. If samples are collected from a location where ash collects over time, such as a storage building or truck, samples must be collected from different locations so that samples represent ash produced over at least eight hours.

(3) Grab samples must be collected of approximately equal weight. Grab samples of bottom ash or combined ash must consist of a minimum of 15 pounds (seven kilograms) of ash. Grab samples of fly ash must consist of a minimum of one pound (one-half kilogram) of ash if the waste combustor produces less than ten tons of fly ash in one week, and two pounds (one kilogram) of ash if the waste combustor produces ten tons or more of fly ash per week.

G. A minimum of three pounds (one and one-half kilograms) of each ash composite sample must be retained for at least one year. These samples must be held in moisture-tight containers which are filled as full as possible, protected from sunlight and extremes of temperature, and kept in a secure place.

H. All analysis samples must be refrigerated and the samples retained according to item G.

Subp. 9. **Sample processing.** The owner or operator must process bottom and combined ash samples according to items A to H. Fly ash samples must be processed according to items A and H.

A. Grab samples must be thoroughly mixed together to form one composite sample for each type of ash collected.

B. Samples must be screened using a three-eighths inch screen. All or a portion of the composite sample may be screened. At a minimum, 35 pounds of ash must be screened.

C. The weight of ash which passes through the screen and the weight of ash which does not pass through the screen must be recorded.

D. The size of friable pieces of ash which are larger than three-eighths inch must be reduced.

E. All ash which was caught by the screen initially must be rescreened to separate ash which has been reduced to less than three-eighths inch by the process in item D.

F. The weight of ash which remains on the screen and ash which passes through the screen must be recorded.

G. Ash which passes through the screen after size reduction must be combined and thoroughly mixed with the ash which originally passed through the screen.

H. Bottom and combined ash analysis samples from the composite ash sample formed by the process in item G must be taken. Fly ash analysis samples from the composite sample formed by the process in item A must be taken. Ash which will be retained according to subpart 8, item G, must also be taken from this ash.

Subp. 10. **Annual ash testing report.** The owner or operator must submit an annual ash testing report to the commissioner by March 15 of each year. The report must include the information in items A to F.

A. Results of quarterly and annual analyses of ash as required by this part. Total composition results must be reported on a dry weight basis.

B. Discussion of the data, including identification of trends observed by comparing the most recent year's results with those of previous years. In particular, the owner or operator must assess whether the waste combustor is in compliance with the goals of Minnesota Statutes, section 115A.97, subdivision 1, clause (1).

C. Data quality assurance assessment, including the following:

(1) precision and accuracy of each method used;

(2) representativeness of the samples;

(3) potential effect of any field or laboratory contamination on the sampling results; and

(4) qualification or rejection of data based on the results of quality control samples.

D. Information summarizing operation of the waste combustor during the ash sampling periods, and data regarding ash sample processing recorded according to subpart 9. Operating information must include an estimate of the quantity and type of wastes other than mixed municipal solid waste which were combusted at the facility during the ash sampling period. If leachate was added to the waste during the sampling period, the quantity of leachate added and source of the leachate must be noted.

E. Certification by the owner or operator that samples analyzed to fulfill the requirements of this part were collected according to the plan required by sub-

part 6, and that no actions were taken during the sample collection period to intentionally affect the results of ash sample analysis so that the results would not be representative of ash typically generated by the waste combustor. Such actions may include, for example, altering the type of waste combusted during the sampling period.

F. Identification of any changes in test methods or parameters made in accordance with subpart 4, items D and E.

Subp. 11. **Special requirements for new facilities.** Waste combustors which begin operation after April 27, 1992, must comply with the requirements of this subpart.

A. The ash sampling plan required by subpart 6 must be submitted to the commissioner for review and approval at least 90 days before the first time waste is fired in the combustor.

B. Samples must begin to be collected within 60 days after reaching the maximum continuous rating for the waste combustor, but not more than 180 days after waste is first fired in the combustor.

C. The first four quarterly samples must be analyzed for the parameters listed in subpart 4, item A, subitems (1), (2), and (3), item B, subitems (1) and (2), and item C, subitems (1) and (2).

D. Quarterly testing reports to the commissioner must be submitted for the first four quarters. A report for each quarter within three months after the first day of sample collection for that quarter must be submitted. The contents of the reports must comply with the requirements of subpart 10, items A, C, D, and E.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*

7035.2915 REQUIREMENTS FOR TEMPORARY PROGRAM TYPE I and II STORAGE FACILITIES.

Subpart 1. **Definitions.** As used in subparts 1 to 4, the following terms have the meanings given them in this subpart.

A. "Temporary program" means the Temporary Management Program for Mixed Municipal Solid Waste Incinerator Ash approved by the agency board under the authority of Minnesota Statutes, section 115A.97, subdivision 4.

B. "Type I ash storage facility" means a facility which has been designed according to part 17.0 of the temporary program where municipal solid waste combustor ash is stored for a limited period of time and all ash will be removed from the facility at closure.

C. "Type II ash storage facility" means a facility designed according to part 18.0 of the temporary program which was classified under the temporary program as a storage facility, pending adoption of parts 7035.0300 to 7035.2915.

Subp. 2. **Scope.** Subparts 1 to 3 apply to owners and operators of type I ash storage facilities. Subparts 1, 2, and 4 apply to owners and operators of type II ash storage facilities.

Subp. 3. **Type I ash storage facilities.** The owner or operator must design, maintain, and operate a type I ash storage facility in compliance with item A. Type I ash storage facilities must be closed in compliance with item B.

A. The owner or operator must design, maintain, and operate a type I ash storage facility in compliance with the solid waste storage facility requirements of part 7035.2855, subparts 3 and 4, excluding subpart 4, item B, the requirements of the facility permit, and applicable parts of the temporary program.

B. Within 18 months after April 27, 1992, the owner or operator must close a type I ash storage facility according to parts 14 and 15 of the temporary program, the facility permit, the site closure plan and subitems (1) to (4). In cases

where requirements of the aforementioned documents conflict with each other, the most recent requirements shall apply.

(1) The owner or operator must notify the director at least 90 days before facility closure activities are to begin.

(2) The owner or operator must remove from the site all municipal solid waste combustor ash and contaminated portions of the storage area, including the liner and underlying or surrounding soils. The owner or operator must take samples of the liner and underlying soils and analyze these samples to determine the extent of contamination according to a plan approved by the commissioner. The owner and operator must submit a liner and soils removal plan to the commissioner for review and approval at least 90 days before closure activities are scheduled to begin. In approving the plan the commissioner shall consider whether the proposed number of samples and parameters to be tested will determine the extent of pollutant migration.

(3) The owner or operator must dispose of, store, or use all removed ash and contaminated portions of the storage area at permitted facilities or locations.

(4) The owner or operator must close the storage facility in a manner that minimizes the release of pollutants to ground water, surface waters, soils, and the atmosphere during the closure and postclosure period. Moisture must be added to the ash or soils if necessary to control fugitive dust emissions.

Subp. 4. **Type II ash storage facilities.** Type II ash storage facilities are classified as municipal solid waste combustor ash land disposal facilities. As such, all operations and new construction other than liner or final cover construction must comply with part 7035.2885 and all other applicable parts of this chapter within 45 days after April 27, 1992. Liners and final cover constructed more than nine months after April 27, 1992, must meet the requirements of part 7035.2885. At least nine months before the anticipated date for beginning construction of a new phase at the facility the owner or operator of a type II ash storage facility must submit to the commissioner for review and approval amendments to the facility's approved engineering plans, engineering reports, and operations manual showing changes necessary to comply with part 7035.2885.

Statutory Authority: *MS s 115A.97*

History: *16 SR 2321*