

**7045.0542 THERMAL TREATMENT.**

Subpart 1. **Scope.** This part applies as follows:

A. This part applies to owners and operators of facilities that thermally treat hazardous waste, except as part 7045.0450 provides otherwise. The following facility owners or operators are considered to thermally treat hazardous waste: owners or operators of hazardous waste incinerators as defined in part 7045.0020; and owners or operators who burn hazardous waste in boilers or in industrial furnaces in order to destroy the waste.

B. For owners or operators of thermal treatment facilities, the commissioner may, in establishing the permit conditions, exempt the applicant from all requirements of this part except subparts 2 and 8, if after examination of the waste analysis included with the applicant's permit application, the commissioner finds that the waste to be treated contains none of the hazardous constituents listed in part 7045.0141 which would reasonably be expected to be in the waste and that the waste to be treated is:

(1) listed as a hazardous waste in part 7045.0135 only because it is ignitable, corrosive, or both;

(2) listed as a hazardous waste in part 7045.0135 only because it is reactive for characteristics other than those listed in part 7045.0131, subpart 5, items D and E, and will not be treated when other hazardous wastes are present in the combustion zone;

(3) a hazardous waste only because it possesses the characteristics of ignitability, corrosivity, or both, as determined by the tests for characteristics of hazardous wastes under part 7045.0131; or

(4) a hazardous waste only because it possesses any of the reactivity characteristics described by part 7045.0131, subpart 5, items A, B, C, F, G, and H, and will not be treated when other hazardous wastes are present in the combustion zone.

C. For owners or operators of thermal treatment facilities, the commissioner may, in establishing the permit conditions, exempt the applicant from all requirements of this part except subparts 2 and 8, if after examination of the waste analysis included with the applicant's permit application the commissioner finds that:

(1) the waste to be treated is one which is specified in item B, subitem (1), (2), (3), or (4), and contains insignificant concentrations of the hazardous constituents listed in part 7045.0141; and

(2) the thermal treatment facility will not endanger human health or the environment, if the exemption is approved.

D. For owners or operators of thermal treatment facilities whose primary purpose is the production of energy, the commissioner may, after review of the request for exemption, exempt the owner or operator from any requirements of this part except

subparts 2 and 8. The owner or operator shall submit to the commissioner a request for exemption which shall include the following information:

- (1) waste analysis results for each waste to be treated;
- (2) a complete description of the thermal treatment unit, including air pollution control equipment;
- (3) a description of the operating procedures; and
- (4) an evaluation of the suitability of the thermal treatment process for the wastes to be treated.

E. The commissioner shall approve the request for exemption if the commissioner finds that:

- (1) the primary purpose of the thermal treatment facility is the production of energy;
- (2) the thermal treatment process is suitable for the wastes to be treated; and
- (3) the thermal treatment facility will not endanger human health or the environment, if the exemption is approved.

F. The owner or operator of a thermal treatment facility may conduct trial burns, subject only to the requirements of a trial burn approval as issued under the agency's permitting procedures in chapter 7001.

Subp. 2. **Waste analysis.** As a portion of a trial burn plan or with a permit application, the owner or operator shall have included an analysis of waste feed sufficient to provide all information required by the agency's permitting procedures in chapter 7001. Owners or operators of new hazardous waste thermal treatment facilities shall provide the required information to the greatest extent possible.

Throughout normal operation the owner or operator shall conduct sufficient waste analysis to verify that waste feed to the thermal treatment process is within the physical and chemical composition limits specified in the permit.

Subp. 3. **Principal organic hazardous constituents.** Principal organic hazardous constituents in the waste feed must be treated to the extent required by the performance standard of subpart 4.

One or more principal organic hazardous constituents will be specified in the facility's permit, from among those constituents listed in part 7045.0141, for each waste feed to be treated. This specification will be based on the degree of difficulty of thermal treatment of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses and trial burns or alternative data submitted with the facility's permit application. Organic constituents which represent the greatest degree

of difficulty of thermal treatment will be those most likely to be designated as a principal organic hazardous constituent. Constituents are more likely to be designated as principal organic hazardous constituents if they are present in large quantities or concentrations in the waste.

Trial principal organic hazardous constituents will be designated for performance of trial burns in accordance with the procedure specified for obtaining trial burn approval.

Subp. 4. **Performance standards.** A thermal treatment facility thermally treating hazardous waste must be designed, constructed, and maintained so that, when operated in accordance with operating requirements specified under subpart 6 it will comply with all federal and state air quality rules and regulations and will meet the performance standards of items A to E, whichever are applicable:

A. Except as provided in item E, a thermal treatment facility thermally treating hazardous waste must achieve a destruction and removal efficiency of 99.99 percent for each principal organic hazardous constituent designated in its permit for each waste feed. The destruction and removal efficiency (DRE) is determined for each principal organic hazardous constituent from the following equation:

$$\text{DRE} = \frac{(\text{Win} - \text{Wout})}{\text{Win}} \times 100\%$$

where:

Win = Mass feed rate of one principal organic hazardous constituent in the waste stream feeding the thermal treatment process, and

Wout = Mass emission rate of the same principal organic hazardous constituent present in exhaust emissions prior to release to the atmosphere.

B. A thermal treatment facility thermally treating hazardous waste and producing stack emissions of more than 1.8 kilograms per hour (four pounds per hour) of hydrogen chloride (HCl) must control hydrogen chloride emissions such that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or one percent of the hydrogen chloride in the stack gas prior to entering any pollution control equipment.

C. A thermal treatment facility thermally treating hazardous waste must not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) when corrected for the amount of oxygen in the stack gas according to the formula:

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$$P_c = P_m \times \frac{14}{21 - Y}$$

where:

$P_c$  = corrected concentration of particulate matter;

$P_m$  = measured concentration of particulate matter; and

$Y$  = measured concentration of oxygen in the stack gas; using the Orsat method for oxygen analysis of dry flue gas, presented in Code of Federal Regulations, title 40, part 60, appendix A (method 3), as amended. This correction procedure is to be used by all hazardous waste thermal treatment facilities except those operating under conditions of oxygen enrichment. For these facilities the commissioner will select an appropriate correction procedure to be specified in the facility permit.

D. For purposes of permit enforcement, compliance with the operating requirements specified in the permit will be regarded as compliance with this part. However, evidence that compliance with these permit conditions is insufficient to ensure compliance with the performance requirements of this part may be information justifying modification, revocation, or reissuance of a permit.

E. A thermal treatment facility thermally treating hazardous wastes F020, F021, F022, F023, F026, and F027 listed under part 7045.0135, subpart 1a, item B, must achieve a destruction and removal efficiency ("DRE") of 99.9999 percent for each principal organic hazardous constituent designated in its permit. This performance must be demonstrated on principal organic hazardous constituents that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans. DRE is determined for each principal organic hazardous constituent from the equation in item A. In addition, the owner or operator of the thermal treatment facility must notify the commissioner of the intent to burn waste F020, F021, F022, F023, F026, or F027.

Subp. 5. **Hazardous waste thermal treatment facility permits.** Requirements for hazardous waste thermal treatment facility permits are as follows:

A. The owner or operator of a hazardous waste thermal treatment facility may thermally treat only wastes specified in the permit and only under operating conditions specified for these wastes under subpart 6, except for the following cases:

- (1) in approved trial burns under the agency's permitting procedures in chapter 7001; or
- (2) under exemptions created by subpart 1.

B. Other hazardous wastes may be thermally treated only after operating conditions have been specified in a new permit, or a permit modification as applicable. Operating requirements for new wastes may be based on either trial burn results or alternative data included with a permit application.

C. The permit for a new hazardous waste thermal treatment facility must establish appropriate conditions for each of the applicable requirements of this part, including but not limited to allowable waste feeds and operating conditions necessary to meet the requirements of subpart 6, sufficient to comply with the following standards:

(1) For the period beginning with initial introduction of hazardous waste to the thermal treatment process and ending with initiation of the trial burn, and only for the minimum time required to establish operating conditions required in item B, not to exceed a duration of 720 hours operating time for treatment of hazardous waste, the operating requirements must be those most likely to ensure compliance with the performance standards of subpart 4, based on the commissioner's engineering judgment. The agency may once extend the duration of this period for up to 720 additional hours when good cause for the extension is demonstrated by the applicant.

(2) For the duration of the trial burn, the operating requirements must be sufficient to demonstrate compliance with the performance standards of subpart 4, and must be in accordance with the approved trial burn plan.

(3) For the period immediately following completion of the trial burn, and only for the minimum period sufficient to allow sample analysis, data computation, and submission of the trial burn results by the applicant, and review of the trial burn results and modification of the facility permit by the agency, the operating requirements must be those most likely to ensure compliance with the performance standards of subpart 4 based on the commissioner's engineering judgment.

(4) For the remaining duration of the permit, the operating requirements must be those demonstrated, in a trial burn or by alternative data specified in the agency's permitting procedures in chapter 7001, as sufficient to ensure compliance with the performance standards of subpart 4.

Subp. 6. **Operating requirements.** Operating requirements are as follows:

A. A thermal treatment facility must be operated in accordance with operating requirements specified in the permit. These will be specified on a case-by-case basis as those demonstrated in a trial burn or in alternative data as specified in subpart 5, item B and included with a facility's permit application to be sufficient to comply with the performance standards of subpart 4. The agency may specify additional operating requirements necessary to assure compliance with air quality emission and ambient limits and to protect public health and property.

B. Each set of operating requirements will specify the composition of the waste feed (including acceptable variations in the physical or chemical properties of the waste feed which will not affect compliance with the performance requirement of subpart 4) to which the operating requirements apply. For each waste feed, the permit shall specify acceptable operating limits, including the following conditions:

- (1) carbon monoxide level in the stack exhaust gas;
- (2) waste feed rate;
- (3) treatment process temperature;
- (4) an appropriate indicator of combustion gas velocity;
- (5) allowable variations in treatment system design or operating procedures;

and

(6) other operating requirements that are necessary to ensure that the performance standards of subpart 4, federal and state statutes and rules, and those required by the agency to protect the environment are met.

C. During start-up and shutdown of a thermal treatment process, hazardous waste, except ignitable waste exempted in accordance with subpart 1, must not be fed into the thermal treatment process unless the treatment process and air pollution control equipment are operating within the conditions of operation specified in the permit.

D. Fugitive emissions from the thermal treatment zone must be controlled by:

- (1) keeping the thermal treatment zone totally sealed against fugitive emissions;
- (2) maintaining a thermal treatment zone pressure lower than atmospheric pressure; or
- (3) an alternate means of control demonstrated with the permit application to provide fugitive emissions control equivalent to maintenance of thermal treatment zone pressure lower than atmospheric pressure.

E. A thermal treatment facility must be operated with a functioning system to automatically cut off waste feed to the treatment process when operating conditions deviate from limits established under item A.

F. A thermal treatment facility must cease operation when changes in waste feed, treatment process design, or operating conditions exceed limits designated in its permit.

Subp. 7. **Monitoring, reporting, and inspections.** Monitoring, reporting, and inspection requirements are as follows:

A. For monitoring:

(1) The owner or operator shall conduct monitoring while thermally treating hazardous waste. Treatment temperature, waste feed rate, oxygen, carbon dioxide, and the indicator of combustion gas velocity specified in the permit must be monitored on a continuous basis.

(2) Carbon monoxide, oxygen, and carbon dioxide must be monitored on a continuous basis at a point in the treatment facility downstream of the thermal treatment zone and prior to release to the atmosphere.

(3) Upon request by the commissioner, sampling and analysis of the waste and exhaust emissions must be conducted as specified in the permit to verify that the operating requirements established in the permit achieve the performance standards of subpart 4 and requirements of federal and state statutes, regulations, and rules.

(4) The agency may specify in the permit other monitors for demonstration of combustion and destruction efficiency of air pollutants.

B. The thermal treatment process and associated equipment must be subjected to thorough visual inspection at least daily for leaks, spills, fugitive emissions, and signs of tampering.

C. The emergency waste feed cut off system and associated alarms must be tested at least weekly to verify operability, unless the applicant demonstrates to the commissioner that weekly inspections will unduly restrict or upset operations and that less frequent inspection will be adequate. Operational testing must be conducted at least monthly.

D. This monitoring and inspection data must be recorded and the records must be placed in the operating log required by part 7045.0478.

Subp. 8. **Closure.** At closure the owner or operator shall remove all hazardous waste and hazardous waste residues including, but not limited to, ash, scrubber waters, and scrubber sludges from the thermal treatment facility site. At closure, as throughout the operating period, unless the owner or operator can demonstrate that any waste removed from the thermal treatment process or equipment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with the requirements of parts 7045.0205 to 7045.1030.

Subp. 9. **Open burning; waste explosives.** Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the potential to detonate, and bulk military propellants

which cannot safely be disposed through other modes of treatment. Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 kilometers/second at sea level). Owners or operators choosing to open burn or detonate waste explosives shall do so in accordance with the following table and in a manner that does not threaten human health or the environment.

#### Property Line Separation

Pounds of waste explosives or propellants	Minimum distance from open burning or detonation to the property of others
0 to 100	204 meters (670 feet)
101 to 1,000	380 meters (1,250)
1,001 to 10,000	530 meters (1,730)
10,001 to 30,000	690 meters (2,260)

**Statutory Authority:** *MS s 14.07; 116.07*

**History:** *9 SR 115; 10 SR 1212; 10 SR 1688; L 1987 c 186 s 15; 17 SR 1279; 20 SR 715; 33 SR 2042*

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