

flue gas flow rate, monitoring methods used to comply with s. NR 665.09 (13) and any air pollution control devices that shall be used.

6. Expected operating schedule.

(d) For the purpose of determining the feasibility of compliance with the performance standards of this section and determining adequate operating conditions, applicants shall propose a trial burn plan, which includes the following information:

1. An analysis of each waste or mixture of waste to be burned during the trial burn and during normal operation which includes:

a. Heat value of the waste in the form and composition in which it shall be burned.

b. Viscosity, if applicable, or description of physical form of the waste.

c. Composition and quantity of hazardous waste or mixtures of hazardous waste to be incinerated. The composition of each waste or mixture of wastes shall include an analysis for heating value, chlorine, sulfur content, ash content and any hazardous constituent listed in ch. NR 605 - Appendix IV.

d. An identification of any hazardous organic constituents listed in ch. NR 605, Appendix IV, which are present in the waste to be burned, except that the applicant need not analyze for constituents listed in ch. NR 605, Appendix IV which would reasonably not be expected to be found in the waste. The constituents excluded from analysis shall be identified, and the basis for the exclusion stated. The waste analysis must rely on analytical techniques specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846" or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84002."

Note: This publication is available from:

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2. An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846" or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002".

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3. A detailed engineering description of the incinerator, including:

a. Manufacturer's name and model number of incinerator, if available.

- b. Type of incinerator.
  - c. Linear dimensions of the incinerator unit including the cross sectional area of the combustion chamber.
  - d. Description of the auxiliary fuel system type/feed.
  - e. Capacity and type of prime mover.
  - f. Description of automatic waste feed cut-off systems.
  - g. Stack gas monitoring and pollution control equipment.
  - h. Nozzle and burner design.
  - i. Construction materials.
  - j. Location and description of temperature, pressure and flow indicating and control devices.
4. A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, sampling and monitoring equipment to be used, sampling and monitoring frequency and planned analytical procedures for sample analysis.
  5. A detailed test schedule for each waste for which the trial burn is planned including dates, duration, quantity of waste to be burned and other factors relevant to the department's decision under sub. (3).
  6. A detailed trial burn protocol, including for each waste identified, the ranges of combustion temperature, waste feed rate expected, carbon monoxide level in the exhaust gas, combustion gas velocity, use of auxiliary fuel and any other relevant parameters that shall be varied to affect the destruction and removal efficiency of the incinerator.
  7. A description of, and planned operating conditions for, any pollution and emission control equipment which shall be used.
  8. Procedures for rapidly stopping waste feed, shutting down the incinerator and controlling emissions in the event of an equipment malfunction.
  9. The department, in reviewing the trial burn plan, shall evaluate the sufficiency of the information provided and may require the applicant to supplement this information, if necessary, to achieve the purposes of this section.

(e) In lieu of the trial burn requirements in par. (d), the applicant may submit the following information:

1. An analysis of each waste or mixture of wastes to be burned including:
  - a. Heat value of the waste in the form and composition in which it shall be burned.
  - b. Viscosity, if applicable, or description of physical form of the waste.
  - c. An identification of any hazardous organic constituents listed in ch. NR 605 - Appendix IV, which are present in the waste to be burned, except that the applicant need not analyze for constituents listed in ch. NR 605 - Appendix IV which would reasonably not be expected to be

found in the waste. The constituents excluded from analysis shall be identified and the basis for their exclusion stated. The waste analysis shall rely on analytical techniques specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846" or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002".

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d. An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW 846", or "Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002."

e. A quantification of those hazardous constituents in the waste which may be designated as principal organic hazardous constituents (POHCs) based on data submitted from other trial or operational burns which demonstrate compliance with the performance standards of this section.

2. A detailed engineering description of the incinerator, including:

a. Manufacturer's name and model number of incinerator.

b. Type of incinerator.

c. Linear dimensions of incinerator unit including cross sectional area of the combustion chamber.

d. Description of auxiliary fuel system type/feed.

e. Capacity of prime mover.

f. Description of automatic waste feed cutoff systems.

g. Stack gas monitoring and pollution control equipment.

h. Nozzle and burner design.

i. Construction materials.

j. Location and description of temperature, pressure and flow indicating devices and control devices.

3. A description and analysis of the waste to be burned compared with the waste for which data from operational or trial burns are provided to support the contention that a trial burn is not needed. The data shall include those items listed in subd. 1. This analysis shall specify the POHCs which the applicant has identified in the waste for which an operating license is sought, and any differences from the POHCs in the waste for which burn data are provided.

4. The design and operating conditions of the incinerator unit to be used, compared with that for which comparative burn data are available.

5. A description of the results submitted from any previously conducted trial burns including:

a. Sampling and analysis techniques used to calculate performance standards in s. NR 665.09 (13).

b. Methods and results of monitoring temperatures, waste feed rates, carbon monoxide and an appropriate indicator of combustion gas velocity, including a statement concerning the precision and accuracy of this measurement.

6. The expected incinerator operational information to demonstrate compliance with s. NR 665.09, including:

a. Expected carbon monoxide (CO) level in the stack exhaust gas.

b. Waste feed rate.

c. Combustion zone temperature.

d. Indication of combustion gas velocity.

e. Expected stack gas volume, flow rate and temperature.

f. Computed residence time for waste in the combustion zone.

g. Expected hydrochloric acid removal efficiency.

h. Expected fugitive emissions and their control procedures.

i. Proposed waste feed cut-off limits based on the identified significant operating parameters.

7. Supplemental information as the department finds necessary to achieve the purposes of this paragraph.

8. Waste analysis data, including that submitted in subd. 1., sufficient to allow the department to specify as licensed POHCs those constituents for which destruction and removal efficiencies shall be required.

(f) The department may approve a feasibility and plan of operation report without a trial burn plan if the information submitted under par. (e) is provided and if it is found that:

1. The wastes are sufficiently similar; and

2. The incinerator units are sufficiently similar, and the data from other trial burns are adequate to specify operating conditions that ensure that the performance standards of s. NR 665.09 (13) will be met by the incinerator.

(g) Appurtenances and procedures intended to store hazardous waste beyond the end of the working day and to control dust, odors, and fire outside the burning chamber.

(h) Waste changing methods during incinerator operation.

(i) Provisions for interim waste storage or disposal when the incinerator is unavailable, including:

1. Type of storage or disposal.
2. Location of storage or disposal facility.
3. Capacity of the storage facility.
4. Daily clean-up procedures.
5. Incinerator inspection, maintenance and monitoring plans and procedures.
6. Detailed drawings and specifications of all structures, equipment and the facility.
7. A report which includes furnace design criteria and expected performance data, including emission data.
8. A waste analysis plan that shall ensure compliance as specified in s. NR 630.20 (1).
9. A contingency plan as specified in s. NR 630.22 (1).
10. Proposed site closure plans addressing the items specified in s. NR 640.06.

(j) A statement which suggests operating conditions necessary to operate in compliance with the performance standards of s. NR 665.09 (13) during both the shakedown period and the post-trial burn period in accordance with s. NR 665.07 (1) and (3).

(2) Based on the waste analysis data in the trial burn plan, the department shall specify as trial principal organic hazardous constituents (POHCs), those constituents for which destruction and removal efficiencies shall be calculated during the trial burn. These trial POHCs shall be specified by the department based on an estimate of the difficulty of incineration of the constituents identified in the waste analysis, their concentration or mass in the waste feed, and for wastes listed in s. NR 605.09 the hazardous waste organic constituent or constituents identified in ch. NR 605, Appendix III as the basis for listing.

(3) The department shall approve a trial burn plan if it finds that:

(a) The trial burn is likely to determine whether the incinerator performance standards required in s. NR 665.09 can be met;

(b) The trial burn itself does not present an imminent hazard to human health or the environment;

(c) The trial burn will help the department to determine operating requirements to be specified under s. NR 665.09 and

(d) The information sought in pars. (a) and (c) cannot reasonably be developed through other means.

(4) For the purposes of determining compliance with the performance standards of s. NR 665.09 and determining adequate operating conditions under s. NR 665.09, any person who submits a feasibility and plan of operation report for an existing hazardous waste incinerator operating under an interim license or a variance shall prepare and submit a trial burn plan and perform a trial burn in accordance with subs. (1) (d), (2) and (3) and s. NR 665.07 (2). Persons who submit trial burn plans and receive approval before submission of a feasibility and plan of operation

report shall complete the trial burns and submit the results, specified in s. NR 665.07 (2), with the feasibility and plan of operation report. If completion of this process conflicts with the date set for submission of the feasibility and plan of operation report, the department shall be notified and may establish a later date for submission of the feasibility and plan of operation report or the trial burn results. Trial burn results shall be submitted prior to the issuance of a license. If the trial burn plan is to be included with the feasibility and plan of operation report, the trial burn shall be conducted and the results submitted within a time period to be specified by the department.

(5) Within 60 days after a feasibility and plan of operation report is submitted, the department shall either determine that the report is complete or notify the applicant in writing that the report is not complete, specifying the information which the applicant shall submit before the report is deemed complete. The department shall determine whether or not the feasibility and plan of operation report is complete by determining whether or not the minimum requirements of this section have been met. Additional feasibility and plan of operation information may be required of the applicant after a determination that the feasibility and plan of operation report is complete only if the department establishes that a detailed review of the feasibility and plan of operation report indicates that feasibility cannot be determined and the report is insufficient in the absence of additional information.

(6) If no hearing has been conducted under s. 144.44, Stats., the department shall issue the final determination for the feasibility and plan of operation report within 60 days after the 45 day notice period required under s. 144.44 (2) (l) and (m), Stats., has expired. If an informational hearing is conducted under s. 144.44 (2g), Stats., the department shall issue a final determination for the feasibility and plan of operation report within 60 days after the hearing is adjourned. If a contested case hearing is conducted under s. 144.44 (2r), Stats., a final determination for the feasibility and plan of operation report shall be issued within 90 days after the hearing is adjourned.

History: Cr. Register, February, 1991, No. 422, eff. 3-1-91; corrections in (1) (d) l. c. and (e) l. c. made under s. 13.93 (2m) (b) 7, Stats., Register, May, 1992, No. 437.

**NR 665.07 Incinerator licenses and final plan approval.** Once the feasibility determination and initial plan of operation approval have been made and all other necessary requirements in s. NR 680.31 (1) have been met, an application for a hazardous waste incinerator license may be submitted. The incinerator license shall cover the shakedown period following construction of a proposed facility, the trial burn period, the post-trial burn period and the final operational period. The department shall review the feasibility and plan of operation report and initial plan approval to ensure that the final incinerator plan approval and license includes the following information:

(1) **SHAKEDOWN PERIOD.** (a) For the purposes of determining operational readiness following completion of physical construction, the department shall establish operating plan approval conditions, including but not limited to allowable waste feeds and operating conditions, in the plan approval for a new hazardous waste incinerator. These plan approval conditions shall be effective for the minimum time required to bring the incinerator to a point of operational readiness sufficient to conduct a trial burn, not to exceed 720 hours operating time for treatment of hazardous waste. The department may extend the duration of this oper-

- 8. Pressure differential indicators.
- 9. Pressure sensors.
- 10. Ammeters for measuring blowers current draw.

(f) The monitoring and inspection data shall be recorded and placed in an operating log as required by s. NR 630.31.

(g) The owner or operator of each incinerator with an interim license shall monitor existing instruments which relate to the combustion and emission control at least every 15 minutes. Appropriate corrections to maintain steady state combustion conditions shall be made immediately either automatically or by the operator.

Note: Instruments which relate to combustion and emission control would normally include those measuring waste feed, auxiliary fuel feed, air flow, incinerator temperature, scrubber flow, scrubber pH and relevant level controls.

Note: Owners and operators of interim license facilities also need to comply with par. (d) for monitoring and inspection. Complete interim license requirements are in s. NR 680.22.

(12) The incinerator shall be operated with a functioning device to automatically cut off waste feed to the incinerator when there is a deviation from or the limits are exceeded for flame combustion temperature, combustion gas velocity, excess CO level, increased waste feed rate or scrubber water pressure or any other operating conditions, as specified in the approved plan of operation.

(13) (a) An incinerator which burns a waste which contains a hazardous constituent listed in ch. NR 605 - Appendix IV, shall be designed, constructed and operated to maintain a destruction and removal efficiency of 99.99% for each principal organic hazardous constituent (POHC) designated under s. NR 665.08 in its license for each waste feed. DRE is determined for each POHC from the following equation:

$$DRE = \frac{W_{in} - W_{out}}{W_{in}} \times 100$$

Where: DRE = destruction and removal efficiency

$W_{in}$  = mass feed rate of the principal organic hazardous constituent (POHC) designated pursuant to s. NR 665.06 (2) or of waste going into the incinerator

$W_{out}$  = mass emissions rate of the same POHC in the exhaust emission prior to waste exiting from release to the atmosphere.

(b) An incinerator burning hazardous waste F020, F021, F022, F023, F026 or F027 shall achieve a destruction and removal efficiency (DRE) of 99.9999% for each principal organic hazardous constituent (POHC) designated under s. NR 665.08 in its feasibility and plan of operation report. This performance shall be demonstrated on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans. DRE is determined for each POHC from the equation in s. NR 665.08 (13) (a). In addition, the owner or operator of the incinerator shall notify the department of the intent to incinerate hazardous waste F020, F021, F022, F023, F026 or F027.

(c) An incinerator burning hazardous waste and producing stack emissions of more than 1.8 kilograms per hour (4 pounds per hour) of hydrogen chloride (HCl) shall control HCl emissions so that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or 1% of the HCl in the stack gas prior to entering any pollution control equipment.

(d) An incinerator shall be operated in a manner ensuring that emissions of particulate matter corrected to 7% O<sub>2</sub> in the stack gas, do not exceed 180 milligrams per dry standard cubic meter, when corrected for the amount of oxygen in the stack gas according to the formula:

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

Where  $P_c$  is the corrected concentration of particulate matter,  $P_m$  is the measured concentration of particulate matter, and  $y$  is the measured concentration of oxygen in the stack gas, using the Orsat method for oxygen analysis of dry flue gas. This correction procedure is to be used by all hazardous waste incinerators except those operating under conditions of oxygen enrichment. For incinerators operating under conditions of oxygen enrichment, the department will select an appropriate correction procedure to be specified in the facility license.

(e) An incinerator shall be operated in a manner ensuring that emissions of particulate matter comply with all appropriate air management rules contained in chs. NR 400 to 499.

(14) An incinerator shall be operated in accordance with the operating requirements specified in the license and any plan approval. Each set of operating requirements shall be sufficient to comply with the performance standards of s. NR 665.09 (13) and shall specify the composition of waste to which the operating requirements apply. Throughout normal operation the owner or operator shall conduct sufficient waste analysis to verify that the waste feed to the incinerator is within the physical and chemical composition limits specified in the license and any plan approval.

(15) Based upon the results of the analysis and trial burns required by sub. (16) the department shall specify acceptable operating limits including the following conditions:

- (a) Carbon monoxide (CO) level in the stack exhaust gas;
- (b) Waste feed rate;
- (c) Combustion temperature;
- (d) An appropriate indicator of combustion gas velocity;
- (e) Allowable variations in incinerator design or operating procedures; and
- (f) Other operating requirements as are necessary to ensure compliance with this section. All sampling and analysis shall be done in accordance with 40 CFR Part 60 Appendix A, Reference Methods, or "Sam-Register, May, 1992, No. 437



pling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-200".

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

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(16) For any new wastes or mixtures of wastes not previously incinerated, the owner or operator shall fulfill the following requirements:

(a) The owner or operator shall supply the following information to the department for any hazardous waste or mixture of hazardous waste not previously burned;

1. The heat value of the waste in the form and composition in which it shall be burned;

2. Identification and quantification of any hazardous constituent listed in ch. NR 605 Appendix IV except for any constituent which would not reasonably be expected to be present. Any constituent excluded from the analysis shall be identified and the reason for its exclusion stated;

3. For interim license incinerators, the halogen content and sulfur content in the waste; and

4. For interim license incinerators, concentrations in the waste of lead and mercury, unless the owner or operator has written documentation data that show that the element is not present.

Note: Complete interim license requirements are in s. NR 680.22.

(b) Based on the information submitted in accordance with par. (a), the department shall specify the principal hazardous constituents for which the destruction and removal efficiency shall be calculated as required in sub. (13) (a).

(c) Either:

1. The owner or operator shall conduct a trial burn to demonstrate compliance with sub. (13) (a). Prior to the trial burn, the owner or operator shall submit for departmental approval a trial burn plan specifying how the following required information shall be obtained from the trial burn:

a. A quantitative analysis in the waste feed for any principal hazardous constituents designated by the department pursuant to par. (b).

b. A quantitative analysis of the exhaust gas for the concentration and mass emissions of the principal hazardous constituents, carbon monoxide and oxygen.

c. A computation of the destruction and removal efficiency for each principal hazardous constituent.

d. A measurement of average, maximum and minimum combustion temperature and the combustion gas velocity and waste feed rates.

e. A continuous measurement of carbon monoxide in the exhaust gas.

f. Any other information the department deems necessary to document compliance with sub. (13) (a), or

2. Submit for departmental approval the results of a trial burn conducted on a similar waste burned under conditions the owner or operator's incinerator can maintain. The trial burn shall meet the requirements of subd. 1.

(17) During start-up and shut-down of an incinerator, hazardous waste may not be fed into the incinerator unless the incinerator is operating within the conditions of operation, such as temperature and air feed rate, specified in the license or plan approval.

(18) Fugitive emissions from the combustion zone shall be controlled by:

(a) Keeping the combustion zone totally sealed against fugitive emissions;

(b) Maintaining a combustion zone pressure lower than atmospheric pressure; or

(c) An alternate means of control demonstrated to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

(19) An incinerator shall cease operation when changes in waste feed, incinerator design, or operating conditions exceed limits designated in its license or plan approval.

(20) An incinerator shall be designed and operated to meet the applicable design and operational requirements specified in s. NR 640.06.

History: Cr. Register, February, 1991, No. 422, eff. 3-1-91; corrections in (13) (a) and (16) (a) 2., made under s. 13.93 (2m) (b) 7, Stats., Register, May, 1992, No. 437.

**NR 665.10 Closure.** (1) Unless specifically exempt under s. NR 665.05 (2), the owner or operator of a hazardous waste incinerator shall meet the requirements specified in s. NR 685.05 and shall, at the completion of closure, remove from the facility all hazardous waste and hazardous waste residues, including, but not limited to, ash, scrubber waters and scrubber sludges.

(2) The owner or operator of a facility that treats hazardous waste shall, at completion of closure, remove all hazardous waste and hazardous waste residues, including, but not limited to, ash and sludges, from the treatment process or equipment, discharge control equipment and discharge confinement structures. The department may require monitoring of ground or surface waters, if the operation or design of the facility in relation to the hazard of wastes handled at the facility warrants monitoring.

Note: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with s. NR 605.04 (3), that the residue removed from the incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with applicable requirements of chs. NR 600 to 685.

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