

WV OFFICE OF AIR QUALITY
45 CSR 25
PART B HAZARDOUS WASTE PERMIT APPLICATION

BOILERS AND INDUSTRIAL FURNACES (BIFs); 40 CFR 266 Subpart H.

I. Hazardous Waste Analysis; 266.102(6)

- A. For each feed stream, including hazardous waste, other fuels, and industrial furnace feed stocks, as fired:
 - 1. Heating value.
 - 2. Levels of antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, thallium, total chlorine/chloride, and ash.
 - 3. Viscosity or description of the physical form of the feed stream.
- B. For each hazardous waste, as-fired:
 - 1. Identification of Appendix VIII constituents that would reasonably be expected in the feed. (*Note: The applicant need not analyze for Appendix VIII constituents which would reasonably not be expected to be found in the waste. The constituents excluded from analysis must be identified, and the basis for exclusion stated.*)
 - 2. Approximate quantification of the hazardous constituents identified.
 - 3. If blending is to occur prior to firing:
 - (a) Detailed analysis of the hazardous waste prior to blending and of the material with which it is blended.
 - (b) Blending ratios.
 - (c) Description of blending procedures.

II. Waste Analysis Plan - 270.14(b)(3); 264.13(b) and (c); (11.7/86, 6/4/87), 268.7 (11/7/86, 6/4/87, 7/8/87, 8/17/88), 266.102(a)(2)(ii), 266.104(a)(2).

A copy of the waste analysis plan required by 264.13(b) and, if applicable, 264.13(c). The waste analysis plan should describe the procedures used to obtain chemical and physical information and data on the wastes to ensure proper storage, treatment and disposal and compliance with the land disposal restriction program. Minimum requirements include:

- A. Parameters and Rationale - 264.13(b)(1)
 - 1. A list of parameters chosen for analysis and an explanation of the rationale for their selection. At a minimum, the parameters listed above in Section I.A. , as applicable, must be chosen for analysis.
 - 2. A methodology for determining all feed rates for which limits must be established. Refer to EPA's Waste Analysis Guidance for Facilities That Burn Hazardous Wastes for appropriate methodology options. At a minimum, the methodology must describe:
 - (a) Sampling and analysis methods and frequencies for each constituent.
 - (b) Procedures for determining mass flow rates for individual constituents from the raw analytical data

B. Test Methods - 264.13(b)(2), 266, Appendix IX

A description of the test methods used to test for parameters chosen.

C. Sampling Methods - 264.13(b)(3), Part 261, Appendix I

A list of the sampling methods used to obtain a representative sample of each waste to be analyzed.

D. Frequency of Analysis - 264.13(b)(4), Guidance

A description of the frequency at which the analyses will be repeated. The frequency must be sufficient to ensure that the analysis is accurate and up-to-date. (For an on-site facility, this will be whenever there is a process change. For an incinerator, boiler, or industrial furnace, this will be as often as required to verify consistency of the waste feed to ensure compliance with the feed rate limits.)

E. Additional Requirements for Wastes Generated Off Site - 264.73(a) and (b), 264.13(b)(5), 264.13(c)

A description of the procedures used to inspect and/or analyze waste generated off-site that includes:

1. Procedures to determine waste identification.
2. Sampling frequency.
3. Sampling methods.
4. Waste analysis information supplied by generator.

III. Trial Burn Plan Requirements for all BIFs - 266.102(d)(4)(ii); 270.66(b)(2); 270.66(c); 270.66(c)(1); 270.66(c)(2); 270.66(c)(3); 270.66(c)(4); 270.66(c)(5); 270.66(c)(6); 270.66(c)(7); 270.66(c)(8); 270.66(c)(9); 270.66(e)

For the duration of the trial burn, the operating conditions must be sufficient to demonstrate compliance with the performance standards of 266.104 through 266.107.

The trial burn plan must include the following information:

A. An analysis of each feed stream, including hazardous waste, other fuels, and industrial furnace feed stocks, as fired, which includes:

1. Heating value.
2. Levels of antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, thallium, total chlorine/chloride, and ash.
3. Viscosity or description of the feed stream's physical form.

B. An analysis of **each** hazardous waste, as fired:

1. Identification of Appendix VIII constituents that would reasonably be expected in the feed.

Note: The applicant need not analyze for Appendix VIII constituents which would reasonably not be expected to be found in the waste. The constituents excluded from

analysis must be identified, and the basis for exclusion stated.

2. Approximate quantification of the hazardous constituents identified.
 3. If blending is to occur prior to firing:
 4. Detailed analysis of the hazardous waste prior to blending and of the material with which it is blended.
 5. Blending ratios.
 6. Description of blending procedures.
- C. Detailed engineering description of the boiler and industrial furnace, including:
1. Manufacturer's name and model number.
 2. Type of boiler or industrial furnace.
 3. Maximum design capacity in appropriate units.
 4. Description of the feed system for the hazardous waste and other fuels, and industrial furnace feed stocks.
 5. Capacity of hazardous waste feed system.
 6. Description of automatic waste feed cutoff system(s). Procedures for stopping the hazardous waste feed and controlling emissions in the event of equipment malfunctions.
 7. Description of any air pollution control system. A description of planned operating conditions for any APCS equipment that will be used.
 8. Description of stack gas monitoring and pollution control monitoring systems. Including:
 - (a) Manufacturer's name and model number
 - (b) Vendor calibration and maintenance specifications
 - (c) A diagram detailing the location of the monitoring system.
- D. A detailed description of sampling and monitoring procedures including:
1. Sampling and monitoring equipment.
 2. Sampling and monitoring frequency.
 3. Sampling and analytical procedures.
 4. Sampling and monitoring locations.
 5. Quality assurance/quality control program.
- E. Test schedule for each hazardous waste:
1. Dates when trial burn is planned.
 2. The duration of each trial burn.
 3. The quantity of waste to be burned during each trial burn.
 4. Other relevant factors.
- F. Test protocols for each hazardous waste including the following for each waste to be burned:
1. Ranges of hazardous waste feed rate.
 2. Feed rates of other fuels and industrial furnace feedstocks.
- G. When a DRE trial burn is required under 266.104(a), the statement should proposed principal organic hazardous constituents (POHCs) for which DRE will be calculated during the trial burn. The basis for selecting the POHCs should be described. The proposed POHCs will be subject to the Director's approval.
- H. Other parameters that may affect the ability of the BIF to meet:

1. Organic emission standards.
2. Metals emissions standards.
3. PM emissions standards.
4. HCl/Cl₂ emissions standards.

I. Other information as the Chief finds necessary.

IV. Trial Burn Results - 270.66(d)(3); 270.66(d)(4); 270.66(d)(5); 270.66(f)(1); 270.66(f)(2); 270.66(f)(3); 270.66(f)(4); 270.66(f)(5); 270.66(f)(6); 270.66(f)(7); 270.66(f)(8)

The following must be submitted within 90 days of the completion of the trial burn. The submittal must be certified on behalf of the applicant by the signature of a person authorized to sign a permit application or a report under 270.11.

- A. A statement that the trial burn has been conducted in accordance with the approved trial burn plan.
- B. All operational and stack sampling data collected during any trial burn
- C. A quantitative analysis of the levels of antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, thallium, silver, and chlorine/chloride, in the feed streams (hazardous waste, other fuels, and industrial furnace feedstocks).
- D. If a DRE trial burn was required under 266.104(a):
 1. A quantitative analysis of the trial POHCs in the hazardous waste feed.
 2. A quantitative analysis of the stack gas for the concentration and mass emissions of the trial POHCs.
 3. A computation of destruction and removal efficiency (DRE) in accordance with the DRE formula specified in 266.104(a).
- E. If a trial burn for chlorinated dioxins and furans was required under §266.104(e):
 1. A quantitative analysis of the stack gas for the concentration and mass emission rate of the 2,3,7,8-chlorinated tetra-octa congeners of chlorinated dibenzo-p-dioxins and furans.
 2. A computation showing the emission rate.
- F. If a trial burn for particulate matter, metals, or HCl/Cl₂ was required under §§266.105, 266.106(c) or (d), or 266.107(b)(2) or (c);
 1. A quantitative analysis of the stack gas for the concentrations and mass emissions of particulate matter, metals, or hydrogen chloride (HCl) and chlorine (Cl₂).
 2. Computations showing conformance with the applicable emissions performance standards.
- G. If a trial burn for DRE, metals, or HCl/Cl₂ was required under §§266.104(a), 266.106(c) or (d), or 266.107(b)(2) or (c), a quantitative analysis of the scrubber water (if any), ash residues, other residues, and products for the purpose of estimating the fate of the trial POHCs, metals, and chlorine/chloride.
- H. An identification of sources of fugitive emissions and their means of control.
- I. Records of continuous measurement of carbon monoxide (CO), oxygen, and where required, hydrocarbons (HC) in the stack gas. CO records should include the actual and oxygen adjusted readings.

- J. Such other information as necessary to ensure that the trial burn will determine compliance with the performance standards in 266.104 through 266.107.

V. Data in Lieu of a Trial Burn - 270.22(a)(6); 270.66(c)(3)

A BIF may seek an exemption from trial burn requirements by submitting the following information provided by previous compliance testing of the same device, or from compliance testing or trial or operational burns of similar BIFs burning similar hazardous wastes under similar conditions:

- A. A description and analysis of the hazardous waste to be burned compared with the hazardous waste for which data from compliance testing, operational burns, or trial burn(s) are provided to support the contention that a trial burn is not needed.
- B. Design and operating conditions of the boiler or industrial furnace to be used compared with that for which data is available and being submitted.
- C. A detailed engineering description of the boiler or industrial furnace to be used compared with that for which data is available and being submitted. The following must be described for both BIF units:
 - 1. Manufacturer's name and model number of the BIF;
 - 2. Type of boiler or industrial furnace;
 - 3. Maximum design capacity;
 - 4. Description of the feed system for the hazardous waste, other fuels, and industrial furnace feedstocks;
 - 5. Capacity of hazardous waste feed system;
 - 6. Description of automatic hazardous waste feed cutoff system(s);
 - 7. Description of APCS; and
 - 8. Description of stack gas monitoring and air pollution control monitoring systems.
- D. Such other information necessary to support the contention that a trial burn is not needed.
- E. All data and results from the previous testing. The data and results submitted must include all of the information listed under Trial Burn Results in Section 6-1d.

VI. Alternative HC Limit for Industrial Furnaces with Organic Matter in Raw Materials - 270.22(b); 266.104(f)

Industrial furnaces requesting the alternative HC limit must submit the following information:

- A. Documentation that the furnace is designed and operated to minimize HC emissions from fuels and raw materials.
- B. Statement of proposed baseline HC and CO levels.
- C. Basis for the proposed baseline flue gas HC and CO concentrations, including data on HC and CO levels during tests when the facility produced normal products under normal operating conditions from normal raw materials while burning normal fuels and when not burning hazardous waste.
- D. Test burn protocol to confirm baseline HC and CO levels, including information in type and flow rate of all feed streams, point of introduction of feed streams,

total organic carbon content (or other appropriate measure of organic content) of all nonfuel feed streams and operating conditions that affect combustion of fuel(s) and hydrocarbon emissions from nonfuel sources.

- F. Trial burn plan to:
 - 1. Demonstrate that flue gas HC and CO concentrations when burning hazardous waste do not exceed baseline levels.
 - 2. Identify types and concentrations of organic compounds listed in Appendix VIII, Part 261, that are emitted when burning hazardous waste.
- G. Implementation plan to monitor over time changes in operation that could reduce the baseline HC levels.
- H. Procedures to periodically confirm baseline levels.
- I. Such other information as necessary to ensure that the requirements of 266.104(f) are met.

VII. Alternative Metals Implementation Approach - 270.22(c); 266.106(f)

For conformance with an alternative metals implementation approach, the information submitted by the applicant must:

- A. Describe the approach which will be used to comply.
- B. Specify how the approach ensures compliance with the metals emissions standards of 266.106(c) or (d).
- C. Specify how the approach can be effectively implemented and monitored.
- D. Provide such other information as necessary to ensure that the standards of 266.106(c) or (d) are met.

VIII. Monitoring Requirements - 266.102(e)(6); 266.102(e)(8)

The following must be monitored on a continuous basis per 266.102(e)(6) while burning hazardous waste. Data must be maintained in the operating record until closure of the facility.

- A. For conformance with the organic emission standards in 266.104:
 - 1. Feed rate of hazardous waste and other fuels.
 - 2. Device production rate.
 - 3. Combustion gas temperature.
 - 4. Appropriate indicator of combustion gas velocity.
 - 5. Carbon monoxide and oxygen.
 - 6. Total hydrocarbons (if complying with 266.104(c), (d), or (f)).

or, if the waiver of DRE trial burn for boilers applies:

- 7. Carbon monoxide and oxygen

or, if the low risk waste exemption applies:

- 8. Carbon monoxide and oxygen.

- B. For conformance with the particulate emission standard in 266.105, unless the

particulate standard is waived under 266.109(b):

1. Total ash feed rate from hazardous waste, other fuels, and industrial furnace feed stocks (except for cement kilns and lightweight aggregate kilns).
2. Device production rate.

C. For conformance with the metal emission standards in 266.106:

1. Tier I or adjusted Tier I:
 - (a) Total feed rate of each metal in hazardous waste, other fuels, and industrial furnace feed stocks.
 - (b) Total feed rate of hazardous waste.
2. Tier II or Tier III:
 - (a) Feed rate of total hazardous waste.
 - (b) Feed rate of pumpable hazardous waste.
 - (c) Feed rate of each metal in the following feed streams:
 - (d) Total feed streams.
 - (e) Total hazardous waste feed.
 - (f) Total pumpable hazardous waste feed.
 - (g) Total feed rate of chlorine/chloride in total feed streams.
 - (h) Combustion gas temperature.
 - (i) Flue gas temperature at the inlet to the air pollution control system.
 - (j) Device production rate.
3. Alternative Metals Approach (including the Kiln Dust Monitoring Approach in 266 Appendix IX)- Same as Tier II requirements except for feed rate of metals in total feed streams

D. For conformance with HCl/Cl₂ emission standards in 266.107:

1. Tier I or adjusted Tier I:
 - (a) Feed rate of total chlorine/chloride in hazardous waste, other fuels, and industrial furnace feed stocks.
 - (b) Feed rate of total hazardous waste.
2. Tier II or Tier III:
 - (a) Feed rate of total hazardous waste.
 - (b) Total feed rate of chlorine/chloride in total feed streams.
 - (c) Production rate when producing normal product.

E. For other operating requirements as may be necessary to measure that the performance standards of 266.104 through 266.107 are met:

1. Wet scrubbers/wet ionizing scrubbers.
 - (a) Liquid to flue gas ratio.
 - (b) Scrubber blowdown or suspended solids content of scrubber water.
 - (c) pH of scrubber water.

2. Venturi scrubbers - Minimum differential gas pressure.
3. Dry scrubbers.
 - (a) Caustic feed rate.
 - (b) Flue gas flow rate.
4. Wet ionizing scrubbers/electrostatic precipitators.
 - (a) Electrical power (kVA).
 - (b) Flue gas flow rate.
5. Baghouses. - Pressure drop.

IX. Automatic Waste Feed Cutoff System - 270.22(d); 266.102(e)(7)(ii)

All facilities must submit a description of the automatic waste feed cutoff system, including any pre-alarm systems that may be used. The description must include:

- A. A statement that hazardous waste feed will be automatically cutoff when operating conditions deviate from those established under 266.102.
- B. A list of all parameters tied into the automatic waste feed cutoff system. At a minimum, the system must be tied to all parameters listed under monitoring requirements in Section VIII.
- C. A description of procedures and controls used to maintain the minimum combustion chamber temperature while hazardous waste residues remain in the combustion chamber.
- D. A statement that exhaust gases will be ducted to the APCS while hazardous waste or its residues remain in the combustion chamber.
- E. A statement that operating parameters will be monitored during the cutoff and hazardous waste feed may not be restarted until the parameters are within allowable limits. For parameters that may be measured on an instantaneous basis, the statement should propose a period of time after waste feed cutoff during which a parameter must not exceed the permit limit before hazardous waste feed may be restarted. The proposed period of time will be subject to the Director's approval.

X. SUMMARY OF EMISSIONS STANDARDS

Applicants are required to demonstrate compliance with the following emission standards.

- A. Carbon Monoxide/Hydrocarbon (CO/HC) Standards: (266.104; 266.104(b)(1); 266.104(f); 270.22(b))
 1. CO cannot exceed 100 ppmv (hourly rolling average) over any 60 minute period continuously corrected to 7% oxygen on a dry gas basis; or
 2. CO may exceed 100 ppmv (and is established based on the trial burn) provided that hydrocarbon (HC) emissions do not exceed 20 ppmv reported as propane (hourly rolling average) corrected to 7% oxygen on a dry gas basis; or

3. If approved by the Director on a case-by-case basis, industrial furnaces that cannot meet the 20 ppmv HC standard due to organic matter in the normal raw material (except cement kilns equipped with by-pass ducts described in 266.104(g)) may establish, during the trial burn, an alternative HC limit that ensures that HC emissions when burning hazardous waste are not greater than when not burning hazardous waste, provided the following is demonstrated when applying for the alternative HC standard:
4. The facility is designed and operated to minimize HC emissions from fuels and raw materials;
5. Emissions testing must be conducted to determine the baseline HC and CO levels; emissions from hazardous waste burning do not exceed these baselines; identify the types and concentrations of 40 CFR Part 261, Appendix VIII organic constituents that are emitted; and conduct dispersion modeling for emissions of Appendix VIII constituents to predict maximum annual average ground level concentrations;
6. Test burn protocol to confirm the baseline HC (and CO) level including information on the type and flow rate of all feed streams, point of introduction of all feed streams, total organic carbon content (for other appropriate measure of organic content) of all nonfuel feed streams, and operating conditions that affect combustion of fuel(s) and destruction of hydrocarbon emissions from nonfuel sources;
7. The maximum annual average ground level concentrations cannot exceed those levels established in Appendix IV or V of 266 (or 0.1 ug/m³ for compounds not listed in these appendices).
8. An approach must be developed to monitor changes over time in operations that could reduce the HC baseline;

B. Cement kilns may comply with the CO/HC standards (166.104(g)) described above by monitoring in the by-pass duct provided that:

1. Hazardous waste is fired only into the kiln;
2. The by-pass duct directs a minimum of 10% of kiln off-gas into the duct.

C. Destruction and Removal Efficiency (DRE) for Organics

1. DRE for all organic hazardous constituents in the waste feed must meet or exceed 99.99%.
2. DRE for all dioxin-listed wastes in the waste feed must meet or exceed 99.9999%.

D. Dioxins/Furans Controls

BIFs that are equipped with a dry particulate matter control device that operates within the temperature range of 450-750° F, and industrial furnaces operating under an alternative hydrocarbon limit established under 266.104(f) must conduct a site-specific risk assessment as described in 266.104(e) to demonstrate that emissions of chlorinated dibenzo-p-dioxins and dibenzofurans do not result in an increased lifetime cancer risk to the hypothetical maximum exposed individual (MEI) exceeding 1 in 100,000.

E. Particulate Matter (PM) Standard:

1. PM cannot exceed 180 mg/dscm corrected to 7% oxygen (0.08 grains/dscf).

F. Metals Standards:

1. Owners/operators of BIFs must comply with either the Tier I, Tier II, Tier III, or Adjusted Tier I metals feedrate limits.
2. A facility must use Tier III metals controls if any of the following criteria are met:
 - (a) The device is located in a narrow valley less than 1 km wide.
 - (b) The device has a stack taller than 20 meters and is located such that the terrain rises to the physical height within 1 km of the facility.
 - (c) The device has stack taller than 20 meters and is located within 5 km of a shoreline of a large body of water, such as an ocean or large lake.
 - (d) The physical stack height of any stack is less than 2.5 times the height of any building within 5 building heights or 5 projected building widths of the stack, and the distance from the stack to the closest boundary is within 5 building heights or 5 projected building widths of the associated building; or
 - (e) The Director determines that standards based on site-specific dispersion modeling are required.

G. Hydrogen Chloride/Chlorine:

1. HCl/Cl₂ must meet either the Tier I, Tier II, Tier III, or Adjusted Tier I feed rate limits.
2. A facility must use Tier III HCl/Cl₂ controls if any of the following criteria are met:
 - (a) The device is located in a narrow valley less than 1 km wide.
 - (b) The device has a stack taller than 20 meters and is located such that the terrain rises to the physical height within 1 km of the facility.
 - (c) The device has stack taller than 20 meters and is located within 5 km of a shoreline of a large body of water, such as an ocean or large lake.
 - (d) The physical stack height of any stack is less than 2.5 times the height of any building within 5 building heights or 5 projected building widths of the stack, and the distance from the stack to the closest boundary is within 5 building heights or 5 projected building widths of the associated building; or
 - (e) The Chief determines that standards based on site-specific dispersion modeling are required.

XI. Risk Exposure Assessment and Air Dispersion Models (specific requirements are located *WV Risk Assessment Policy for Hazardous Waste Combustors*)

XII. Closure for Combustion Units

The applicant must provide a copy of the following information in accordance with 40 CFR Part 264, Subpart G. [§270.14(b)(13)].

- A. Attach the following information to meet the closure performance standard of 40 CFR 264.111. 40 CFR 264.111 requires controlling, minimizing, or eliminating to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground water, surface waters or to the atmosphere. The closure plan [§264.112] must include all of the information required in Part II, Sections A through I [§270.14(b)(13)]:
1. A description of how the applicant will close each hazardous waste management unit at the facility in accordance with 40 CFR 264.111;
 2. A description of how the applicant will conduct final closure of the facility in accordance with 40 CFR 264.111. The description must identify the maximum extent of the operations during the active life of the facility;
 3. An estimate of the maximum inventory of wastes over onsite over the active life of the facility and a detailed description of the methods to be used during partial closures and final closure. The methods include but are not limited to, methods for removing, transporting, treating, storing, or disposing of all hazardous wastes. Identify the type(s) of the offsite hazardous waste management units the applicant will use, if applicable;
 4. A detailed description of the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial and final closure. The steps include but are not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard;
 5. A detailed description of other activities necessary during the closure period to ensure that all partial closures and final closure satisfy the closure performance standards, including but not limited to, ground water monitoring, leachate collection, and run-on and run-off control; and
 6. A schedule for closure of each hazardous waste management unit and for final closure of the facility. The schedule must include, at a minimum, the total time required to close each hazardous waste management unit and the time required for intervening closure activities which will allow tracing of the progress of partial and final closure. Closure schedule with total time to close, time for closure activities and inspection schedule during closure.
 7. For facilities that use trust funds to establish financial assurance under §264.143 or §264.145 and that are expected to close prior to the expiration of the operation permit, an estimate of the expected year of

final closure.

- B. A description of how at closure all hazardous waste and hazardous waste residues (including but not limited to ash, scrubber water and scrubber sludges) from the combustion units, associated duct-work, piping, air pollution control equipment, sump, and any other structures or operating equipment such as pumps, valves, etc., that have come in contact with the hazardous waste. Alternatively, a description of how the combustion units and associated units and equipment will be dismantled and disposed of as a hazardous waste.
- C. If closure or post-closure plans have been approved by the Chief as part of a construction or operation permit application, attach a copy of a closure and post-closure plan as required by §264.112 and §264.118. Also, either:
 - 1. Attach a certification stating that no changes have been made to the plans which have been provided to the Chief; or
 - 2. Provide an amended plan showing all the changes which have been made, or are proposed to be made, to the plans which have been provided to the Chief.

XIII. Compliance Schedule

The applicant shall propose to the Chief, a compliance schedule for achieving compliance with any standards that have not been met at this time. The Chief will evaluate this proposal and may take into consideration when developing a compliance schedule.