**Terms Last Revised: 6/02/2016**

**NA.NL.ws Permit Template for New Large Hospital / Medical / Infectious Waste Incinerators using a Wet Scrubber**

**HMIWI**

**New: commenced construction after 6/20/96 or modification after 3/16/98**

**Large: > 500 lbs/hr; or batch: > 4000 lbs/day**

**Using: Wet Scrubber**

**Note:** **If using a CEM or COM to demonstrate compliance add the applicable terms for continuous monitoring systems found in the “J” terms.**

**Additional Terms and Conditions**

* + - 1. The emissions from the large hospital/medical/infectious waste incinerator’s (HMIWI) exhaust stack shall not exceed the following limitations. The pollutant concentrations shall be computed as 3-hour rolling averages (not including startup and shutdown) for the pollutants not monitored with continuous emissions monitoring (CEM) systems. Any pollutant being monitored by a CEM, installed and maintained in accordance with the applicable procedures under Appendices B and F of 40 CFR Part 60, shall be calculated as 12-hour averages (not including startup and shutdown).

34 mg PE/dscm (0.015 grains PE/dscf) adjusted to 7% O2 for particulate emissions (PE);

15 ppm hydrogen chloride (HCl) by volume on a dry basis adjusted to 7% O2 or

a demonstration of a minimum control efficiency of 99%;

40 ppm carbon monoxide (CO) by volume on a dry basis adjusted to 7% O2 as a 12-hour rolling average where measured by the CEM; and

40 ppm CO by volume on a dry basis adjusted to 7% O2 as a 3-hour rolling average as measured by Method 10 or 10B of Appendix A of 40 CFR Part 60;

55 ppm sulfur dioxide (SO2) by volume on a dry basis adjusted to 7% O2;

250 ppm nitrogen oxides (NOx) by volume on a dry basis adjusted to 7% O2;

25 ng dioxins-furans/dscm (11 grains dioxins-furans/billion dscf) expressed as total mass on a dry basis and adjusted to 7% O2; or

0.6 ng dioxins-furans/dscm (0.26 grain dioxins-furans/billion dscf) expressed as a toxic equivalent;

0.04 mg Cd/dscm (0.00002 grain Cd/dscf) adjusted to 7% oxygen; or

cadmium (Cd) emissions shall be reduced by 90%;

0.07 mg Pb/dscm (0.00003 grain Pb/dscf) adjusted to 7% oxygen; or

lead (Pb) emissions shall be reduced by 98%;

0.55 mg Hg/dscm (0.00024 grain Hg/dscf) adjusted to 7% oxygen; or

mercury (Hg) emissions shall be reduced by 85%; and

Visible particulate emissions from the HMIWI stack shall not exceed 10% opacity as a 6- minute average; and

Excluding periods of maintenance and repair, emissions of fugitive combustion ash from the ash conveying system (including conveyor transfer points) shall not be visible in excess of 5% of the observation period, or shall not exceed 9 minutes in any 3-hour observation period.

The emission limitations established pursuant to 40 CFR Part 60 Subpart Ec shall apply at all times except during periods of startup, shutdown, or malfunction, provided that no hospital waste or medical/infectious waste is charged to the HMIWI during periods of startup, shutdown, or malfunction.

[40 CFR 60.52c(a) and (b)], [40 CFR 60.56c(c)(4)], and [40 CFR Part 60, Subpart Ec, Table 1]

* + - 1. The HMIWI shall be operated only by properly trained personnel. A minimum of 24 hours of incinerator operation training shall be provided to each operator before he or she is allowed to operate the HMIWI. An annual review or refresher course of at least 4 hours must be conducted annually in order to maintain their qualifications to operate the HMIWI.

[40 CFR 60.53c]

* + - 1. The maximum HMIWI charge rate shall not exceed 110% of the lowest 3-hour average charge rate measured during the most recent performance test demonstrating compliance with all of the emission limits above.

[40 CFR 56c(d)] and [40 CFR 60.51c]

**Or for a batch HMIWI use this term instead:**

* + - 1. The maximum batch HMIWI charge rate shall not exceed 110% of the lowest daily charge rate measured during the most recent performance test demonstrating compliance with all of the emission limits above.

[40 CFR 56c(d)] and [40 CFR 60.51c]

* + - 1. The maximum flue gas temperature shall not exceed 110% of the lowest 3-hour average temperature at the outlet from the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the mercury (Hg) emission limit.

[40 CFR 56c(d)] and [40 CFR 60.51c]

* + - 1. If using the horsepower or amperage to the wet scrubber as the monitored parameter for the compliance demonstration, the minimum horsepower or amperage to the wet scrubber shall not be less than 90% of the highest 3-hour average horsepower or amperage (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with all the emission limits above.

[40 CFR 56c(d)] and [40 CFR 60.51c]

* + - 1. If using the pressure drop across the wet scrubber as the monitored parameter for the compliance demonstration, the minimum pressure drop across the wet scrubber shall not be less than 90% of the highest 3-hour average pressure drop across the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the PE emission limit.

[40 CFR 56c(d)] and [40 CFR 60.51c]

* + - 1. The minimum liquor flow rate at the inlet to the wet scrubber shall not be less than 90% of the highest 3-hour average liquor flow rate (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with all the emission limits above.

[40 CFR 56c(d)] and [40 CFR 60.51c]

* + - 1. The minimum liquor pH at the inlet to the wet scrubber shall not be less than 90% of the highest 3-hour average liquor pH (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the HCl emission limit.

[40 CFR 56c(d)] and [40 CFR 60.51c]

* + - 1. The minimum secondary chamber temperature shall not be less than 90% of the highest 3-hour average secondary chamber temperature (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the PE, CO, or dioxins/furans emission limits.

[40 CFR 56c(d)] and [40 CFR 60.51c]

* + - 1. If not submitted with the permit application and prior to the commencement of construction, the permittee shall prepare an impact analysis of the HMIWI. The analysis shall consider air pollution control alternatives that minimize to the maximum extent practicable, on a site-specific basis, potential risks to public health or the environment. In considering such alternatives the analysis may consider costs, energy impacts, non-air environmental impacts, or any other factors related to the practicability of the alternatives. The impact analysis shall be submitted to the appropriate Ohio EPA Division of Air Pollution Control District Office or local air agency before construction begins.

[40 CFR 60.54c] and [40 CFR 60.58c(a)(1)(iii)]

**Operational Restrictions**

* + - 1. The maximum HMIWI charge rate established during the initial performance test and/or reestablished during a subsequent compliant stack test shall be monitored and maintained as required in this permit in order to demonstrate continuous compliance with emission limitations from 40 CFR 60.52c and Table 1 (or Table 2 for dioxins/furans) from Subpart Ec. Operating the HMIWI above the established maximum charge rate shall constitute a violation of established operating parameters.

[40 CFR 60.56c(d)]

* + - 1. The minimum pressure drop or the minimum horsepower or amperage, the minimum flow rate, and the minimum pH of the wet scrubber established during the initial performance test and/or reestablished during a subsequent compliant stack test shall be monitored and maintained as required in this permit in order to demonstrate continuous compliance with emission limitations from 40 CFR 60.52c and Table 1 (or Table 2 for dioxins/furans) from Subpart Ec. Operating the HMIWI’s wet scrubber below the established minimum pressure drop or minimum horsepower or amperage, below the minimum flow rate, and/or below the minimum pH shall constitute a violation of established operating parameters.

[40 CFR 60.56c(d)]

* + - 1. The maximum flue gas temperature of the wet scrubber established during the initial performance test and/or reestablished during a subsequent compliant stack test shall be monitored and maintained as required in this permit, in order to demonstrate continuous compliance with emission limitations from 40 CFR 60.52c and Table 1 (or Table 2 for dioxins/furans) from Subpart Ec. Operating the HMIWI above the established maximum flue gas temperature shall constitute a violation of established operating parameters.

[40 CFR 60.56c(d)]

* + - 1. The minimum secondary chamber temperature established during the initial performance test and/or reestablished during a subsequent compliant stack test shall be monitored and maintained as required in this permit, in order to demonstrate continuous compliance with emission limitations from 40 CFR 60.52c and Table 1 (or Table 2 for dioxins/furans) from Subpart Ec. Operating the HMIWI below the established minimum secondary chamber temperature shall constitute a violation of established operating parameters.

[40 CFR 60.56c(d)]

* + - 1. Except during startup or shutdown (where no hospital, medical, and/or infectious wastes have been charged or the charged material has been completely incinerated), use of the bypass stack to the HMIWI shall constitute a violation of the particulate matter, dioxins/furans, hydrogen chloride, lead, cadmium, and mercury emissions limitations.

[40 CFR 60.56c(f)(6)]

* + - 1. For units not equipped with a continuous carbon monoxide monitor, operation of the HMIWI above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three‑hour rolling average) simultaneously shall constitute a violation of the carbon monoxide emission limit.

[40 CFR 60.56c(f)(2)]

* + - 1. Operating the HMIWI, equipped with a wet scrubber, above the maximum charge rate, below the minimum secondary chamber temperature, and below the minimum scrubber liquor flow rate (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the dioxins/furans emission limitation.

[40 CFR 60.56c(f)(3)]

* + - 1. Operating the HMIWI, equipped with a wet scrubber, above the maximum charge rate and above the maximum flue gas temperature (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the mercury emission limitation.

[40 CFR 56c(f)(5)]

* + - 1. Operating the HMIWI, equipped with a wet scrubber, above the maximum charge rate and below the minimum scrubber liquor pH (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the hydrogen chloride emission limitation.

[40 CFR 60.56c(f)(4)]

* + - 1. Operating the HMIWI, equipped with a wet scrubber, above the maximum charge rate and below the minimum pressure drop across the wet scrubber or below the minimum horsepower or amperage to the system (each measured on a 3-hour rolling average) simultaneously shall constitute a violation of the particulate matter emission limitation.

[40 CFR 60.56c(f)(1)]

* + - 1. Following the initial performance test, the HMIWI shall not be operated at any time above any of the applicable maximum operating parameters or below any of the applicable minimum operating parameters, measured as 3-hour rolling averages, except during periods of startup, shutdown, and malfunction. Operating parameter limits do not apply during the performance testing. Operating above the established maximum or below the established minimum operating parameters shall constitute a violation of established operating parameters.

[40 CFR 60.56c(d)(2)]

* + - 1. The HMIWI, including all associated equipment and waste storage areas, shall be designed, operated, and maintained to prevent the emission of objectionable odors.

[OAC 3745-15-07(A)]

* + - 1. The permittee shall not intentionally dispose of the following items by charging and burning them in the HMIWI:
         1. visible globules of mercury;
         2. nickel-cadmium batteries; and
         3. switches, thermometers, batteries, and other devices containing mercury.

[OAC rule 3745‑31‑05(A)(3)] or [OAC rule 3745‑31‑05(C)] or [OAC rule 3745‑77‑07(C)(1)]

* + - 1. Medical/infectious wastes that are also radioactive shall be managed in accordance with the applicable rules of the Ohio Department of Health and regulations of the United States nuclear regulatory commission. Radioactive wastes or infectious radioactive wastes having levels of radioactivity that require special treatment or disposal according to United States Nuclear Regulatory Commission and Ohio Department of Health requirements shall not be charged to this emissions unit.

[OAC rule 3745‑31‑05(A)(3)] or [OAC rule 3745‑31‑05(C)] or [OAC rule 3745‑77‑07(C)(1)]

**Monitoring and Record keeping Requirements**

* + - 1. The permittee shall properly install, calibrate, operate, and maintain a device for measuring the use of the bypass stack. The device shall be maintained and calibrated according to manufacturer’s specifications and shall record the date, time, and duration of every use of the bypass stack.

[40 CFR 60.57c(b)]

* + - 1. The permittee shall properly install, calibrate (to manufacturers’ specifications), operate, and maintain a scale (accurate to within one pound) to weigh all of the material charged to the HMIWI. All materials shall be weighed before incineration and a written log shall be maintained to record the amount of material charged to the HMIWI on a pounds per hour or pounds per batch basis.

[40 CFR 60.58c(b)(2)(iii)], [40 CFR 60.57c(a)], and [40 CFR Part 60, Subpart Ec, Table 3]

* + - 1. The permittee shall properly install, calibrate, operate, and maintain continuous temperature monitors and recorders which measure and record the secondary combustion temperatures when the incinerator is in operation. The temperature monitors and recorders shall be installed, calibrated, operated, and maintained in accordance with the manufacturers’ recommendations, instructions, and operating manuals. The secondary combustion temperatures shall be recorded on a once per minute basis.

[40 CFR 60.57c(a)] and [40 CFR Part 60, Subpart Ec, Table 3]

* + - 1. The permittee shall properly install, calibrate (to manufacturers’ specifications), operate, and maintain a device to continuously monitor the flue gas temperature at the outlet of the wet scrubber and record this temperature once per minute during all periods of HMIWI operations except during periods of startup and shutdown.

[40 CFR 60.57c(a)] and [40 CFR Part 60, Subpart Ec, Table 3]

* + - 1. The permittee shall properly install, calibrate (to manufacturers’ specifications), operate, and maintain equipment to continuously monitor and record either the static pressure drop across the scrubber or the horsepower or amperage to the scrubber, the scrubber liquid flow rate, and the scrubber liquid pH while the HMIWI is in operation. The pressure drop or horsepower or amperage, the liquid flow rate, and the pH shall be recorded on a once per minute basis.

[40 CFR 60.57c(a)] and [40 CFR Part 60, Subpart Ec, Table 3]

* + - 1. The permittee shall maintain the following information for the HMIWI and each record shall including the calendar date of the HMIWI operations:
         1. the measured concentrations of each pollutant (PE, CO, dioxins/furans, HCl, Pb, Cd, and Hg) as determined in the initial compliance stack test and the measured concentrations of each pollutant (PE, CO, and HCl) as determined in the annual (or if qualified, every third year) compliance stack test; and the measurements of opacity as determined during the annual compliance demonstration or by the continuous opacity monitoring system (if applicable);
         2. all records of the concentrations of CO and/or percent opacity, as determined by a continuous emissions monitor (CEM) and/or a continuous opacity monitor (COM), where compliance is demonstrated and/or required through their use;
         3. the log or records of the daily HMIWI process and control parameter information, to include:

the amount of material charged to the HMIWI on a pounds per hour or pounds per batch basis, and the date and time the recorded weight is changed;

the date, time, and duration of each use of the bypass stack, and the reason for the bypass;

the secondary chamber temperatures recorded during each minute of operation;

the pressure drop across the wet scrubber system during each minute of operation or the horsepower or amperage to the wet scrubber during each minute of operation;

the inlet liquor flow rate to the wet scrubber during each minute of operation;

the pH at the inlet to the wet scrubber during each minute of operation; and

the temperature at the outlet from the wet scrubber (flue gas temperature) during each minute of operation;

* + - * 1. the identification of calendar days during which the required operating data, emission rates, and/or the operating parameters (records required in “b” and “c” above) were not obtained, to include an identification of the operating data, emission rates, and/or operating parameters not measured, any monitoring equipment downtime, the reason(s) for not obtaining the data, and a description of the corrective action(s) taken to prevent a recurrence;
        2. the identification of calendar days during which there was a malfunction of the HMIWI or wet scrubber; a description of the malfunction; the time and duration of the malfunction; and the corrective action(s) taken to correct each;
        3. the identification of calendar days during which an emission rate or the percent opacity (measured by a CEM or COM) and/or an operating parameter or operational restriction (records required in “b” and “c” above) exceeded the applicable limit(s), with a description of each exceedance, the reason for each exceedance, and a description of the corrective action(s) taken;
        4. the results of the initial, annual, and any subsequent performance tests conducted to determine compliance with the emission limits and/or to establish the operating parameters;
        5. all documentation produced from the impact analysis, as a result of the siting requirements of 40 CFR 60.54c;

the results of fugitive emissions observed from the ash conveying system (by EPA Reference Method 22) tests;

records of the calibration of:

the HMIWI’s primary and secondary chamber temperature monitoring devices;

the material weighing scale;

the flue gas temperature monitoring device to the wet scrubber;

the wet scrubber’s parameter monitoring devices for the pressure drop or horsepower or amperage, the liquor flow rate, and the pH;

any required CEM and/or COM system, and

the device used for measuring the date, time, and the duration of use of the bypass stack if the wet scrubber is bypassed; and

* + - * 1. the following records related to HMIWI operator training:

records showing the names of the HMIWI operators and the dates each operator completed his/her annual review of the information relating to the HMIWI and control equipment operations (information from 40 CFR 60.53c(h) required to be reviewed annually per 40 CFR 60.53c(i));

records showing the names of the HMIWI operators who have completed the operator training requirements, including documentation of the training materials, and the date(s) the training was completed; and

records showing the names of the HMIWI operators who have met the criteria for qualification under 40 CFR 60.53c and the dates of their qualification.

All records shall be maintained onsite in either paper copy or computer-readable format, unless an alternative format is approved by the Director (or his/her representative), and with the exception of the initial performance test, for a period of 5 years. The initial performance testing results shall be maintained on site for a minimum of 5 years and until any additional testing is conducted to replace the compliance demonstration for the emission limitations for dioxins/furans, Pb, Cd, and/or Hg, which are not included in annual testing requirements.

[40 CFR 60.58c(b)]

* + - 1. The permittee shall obtain monitoring data at all times during HMIWI operations except during periods of monitoring equipment malfunction, calibration, or repair. At a minimum, valid monitoring data shall be obtained and recorded for 75% of the operating hours per day and 90% of the operating days per calendar quarter that the facility is combusting hospital and/or medical/infectious waste.

[40 CFR 60.57c(d)]

**Note:** **Inspections are only required by small rural HMIWIs, however, the following term may serve as a BAT determination, if appropriate:**

* + - 1. The permittee shall have the HMIWI inspected annually using preventive maintenance procedures recommended by the manufacturer. Each inspection shall include a written report identifying any needed repairs to the incinerator. If repairs are needed, the incinerator shall not be operated if the operation would result in any exceedance of the emission limits identified in this permit. At a minimum, the permittee shall do the following during the inspection:
         1. inspect all burners, pilot assemblies, and pilot sensing devices for proper operation, and clean pilot flame sensor as necessary;
         2. check for proper adjustment of primary and secondary chamber combustion air, and adjust as necessary;
         3. inspect hinges and door latches, and lubricate as necessary;
         4. inspect dampers, fans, and blowers for proper operation;
         5. inspect incinerator door and door gaskets for proper sealing;
         6. inspect motors for proper operation;
         7. inspect primary chamber refractory lining, and clean and repair/replace lining as necessary;
         8. inspect incinerator shell for corrosion and/or hot spots;
         9. inspect secondary/tertiary chamber and stack, and clean as necessary;
         10. inspect mechanical loader, including limit switches, for proper operation, if applicable;
         11. visually inspect waste bed (grates), and repair/ seal, as necessary;
         12. for the burn cycle that follows the inspection, document that the HMIWI is operating properly and make any necessary adjustments;
         13. inspect the wet scrubber for proper operation;
         14. inspect waste heat boiler systems to ensure proper operation, if applicable;
         15. inspect bypass stack components and monitors;
         16. ensure proper calibration of thermocouples, the wet scrubber monitoring equipment, and all other required monitoring equipment for the HMIWI operations;
         17. generally observe that the equipment is maintained in good operating condition.

All inspection and repair reports shall be maintained by the permittee for a period of 5 years and shall be made available to the Director or his/her representative upon request.

[OAC rule 3745‑31‑05(A)(3)] or [OAC rule 3745‑31‑05(C)] or [OAC rule 3745‑77‑07(C)(1)]; [inspection list from 40 CFR 60.36e for small HMIWIs subject to the requirements of 60.33e(b)]

* + - 1. Each operator of the HMIWI shall be fully trained and qualified to operate the incinerator and the control and monitoring equipment by completing an HMIWI operator training course and following either 6 months experience as an HMIWI operator, 6 months experience as a direct supervisor of an HMIWI operator, or completion of at least two burn cycles under the observation of two qualified HMIWI operators. The HMIWI operator training shall include, at a minimum, the following provisions:
         1. 24 hours of training on the following subjects:

environmental concerns, including pathogen destruction and types of emissions;

basic combustion principles, including products of combustion;

operation of the type of incinerator to be used by the operator, including proper startup, waste charging, and shutdown procedures;

combustion controls and monitoring;

operation of air pollution control equipment and factors affecting performance (if applicable);

methods to monitor pollutants (continuous emission monitoring systems and monitoring of HMIWI and air pollution control device operating parameters) and equipment calibration procedures (where applicable);

inspection and maintenance of the HMIWI, air pollution control devices, and continuous emission monitoring systems;

actions to correct malfunctions or conditions that may lead to malfunction;

bottom and fly ash characteristics and handling procedures;

applicable Federal, State, and local regulations;

work safety procedures;

pre-startup inspections; and

record keeping requirements;

* + - * 1. an examination designed and administered by the instructor; and
        2. reference material distributed to the attendees covering the course topics.

Qualification is valid from the date on which the examination is passed or following the completion of the required experience, whichever is later.

[40 CFR 60.53c(c), (d), and (e)]

* + - 1. In order to maintain qualification, the trained and qualified HMIWI operator shall review the information contained in the operations manual and complete and pass an annual review or refresher course of at least 4 hours covering, at a minimum, the following topics:
         1. an update of the regulations;
         2. incinerator operation, including startup and shutdown procedures;
         3. inspection and maintenance;
         4. responses to malfunctions or conditions that may lead to malfunction; and
         5. discussion of operating problems encountered by attendees.

[40 CFR 60.53c(f)]

* + - 1. A lapsed qualification shall be renewed by one of the following methods:
         1. for a lapse of less than 3 years, the HMIWI operator shall complete and pass a standard annual refresher course described above; and
         2. for a lapse of 3 years or more, the HMIWI operator shall complete and pass a training course with the minimum criteria described in the initial training class including the content documented above.

[40 CFR 60.53c(g)]

* + - 1. The permittee shall maintain an HMIWI operations manual at the facility that includes at a minimum the following information. The permittee shall establish a program for reviewing this information annually with each HMIWI operator:
         1. summary of the applicable standards under this subpart;
         2. description of basic combustion principles applicable to the HMIWI;
         3. procedures for receiving, handling, and charging waste;
         4. startup, shutdown, and malfunction procedures for the HMIWI and control equipment;
         5. procedures for maintaining proper combustion air supply levels;
         6. procedures for operating the HMIWI and associated air pollution control equipment within the standards established under the applicable rules;
         7. procedures for responding to periodic malfunction or conditions that may lead to malfunction;
         8. procedures for monitoring HMIWI emissions;
         9. reporting and record keeping procedures;
         10. procedures for handling ash; and
         11. a list of the current allowable values for the operating parameters for the HMIWI and the control equipment, with the dates of the most recent performance test(s) and the actual operating conditions that served as the basis for deriving the parameter limits.

[40 CFR 60.53c(h) and(i)]

* + - 1. The initial training and review of HMIWI operations shall be conducted prior to assumption of responsibilities affecting HMIWI operations and subsequent reviews of the information shall be conducted annually. The permittee shall maintain and make available to Ohio EPA inspectors records showing the names of the HMIWI operators who have completed the operator training requirements, refresher training, and annual review of the operations manual, including documentation of the date of completion for each training or qualifying requirement for each operator.

[40 CFR 60.53c]

* + - 1. In order to identify possible means of reducing the amount of toxic emissions from the incinerated waste, the permittee shall prepare a waste management plan which shall identify both the feasibility of and the approach to separating certain components of solid waste from the health care waste stream. The waste management plan may include, but shall not be limited to, materials such as paper, cardboard, plastics, glass, battery, or metal recycling; or plans for purchasing recycled or recyclable products. The waste management plan may include different goals or approaches for different areas or departments of the facility and need not include new waste management goals for every waste stream. The plan should identify reasonably available additional waste management measures that can be implemented, taking into account the effectiveness of waste management measures already in place, the costs of the additional measures, the emission reductions expected to be achieved from each, the need to minimize employee exposure to pathogens, and any other environmental, energy, or safety impacts. In developing the waste management plan, the permittee shall consider the American Hospital Association publication entitled "Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities." This publication (AHA Catalog No. 057007) is available for purchase from the American Hospital Association (AHA) Service, Inc., Post Office Box 92683, Chicago, Illinois 60675‑2683.

[40 CFR 60.55c]

**Reporting Requirements**

* + - 1. The permittee shall submit the following information no later than 60 days following the initial performance test:
         1. the measured concentrations of each pollutant (PE, CO, dioxins/furans, HCl, SO2, NOx, Pb, Cd, and Hg), the stack opacity, the Method 22 results for the ash conveying/handling system, and the initial performance data recorded to meet the requirements of 40 CFR 60.56c(b) from the initial compliance demonstration;
         2. the values for the site-specific operating parameters established during the initial compliance demonstration, as required per 40 CFR 60.56c(d); and
         3. a copy of the waste management plan, required per 40 CFR 60.55c.

All reports shall be signed by the facility manager. A copy of the testing results/report shall be retained on site for a minimum of 5 years and until testing results for each regulated pollutant have been retested (not all pollutants are retested annually).

[40 CFR 60.58c(c)]

* + - 1. The permittee shall submit an annual report one year following the submission of the results of the initial performance test. Subsequent reports shall be submitted no more than 12 months following the previous report and following the annual performance test. The annual report shall include the information specified below. All reports shall be signed by the facilities manager.
         1. the values for the site-specific operating parameters established pursuant to 40 CFR 60.56c(d);
         2. the highest maximum operating parameter and the lowest minimum operating parameter for each required parameter recorded for the calendar year being reported;
         3. the highest maximum operating parameter and the lowest minimum operating parameter for each required operating parameter recorded during the calendar year preceding the year being reported, in order to provide the Director (or his/her representative) with a summary of the performance of the affected facility over a 2-year period;
         4. the identification of calendar days during which required data on emission rates or the operating parameters were not obtained, to include an identification of the emission rates or operating parameters not measured, the reason(s) for not obtaining the data, and a description of the corrective action(s) taken to prevent a recurrence;
         5. the identification of calendar days during which there was a malfunction of the HMIWI or its control equipment, a description of the malfunction, the time and duration of the malfunction, and the corrective action(s) taken to correct it;
         6. the identification of calendar days during which any emission rate or operating parameter exceeded the applicable limits, with a description of the exceedances, reasons for such exceedances, and a description of the corrective action(s) taken;
         7. the identification of any recorded exceedances of the emission rate(s) (CEM) or opacity (COM), if applicable, and the operating parameter(s) for the calendar year preceding the year being reported, in order to provide the Director (or his/her representative) with a summary of the performance of the HMIWI over a 2-year period;
         8. if a performance test was conducted during the reporting period, the results of that test;
         9. if no exceedances of the emission limits or the operating parameters or malfunctions of the HMIWI or control equipment were recorded for the calendar year, a statement that no exceedances occurred during the annual reporting period; and
         10. the date, time, and duration of any use of the bypass stack; the reason for the malfunction, and the corrective action(s) taken.

[40 CFR 60.58c(d)]

* + - 1. The permittee shall submit semiannual reports no later than 60 days following the reporting period. The first semiannual reporting period ends 6 months following the submission of the results of the initial performance test. Subsequent reports shall be submitted no later than 6 calendar months following the previous report. All reports shall be signed by the facility manager. The semiannual report shall contain the following information:
         1. the identification of calendar days during which required data on emission rates or the operating parameters were not obtained, to include an identification of the emission rate(s) or operating parameter(s) not measured, the reason(s) for not obtaining the data, and a description of the corrective action(s) taken to prevent a recurrence;
         2. the identification of calendar days during which there was a malfunction of the HMIWI or its control equipment, a description of the malfunction, the time and duration of the malfunction, the corrective action(s) taken, and any measure(s) implemented to prevent a recurrence; and
         3. the identification of calendar days during which any emission rate or operating parameter exceeded the applicable limits, with a description of the exceedance(s), reason(s) for such exceedance(s), a description of the corrective action(s) taken, and any measure(s) implemented to prevent a recurrence.

[40 CFR 60.58c(e)]

**Testing Requirements**

* + - 1. The permittee shall conduct an initial performance test for the HMIWI in order to demonstrate compliance with the emission limits and opacity limit contained in 40 CFR 60.52c and Table 1 to Subpart Ec.
         1. Emission testing shall be conducted to demonstrate compliance with the emission limits for PE, HCl, and CO, dioxins/furans, SO2, NOx, lead, cadmium, and mercury, and the visible emission limits for the HMIWI stack (stack opacity) and visible fugitive emissions from the ash conveying system(s), using the test methods specified below:

Method 1 of 40 CFR Part 60, Appendix A to select the sampling ports locations and number of traverse points;

Method 3, 3A, or 3B of 40 CFR Part 60, Appendix A for gas composition analysis, including measurement of oxygen concentration (the permittee shall use EPA Reference Method 3, 3A, or 3B of 40 CFR part 60, Appendix A simultaneously with each reference method);

The pollutant concentrations shall be adjusted to 7% oxygen using the following equation:

Cadj = Cmeas (20.9 7) / (20.9 %O2)

where:

Cadj = pollutant concentration adjusted to 7% oxygen;

Cmeas = pollutant concentration measured on a dry basis;

20.9=oxygen concentration in air, percent; and

%O2=oxygen concentration measured on a dry basis, percent.

Method 5 or 29 of 40 CFR Part 60, Appendix A to measure particulate emissions;

Method 9 of 40 CFR Part 60, Appendix A to measure stack opacity; or where compliance with the opacity limitation is met by using a COM, data shall be reduced to 6-minute averages over the duration of the mass emission performance test;

Method 10 or 10B of 40 CFR Part 60, Appendix A to measure carbon monoxide (CO) emissions;

Method 22 of 40 CFR Part 60, Appendix A to determine compliance with the visible emission limits for fugitive emissions from flyash/bottom ash storage and handling for large HMIWIs. The minimum observation time shall be a series of three 1-hour observations.

Method 23 of 40 CFR Part 60, Appendix A to measure total dioxin/furan emissions. The minimum sample time shall be 4 hours per test run. If the permittee selects the toxic equivalency standards for dioxins/furans to demonstrate compliance, the following procedures shall be used:

the concentration of each dioxin/furan tetra- through octa-congener emitted shall be measured using EPA Reference Method 23.

multiply each dioxin/furan tetra- through octa-congener concentration measured by its corresponding toxic equivalency factor specified in Table 2 of 40 CFR part 60 Subpart Ec; and

iii. sum the products calculated above to obtain the total concentration of dioxins/furans emitted in terms of toxic equivalency;

Method 26 of 40 CFR Part 60, Appendix A to measure HCl emissions. If the percentage reduction standards for HCl has been selected as the compliance method, the percentage reduction in HCl emissions (%RHCl) shall be calculated using the following formula:

%RHCl = [(Ei - Eo) / Ei] x 100

where:

%RHCl = percentage reduction of HCl emissions achieved;

Ei = HCl emission concentration measured at the control device inlet, corrected to 7% oxygen (dry basis); and

Eo = HCl emission concentration measured at the control device outlet, corrected to 7% oxygen (dry basis);

Method 29 of 40 CFR Part 60, Appendix A to measure Pb, Cd, and Hg emissions. If the percentage reduction standards for metals has been selected as the compliance method, the percentage reduction in emissions (%Rmetal) shall be calculated using the following formula:

%Rmetal = [(Ei - Eo) / Ei] x 100

where:

%Rmetal =percentage reduction of metal emission (Pb, Cd, or Hg) achieved;

Ei = metal emission concentration (Pb, Cd, or Hg) measured at the control device inlet, corrected to 7% oxygen (dry basis); and

Eo = metal emission concentration (Pb, Cd, or Hg) measured at the control device outlet, corrected to 7% oxygen (dry basis).

* + - * 1. Sampling sites shall be located at the outlet of the control equipment and prior to any releases to the atmosphere.
        2. Each performance test shall consist of three separate runs using the applicable test method specified above. Each run shall last at least one hour and shall be conducted under the conditions specified in the methods. The arithmetic mean of the results of the three runs shall be used for the purpose of determining compliance with the limitations in this permit. The appropriate Ohio EPA, District Office or local air agency may request a repeat performance test at any time;
        3. The test(s) shall be conducted at the maximum charge rate, unless otherwise specified or approved by the Ohio EPA, while burning representative waste. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of the performance test and a malfunction during testing shall invalidate the results. The permittee shall make available to the Ohio EPA, Division of Air Pollution Control, Central Office or the appropriate District Office or local air agency, upon request, any records that may be necessary to determine the conditions of the performance tests.
        4. Use of the bypass stack during a performance test will invalidate the performance test.
        5. The permittee shall notify the appropriate Ohio EPA, Division of Air Pollution Control, District Office or local air agency in writing and at least 30 calendar days before a performance test is initially scheduled to begin, of plans to conduct a performance test. If a performance evaluation of a CEM or COM system is to be conducted at the same time, the Division of Air Pollution Control's Central Office shall also be notified. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the monitored operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Division of Air Pollution Control’s refusal to accept the results of the emission test(s).
        6. Personnel from the appropriate Ohio EPA, Division of Air Pollution Control, District Office, local air agency, or Central Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of HMIWI and the testing procedures provide a valid characterization of the emissions from each emissions unit and/or the performance of the control equipment.
        7. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and shall be submitted to the appropriate Ohio EPA, Division of Air Pollution Control, District Office or local air agency within 30 days following completion of the test(s).
        8. In the event the permittee is unable to conduct the performance test on the date specified in the notification requirement due to unforeseeable circumstances beyond control, the permittee shall notify the appropriate Ohio EPA, Division of Air Pollution Control, District Office or local air agency as soon as practicable and without delay prior to the scheduled performance test date and specify the date when the performance test is rescheduled. This notification of delay in conducting the performance test shall not relieve the permittee of legal responsibility for compliance with any other applicable provisions of this part or with any other applicable federal, State, or local requirement.
        9. The permittee shall maintain performance test results and any other data needed to determine emissions from the HMIWI for a minimum of 5 years after the testing is conducted or after the data is collected. These records shall be made available for inspection by the Director of the Ohio EPA or his/her representative, upon request.

[40 CFR 60.56c]

* + - 1. The permittee shall conduct annual performance testing (no more than 12 months following the previous performance test) for the HMIWI to demonstrate compliance with the PE, CO, and HCl emission limits and the visible emission limits from the HMIWI stack (opacity) and fugitive emissions from the ash conveying system(s), using the appropriate test methods and procedures below. Following 3 consecutive years of compliant stack testing results for PE, CO, and/or HCl, performance testing may be conducted every third year, or no more than 36 months after the previous performance test, as long as compliant testing results are maintained. Testing shall revert to annual for at least another 3 consecutive years, following a performance test showing noncompliance with the emissions limitations for PE, HCl, or CO for the noncompliant pollutant(s). If all performance tests for the subject pollutant meet the emission limit in for another three consecutive years, testing can again revert to every third year, i.e, no more than 36 months after the last performance test. An annual performance test (no more than 12 months following the previous compliance test) shall be conducted for opacity regardless of the compliant results from previous years. Compliance with the emission limitations contained in this permit shall be determined in accordance with the following methods:
         1. Emission testing shall be conducted to demonstrate compliance with the emission limits for PE, HCl, and CO and visible particulate emissions (stack opacity) using the test methods specified below:

Method 1 of 40 CFR Part 60, Appendix A to select the sampling ports locations and number of traverse points;

Method 3, 3A, or 3B of 40 CFR Part 60, Appendix A for gas composition analysis, including measurement of oxygen concentration (the permittee shall use EPA Reference Method 3, 3A, or 3B of 40 CFR part 60, Appendix A simultaneously with each reference method);

The pollutant concentrations shall be adjusted to 7% oxygen using the following equation:

Cadj = Cmeas (20.9 7) / (20.9 %O2)

where:

Cadj = pollutant concentration adjusted to 7% oxygen;

Cmeas = pollutant concentration measured on a dry basis;

20.9=oxygen concentration in air, percent; and

%O2=oxygen concentration measured on a dry basis, percent.

Method 5 or 29 of 40 CFR Part 60, Appendix A to measure particulate emissions;

Method 9 of 40 CFR Part 60, Appendix A to measure stack opacity; or where compliance with the opacity limitation is met by using a COM, data shall be reduced to 6-minute averages over the duration of the mass emission performance test;

Method 10 or 10B of 40 CFR Part 60, Appendix A to measure carbon monoxide (CO) emissions; or if using CEMs to demonstrate compliance, the 12-hour rolling average CO emissions shall be calculated each hour as the average emissions from the previous 12 hours of operation;

Method 22 of 40 CFR Part 60, Appendix A to determine compliance with the visible emission limits for fugitive emissions from flyash/bottom ash storage and handling for large HMIWIs. The minimum observation time shall be a series of three 1-hour observations.

Method 26 of 40 CFR Part 60, Appendix A to measure HCl emissions. If the percentage reduction standards for HCl has been selected as the compliance method, the percentage reduction in HCl emissions (%RHCl) shall be calculated using the following formula:

%RHCl = [(Ei - Eo) / Ei] x 100

where:

%RHCl = percentage reduction of HCl emissions achieved;

Ei = HCl emission concentration measured at the control device inlet, corrected to 7% oxygen (dry basis); and

Eo = HCl emission concentration measured at the control device outlet, corrected to 7% oxygen (dry basis);

* + - * 1. The Director or his/her representative may request a performance test or repeat performance test at any time, if in his/her judgment there may be a violation of any applicable emission standards or there has been a change in the operation of the HMIWI that may cause an increase in emissions due to a change in waste streams, infectious waste generators, or other operating conditions. Therefore, following the initial compliance demonstration and if required by the Director, the permittee shall also conduct performance testing of the HMIWI for SO2, NOx, dioxins/furans, As, Be, Cd, Cr, Pb, Hg, and/or Ni in order to demonstrate compliance with the limitations contained in this permit. The following applicable method(s) shall be used if it is determined a compliance demonstration is required for one or more of these pollutants:

Method 6 of 40 CFR Part 60, Appendix A to measure SO2 emissions

Method 7 of 40 CFR Part 60, Appendix A to measure NOx emissions

Method 23 of 40 CFR Part 60, Appendix A to measure total dioxin/furan emissions. The minimum sample time shall be 4 hours per test run. If the permittee selects the toxic equivalency standards for dioxins/furans to demonstrate compliance, the following procedures shall be used:

the concentration of each dioxin/furan tetra- through octa-congener emitted shall be measured using EPA Reference Method 23.

multiply each dioxin/furan tetra- through octa-congener concentration measured by its corresponding toxic equivalency factor specified in Table 2 of 40 CFR part 60 Subpart Ec; and

sum the products calculated above to obtain the total concentration of dioxins/furans emitted in terms of toxic equivalency;

Method 29 of 40 CFR Part 60, Appendix A to measure Pb, Cd, and Hg emissions. If the percentage reduction standards for metals has been selected as the compliance method, the percentage reduction in emissions (%Rmetal) shall be calculated using the following formula:

%Rmetal = [(Ei - Eo) / Ei] x 100

where:

%Rmetal= percentage reduction of metal emission (Pb, Cd, or Hg) achieved;

Ei = metal emission concentration (Pb, Cd, or Hg) measured at the control device inlet, corrected to 7% oxygen (dry basis); and

Eo = metal emission concentration (Pb, Cd, or Hg) measured at the control device outlet, corrected to 7% oxygen (dry basis).

* + - * 1. Sampling sites shall be located at the outlet of the control equipment and prior to any releases to the atmosphere.
        2. Each performance test shall consist of three separate runs using the applicable test method specified above. Each run shall last at least one hour and shall be conducted under the conditions specified in the methods. The arithmetic mean of the results of the three runs shall be used for the purpose of determining compliance with the limitations in this permit. The appropriate Ohio EPA, District Office or local air agency may request a repeat performance test at any time;
        3. The test(s) shall be conducted at the maximum charge rate, unless otherwise specified or approved by the Ohio EPA, while burning representative waste. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of the performance test and a malfunction during testing shall invalidate the results. The permittee shall make available to the Ohio EPA, Division of Air Pollution Control, Central Office or the appropriate District Office or local air agency, upon request, any records that may be necessary to determine the conditions of the performance tests.
        4. Use of the bypass stack during a performance test will invalidate the performance test.
        5. The permittee shall notify the appropriate Ohio EPA, Division of Air Pollution Control, District Office or local air agency in writing and at least 30 calendar days before a performance test is initially scheduled to begin, of plans to conduct a performance test. If a performance evaluation of a CEM or COM system is to be conducted at the same time, the Division of Air Pollution Control's Central Office shall also be notified. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the monitored operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Division of Air Pollution Control’s refusal to accept the results of the emission test(s).
        6. Personnel from the appropriate Ohio EPA, Division of Air Pollution Control, District Office, local air agency, or Central Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of HMIWI and the testing procedures provide a valid characterization of the emissions from each emissions unit and/or the performance of the control equipment.
        7. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and shall be submitted to the appropriate Ohio EPA, Division of Air Pollution Control, District Office or local air agency within 30 days following completion of the test(s).
        8. In the event the permittee is unable to conduct the performance test on the date specified in the notification requirement due to unforeseeable circumstances beyond control, the permittee shall notify the appropriate Ohio EPA, Division of Air Pollution Control, District Office or local air agency as soon as practicable and without delay prior to the scheduled performance test date and specify the date when the performance test is rescheduled. This notification of delay in conducting the performance test shall not relieve the permittee of legal responsibility for compliance with any other applicable provisions of this part or with any other applicable federal, State, or local requirement.
        9. The permittee shall maintain performance test results and any other data needed to determine emissions from the HMIWI for a minimum of 5 years after the testing is conducted or after the data is collected. These records shall be made available for inspection by the Director of the Ohio EPA or his/her representative, upon request.

[40 CFR 60.56c]

* + - 1. The permittee, using a CEM to demonstrate compliance with any of the emission limits under 40 CFR 60.52c, shall determine compliance with the appropriate emission limit(s) using a 12-hour rolling average, calculating each hour as the average of the previous 12 operating hours (not including startup, shutdown, or malfunction). All CEM systems shall be operated in accordance with the applicable procedures under Part 60, Appendices B and F.

[40 CFR 60.56c(c)(4)]

* + - 1. The permittee may conduct a repeat performance test within 30 days of the violation of an operating parameter limit to demonstration that the HMIWI is not in violation of the applicable emission limitation(s). The repeat performance tests shall be conducted using the identical operating parameters that indicated a violation of the emissions limits. The permittee may conduct a repeat performance test at any time in order to establish new values for the operating parameters.

[40 CFR 56c(h) and (j)]

* + - 1. In summary, compliance with the emission limitations contained in this permit shall be determined in accordance with the following methods:
         1. Emission Limitation:

Visible particulate emissions from the HMIWI stack shall not exceed 10% opacity as a 6-minute average.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the opacity limit through an annual compliance demonstration using Method 9 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

**OR** alternative compliance method using COM:

Applicable Compliance Method:

The permittee shall demonstrate compliance with the opacity limit by maintaining a COM as required in this permit.

* + - * 1. Emission Limitation:

Particulate emissions (PE) shall not exceed 34 mg/dscm (0.015 grains/dscf), adjusted to 7% oxygen in the exhaust stream for the large HMIWI

Applicable Compliance Method:

The permittee shall demonstrate compliance with the PE limit through an annual compliance demonstration using Methods 1, 3, and 5 or 29 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

* + - * 1. Emission Limitation:

Sulfur dioxide (SO2) emissions shall not exceed 55 ppm by volume, on a dry basis, adjusted to 7% oxygen.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the SO2 limit through a compliance demonstration using Methods 1, 3, and 6 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

* + - * 1. Emission Limitation:

Nitrogen Oxide (NOx) emissions shall not exceed 250 ppm by volume, on a dry basis, adjusted to 7% oxygen.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the NOx limit through a compliance demonstration using Methods 1, 3, and 7 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

* + - * 1. Emission Limitation:

Carbon monoxide (CO) emissions shall not exceed 40 ppm by volume, on a dry basis, adjusted to 7% oxygen and calculated for the appropriate averaging period.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the CO limit through an annual compliance demonstration using Methods 1, 3, and 10 or 10B from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit; or if using CEMs to demonstrate compliance, the 12-hour rolling average CO emissions shall be calculated each hour as the average emissions from the previous 12 hours of operation.

* + - * 1. Emission Limitations:

Lead (Pb) emissions shall not exceed 0.07 mg/dscm (0.00003 grain/dscf) adjusted to 7% oxygen; or Pb emissions shall be reduced by 98%.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the Pb limit through the initial compliance demonstration (and subsequent testing if required) using Method 29 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

* + - * 1. Emission Limitations:

Dioxins/furans (D/F) emissions shall not exceed 25 nanograms/dscm (11 grains/billion dscf) as total mass; or shall not exceed 0.6 nanograms/dscm (0.26 grain/billion dscf) as the D/F Toxics Equivalency Factor (TEQ).

Applicable Compliance Method:

The permittee shall demonstrate compliance with the dioxins/furans limit through the initial compliance demonstration (and subsequent testing if required) using Methods 1, 3, and 23 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

* + - * 1. Emission Limitations:

Hydrogen chloride (HCl) emissions shall not exceed 15 ppm by volume, on a dry basis, adjusted to 7% oxygen or HCl emissions shall be reduced by 99%.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the HCl limit through an annual compliance demonstration using Methods 1, 3, and 26 or 26A from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

* + - * 1. Emission Limitations:

Cadmium (Cd) emissions shall not exceed 0.04 mg/dscm (0.00002 grain/dscf) adjusted to 7% oxygen; or Cd emissions shall be reduced by 90%.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the Cd limit through the initial compliance demonstration (and subsequent testing if required) using Method 29 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.

* + - * 1. Emission Limitations:

Mercury (Hg) emissions shall not exceed 0.55 mg/dscm (0.00024 grain/dscf) adjusted to 7% oxygen; or Hg emissions shall be reduced by 85%.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the Hg limit through the initial compliance demonstration (and subsequent testing if required) using Method 29 from 40 CFR Part 60, Appendix A and by maintaining the operating parameters for the HMIWI and control equipment as required in this permit.