10 CSR 10-6.200 Hospital, Medical, Infectious Waste Incinerators

(1) Applicability.

(A) Except as provided in subsection (1)(B) through (H) of this rule, this rule applies to each individual hospital or medical/infectious waste incinerator (HMIWI) –

1. For which construction was commenced after June 20, 1996, but no later than December 1, 2008; or

2. For which modification is commenced after March 16, 1998, but no later than April 6, 2010.

(B) A combustor is not subject to this rule during periods when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste is burned, provided the owner or operator of the combustor—

1. Notifies the director of an exemption claim; and

2. Keeps records on a calendar-quarter basis of the periods of time when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste is burned.

(C) Any co-fired combustor is not subject to this rule if the owner or operator of the co-fired combustor—

1. Notifies the director of an exemption claim;

2. Provides an estimate of the relative weight of hospital waste, medical/infectious waste, and other fuels and/or wastes to be combusted; and

3. Keeps records on a calendar-quarter basis of the weight of hospital waste and medical/infectious waste combusted, and the weight of all other fuels and wastes combusted at the co-fired combustor.

(D) Any combustor required to have a permit under section 3005 of the Solid Waste Disposal Act is not subject to this rule.

(E) Any combustor which meets the applicability requirements under Subpart Cb, Ea, or Eb of 40 CFR 60 is not subject to this rule.

(F) Any pyrolysis unit is not subject to this rule.

(G) Cement kilns firing hospital waste and/or medical/infectious waste are not subject to this rule.

(H) Physical or operational changes made to an HMIWI unit solely for the purpose of complying with this rule are not considered a modification and do not result in an HMIWI unit becoming subject to the provisions of 40 CFR 60, Subpart Ec.

(I) Facilities subject to this rule shall operate pursuant to a permit issued under the permitting authorities operating permit program.

(2) Definitions.

(A) Definitions of certain terms specified in this rule may be found in 40 CFR 60.21 and 40 CFR 60.51c, promulgated as of July 1, 2012, and are hereby incorporated by reference in this rule, as published by the Office of Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408. This rule does not incorporate any subsequent amendments or additions.

(B) Definitions of certain terms specified in this rule, other than those defined in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Emission Limits.

1. No owner or operator of an HMIWI subject to this rule shall cause to be discharged into the atmosphere any gases that contain stack emissions in excess of the limits presented in Table 1 of this subsection, except as provided for in paragraph (3)(A)2. of this rule.

TABLE 1. EMISSION LIMITS FOR SMALL, MEDIUM, AND LARGE HMIWI

Pollutant	Units (7 percent oxygen, dry basis)	Emission limits HMIWI size			Averaging time[1]	Method for demonstrating compliance[2]
		Small	Medium	Large		
Particulate matter	Milligrams per dry standard cubic meter (mg/dscm) (grains per dry standard cubic foot (gr/dscf))	66 (0.029)	46 (0.020) or 34 (.015)[3]	25 (0.011)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 5 of 40 CFR 60, Appendix A–3 or EPA Reference Method 26A or 29 of 40 CFR 60, Appendix A–8.
Carbon monoxide	parts per million by volume (ppmv)	20	5.5	11	3-run average (1-hour minimum sample time per run)	EPA Reference Method 10 or 10B of 40 CFR 60, Appendix A–4.
Dioxins/furans	Nanograms per dry standard cubic meter total dioxins/furans (ng/dscm) (grains per billion dry standard cubic feet (gr/10^9dscf)) or ng/dscm TEQ (gr/10^9dscf)	16 (7.0) or 0.013 (0.0057)	0.85 (0.37) or 0.020 (0.0087)	9.3 (4.1) or 0.054 (0.024)	3-run average (4-hour minimum sample time per run)	EPA Reference Method 23 of 40 CFR 60, Appendix A–7.
Hydrogen chloride	ppmv	44 or 15 or 99%[3]	7.7	6.6	3-run average (1-hour minimum sample time per run)	EPA Reference Method 26 or 26A of 40 CFR 60, Appendix A–8.
Sulfur dioxide	ppmv	4.2	4.2	9.0	3-run average (1-hour minimum sample time per run)	EPA Reference Method 6 or 6C of 40 CFR 60, Appendix A–4.
Nitrogen oxides	ppmv	190	190	140	3-run average (1-hour minimum sample time per run)	EPA Reference Method 7 or 7E of 40 CFR 60, Appendix A–4.
Lead	mg/dscm (grains per thousand dry standard cubic feet (gr/10^3dscf))	0.31 (0.14)	0.018 (0.0079)	0.036 (0.016)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of 40 CFR 60, Appendix A–8.
Cadmium	mg/dscm (gr/10^3dscf)	0.017 (0.0074)	0.013 (0.0057)	0.0092 (0.004 0)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of 40 CFR 60, Appendix A–8.
Mercury	mg/dscm (gr/103dscf)	0.014 (0.0061)	0.025 (0.011)	0.018 (0.007 9)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of 40 CFR 60, Appendix A–8.

[1] Except as allowed under section 60.56c(c) for HMIWI equipped with Continuous Emission Monitoring System (CEMS).
[2] Does not include CEMS and approved alternative non-EPA test methods allowed under section 60.56c(b).
[3] HMIWI constructed after June 20, 1996, but no later than December 1, 2008, or for which modification is commenced after March 16, 1998, but no later than April 6, 2010.

2. No owner or operator of a small HMIWI constructed on or before June 20, 1996, which is located more than fifty (50) miles from the boundary of the nearest Standard Metropolitan Statistical Area and which burns less than two thousand (2,000) pounds per week of hospital waste and medical/infectious waste shall cause to be discharged into the atmosphere any gases that contain stack emissions in excess of the limits presented in Table 2 of this paragraph. The two thousand (2,000) pounds per week limitation does not apply during performance tests.

Table 2—Emissions Limits for Small HMIWI Which Meet the Criteria Under Paragraph (3)(A)2. of this Rule

Pollutant	Units (7 percent oxygen, dry basis)	HMIWI Emission limits	Averaging time[1]	Method for demonstrating compliance[2]
Particulate matter	mg/dscm (gr/dscf)	87 (0.038)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 5 of 40 CFR 60, Appendix A–3 or EPA Reference Method 26A or 29 of 40 CFR 60, Appendix A–8.
Carbon monoxide	ppmv	20	3-run average (1-hour minimum sample time per run)	EPA Reference Method 10 or 10B of 40 CFR 60, Appendix A–4.
Dioxins/furans	ng/dscm total dioxins/furans (gr/10^9dscf) or ng/dscm TEQ (gr/10^9dscf)	240 (100) or 5.1 (2.2)	3-run average (4-hour minimum sample time per run)	EPA Reference Method 23 of 40 CFR 60, Appendix A–7.
Hydrogen chloride	ppmv	810	3-run average (1-hour minimum sample time per run)	EPA Reference Method 26 or 26A of 40 CFR 60, Appendix A–8.
Sulfur dioxide	ppmv	55	3-run average (1-hour minimum sample time per run)	EPA Reference Method 6 or 6C of 40 CFR 60, Appendix A–4.
Nitrogen oxides	ppmv	130	3-run average (1-hour minimum sample time per run)	EPA Reference Method 7 or 7E of 40 CFR 60, Appendix A–4.
Lead	mg/dscm (gr/10^3dscf)	0.50 (0.22)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of 40 CFR 60, Appendix A–8.
Cadmium	mg/dscm (gr/10^3dscf)	0.11 (0.048)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of 40 CFR 60, Appendix A–8.
Mercury	mg/dscm (gr/10^3dscf)	0.0051 (0.0022)	3-run average (1-hour minimum sample time per run)	EPA Reference Method 29 of 40 CFR 60, Appendix A–8.

[1] Except as allowed under section 60.56c(c) for HMIWI equipped with CEMS.
[2] Does not include CEMS and approved alternative non-EPA test methods allowed under section 60.56c(b).

3. No owner or operator of an HMIWI subject to this rule shall cause to be discharged into the atmosphere from the stack of that HMIWI any gases that exhibit greater than six percent (6%) opacity (six (6)-minute block average).

(B) Operator Training and Qualification Requirements.

1. No owner or operator of an HMIWI subject to this rule shall allow the HMIWI to operate at any time unless a fully trained and qualified HMIWI operator is accessible, either at the facility or available within one (1) hour. The trained and qualified HMIWI operator may operate the HMIWI directly or be the direct supervisor of one (1) or more HMIWI operators.

2. Operator training and qualification shall be obtained by completing the requirements included in paragraphs (3)(B)3. through 7. of this rule.

3. Training shall be obtained by completing an HMIWI operator training course that includes, at a minimum, the following provisions:

A. Twenty-four (24) hours of training on the following subjects:

(I) Environmental concerns, including pathogen destruction and types of emissions;

(II) Basic combustion principles, including products of combustion;

(III) Operation of the type of incinerator to be used by the operator, including proper startup, waste charging, and shutdown procedures;

(IV) Combustion controls and monitoring;

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

(VI) Methods to monitor pollutants and equipment calibration procedures (where applicable);

(VII) Inspection and maintenance of the HMIWI, air pollution control devices, and continuous emission monitoring systems;

(VIII) Actions to correct malfunctions or conditions that may lead to malfunction;

(IX) Bottom and fly ash characteristics and handling procedures;

(X) Applicable federal, state, and local regulations;

(XI) Work safety procedures;

(XII) Pre-startup inspections; and

(XIII) Record keeping requirements;

B. An examination designed and administered by the instructor; and

C. Reference material distributed to the attendees covering the course topics.

4. Qualifications shall be obtained by—

A. Completion of a training course that satisfies the criteria under paragraph (3)(B)3. of this rule; and

B. Either six (6) months experience as an HMIWI operator, six (6) months experience as a direct supervisor of an HMIWI operator, or completion of at least two (2) burn cycles under the observation of two (2) qualified HMIWI operators.

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

6. To maintain qualification, the trained and qualified HMIWI operator shall complete and pass an annual review or refresher course of at least four (4) hours covering, at a minimum, the following:

A. Update of regulations;

B. Incinerator operation, including startup and shutdown procedures;

C. Inspection and maintenance;

D. Responses to malfunctions or conditions that may lead to malfunction; and

E. Discussion of operating problems encountered by attendees.

7. A lapsed qualification shall be renewed by one (1) of the following methods:

A. For a lapse of less than three (3) years, the HMIWI operator shall complete and pass a standard annual refresher course described in paragraph (3)(B)6. of this rule; or

B. For a lapse of three (3) years or more, the HMIWI operator shall complete and pass a training course with the minimum criteria described in paragraph (3)(B)3. of this rule.

8. The owner or operator of an HMIWI shall maintain documentation at the facility that address the following:

A. Summary of the applicable standards under this subpart;

B. Description of basic combustion theory applicable to an HMIWI;

C. Procedures for receiving, handling, and charging waste;

D. HMIWI startup, shutdown, and malfunction procedures;

E. Procedures for maintaining proper combustion air supply levels;

F. Procedures for operating the HMIWI and associated air pollution control systems within the standards established under this subpart;

G. Procedures for responding to periodic malfunction or conditions that may lead to malfunction;

H. Procedures for monitoring HMIWI emissions;

I. Reporting and record keeping procedures; and

J. Procedures for handling ash.

9. The owner or operator of an HMIWI shall establish a program for reviewing the information listed in paragraph (3)(B)8. of this rule annually with each HMIWI operator.

A. The initial review of the information listed in paragraph (3)(B)8. of this rule shall be conducted within six (6) months after the effective date of this rule or prior to assumption of responsibilities affecting HMIWI operation.

B. Subsequent reviews of the information listed in paragraph (3)(B)8. of this rule shall be conducted annually.

10. The information listed in paragraph (3)(B)8. of this rule shall be kept in a readily accessible location for all HMIWI operators. This information, along with records of training shall be available for inspection by the department or its delegated enforcement agent upon request.

(C) Waste Management Plan. The owner or operator of an HMIWI shall prepare a waste management plan. The waste management plan shall identify both the feasibility and the approach to separate certain components of solid waste from the health care waste stream in order to reduce the amount of toxic emissions from incinerated waste. A waste management plan may include, but is not limited to, elements such as segregation and recycling of paper, cardboard, plastics, glass, batteries, food waste, and metals (e.g., aluminum cans, metals-containing devices); segregation of non-recyclable wastes (e.g., polychlorinated biphenyl-containing waste, pharmaceutical waste, and mercury-containing waste, such as dental waste); and purchasing recycled or recyclable products. A 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. It should identify, where possible, reasonably available additional waste management measures, taking into account the effectiveness of waste management measures already in place, the costs of additional measures, the emission reductions expected to be achieved, and any other environmental or energy impacts they might have. The development of the waste management plan shall consider the publication entitled An Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities (Catalog No. 057007), copyright year 1993, and hereby incorporated by reference in this rule, as published by the American Hospital Association Services, Inc., PO Box 92683, Chicago, IL 60675- 2683. This rule does not incorporate any subsequent amendments or additions to this publication. The owner or operator of each commercial HMIWI company shall conduct training and education programs in waste segregation for each of the company’s waste generator clients and ensure that each client prepares its own waste management plan that includes, but is not limited to, the provisions listed previously in this subsection.

(D) Inspection Guidelines.

1. Each HMIWI subject to the emission limits under paragraph (3)(A)1. of this rule and each small HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule shall undergo an initial equipment inspection that is at least as protective as the following:

A. At a minimum, an inspection shall include the following:

(I) Inspect all burners, pilot assemblies, and pilot sensing devices for proper operation, and clean pilot flame sensor, as necessary;

(II) Ensure proper adjustment of primary and secondary chamber combustion air, and adjust as necessary;

(III) Inspect hinges and door latches and lube as necessary;

(IV) Inspect dampers, fans, and blowers for proper operation;

(V) Inspect HMIWI door and door gaskets for proper sealing;

(VI) Inspect motors for proper operation;

(VII) Inspect primary chamber refractory lining and clean and repair/replace as necessary;

(VIII) Inspect incinerator shell for corrosion and/or hot spots;

(IX) Inspect secondary/tertiary chamber and stack; clean as necessary;

(X) Inspect mechanical loader, including limit switches, for proper operation, if applicable;

(XI) Visually inspect waste bed (grates) and repair/seal, as necessary;

(XII) For the burn cycle that follows the inspection, document that the incinerator is operating properly and make any necessary adjustments;

(XIII) Inspect air pollution control devices for proper operation, if applicable;

(XIV) Inspect waste heat boiler systems to ensure proper operation, if applicable;

(XV) Inspect bypass stack components;

(XVI) Ensure proper calibration of thermocouples, sorbent feed systems and any other monitoring equipment; and

(XVII) Generally observe that the equipment is maintained in good operating condition; and.

B. Within ten (10) operating days following an equipment inspection all necessary repairs shall be completed unless the owner or operator obtains written approval from the department or local air pollution control authority establishing a date whereby all necessary repairs of the designated facility shall be completed.

2. Each HMIWI subject to the emissions limits under paragraph (3)(A)1. of this rule and each small HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule shall undergo an equipment inspection annually (no more than twelve (12) months following the previous annual equipment inspection), as outlined in paragraph (3)(D)1. of this rule.

3. Each HMIWI subject to the emissions limits under paragraph (3)(A)1. of this rule and each small HMIWI subject to the emissions limits under paragraph (3)(A)2. of this rule shall undergo an initial air pollution control device inspection, as applicable, that is at least as protective as the following:

A. At a minimum, an inspection shall include the following:

(I) Inspect air pollution control device(s) for proper operation, if applicable;

(II) Ensure proper calibration of thermocouples, sorbent feed systems, and any other monitoring equipment; and

(III) Generally observe that the equipment is maintained in good operating condition; and

B. Within ten (10) operating days following an air pollution control device inspection, all necessary repairs shall be completed unless the owner or operator obtains written approval from the Missouri Department of Natural Resources' Air Pollution Control Program establishing a date whereby all necessary repairs of the designated facility shall be completed.

4. Each HMIWI subject to the emissions limits under paragraph (3)(A)1. of this rule and each small HMIWI subject to the emissions limits under paragraph (3)(A)2. of this rule shall undergo an air pollution control device inspection, as applicable, annually (no more than twelve (12) months following the previous annual air pollution control device inspection), as outlined in paragraph (3)(D)3. of this rule.

(E) Compliance and Performance Testing.

1. The emission limits under this rule apply at all times.

2. Except as provided in paragraph (3)(E)12. of this rule, the owner or operator of an HMIWI subject to this rule shall conduct an initial performance test to determine compliance with the emission limits using the procedures and test methods listed in subparagraphs (3)(E)2.A. through L. of this rule. The use of the bypass stack during a performance test shall invalidate the performance test. For small HMIWIs as defined in paragraph (3)(A)2. of this rule, the two-thousand (2,000)-pound-per-week limitation does not apply during performance tests.

A. All performance tests shall consist of a minimum of three (3) test runs conducted under representative operating conditions.

B. The minimum sample time shall be one (1) hour per test run unless otherwise indicated.

C. The sampling location and number of traverse points shall be determined using EPA Reference Method 1 of 40 CFR 60, Appendix A–1.

D. Gas composition shall be analyzed and include a measurement of oxygen concentration using EPA Reference Method 3, 3A, or 3B of 40 CFR 60, Appendix A–2. EPA Reference Method 3, 3A, or 3B shall be used simultaneously with each of the other EPA reference methods. As an alternative to EPA Reference Method 3B, ASME PTC-19-10-1981-Part 10 may be used.

E. The pollutant concentrations shall be adjusted to seven percent (7%) oxygen using the following equation:

$$C_{adj} = C_{meas} \ (20.9 - 7) \ / \ (20.9 - \% \ O_2)$$

where:

C_{adj} = pollutant concentration adjusted to 7 percent oxygen
C_{meas} = pollutant concentration measured on a dry basis
20.9 – 7) = 20.9 percent oxygen – 7 percent oxygen (defined oxygen correction basis)
20.9 = oxygen concentration in air, percent
% O_2 = oxygen concentration measured on a dry basis, percent

F. Particulate Matter (PM) emissions shall be measured using EPA Reference Method 5 of 40 CFR 60, Appendix A– 3. An acceptable alternate method for measuring PM emissions is EPA Reference Method 26A or Method 29 of 40 CFR 60, Appendix A– 8. As an alternative, PM Continuous Emission Monitoring System (CEMS) may also be used as specified in subparagraph (3)(E)3.C. of this rule.

G. Stack opacity shall be measured using EPA Reference Method 9 of 40 CFR 60, Appendix A–4. As an alternative, demonstration of compliance with the PM standards using bag leak detection systems as specified in paragraph (3)(E)11. of this rule or PM CEMS as specified in subparagraph (3)(E)3.C. of this rule is considered demonstrative of compliance with the opacity requirements.

H. Carbon monoxide (CO) emissions shall be measured using EPA Reference Method 10 or 10B of 40 CFR 60, Appendix A–4. As an alternative, CO CEMS may be used as specified in subparagraph (3)(E)3.C. of this rule.

I. Total dioxin/furan emissions shall be measured using EPA Reference Method 23 of 40 CFR 60, Appendix A–7. As an alternative, an owner or operator may elect to sample dioxins/furans by installing, calibrating, maintaining, and operating a continuous automated sampling system for monitoring dioxin/furan emissions. Sampling shall be done using EPA Reference Method 23 of 40 CFR 60, Appendix A–7. The minimum sample time shall be four (4) hours per test run. If the affected facility has selected the toxic equivalency standards for dioxin/furans the following procedures shall be used to determine compliance:

(I) Measure the concentration of each dioxin/furan tetra- through octa-congener emitted using EPA Reference Method 23 of 40 CFR 60, Appendix A–7;

(II) For each dioxin/furan congener measured in accordance with part (3)(E)2.I.(I) of this rule, multiply the congener concentration by its corresponding toxic equivalency factor specified in Table 3 of this part; and

TABLE 3.- TOXIC EQUIVALENCY FACTORS

Dioxin/furan congener	Toxic equivalency factor
2,3,7,8-tetrachlorinated dibenzo-p-dioxin	1
1,2,3,7,8-pentachlorinated dibenzo-p-dioxin	0.5
1,2,3,4,7,8-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,7,8,9-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,6,7,8-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,4,6,7,8-heptachlorinated dibenzo-p-dioxin	0.01
octachlorinated dibenzo-p-dioxin	0.001
2,3,7,8-tetrachlorinated dibenzofuran	0.1
2,3,4,7,8-pentachlorinated dibenzofuran	0.5
1,2,3,7,8-pentachlorinated dibenzofuran	0.05
1,2,3,4,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,6,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,7,8,9-hexachlorinated dibenzofuran	0.1
2,3,4,6,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,4,6,7,8-heptachlorinated dibenzofuran	0.01
1,2,3,4,7,8,9-heptachlorinated dibenzofuran	0.01
octachlorinated dibenzofuran	0.001

(III) Sum the products calculated in accordance with part (3)(E)2.I.(II) of this rule to obtain the total concentration of dioxins/furans emitted in terms of toxic equivalency.

J. Hydrogen chloride (HCl) shall be measured using EPA Reference Method 26 or 26A of 40 CFR 60, Appendix A–8. As an alternative, HCl CEMS may be used as specified in subparagraph (3)(E)3.C. of this rule.

K. Lead (Pb), cadmium (Cd), and mercury (Hg) emissions shall be measured using EPA Reference Method 29 of 40 CFR 60, Appendix A–8. As an alternative, Hg emissions may be measured using ASTM D6784–02(2008). As an alternative for Pb, Cd, and Hg, multi-metals CEMS or Hg CEMS, may be used as specified in subparagraph (3)(E)3.C. of this rule. As an alternative, an owner or operator may elect to sample Hg by installing, calibrating, maintaining, and operating a continuous automated sampling system for monitoring Hg emissions.

L. Compliance for fugitive ash emissions shall be determined using EPA Reference Method 22 of 40 CFR 60, Appendix A–7. The minimum observation time shall be a series of three (3) one (1)-hour observations.

3. Following the date on which the initial performance test is completed, the owner or operator of an affected facility shall—

A. Determine compliance with the opacity limit by conducting an annual performance test (no more than twelve (12) months following the previous performance test) using the applicable procedures and test methods listed in paragraph (3)(E)2. of this rule;

B. Determine compliance with the PM, CO, and HCl emission limits by conducting an annual performance test (no more than twelve (12) months following the previous performance test) using the applicable procedures and test methods listed in paragraph (3)(E)2. of this rule. If all three (3) performance tests over a three (3)-year period indicate compliance with the emission limit for a pollutant (PM, CO, or HCl), the owner or operator may forego a performance test for that pollutant for the subsequent two (2) years. At a minimum, a performance test for PM, CO, and HCl shall be conducted every third year (no more than thirty-six (36) months following the previous performance test). If a performance test conducted every third year indicates compliance with the emission limit for a pollutant (PM, CO, or HCl), the owner or operator may forego a performance test for that pollutant for an additional two (2) years. If any performance test indicates noncompliance with the respective emission limit, a performance test for that pollutant shall be conducted annually until all annual performance tests over a three (3)-year period indicate compliance with the emission limit. The use of the bypass stack during a performance test shall invalidate the performance test; and

C. Facilities using a Continuous Emission Monitoring System (CEMS) to demonstrate compliance with any of the emission limits under section (3) of this rule shall determine compliance with the appropriate emission limit(s) using a twelve (12)-hour rolling average, calculated each hour as the average of the previous twelve (12) operating hours.

4. The owner or operator of an affected facility equipped with a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and wet scrubber shall—

A. Establish the appropriate maximum and minimum operating parameters, indicated in Table 4 of this subparagraph for each control system, as site-specific operating parameters during the initial performance test to determine compliance with the emission limits; and

Table 4—Operating Parameters to be Monitored and Minimum Measurement and Recording Frequencies

Operating parameters to be monitored	Minimum frequency		Control system		
	Data measurement	Data recording	Dry scrubber followed by fabric filter	Wet scrubber	Dry scrubber followed by fabric filter and wet scrubber
MAXIMUM OPERATING PARAMETERS					
Maximum charge rate	Continuous	1 per hour	✓	✓	✓
Maximum fabric filter inlet temperature	Continuous	1 per minute	✓		✓
Maximum flue gas temperature	Continuous	1 per minute		✓	✓
MINIMUM OPERATING PARAMETERS					
Minimum secondary chamber temperature	continuous	1 per minute	✓	✓	✓
Minimum dioxin/furan sorbent flow rate	hourly	1 per hour	✓		✓
Minimum hydrogen chloride (HCl) sorbent flow rate	hourly	1 per hour	✓		✓
Minimum mercury (Hg) sorbent flow rate	hourly	1 per hour	✓		✓
Minimum pressure drop across the wet scrubber or minimum horsepower or amperage to wet scrubber	continuous	1 per minute		✓	✓
Minimum scrubber liquor flow rate	continuous	1 per minute		✓	✓
Minimum scrubber liquor pH	continuous	1 per minute		✓	✓

B. Following the date on which the initial performance test is completed, ensure that the affected facility does not operate above any of the applicable maximum operating parameters or below any of the applicable minimum operating parameters listed in Table 4 and measured as three (3)-hour rolling averages (calculated each hour as the average of the previous three (3) operating hours) at all times. Operating parameter limits do not apply during performance tests. Operation above the established maximum or below the established minimum operating parameter(s) shall constitute a violation of established operating parameter(s).

5. Except as provided in paragraph (3)(E)8. of this rule, for affected facilities equipped with a dry scrubber followed by a fabric filter—

A. Operation of the affected facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the CO emission limit;

B. Operation of the affected facility above the maximum fabric filter inlet temperature, above the maximum charge rate, and below the minimum dioxin/furan sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the dioxin/furan emission limit;

C. Operation of the affected facility above the maximum charge rate and below the minimum HCl sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the HCl emission limit;

D. Operation of the affected facility above the maximum charge rate and below the minimum Hg sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the Hg emission limit; or

E. Use of the bypass stack shall constitute a violation of the PM, dioxin/furan, HCl, Pb, Cd and Hg emission limits.

6. Except as provided in paragraph (3)(E)8. of this rule, for affected facilities equipped with a wet scrubber—

A. Operation of the affected facility 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 three (3)-hour rolling average) simultaneously shall constitute a violation of the PM emission limit;

B. Operation of the affected facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the CO emission limit;

C. Operation of the affected facility above the maximum charge rate, below the minimum secondary temperature, and below the minimum scrubber liquor flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the dioxin/furan emission limit;

D. Operation of the affected facility above the maximum charge rate and below the minimum scrubber liquor pH (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the HCl emission limit;

E. Operation of the affected facility above the maximum flue gas temperature and above the maximum charge rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the Hg emission limit; or

F. Use of the bypass stack shall constitute a violation of the PM, dioxin/furan, HCl, Pb, Cd and Hg emission limits.

7. Except as provided in paragraph (3)(E)8. of this rule, for affected facilities equipped with a dry scrubber followed by a fabric filter and a wet scrubber—

A. Operation of the affected facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the CO emission limit;

B. Operation of the affected facility above the maximum fabric filter inlet temperature, above the maximum charge rate, and below the minimum dioxin/furan sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the dioxin/furan emission limit;

C. Operation of the affected facility above the maximum charge rate and below the minimum scrubber liquor pH (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the HCl emission limit;

D. Operation of the affected facility above the maximum charge rate and below the minimum Hg sorbent flow rate (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the Hg emission limit; or

E. Use of the bypass stack shall constitute a violation of the PM, dioxin/furan, HCl, Pb, Cd and Hg emission limits.

8. The owner or operator of an affected facility may conduct a repeat performance test within thirty (30) days of violation of applicable operating parameter(s) to demonstrate that the affected facility is not in violation of the applicable emission limit(s). Repeat performance tests conducted pursuant to this paragraph shall be conducted using the identical operating parameters that indicated a violation under paragraphs (3)(E)5., 6., or 7. of this rule.

9. The owner or operator of an affected facility using an air pollution control device other than a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and a wet scrubber or selective noncatalytic reduction technology, to comply with the emission limits under section (3) of this rule shall petition the administrator for other site-specific operating parameters to be established during the initial performance test and continuously monitored thereafter. The owner or operator shall not conduct the initial performance test until after the petition has been approved by the administrator.

10. The owner or operator of an affected facility may conduct a repeat performance test at any time to establish new values for the operating parameters. The department may request a repeat performance test at any time.

11. The owner or operator of an affected facility that uses an air pollution control device that includes a fabric filter and is not demonstrating compliance using PM CEMS, determines compliance with the PM emissions limit using a bag leak detection system, and meets the requirements in subparagraphs (3)(E)11.A. through L. of this rule for each bag leak detection system.

A. Each triboelectric bag leak detection system may be installed, calibrated, operated, and maintained according to the "Fabric Filter Bag Leak Detection Guidance" (EPA–454/R–98–015, September 1997). This document is available from the U.S. Environmental Protection Agency (U.S. EPA), Office of Air Quality Planning and Standards, Sector Policies and Programs Division, Measurement Policy Group (D–243–02), Research Triangle Park, NC 27711. This document is also available on the Technology Transfer Network (TTN) under Emissions Measurement Center Continuous Emissions Monitoring. Other types of bag leak detection systems shall be installed, operated, calibrated, and maintained in a manner consistent with the manufacturer's written specifications and recommendations.

B. The bag leak detection system shall be certified by the manufacturer to be capable of detecting PM emissions at concentrations of ten (10) milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

C. The bag leak detection system sensor shall provide an output of relative PM loadings.

D. The bag leak detection system shall be equipped with a device to continuously record the output signal from the sensor.

E. The bag leak detection system shall be equipped with an audible alarm system that will sound automatically when an increase in relative PM emissions over a preset level is detected. The alarm shall be located where it is easily heard by plant operating personnel.

F. For positive pressure fabric filter systems, a bag leak detector shall be installed in each baghouse compartment or cell.

G. For negative pressure or induced air fabric filters, the bag leak detector shall be installed downstream of the fabric filter.

H. Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

I. The baseline output shall be established by adjusting the range and the averaging period of the device and establishing the alarm set points and the alarm delay time according to section 5.0 of the "Fabric Filter Bag Leak Detection Guidance."

J. Following initial adjustment of the system, the sensitivity or range, averaging period, alarm set points, or alarm delay time may not be adjusted. In no case may the sensitivity be increased by more than one hundred percent (100%) or decreased more than fifty percent (50%) over a three-hundred sixty-five (365)-day period unless such adjustment follows a complete fabric filter inspection that demonstrates that the fabric filter is in good operating condition. Each adjustment shall be recorded.

K. Record the results of each inspection, calibration, and validation check.

L. Initiate corrective action within one (1) hour of a bag leak detection system alarm; operate and maintain the fabric filter such that the alarm is not engaged for more than five percent (5%) of the total operating time in a six (6)- month block reporting period. If inspection of the fabric filter demonstrates that no corrective action is required, no alarm time is counted. If corrective action is required, each alarm is counted as a minimum of one (1) hour. If it takes longer than one (1) hour to initiate corrective action, the alarm time is counted as the actual amount of time taken to initiate corrective action.

12. Small HMIWI subject to the emissions limits under paragraph (3)(A)2. of this rule that is not equipped with an air pollution control device shall meet the following compliance and performance testing requirements:

A. Establish maximum charge rate and minimum secondary chamber temperature as site-specific operating parameters during the initial performance test to determine compliance with applicable emission limits;

B. Following the date on which the initial performance test is completed, ensure that the designated facility does not operate above the maximum charge rate or below the minimum secondary chamber temperature measured as three (3)-hour rolling averages (calculated as the average of the previous three (3) operating hours) at all times. Operating parameter limits do not apply during performance tests. Operation above the maximum charge rate or below the minimum secondary chamber temperature shall constitute a violation of the established operating parameter(s);

C. Except as provided in subparagraph (3)(E)12.D. of this rule, operation of the designated facility above the maximum charge rate and below the minimum secondary chamber temperature (each measured on a three (3)-hour rolling average) simultaneously shall constitute a violation of the PM, CO, and dioxin/furan emission limits; and

D. The owner or operator of a designated facility may conduct a repeat performance test within thirty (30) days of the violation of applicable operating parameter(s) to demonstrate that the designated facility is not in violation of the applicable emission limit(s). Repeat performance tests conducted pursuant to this paragraph must be conducted using the identical operating parameters that indicated a violation under subparagraph (3)(E)12.C. of this rule.

13. The owner or operator of a designated facility subject to this rule may use the results of previous emissions tests to demonstrate compliance with the emissions limits, provided that the following conditions are met:

A. The designated facility’s previous emissions tests must have been conducted using the applicable procedures and test methods listed in subparagraphs (3)(E)2.A.–L. of this rule. Previous emissions test results obtained using EPA accepted voluntary consensus standards are also acceptable;

B. The HMIWI at the designated facility shall currently be operated in a manner (e.g., with charge rate, secondary chamber temperature, etc.) that would be expected to result in the same or lower emissions than observed during the previous emissions test(s), and the HMIWI may not have been modified such that emissions would be expected to exceed (notwithstanding normal test-to-test variability) the results from previous emissions test(s); and

C. The previous emissions test(s) must have been conducted in 1996 or later.

(F) Monitoring Requirements.

1. Except as provided for under paragraph (3)(F)5. of this rule, the owner or operator of an HMIWI subject to this rule shall install, calibrate (to manufacturers' specification), maintain, and operate devices (or establish methods) for monitoring the applicable maximum and minimum operating parameters listed in Table 4 of this rule (unless CEMS are used as a substitute for certain parameters as specified) such that these devices (or methods) measure and record values for these operating parameters at the frequency indicated in Table 4 of this rule at all times.

2. The owner or operator of an HMIWI shall install, calibrate (to manufacturers' specifications), maintain and operate a device or method for measuring the use of the bypass stack including date, time, and duration.

3. The owner or operator of an HMIWI using something other than a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and a wet scrubber to comply with the emission limits under section (3) of this rule shall install, calibrate (to manufacturers' specifications), maintain, and operate the equipment necessary to monitor the site-specific operating parameters developed pursuant to paragraph (3)(E)9. of this rule.

4. The owner or operator of an HMIWI shall obtain monitoring data at all times during HMIWI operation except during periods of monitoring equipment malfunction, calibration, or repair. At a minimum, valid monitoring data shall be obtained for seventy-five percent (75%) of the operating hours per day for ninety percent (90%) of the operating days per calendar quarter that the HMIWI is combusting hospital waste and/or medical/infectious waste.

5. Small HMIWI subject to the emission limits under paragraph (3)(A)2. of this rule not equipped with an air pollution control device shall meet the following monitoring requirements:

A. Install, calibrate (to manufacturers' specification), maintain, and operate a device for measuring and recording the temperature of the secondary chamber on a continuous basis, the output of which shall be recorded, at a minimum, once every minute throughout operation;

B. Install, calibrate (to manufacturers' specification), maintain, and operate a device that automatically measures and records the date, time, and weight of each charge fed into the HMIWI; and

C. The owner or operator of a designated facility shall obtain monitoring data at all times during HMIWI operation except during periods of monitoring equipment malfunction, calibration, or repair. At a minimum, valid monitoring data shall be obtained for seventy-five percent (75%) of the operating hours per day for ninety percent (90%) of the operating days per calendar quarter that the designated facility is combusting hospital waste and/or medical/infectious waste.

(4) Reporting and Record Keeping.

(A) The owner or operator of an HMIWI subject to this rule shall maintain the following information (as applicable) for a period of at least five (5) years:

1. Calendar date of each record;

2. Records of the following data:

A. Concentrations of any pollutant listed in section (3) of this rule or measurements of opacity as determined by the continuous emission monitoring system (if applicable);

B. Results of fugitive emissions (by EPA Reference Method 22) tests, if applicable;

C. HMIWI charge dates, times, and weights and hourly charge rates;

D. Fabric filter inlet temperatures during each minute of operation, as applicable;

E. Amount and type of dioxin/furan sorbent used during each hour of operation, as applicable;

F. Amount and type of Hg sorbent used during each hour of operation, as applicable;

G. Amount and type of HCl sorbent used during each hour of operation, as applicable;

H. Amount and type of nitrogen oxides (NOx) reagent used during each hour of operation, as applicable;

I. Secondary chamber temperatures recorded during each minute of operation;

J. Liquor flow rate to the wet scrubber inlet during each minute of operation, as applicable;

K. Horsepower or amperage to the wet scrubber during each minute of operation, as applicable;

L. Pressure drop across the wet scrubber system during each minute of operation, as applicable;

M. Temperature at the outlet from the wet scrubber during each minute of operation, as applicable;

N. pH of the scrubber liquor at the inlet to the wet scrubber during each minute of operation, as applicable;

O. Records indicating use of the bypass stack, including dates, times, and durations; and

P. For HMIWI complying with paragraph (3)(E)9. and paragraph (3)(F)3. of this rule, the owner or operator shall maintain all operating parameter data collected; and

Q. For affected facilities as defined in this rule, records of the annual equipment inspections, annual air pollution control device inspections, any required maintenance, and any repairs not completed within ten (10) days of an inspection or the time frame established by the director;

3. Identification of calendar days for which data on emission rates or operating parameters specified under paragraph (4)(A)2. of this rule have not been obtained, with an identification of the emission rates or operating parameters not measured, reasons for not obtaining the data, and a description of corrective actions taken;

4. Identification of calendar days, times and durations of malfunctions, a description of the malfunction and the corrective action taken;

5. Identification of calendar days for which data on emission rates or operating parameters specified under paragraph (4)(A)2. of this rule exceeded the applicable limits, with a description of the exceedances, reasons for such exceedances, and a description of corrective actions taken;

6. The results of the initial, annual, and any subsequent performance tests conducted to determine compliance with the emission limits and/or to establish operating parameters, as applicable, and a description, including sample calculations, of how the operating parameters were established or re-established, if applicable;

7. Records showing the names of HMIWI operators who have completed review of the information in paragraph (3)(B)8. of this rule as required by paragraph (3)(B)9. of this rule, including the date of the initial review and all subsequent annual reviews;

8. Records showing the names of the HMIWI operators who have completed the operator training requirements, including documentation of training and the dates of the training;

9. Records showing the names of the HMIWI operators who have met the criteria for qualification under subsection (3)(B) of this rule and the dates of their qualification; and

10. Records of calibration of any monitoring devices as required under paragraphs (3)(F)1. through 5. of this rule.

(B) The owner or operator of an HMIWI shall submit to the department the information specified in paragraphs (4)(B)1. through 3. of this rule no later than sixty (60) days following the initial performance test. All reports shall be signed by the facilities manager.

1. The initial performance test data as recorded under subparagraphs (3)(E)2.A. through L. of this rule, as applicable.

2. The values for the site-specific operating parameters established pursuant to paragraph (3)(E)4. or 9. Of this rule, as applicable, and a description, including sample calculations, of how the operating parameters were established during the initial performance test.

3. The waste management plan as specified in subsection (3)(C) of this rule.

(C) An annual report shall be submitted to the department one (1) year following the submission of the information in subsection (4)(B) of this rule and subsequent reports shall be submitted no more than twelve (12) months following the previous report (once the unit is subject to permitting requirements under Title V of the Clean Air Act, the owner or operator of an affected facility must submit these reports semiannually). The annual report shall include the information specified in paragraphs (4)(C)1. through 8. of this rule. All reports shall be signed by the facilities manager.

1. The values for the site-specific operating parameters established pursuant to paragraph (3)(E)4., 8., or 9. of this rule, as applicable.

2. The highest maximum operating parameter and the lowest minimum operating parameter, as applicable, for each operating parameter recorded for the calendar year being reported, pursuant to paragraph (3)(E)4., 8., or 9. of this rule, as applicable.

3. The highest maximum operating parameter and the lowest minimum operating parameter, as applicable for each operating parameter recorded pursuant to paragraph (3)(E)4., 8., or 9. of this rule for the calendar year preceding the year being reported, in order to provide the department with a summary of the performance of the affected facility over a two (2)-year period.

4. Any information recorded under paragraphs (4)(A)3. through 5. of this rule for the calendar year being reported.

5. Any information recorded under paragraphs (4)(A)3. through 5. of this rule for the calendar year preceding the year being reported, in order to provide the department with a summary of the performance of the affected facility over a two (2)-year period.

6. If a performance test was conducted during the reporting period, the results of that test.

7. If no exceedances or malfunctions were reported under paragraphs (4)(A)3. through 5. of this rule for the calendar year being reported, a statement that no exceedances occurred during the reporting period.

8. Any use of the bypass stack, the duration, reason for malfunction, and corrective action taken.

(D) The owner or operator of an HMIWI shall submit to the department semiannual reports containing any information recorded under paragraphs (4)(A)3. through 5. of this rule no later than sixty (60) days following the reporting period. The first semiannual reporting period ends six (6) months following the submission of information in subsection (4)(B) of this rule. Subsequent reports shall be submitted to the department no later than six (6) calendar months following the previous report. All reports shall be signed by the facilities manager.

(E) All records specified under subsection (4)(A) of this rule shall be maintained on-site in either paper copy or computer-readable format, unless an alternative format is approved by the department.

(F) The owner or operator of an HMIWI shall submit an annual report to the department containing information recorded under subparagraph (4)(A)2.Q. of this rule no later than sixty (60) days following the year in which data were collected. Subsequent reports shall be sent no later than twelve (12) calendar months following the previous report (once the unit is subject to permitting requirements under Title V of the Clean Air Act, the owner or operator must submit these reports semiannually). The report shall be signed by the facilities manager.

(5) Test Methods. Test methods can be found in subparagraphs (3)(E)2.A. through L. of this rule.

EPA Rulemakings

CFR: 40 C.F.R. 62.6358(e)
FRM: 83 FR 17757 (4/24/2018), effective 5/24/2018
PRM: 83 FR 5231 (2/6/2018)
State Submission: 8/8/2011 and 7/3/2014
State Final: 10 C.S.R. 10-6 (06/30/2014)
APDB File: MO-360; EPA-R07-OAR-2018-0005
Description: This revision to the state plan approves revisions submitted both in 2011 and 2014. These state plan revisions amend the previous state regulations referenced in the state's 111(d) plan applicable to existing Hospital, Medical, Infectious Waste Incinerators (HMIWI) operating in the state of Missouri. The state rule revisions update the HMIWI regulatory requirements for emission limits, waste management plans, training, compliance and performance testing, monitoring, and reporting and recordkeeping to be consistent with updates to Federal emission guidelines for HMIWI published in October of 2009, April 2011, and May 2013 and found at 40 CFR part 60, subpart Ce.

CFR: 40 C.F.R. 62.6358(d)
FRM: 66 FR 52060 (10/12/2001)
PRM: 66 FR 52077 (10/12/2001)
State Submission: 07/13/2001
State Final: 10 C.S.R. 10-6 (06/30/2001)
APDB File: MO-192
Description: This revision to the state plan approves modifications to two definitions to make them equivalent to the EPA definitions. In subsection (2)(E) and (2)(T) the terms "co-fired combustor" and "medical/infectious waste" were amended.

CFR: 40 C.F.R. 62.6358
FRM: 64 FR 45184 (8/19/99)
PRM: 64 FR 45221 (8/19/99)
State Submission: 6/15/99
State Proposal: 1/4/99
State Final: 7/30/99
APDB File: MO-138
Description: This state plan establishes emission limits and controls for hospital medical waste incinerator sources constructed on or before June 20, 1996.

Difference Between the State and EPA-Approved Regulation

None.