401 KAR 59:021. New municipal solid waste incinerators.

RELATES TO: KRS 224.20-100, 224.20-110, 224.20-120, 40 C.F.R. 60.13 (1990), 40 C.F.R. 60, Appendix A, Methods 1, 2, 3, 5, 6, 6A, 6C, 7, 7E, 9, 10, and 19 (1990), 40 C.F.R. 60, Appendix B, Performance Specifications 1, 2, 3, and 4 (1990)

STATUTORY AUTHORITY: KRS 224.10-100, 40 C.F.R. 60.13 (1990), 40 C.F.R. 60, Appendix A, Methods 1, 2, 3, 5, 6, 6A, 6C, 7, 7E, 9, 10, and 19 (1990), 40 C.F.R. 60, Appendix B, Performance Specifications 1, 2, 3, and 4 (1990)

NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100 requires the Environmental and Public Protection Cabinet to prescribe administrative regulations for the prevention, abatement, and control of air pollution. This administrative regulation provides standards of performance for new municipal solid waste incinerators.

Section 1. Definitions. As used in this administrative regulation, all terms not defined in this section shall have the meaning given them in 401 KAR 50:010.

(1) "Affected facility" means each municipal solid waste incinerator unit for which construction, modification, or reconstruction is commenced on or after December 20, 1989.

(2) "Municipal solid waste incinerator" or "municipal solid waste incinerator unit" or "MSWI" or "MSWI unit" means a device that combusts material, which if included in the waste stream, would be municipal solid waste. This includes but is not limited to, field-erected incinerators (with or without heat recovery), modular incinerators (starved air or excess air), boilers (i.e., steam generating units), and furnaces (whether suspension-fired, grate-fired, mass-fired, or fluidized bed-fired).

(3) "ASME" means the American Society of Mechanical Engineers.

(4) "Biologicals" means a biological product used in the prevention or treatment of disease.

(5) "Bubbling fluidized bed incinerator" means a fluidized bed incinerator in which the majority of the bed material remains in the primary combustion zone.

(6) "Chief facility operator" means the person in direct charge and control of the operation of a MSWI and who is responsible for daily on-site supervision, technical direction, management, and overall performance of the facility.

(7) "Circulating fluidized bed incinerator" means a fluidized bed incinerator in which the majority of the bed material is carried out of the primary combustion zone and is transported back to the primary zone through a recirculation loop.

(8) "Refuse-derived fuel cofired incinerator" or "RDF cofired incinerator" means an incinerator that is designed to fire refuse-derived fuel simultaneously with other fuels.

(9) "Commercial solid waste" means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding household and industrial wastes. Commercial solid waste includes waste from medical facilities, schools, and other institutions that is not medical waste.

(10) "Contained landfill" has the meaning given it in 401 KAR 30:010.

(11) "Continuous emission monitoring system" or "CEMS" means a monitoring system for continuously measuring and recording the emissions of a pollutant from an affected facility.

(12) "Daily average" means the average of all hourly emission rates when the affected facility is operating and firing municipal solid waste measured between 12 midnight and the following midnight.

(13) "Dioxin or furan" means total tetra- through octa-chlorinated dibenzo-p-dioxins and tetra- through octa-chlorinated dibenzofurans.

(14) "Ferrous metals" means metals and alloys containing iron. Ferrous metals include, but are not limited to, pieces of scrap metal and household appliances made of iron-

containing metals, including stoves, refrigerators, air conditioners, and other appliances. Ferrous metals shall not include whole automobiles or other vehicles or vehicle bodies.
(15) "Field-erected" means assembled from components at a final site of operation.
(16) "Four (4) hour block average" means the average of all hourly emission rates when the affected facility is operating and combusting municipal solid waste measured over four (4) hour periods of from 12 midnight to 4 a.m., 4 a.m. to 8 a.m., 8 a.m. to 12 noon, 12 noon to 4 p.m., 4 p.m. to 8 p.m., 8 p.m. to 12 midnight.
(17) "Hazardous waste" has the meaning given it in KRS 224.01-010.
(18) "Household battery" means a dry cell battery.
(19) "Household solid waste" means solid waste, including garbage and trash generated by single and multiple family residences, hotels, motels, bunkhouses, ranger stations, crew quarters, and recreational areas such as picnic areas, parks, and campgrounds.
(20) "Industrial waste" means a liquid, gaseous, or solid waste substance resulting from a process of industry, manufacture, trade, or business, or from the development, process, or recovery of a natural resource.
(21) "Large MSWI plant" means a MSWI plant with a MSWI plant capacity greater than 225 megagrams per day (250 tons per day) of municipal solid waste.
(22) "Mass burn refractory incinerator" means an incinerator that combusts waste in a refractory wall furnace.
(23) "Mass burn rotary waterwall incinerator" means an incinerator that combusts waste in a cylindrical rotary waterwall furnace.
(24) "Mass burn waterwall incinerator" means an incinerator that combusts waste in a conventional waterwall furnace.
(25) "Maximum MSWI unit load" means the maximum one (1) hour MSWI load achieved when compliance with all applicable administrative regulations is demonstrated or during a subsequent test demonstrating compliance at a higher unit load.
(26) "Medical waste" means:
(a) Cultures and stocks of infectious agents, including specimen cultures collected from medical and pathological laboratories, cultures and stocks of infectious agents from research and industrial laboratories, wastes from the production of biologicals, discarded live and attenuated vaccines, and culture dishes and devices used to transfer, inoculate, and mix cultures;
(b) Waste human blood and blood products such as serum, plasma, and other blood components;
(c) Pathological wastes, such as tissues, organs, body parts, and body fluids that are removed during surgery and autopsy;
(d) All discarded sharps, including but not limited to hypodermic needles, syringes, Pasteur pipettes, broken glass, scalpels, scalpel blades, glass vials, etc., used in patient care, autopsy, embalming, or which have come into contact with infectious agents during use in medical, research, or industrial laboratories;
(e) Carcasses and body parts of animals that were exposed to pathogens in research, in the production of biologicals, or in the in vivo testing of pharmaceuticals; and
(f) Other wastes as may be designated by a permit issued by the Division for Air Quality.
(27) "Modular excess air incinerator" means an incinerator that combusts waste and that is not field-erected and has multiple combustion chambers, all of which are designed to operate at conditions with combustion air amounts in excess of theoretical air requirements.
(28) "Modular starved air incinerator" means an incinerator that combusts waste and that is not field-erected and has multiple combustion chambers in which the primary combustion chamber is designed to operate at substoichiometric conditions.

(29) "Multiple chamber incinerator" means an incinerator consisting of at least two (2) refractory lined combustion chambers (primary and secondary) in series, physically separated by refractory walls, and interconnected by gas passage ports or ducts.
(30) "Municipal solid waste" or "MSW" means household solid waste and commercial solid waste. Medical waste shall not be considered to be MSW, but may be regulated by other administrative regulations of the Division for Air Quality, including but not limited to 401 KAR 59:023 or Title 401, Chapter 63.
(31) "Normal" means a volumetric measurement at thirty-two (32) degrees Fahrenheit and one (1) atmosphere.
(32) "Particulate matter" means total particulate matter emitted from MSWI units.
(33) "Particulate matter carry-over" means particulate matter which is passed from the primary chamber of an incinerator into the flue gas stream.
(34) "Processed MSW or refuse-derived fuel" or "processed MSW or RDF" means MSW or refuse-derived fuel that has been processed to separate materials for recovery prior to combustion in a MSWI unit. MSW or RDF shall be considered to be processed MSW or RDF if an overall forty (40) percent or greater reduction by weight (annual average) of MSW is achieved through the separation of recoverable materials. A maximum of fifteen (15) percent reduction (by weight) of the overall MSW shall be attributed to separation of yard waste. The forty (40) percent or greater overall reduction requirement may be achieved by on-site mechanical separation, on-site manual separation, off-site mechanical separation, off-site manual separation, or a curbside source reduction or materials separation (recycling) program, or a combination thereof.
(35) "RDF spreader stoker" means a steam generating unit that combusts RDF in a semisuspension firing mode using air-fed distributors.
(36) "Recoverable materials" means paper, paperboard, ferrous metals, nonferrous metals, glass, plastics, household batteries, and yard waste.
(37) "Refuse-derived fuel" or "RDF" means a type of MSW produced by processing MSW through shredding and size classification. This includes all classes of RDF including low density fluff RDF through densified RDF fuel pellets.
(38) "Same location" means the same or contiguous property that is under common ownership or control, including properties that are separated only by a street, road, highway, or other public right-of-way. Common ownership or control includes properties that are owned, leased, or operated by the same entity, parent entity, subsidiary, subdivision, or a combination thereof, including a municipality or other governmental unit, or a quasi-governmental authority (e.g., a public utility district or waste management district).
(39) "Shift supervisor" means the person in direct charge and control of the operation of a MSWI and who is responsible for on-site supervision, technical direction, management, and overall performance of the facility during an assigned shift.
(40) "Small MSWI plant" means a MSWI plant with a MSWI plant capacity of greater than 500 pounds per hour but less than or equal to 225 megagrams per day (250 tons per day) of municipal solid waste.
(41) "Solid waste" has the meaning given it in KRS 224.01-010.
(42) "Solid waste burnout" means the percent of matter completely burned in the primary chamber of a MSWI.
(43) "Standard" means a volumetric measurement at sixty-eight (68) degrees Fahrenheit and one (1) atmosphere.
(44) "MSWI acid gases" means sulfur dioxide and hydrogen chloride gases emitted from MSWI units.
(45) "MSWI metals" means condensible metals emitted from MSWI units. For the purpose of this administrative regulation, particulate matter shall serve as a surrogate for the measurement and control of MSWI metals.

(46) "MSWI organics" means organic compounds emitted from MSWI units and includes dioxins or furans. For the purpose of this administrative regulation, dioxin or furan shall serve as a surrogate for the measurement and control of MSWI organics.
(47) "MSWI plant" means one (1) or more MSWI units at the same location for which construction, modification, or reconstruction is commenced on or after December 20, 1989.
(48) "MSWI plant capacity" means the aggregate MSWI unit capacity of all MSWI units at a MSWI plant. MSWI units for which construction, modification, or reconstruction is commenced before December 20, 1989, shall not be included for determining applicability under this administrative regulation.
(49) "MSWI unit capacity" means the maximum designed charging rate of the waste for an individual MSWI.
(50) "MSWI unit load" means volume of steam produced expressed in kilograms per hour (pounds per hour) of steam.
(51) "Uncontrolled hydrogen chloride emission rate" means the hydrogen chloride emission rate that would occur from combustion of MSW in the absence of hydrogen chloride emissions control.
(52) "Uncontrolled sulfur dioxide emission rate" means the sulfur dioxide emission rate that would occur from combustion of MSW in the absence of sulfur dioxide emissions control.
(53) "Unprocessed MSW or RDF" means MSW or RDF that has not been processed to separate materials for recovery prior to combustion or for which less than a forty (40) percent reduction by weight (annual average) of MSW is achieved.
(54) "Vehicle battery" means a wet lead-acid battery.
(55) "Waste management district" has the meaning given it in KRS 224.01-010.
(56) "Yard waste" means vegetative matter removed as a result of outdoor maintenance practices from residential and commercial yards, municipal parks, gardens, golf courses, and other similar areas, and includes, but is not limited to, grass trimmings, tree branches, straw, and leaves.

Section 2. Applicability.
(1) This administrative regulation shall apply to each affected facility which means each MSWI unit for which construction, modification, or reconstruction is commenced on or after December 20, 1989. RDF cofired incinerators which combust less than or equal to twenty (20) percent RDF shall be exempt from this administrative regulation. Incinerators which combine and combust municipal solid waste and medical waste shall be subject to 401 KAR 59:023.
(2) The physical or operational changes made to an existing MSWI unit to comply with 401 KAR 61:011 shall not be considered a modification or reconstruction and shall not subject the existing MSWI unit to this administrative regulation.
(3) Owners or operators of MSWI plants with a plant capacity of 500 pounds per hour or less shall be exempt from Sections 3 to 11 of this administrative regulation. However, these facilities shall comply with the following requirements:
(a) Emissions discharged into the atmosphere shall not exhibit greater than ten (10) percent opacity. Method 9, which has been filed by reference in 401 KAR 50:015, shall be used to determine compliance with the opacity standard.
(b) Other regulatory requirements including but not limited to 401 KAR 53:010 and Title 401, Chapter 63.
(4) Emission limitations or control requirements imposed by any other administrative regulation of the Division for Air Quality or the Division of Waste Management may impose more stringent requirements than those imposed by this administrative regulation.

(5) Siting criteria. No owner or operator of an affected facility subject to 401 KAR 47:030 shall construct or operate the affected facility in a manner which will violate the requirements of that administrative regulation.

Section 3. Standards for MSWI Metals. On and after the date on which the initial performance test is completed or is required to be completed by Section 10 of this administrative regulation, no owner or operator of an affected facility shall cause or allow to be discharged into the atmosphere from the affected facility:

(1) Emissions that contain particulate matter in excess of thirty-four (34) milligrams per dry standard cubic meter (0.015 grains per dry standard cubic foot), corrected to seven (7) percent oxygen (dry basis).

(2) Emissions that exhibit greater than ten (10) percent opacity.

Section 4. Standards for MSWI Organics. On and after the date in which the initial performance test is completed or is required to be completed by Section 10 of this administrative regulation, no owner or operator of an affected facility:

(1) Located within a small MSWI plant shall cause or allow to be discharged into the atmosphere from that affected facility emissions that contain dioxin or furan emissions that exceed seventy-five (75) nanograms per normal cubic meter (thirty (30) grains per billion standard cubic feet), corrected to seven (7) percent oxygen (dry basis); or

(2) Located within a large MSWI plant shall cause or allow to be discharged into the atmosphere from that affected facility emissions that contain dioxin or furan emissions that exceed thirty (30) nanograms per normal cubic meter (fourteen (14) grains per billion standard cubic feet), corrected to seven (7) percent oxygen (dry basis).

Section 5. Standards for MSWI Acid Gases.

(1) Small MSWI plant. On and after the date on which the initial performance test is completed or is required to be completed by Section 10 of this administrative regulation, no owner or operator of an affected facility located within a small MSWI plant shall cause or allow to be discharged into the atmosphere from that affected facility emissions that contain:

(a) Sulfur dioxide in excess of fifty (50) percent of the uncontrolled sulfur dioxide emission rate (fifty (50) percent reduction by weight) or thirty (30) parts per million by volume, corrected to seven (7) percent oxygen (dry basis), whichever is less stringent.

(b) Hydrogen chloride in excess of twenty (20) percent of the uncontrolled hydrogen chloride emission rate (eighty (80) percent reduction by weight) or twenty-five (25) parts per million by volume, corrected to seven (7) percent oxygen (dry basis), whichever is less stringent.

(2) Large MSWI plant. On and after the date on which the initial performance test is completed or is required to be completed by Section 10 of this administrative regulation, no owner or operator of an affected facility located within a large MSWI plant shall cause or allow to be discharged into the atmosphere from that affected facility emissions that contain:

(a) Sulfur dioxide in excess of fifteen (15) percent of the uncontrolled sulfur dioxide emission rate (eighty-five (85) percent reduction by weight) or thirty (30) parts per million by volume, corrected to seven (7) percent oxygen (dry basis), whichever is less stringent.

(b) Hydrogen chloride in excess of five (5) percent of the uncontrolled hydrogen chloride emission rate (ninety-five (95) percent reduction by weight) or twenty-five (25) parts per million by volume, corrected to seven (7) percent oxygen (dry basis), whichever is less stringent.

Section 6. Standard for Nitrogen Oxides. On and after the date on which the initial performance test is completed or is required to be completed by Section 10 of this

administrative regulation, no owner or operator of an affected facility located within a large MSWI plant shall cause or allow to be discharged into the atmosphere from that affected facility emissions that contain nitrogen oxides in excess of 120 parts per million by volume, corrected to seven (7) percent oxygen (dry basis).

Section 7. Standards for Carbon Monoxide. On and after the date on which the initial performance test is completed or is required to be completed by Section 10 of this administrative regulation, no owner or operator of an affected facility shall cause or allow the facility to exceed the carbon monoxide standard for the applicable MSWI technology in Appendix A of this administrative regulation.

Section 8. Standards for MSWI Operating Practices.

(1) No owner or operator of an affected facility that generates steam shall cause or allow the facility to operate at a load level greater than 100 percent of the maximum MSWI unit load. An owner or operator of an affected facility who wishes to operate at a load level greater than the maximum MSWI unit load may do so by conducting all applicable compliance tests to establish a higher maximum MSWI unit load.

(2) No owner or operator of an affected facility shall burn MSW except in a multiple chamber incinerator with a solid hearth, or in a device found to be equally effective for the purpose of air contaminant control as determined by the cabinet.

(3) Temperature and residence time requirements for affected facilities equipped with a secondary chamber while combusting MSW:

(a) The incinerator secondary chamber shall be maintained at a minimum temperature of 982 degrees Celsius (1800 degrees Fahrenheit);

(b) The minimum secondary chamber residence time shall be one and zero-tenths (1.0) seconds; and

(c) The incinerator shall have interlocks or other process control devices to prevent operation of the incinerator until the conditions in paragraphs (a) and (b) of the subsection and subsection (4) of this section are assured.

(4) No owner or operator of an affected facility other than a facility using a wet scrubber as a particulate matter control device shall allow the temperature of the flue gases entering the particulate matter control device inlet to exceed 149 degrees Celsius (300 degrees Fahrenheit) while combusting MSW.

(5) Except as provided under subsection (8) of this section, on and after the date of initial start-up, no owner or operator of an affected facility shall cause or allow unprocessed MSW or RDF to be combusted in the facility.

(6) No owner or operator of an affected facility shall cause or allow yard waste or vehicle batteries to be combusted in the facility.

(7) Prior to initial start-up, the owner or operator of an affected facility shall establish a program which has been approved by the cabinet to remove household batteries from MSW prior to combustion. On and after the date of initial start-up, the owner or operator shall comply with the approved plan for removing household batteries from MSW.

(8) The owner or operator of an affected facility may apply to the cabinet for a materials separation or combustion permit for any combustible material designated for separation under the materials separation plan under Section 11(3) of this administrative regulation for which a market is unavailable for the separated material for 120 days. Approval by the cabinet shall not constitute or imply approval by the U.S. EPA. A market shall be considered to be unavailable for these combustibles if the cabinet determines that the cost of recycling these combustibles exceeds the cost of landfilling them, and that the forty (40) percent reduction requirement for processed MSW or RDF cannot be obtained through separation of other recoverable materials. An owner or operator wishing to demonstrate that a recycling market is unavailable for recoverable combustibles shall submit a demonstration to the cabinet that includes a list of recycling facilities and

facility officials contacted, a written discussion of why he was not able to obtain recycling for the combustible wastes, and a list of landfill facilities and facility individuals contacted and a documented comparison of the costs of recycling versus the costs of landfilling. The MSWI owner or operator shall also provide to the cabinet the following certification: "I certify under penalty of law that a recycling market is unavailable for the following combustible recoverables as defined in 401 KAR 59:021, Section 1. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment."

(a) If a materials separation or combustion permit has been issued, separated material covered under the materials separation or combustion permit may be combusted in the affected facility and may be credited toward the overall forty (40) percent materials separation requirement for processed MSW or RDF.

(b) If a materials separation or combustion permit is granted by the cabinet, it shall be valid for a maximum of one (1) year. Reapplication may be made for subsequent materials separation or combustion permits. A reapplication shall be made within ninety (90) days before expiration of the permit and may be renewed for one (1) year.

(9) Owners or operators of affected facilities shall cause ash from MSWI units to be tested to determine the toxicity of the ash, using tests required in Title 401, Chapter 31. Ash which is determined to be a hazardous waste shall be disposed of according to the administrative regulations of the Division of Waste Management. Ash which is determined to be not hazardous waste shall be disposed of in a contained landfill.

(10) Owners or operators of affected facilities that receive MSW from generators that are noncontiguous to the incineration site shall comply with the operating requirements for contained landfills in 401 KAR 48:090, Section 2.

(11) Owners or operators of affected facilities shall comply with the design requirements for contained landfills in 401 KAR 48:070, Section 15.

Section 9. Operator Certification and Training.

(1) Within twenty-four (24) months from the date that ASME adopts a certification program for municipal solid waste combustor (incinerator) unit operators, each facility operator and shift supervisor of an affected facility shall obtain and keep current either a provisional or operator certification from ASME.

(2) No owner or operator of an affected facility shall cause or allow an affected facility to be operated unless an ASME certified shift supervisor or ASME certified chief facility operator is on duty at the affected facility at all times during periods of MSWI unit operation. This requirement shall take effect twenty-four (24) months after the date that ASME adopts a certification program for municipal solid waste combustor (incinerator) unit operators.

(3) The owner or operator of an affected facility shall develop and update on a yearly basis a site-specific operation manual that shall at a minimum, address the following elements of MSWI unit operation:

(a) Summary of the applicable standards under this administrative regulation;

(b) Description of basic combustion theory applicable to a MSWI unit;

(c) Procedures for receiving, handling, and feeding MSW;

(d) MSWI unit start-up, shutdown, and malfunction procedures;

(e) Procedures for maintaining proper combustion air supply levels;

(f) Procedures for operating a MSWI unit within the standards established under this administrative regulation;

(g) Procedures for responding to periodic upset or off-specification conditions;

(h) Procedures for minimizing particulate matter carry-over;

(i) Procedures for monitoring solid waste burnout;

(j) Procedures for handling ash;
(k) Procedures for monitoring MSWI unit emissions; and
(l) Reporting and recordkeeping procedures.

(4) The owner or operator of an affected facility shall establish a program for reviewing the operating manual annually with each person who has responsibilities affecting the operation of an affected facility including, but not limited to, chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane or load handlers.

(5) The initial review of the operating manual, as specified under subsection (4) of this section, shall be conducted prior to assumption of responsibilities affecting MSWI unit operation by those persons required to undergo training under subsection (4) of this section. Subsequent reviews of the manual shall be carried out annually by each person required to undergo training.

(6) The operating manual shall be kept in a readily accessible location for all persons required to undergo training under subsection (4) of this section. The operating manual and records of training shall be available for inspection by the cabinet upon request.

(7) The owner or operator of each affected facility shall maintain documentation to support compliance with this section. The documentation shall be made available to the cabinet upon request, and shall include, at a minimum, a description of the instruction given, the date of the instruction, the signature of the person receiving the instruction, and copies of the certificates issued to the chief facility operator and shift supervisor documenting compliance with subsection (1) of this section.

Section 10. Compliance and Performance Testing. Within sixty (60) days after achieving the maximum production rate at which an affected facility will be operated, but not later than 180 days after initial start-up of the facility and at other times as may be required by the cabinet, the owner or operator of an affected facility shall conduct performance tests according to 401 KAR 50:045 and this section and shall furnish the cabinet a written report of the results of the performance tests. This section shall apply at all times, except for a period of one (1) hour for the start-up or shutdown of the affected facility and for a period not to exceed three (3) hours during the malfunction of an affected facility. Except as provided in 401 KAR 50:045, the following methods and procedures shall be used to determine compliance with Sections 3 to 8 of this administrative regulation. 40 CFR 60.13, Methods 1, 2, 3, 5, 6, 6A, 6C, 7, 7E, 9, 10, and 19, and Performance Specifications 1, 2, 3, and 4 are adopted without change in Section 12 of this administrative regulation. Kentucky Methods 23 and 26, Kentucky Specification 4A, and Kentucky Procedure 1 are incorporated by reference in Section 12 of this administrative regulation. For each performance test, an owner or operator may request that compliance be determined using carbon dioxide measurements corrected to an equivalent of seven (7) percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established during each initial performance test.

(1) MSWI metals. The following procedures and test methods shall be used to determine compliance with the standards for MSWI metals in Section 3 of this administrative regulation.

(a) Method 1 shall be used to select sampling sites and the number of traverse points. Method 2 shall be used to determine the stack gas velocity and volumetric flow rates.

(b) Method 3 shall be used for gas analysis.

(c) Method 5 shall be used for determining compliance with the particulate matter emission standard. The minimum sample volume shall be one and seven-tenths (1.7) cubic meters (sixty (60) cubic feet). The temperature of the sample gas in the probe and filter holder shall be 120 ± (plus or minus) 14°C (248 ± (plus or minus) 25°F). An

oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 5 run.

(d) Both Method 9 and CEMS shall be used for determining compliance with the opacity standard. However, Method 9 results shall take precedence over CEMS data if concurrent readings occur.

(e) The owner or operator of an affected facility with a MSWI unit capacity greater than 500 lb per hr except for MSWI units equipped with a wet scrubber shall install, calibrate, maintain, and operate a CEMS for measuring opacity and shall record the output of the system.

(f) Following the date the initial performance test for the mass emission standard for particulate matter is completed or is required to be completed by this section, the owner or operator of an affected facility shall conduct a performance test for the mass emission standard for particulate matter on an annual basis (no more than twelve (12) calendar month following the previous compliance test). For an affected facility located within a small MSWI plant, if all three (3) performance tests for a three (3) year period indicate compliance with the particulate matter standard, the owner or operator may forego a performance test for the subsequent two (2) years. At a minimum, a performance test for particulate matter for an affected facility located within a small MSWI plant shall be conducted every third year (no more than thirty-six (36) month following the previous compliance test). If a performance test conducted every third year within a small MSWI plant indicates compliance with the mass emission particulate matter standard, the owner or operator may forego a performance test for an additional two (2) years.

(g) Following the date the initial performance test is completed or is required to be completed in this section, compliance with the opacity standard shall be determined by a six (6) minute average of the opacity readings obtained from the CEMS.

(2) MSWI organics. The following procedures and test methods shall be used to determine compliance with the standards for MSWI organics under Section 4 of this administrative regulation.

(a) Kentucky Method 23 shall be used for determining compliance with dioxin or furan emission standards. The sampling time shall be four (4) hours and the minimum sampling volume shall be four and zero-tenths (4.0) cubic meters (140 cubic feet).

(b) Following the date of the initial performance test or the date on which the initial performance test is required to be completed by this section, the owner or operator of an affected facility shall conduct a performance test for dioxin or furan emissions on an annual basis (no more than twelve (12) calendar months following the previous performance test). For an affected facility located within a small MSWI plant, if all three (3) performance tests in a three (3) year period indicate compliance with the dioxin or furan emissions standard, the owner or operator may forego a performance test for the subsequent two (2) years. At a minimum, a performance test for dioxin or furan emissions at affected facilities located within a small MSWI plant 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 within a small MSWI plant indicates compliance with the dioxin or furan emissions standard, the owner or operator may forego conducting a performance test for an additional two (2) years.

(3) Sulfur dioxide. The following procedures and test methods shall be used for determining compliance with the sulfur dioxide standards under Section 5 of this administrative regulation.

(a) The percentage reduction in the uncontrolled sulfur dioxide emissions ($\%P_{SO2}$) shall be computed using the formula in Appendix B of this administrative regulation.

(b) Methods 6, 6A, or 6C, and 19 shall be used for determining the sulfur dioxide emission rate.

(c) The sulfur dioxide performance test shall be conducted over twenty-four (24) consecutive unit operating hours at maximum MSWI unit load. Compliance with the sulfur dioxide standard shall be determined using a daily average.

(d) The owner or operator of an affected facility with a MSWI unit capacity greater than 500 pound per hour shall install, calibrate, maintain, and operate a CEMS for measuring sulfur dioxide emissions discharged to the atmosphere and shall record the input and output of the system.

(e) Following the date of the initial performance test or the date on which the initial performance test is required to be completed by this section compliance with the sulfur dioxide standard shall be determined based on the arithmetic average of the hourly emission rates during each daily period measured between 12 midnight and the following midnight using CEMS inlet and outlet data, if compliance is based on a percentage reduction; or outlet data only if compliance is based on an emission limit.

(f) The one (1) hour averages required under paragraph (e) of this subsection shall be expressed in nanograms per hour (pounds per hour) and shall be used to calculate the daily average emission rates. The one (1) hour averages shall be calculated using the data points required under 40 CFR 60.13(h).

(g) For affected facilities which shall install CEMS, the span value of the CEMS at the inlet to the sulfur dioxide control device shall be 125 percent of the maximum estimated hourly uncontrolled sulfur dioxide emissions of the MSWI unit, and the span value of the CEMS at the outlet to the sulfur dioxide control device shall be fifty (50) percent of the maximum estimated hourly uncontrolled sulfur dioxide emissions of the MSWI unit.

(4) Hydrogen chloride. The following procedures and test methods shall be used for determining compliance with the hydrogen chloride standards under Section 5 of this administrative regulation.

(a) The percentage reduction in the uncontrolled hydrogen chloride emissions ($\%P_{HCl}$) shall be computed using the formula in Appendix C of this administrative regulation.

(b) Kentucky Method 26 shall be used for determining the hydrogen chloride emission rate.

(c) Following the date of the initial performance test or the date on which the initial performance test is required by this section, the owner or operator of an affected facility shall conduct a performance test for hydrogen chloride on an annual basis (no more than twelve (12) calendar months following the previous compliance test). For an affected facility located within a small MSWI plant, if all three (3) performance tests in a three (3) year period indicate compliance with the hydrogen chloride standard, the owner or operator may forego a performance test for the subsequent two (2) years. At a minimum a performance test for hydrogen chloride for an affected facility within a small MSWI plant shall be conducted every third year (no more than thirty-six (36) months following the previous compliance test). If a performance test conducted every third year at a small MSWI plant indicates compliance with the hydrogen chloride standard, the owner or operator may forego conducting a performance test for an additional two (2) years.

(5) Nitrogen oxides. The following procedures and test methods shall be used to determine compliance with the nitrogen oxides standard under Section 6 of this administrative regulation.

(a) Methods 7 or 7E, and 19 shall be used for determining the nitrogen oxides emission rate.

(b) The initial performance test for nitrogen oxides required by this section for a large MSWI facility shall be conducted over twenty-four (24) consecutive hours of unit operation to determine compliance with the nitrogen oxides standard. CEMS data shall be used if required by paragraph (c) of this subsection. Compliance with the nitrogen oxides standard shall be determined using a daily average.

(c) The owner or operator of an affected facility with a MSWI unit capacity greater than 500 pound per hour which is subject to the nitrogen oxides emissions standard of Section 6 of this administrative regulation shall install, calibrate, maintain, and operate a CEMS for measuring nitrogen oxides discharged to the atmosphere and shall record the output of the system.

(d) Following the initial performance test or the date on which the initial performance test is required to be completed by this section, compliance with the emission limits for nitrogen oxides required under Section 6 of this administrative regulation shall be determined based on the arithmetic average of the hourly emission rates during each twenty-four (24) hour daily period measured between 12 midnight and the following midnight using CEMS data.

(e) The one (1) hour averages required by paragraph (d) of this subsection shall be expressed in parts per million volume (dry basis) and shall be used to calculate the daily average emission rates under Section 6 of this administrative regulation. The one (1) hour averages shall be calculated using the data points required under 40 CFR 60.13(h).

(6) Carbon monoxide. The following procedures shall be used for determining compliance with the carbon monoxide standards under Section 7 of this administrative regulation.

(a) Compliance with the carbon monoxide emission limits in Appendix A of this administrative regulation shall be determined using Method 10.

(b) The owner or operator of an affected facility with a MSWI unit capacity greater than 500 pound per hour shall install, calibrate, maintain, and operate a CEMS for measuring carbon monoxide at the incinerator outlet and shall record the output of the system.

(c) Following the initial performance test or the date on which the initial performance test is required to be completed by this section, compliance with the carbon monoxide emission limits shall be determined based on the arithmetic average of the four (4) hour emission rates measured using CEMS data.

(7) The following procedures shall be used for determining compliance with the operating practices under Section 8 of this administrative regulation.

(a) The owner or operator of an affected facility that generates steam with a MSWI unit capacity greater than 500 pound per hour shall install, calibrate, maintain, and operate a steam flow meter, shall measure steam flow in kilograms per hour (pounds per hour) steam on a continuous basis, and shall record the output of the monitor. Steam flow shall be calculated in one (1) hour block averages.

(b) The owner or operator of an affected facility with a MSWI unit capacity greater than 500 pound per hour shall install, calibrate, maintain, and operate a continuous monitoring system for measuring both secondary chamber temperature and the temperature of the flue gas stream at the inlet to the particulate matter air pollution control device and shall record the output of the device. Temperature shall be calculated in four (4) hour block averages.

(c) Percent reduction requirements. The following procedures shall be used to determine compliance with Section 8(5) to (7) of this administrative regulation.

1. Except as provided in subparagraph 4 of this paragraph, the initial demonstration of compliance with the percent reduction requirement for processed MSW or RDF and Section 8(5), (6), and (7) of this administrative regulation shall be required at

the end of the second full calendar year (January through December) after the date of initial start-up of an affected facility. The annual average percent MSW reduction calculated and reported at the end of the first full calendar year after initial start-up shall not be used to determine compliance.

2. Compliance with the percent reduction requirement for processed MSW or RDF shall be determined by calculating the percentage difference between the weight of MSW received at the affected facility and the weight of MSW combusted in the MSWI unit or the weight of separated recoverable materials. Except as provided in subparagraph 4 of this paragraph, beginning the month after the date of the initial start-up for new MSWIs, the percent reduction in MSW shall be calculated on a monthly basis using the monthly total weights recorded in compliance with Section 11(1)(h) and (i) of this administrative regulation. At the end of each full calendar year (January through December) the annual average percent MSW reduction (by weight) shall be calculated by using the annual total weights. In calculating the percent MSW reduction, a maximum of fifteen (15) percent weight reduction shall be attributed to separation of yard waste. If the annual average percentage reduction requirement for processed MSW or RDF is not achieved, the MSW or RDF shall not be considered to be processed MSW or RDF.

3. An owner or operator may elect to achieve, either wholly or partially, the percent reduction requirement for processed MSW or RDF, the prohibition of yard waste or vehicle batteries in Section 8(6) of this administrative regulation, or the removal of household batteries in Section 8(7) of this administrative regulation, through an off-site source reduction or materials separation (recycling) program. The owner or operator shall submit a separation plan which contains sufficient information to measure the performance of the off-site separation program on an annual basis beginning the first full calendar year (January through December) for the initial start-up of the affected facility, except as provided in subparagraph 4 of this paragraph. The off-site separation plan shall be submitted along with the initial compliance demonstration results.

4. The owner or operator of an affected facility shall be responsible for operating the affected facility in compliance with all standards including the prohibition on combustion of unprocessed MSW, yard waste, and vehicle batteries under Section 8(5) and (6) of this administrative regulation and the implementation of a program for removal of household batteries under Section 8(7) of this administrative regulation. If another party provides processed MSW, or removes yard waste or vehicle or household batteries, the provider of the service may become a co-operator of the affected facility. If the party providing the off-site processing of MSW, removal of yard waste or vehicle batteries, or removal of household batteries elects to become a co-operator for purposes of demonstrating compliance with Section 8(5), (6), or (7) of this administrative regulation, the owner or operator of the affected facility shall submit at the time of submittal of the initial compliance demonstration related to the requirements of Section 8(5), (6), or (7) of this administrative regulation:

a. A copy of a validly executed contract between the owner and operator of the affected facility and the party providing the processing of MSW, removal of vehicle batteries, removal of yard waste, or removal of household batteries which contains the following provisions:

(i) An undertaking any the party that is co-operator or sole operator of the affected facility regarding compliance with the requirements of Section 8(5), (6), or (7) of this administrative regulation; and

(ii) An undertaking by the party to meet the requirements of Section 8(5), (6), or (7) of this administrative regulation and a description of the specific actions

that will be implemented to comply with these requirements; and

b. A certified statement signed by an authorized official representing the party that they agree to become a cooperator, or sole operator, for the purpose of demonstrating compliance with Section 9(5), (6), or (7) of this administrative regulation and recognizing that enforcement action, including penalties, may be taken against the party for failure to demonstrate compliance with these requirements.

(8) Additional CEMS and continuous monitoring system requirements.

(a) CEMS and continuous monitoring data, if required, shall be used to determine compliance with emission standards and operating practice standards.

(b) At a minimum, CEMS or continuous monitoring system data, if required, shall be obtained for ninety (90) percent of the hours per day for ninety (90) percent of the days per month that the unit is operated and combusting MSW.

(c) All valid CEMS or continuous monitoring system data, if required, shall be used in calculating emission rates and percent reductions even if the minimum CEMS or continuous monitoring system data requirements of paragraph (b) of this subsection are not met.

(d) If emissions data from CEMS or continuous monitoring systems are not obtained because of CEMS or monitoring system breakdown, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the cabinet or Methods 6, 6A, 6C, 7, 7E, 10, and 19, as appropriate, to provide necessary emission data for a minimum of ninety (90) percent of the hours per day for ninety (90) percent of the days per month the unit is operated and combusting MSW.

(e) The procedures in 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the CEMS.

(f) The CEMS shall conform to the applicable performance specifications in 40 CFR Part 60, Appendix B or Kentucky Specification 4A.

(g) The requirements of Kentucky Procedure 1 shall be met in the operation of the CEMS.

Section 11. Reporting and Recordkeeping Requirements.

(1) The owner or operator of an affected facility subject to Sections 3 to 10 of this administrative regulation shall maintain records of the following information for each affected facility:

(a) Calendar date that data from performance tests, CEMS, or continuous monitoring systems were obtained.

(b) Emission rates and parameters measured using the units and time bases required for demonstrating compliance.

(c) Identification of the operating periods that the calculated sulfur dioxide, nitrogen oxides, or carbon monoxide emission rates, the opacity, or the operating parameters exceeded the applicable standards, with reasons for the exceedances and a description of corrective actions taken.

(d) Identification of operating periods for which sulfur dioxide, nitrogen oxides, or carbon monoxide emissions, opacity, or operational data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken.

(e) Identification of the times that sulfur dioxide, nitrogen oxides, or carbon monoxide emission, opacity, or operational data have been excluded from the calculation of average emission rates or parameters and the reasons for excluding the data.

(f) The results of daily sulfur dioxide, nitrogen oxides, and carbon monoxide CEMS drift tests and accuracy assessments as required under Kentucky Procedure 1.

(g) The results of all annual performance tests conducted to determine compliance with the mass particulate matter, dioxin or furan, and hydrogen chloride standards.

(h) Beginning the month after the date of the initial start-up, the amount (by weight) of MSW or RDF received on a monthly basis at the affected facility, the amount (by weight) of MSW or RDF combusted on a monthly basis, and the amount of recoverable materials (by type and weight) separated on a monthly basis. Separated paper and paperboard shall be stored in a covered area and shall be protected from rain and moisture, so that the moisture content of the paper and paperboard when weighed is similar to their moisture content when received in the MSW or RDF.

(i) Beginning the month after the date of the initial start-up, the estimated amount (by type and weight) of recoverable materials reduced or separated for recovery on a monthly basis through an off-site or community source reduction or materials separation (recycling) program.

(j) Beginning at the end of the first full calendar year after the date of initial start-up, the calculations of the annual average percentage reduction in MSW achieved for the previous calendar year.

(k) Beginning the month after the date of the initial start-up and for each month thereafter, the amount (by weight) of vehicle batteries separated for recovery.

(2) After completion in accordance with applicable administrative regulations, the owner or operator of an affected facility shall submit to the cabinet the initial performance test data, the performance evaluation of the CEMS using the applicable performance specifications in 40 CFR Part 60, Appendix B or Kentucky Specification 4A, and the maximum MSWI unit load within sixty (60) days upon completion.

(3) A plan describing the procedures for separating materials for recovery to achieve the forty (40) percent or greater MSW reduction requirement for processed MSW or RDF, a plan describing the procedures for ensuring that vehicle batteries are not combusted in the affected facility, and a description of the program for removal of household batteries shall be provided at the time of submittal of the initial demonstration of compliance with the requirements of Section 8(5), (6), and (7) of this administrative regulation. The information shall be provided by the 30th day following the end of the second full calendar year after initial start-up.

(4) The owner or operator of an affected facility shall submit quarterly reports to the cabinet containing the information recorded under subsection (1) of this section and 401 KAR 59:005, Section 3(3) for all records required by this administrative regulation which are applicable to the facility. Both a printed report and computer tape or discs shall be furnished in the format specified by the cabinet. All reports shall be postmarked by the 30th day following the end of each calendar quarter.

(5) Records of CEMS, steam flow, and temperature data shall be maintained for at least two (2) years after date of recording and shall be made available for inspection upon request.

(6) Records showing the names of persons who have completed review of the operating manual, including the date of the initial review and all subsequent annual reviews, and the documentation required by Section 9(7) of this administrative regulation shall be maintained for at least two (2) years after date of manual review and shall be made available to the cabinet for inspection upon request.

(7) A description of the procedures employed for ensuring that unprocessed MSW or RDF is not combusted in an affected facility shall be maintained, along with associated records to demonstrate use of the procedures, and shall be made available for inspection upon request.

(8) Documentation demonstrating that the ash disposal from an affected facility complies with Section 8(9) of this administrative regulation and 401 KAR 47:080 shall be

submitted to the Division of Waste Management in the frequency required by the Division of Waste Management.

Section 12. Reference Material.

(1) The subject matter of this administrative regulation relating to reference methods, CEMS, and testing shall be governed by 40 CFR 60.13 (1990), 40 CFR 60, Appendix A, Methods 1, 2, 3, 5, 6, 6A, 6C, 7, 7E, 9, 10, and 19 (1990), and 40 CFR 60, Appendix B, Performance Specifications 1, 2, 3, and 4 (1990).

(2) Incorporation by reference. The following documents from the Kentucky Division for Air Quality are hereby incorporated by reference.

(a) Kentucky Method 23, effective December 1990;

(b) Kentucky Method 26, effective July 1990;

(c) Kentucky Specification 4A, effective July 1990; and

(d) Kentucky Procedure 1, effective July 1990.

(3) The documents incorporated by reference in subsection (2) of this section are available for public inspection and copying at the following main regional offices of the Kentucky Division for Air Quality during the normal working hours of 8 a.m. to 4:30 p.m., local time.

(a) Kentucky Division for Air Quality, 300 Sower Boulevard, Frankfort, Kentucky 40601, (502) 564-3999;

(b) Ashland Regional Office, 1550 Wolohan Drive, Suite 1, Ashland, Kentucky 41102-8942, (606) 929-5285;

(c) Bowling Green Regional Office, 1508 Westen Avenue, Bowling Green, Kentucky 42104, (270) 746-7475;

(d) Florence Regional Office, 8020 Veterans Memorial Drive, Suite 110, Florence, Kentucky 41042, (859) 525-4923;

(e) Hazard Regional Office, 233 Birch Street, Suite 2, Hazard, Kentucky 41701, (606) 435-6022;

(f) London Regional Office, 875 South Main Street, London, Kentucky 40741, (606) 330-2080;

(g) Owensboro Regional Office, 3032 Alvey Park Drive West, Owensboro, Kentucky 42303, (270) 687-7304; and

(h) Paducah Regional Office, 130 Eagle Nest Drive, Paducah, Kentucky 42003-9435 (270) 898-8468.

Section 13. Appendix A. Carbon Monoxide Standards for Municipal Solid Waste Incinerators.

CARBON MONOXIDE STANDARDS FOR MUNICIPAL SOLID WASTE INCINERATORS

Municipal Solid Waste Incinerator	Carbon Monoxide Emission Limit (ppmv)*
Mass burn waterwall	100
Mass burn refractory	100
Mass burn rotary waterwall	150
Modular starved air	50
Modular excess air	50
Refuse-derived fuel spreader stoker	150
Bubbling fluidized bed incinerator	100
Circulating fluidized bed incinerator	100

RDF co-fired incinerator	150
Other technologies	150

*Measured at the incinerator outlet in conjunction with a measurement of oxygen concentration, corrected to seven (7) percent oxygen (dry basis) using a four (4) hour block average.

Section 14. Appendix B. Formula for Percentage Reduction in Uncontrolled Sulfur Dioxide Emissions.

FORMULA FOR PERCENTAGE REDUCTION IN UNCONTROLLED SULFUR DIOXIDE EMISSIONS

$$\%P_{SO2} = \frac{(E_i - E_o)}{E_i} \times 100$$

where:
%PHC1 is the percentage reduction in uncontrolled hydrogen chloride emissions.
Ei is the daily uncontrolled hydrogen chloride emission rate.
Eo is the daily hydrogen chloride emission rate measured at the outlet of the acid gas control device.

Section 15. Appendix C. Formula for Percentage Reduction in Uncontrolled Hydrogen Chloride Emissions.

FORMULA FOR PERCENTAGE REDUCTION IN UNCONTROLLED HYDROGEN CHLORIDE EMISSIONS

$$\%P_{HC1} = \frac{(E_i - E_o)}{E_i} \times 100$$

where:
%PHC1 is the percentage reduction in uncontrolled hydrogen chloride emissions.
Ei is the daily uncontrolled hydrogen chloride emission rate.
Eo is the daily hydrogen chloride emission rate measured at the outlet of the acid gas control device.

(17 Ky.R. 662; 1460; 1982; eff. 11-15-1990; TAm eff. 8-9-2007; TAm eff. 5-20-2010; TAm eff. 7-8-2016; Crt eff. 11-21-2018; TAm eff. 9-4-2019.)