

**METROPOLITAN HEALTH DEPARTMENT
DIVISION OF POLLUTION CONTROL**

REGULATION NO. 12

**Regulation For Control of
Large Municipal Waste Combustors**

**As provided for in Chapter 10.56, Article I,
Section 10.56.090 and Article II, Section
10.56.230 of the Metropolitan Code of Laws of
the Metropolitan Government of Nashville and
Davidson County, Tennessee.**

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By the Metropolitan Board of Health
of Nashville and Davidson County, Tennessee**

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**REGULATIONS FOR CONTROL OF
LARGE MUNICIPAL WASTE COMBUSTORS (MWC)**

This Regulation establishes emission standards for each municipal waste combustor (MWC) plant with a municipal waste combustor unit capacity greater than 250 tons per day for which construction, modification or reconstruction commenced on or before September 20, 1994.

SECTION 12-1: Definitions

As used in this Regulation, all terms not defined herein shall have the meaning given them in the Metropolitan Code of Laws, Chapter 10.56, "Air Pollution Control," Section 10.56.010, "Definitions."

- (a) **"ASME"** - means the American Society of Mechanical Engineers.
- (b) **"Air Curtain Incinerator"** - means an incinerator that operates by forcefully projecting a curtain of air across an open chamber or pit in which burning occurs. Incinerators of this type can be constructed above or below ground and with or without refractory walls and floor.
- (c) **"Batch Municipal Waste Combustor"** - means a municipal waste combustor unit designed such that it cannot combust municipal solid waste continuously 24 hours per day because the design does not allow waste to be fed to the unit or ash to be removed while combustion is occurring.
- (d) **"Bubbling Fluidized Bed Combustor"** - means a fluidized bed combustor in which the majority of the bed material remains in fluidized state in the primary combustion zone.
- (e) **"Calendar Quarter"** - means a consecutive 3-month period (non-overlapping) beginning on January 1, April 1, July 1, and October 1.
- (f) **"Calendar Year"** - means the period including 365 days starting January 1 and ending on December 31.
- (g) **"Chief Facility Operator"** - means the person in direct charge and control of the operation of a municipal waste combustor and who is responsible for daily on-site supervision, technical direction, management, and overall performance of the facility.
- (h) **"Circulating Fluidized Bed Combustor"** - means a fluidized bed combustor in which the majority of the fluidized bed material is carried out of the primary combustion zone and is transported back to the primary zone through a recirculation loop.
- (i) **"Clean Wood"** - means untreated wood or untreated wood products including clean untreated lumber, tree stumps, (whole or chipped), and tree limbs (whole or chipped). Clean wood does not include yard waste, construction, renovation, and demolition wastes.
- (j) **"Coal/RDF Mixed Fuel Fired Combustor"** - means a combustor that fires coal and RDF simultaneously.

- (k) “**Cofired Combustor**” - means a unit combusting municipal solid waste with nonmunicipal solid waste fuel (e.g., coal, industrial process waste) and subject to a federally enforceable permit limiting the unit to combusting a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal solid waste as measured on a calendar quarter basis.
- (l) “**Continuous Emission Monitoring System (CEMS)**” - means a monitoring system for continuously measuring the emissions of a pollutant from an affected facility.
- (m) “**Dioxin/Furan**” - means total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.
- (n) “**Federally-Enforceable**” - means all limitations and conditions that are enforceable by the Administrator including any permit requirement.
- (o) “**Four-Hour Block Average**” - means the average of all hourly emission concentration when the affected facility is operating and combusting municipal solid waste measured over 4-hour periods of time from 12 midnight to 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., and 8 p.m. to 12 midnight.
- (p) “**Malfunctions**” - means any sudden and unavoidable failure of air pollution control equipment or process equipment, or the failure of a process to operate in a normal or usual manner, however, such failures that are caused entirely or in part by poor maintenance, or careless operation, or any other preventable improper function or preventable equipment breakdown shall not be considered a malfunction.
- (q) “**Mass Burn Refractory Municipal Waste Combustor**” - means a field-erected combustor that combusts municipal solid waste in a refractory wall furnace. Unless otherwise specified, this includes combustors with a cylindrical rotary refractory wall furnace.
- (r) “**Mass Burn Rotary Waterwall Municipal Waste Combustor**” - means a field-erected combustor that combusts municipal solid waste in a cylindrical rotary waterwall furnace.
- (s) “**Mass Burn Waterwall Municipal Waste Combustor**” - means a field-erected combustor that combusts municipal solid waste in a waterwall furnace.
- (t) “**Maximum Demonstrated Municipal Waste Combustor Unit Load**” - means the highest 4-hour arithmetic average municipal waste combustor unit load achieved during four consecutive hours during dioxin/furan test demonstrating compliance with the applicable standard for municipal waste combustor organics specified in Section 12-3.
- (u) “**Maximum Demonstrated Particulate Matter Control Device Temperature**” - means the maximum 4-hour arithmetic average flue gas temperature measured at the final particulate matter control device inlet during four consecutive hours during the most recent dioxin/furan test demonstrating compliance with the applicable standard for municipal waste combustor organics specified in Section 12-3.
- (v) “**Modular Excess Air municipal waste combustor**” - means a combustor that combusts municipal solid 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.

- (w) **“Modular Starved Air municipal waste combustor”** - means a combustor that combusts municipal solid 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.
- (x) **“Municipal Solid Waste (MSW)”** - means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, hospitals, non-manufacturing activities at prisons and government facilities and other similar establishments or facilities. Municipal solid waste does not include used oil, sewage, wood pallets, construction and demolition waste, industrial process or manufacturing waste, medical waste, or, motor vehicles, or motor vehicle parts. However, any mixture of segregated medical waste and other wastes containing 30 percent or more of medical waste discards, is considered to be municipal-type solid waste.
- (y) **“Municipal Waste Combustor (MWC) or Municipal Waste Combustor Unit”** - means any device that combusts solid, liquid, or gasified municipal solid waste including, but not limited to, field-erected incinerators (with or without heat recovery), modular incinerators (starved air or excess air), boilers (i.e., steam generating units), furnaces (whether suspension-fired, grate-fired, mass-fired, air curtain incinerators, or fluidized bed-fired) and gasification/combustion units. This does not include internal combustion engines, or other devices that combust landfill gases collected by landfill gas collection systems. The boundaries of a municipal solid waste combustor are defined as follows. The municipal waste combustor unit includes, but is not limited to, the municipal solid waste fuel feed system, grate system, flue gas system, bottom ash system, and the combustor water system. The municipal waste combustor boundary starts at the municipal solid waste pit or hopper and extends through:
 - (1) The combustor flue gas system, which ends immediately following the heat recovery equipment or, if there is no heat recovery equipment, immediately following the combustion chamber;
 - (2) The combustor bottom ash system, which ends at the truck loading station or similar ash handling equipment that transfer the ash to final disposal, including all ash handling systems that are connected to the bottom ash handling system; and
 - (3) The combustor water system, which starts at the feed water pump and ends at the piping exiting the steam drum or superheater.

The municipal waste combustor unit does not include air pollution control equipment, the stack, water treatment equipment, or the turbine-generator set.

- (z) **“Municipal Waste Combustor Acid Gases”** - means all acid gases emitted in the exhaust gases from municipal waste combustor units including, but not limited to, sulfur dioxide and hydrogen chloride gases.

- (aa) **“Municipal Waste Combustor Metals”** - means metals and metal compounds emitted in the exhaust gases from municipal waste combustor units.
- (bb) **“Municipal Waste Combustor Organics”** - means organic compounds emitted in the exhaust gases from municipal waste combustor units and includes total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.
- (cc) **“Municipal Waste Combustor Plant”** - means one or more affected facilities (as defined in Section 12-2) at the same location.
- (dd) **“Municipal Waste Combustor Unit Capacity”** - means the maximum design charging rate of a municipal waste combustor unit expressed in tons per day of municipal solid waste combusted, calculated according to the procedures in Section 12-6, Paragraph (k).
- (ee) **“Municipal Waste Combustor Unit Load”** - means the steam load of the municipal waste combustor unit measured as specified in Section 12-6, Paragraph (j)(6).
- (ff) **“Particulate Matter”** - means total particulate matter emitted from municipal waste combustor units as measured by Method 5 (as outlined in 40 CFR, Part 60, Appendix A.).
- (gg) **“Potential Hydrogen Chloride Emission Concentration”** - means the hydrogen chloride emission rate that would occur from combustion of municipal solid waste in the absence of any hydrogen chloride emissions control.
- (hh) **“Potential Mercury Emission Concentration”** - means the mercury emission concentration that would occur from combustion of municipal solid waste in the absence of any mercury emissions control.
- (ii) **“Potential Sulfur Dioxide Emission Concentration”** - means the sulfur dioxide emission concentration that would occur from combustion of municipal solid waste in the absence of any sulfur dioxide emissions control.
- (jj) **“Refuse Derived Fuel Stoker”** - means a steam generating unit that combusts refuse derived fuel in a semisuspension firing mode using air-fed distributors.
- (kk) **“Refuse Derived Fuel (RDF)”** - means a type of municipal solid waste produced by processing municipal solid waste through shredding and size classification. This includes all classes of refuse derived fuel including low density fluff refuse derived fuel through densified refuse derived fuel and refuse derived fuel pellets.
- (ll) **“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 any combination thereof, including any municipality or other governmental unit, or any quasigovernmental authority (e.g., a public utility district or regional waste disposal authority).
- (mm) **“Shift Supervisor”** - means the person in direct charge and control of the operation of a municipal waste combustor and who is responsible for on-site supervision, technical direction, management, and overall performance of the facility during an assigned shift.
- (nn) **“Shutdown”** - means the cessation or suspension of operation.

- (oo) **“Standard Conditions”** - means a temperature of 293° Kelvin (68° Fahrenheit) and a pressure of 101.3 kilopascals (29.92 inches of mercury).
- (pp) **“Total Mass Dioxin/Furan”** - means the total mass of tetra- through octa- chlorinated dibenzo-p-dioxins and dibenzofurans, as determined using EPA Reference Method 23 and the procedures specified under Section 12-6, Paragraph (h) of this Regulation.
- (qq) **“Twenty-Four Hour Daily Average or 24-hour Daily Average”** - means the arithmetic or geometric mean (as specified) of all hourly emission concentration when the affected facility is operating and combusting municipal solid waste measures over a 24-hour period between 12 midnight and the following midnight.
- (rr) **“Untreated Lumber”** - means wood or wood products that have been cut or shaped and include wet, air-dried, and kiln-dried wood products. Untreated lumber does not include wood products that have been painted, pigment-stained, or “pressure-treated”. Pressure-treating compounds include, but are not limited to, chromate copper arsenate, pentachlorophenol, and creosote.
- (ss) **“Waterwall Furnace”** - means a combustion unit having energy (heat) recovery in the furnace (i.e., radiant heat transfer section) of the combustor.
- (tt) **“Yard Waste”** - means grass, grass clippings, bushes, shrubs, and clippings from bushes and shrubs that are generated residential, commercial/retail, institutional, and/or industrial sources as part of maintenance activities associated with yards or other private or public lands. Yard waste does not include construction, renovation, and demolition wastes, which are exempt from the definition of municipal solid waste in this section. Yard waste does not include clean wood, which is exempt from the definition of municipal solid waste in this section.

SECTION 12-2: Affected Facility

- (a) The affected facilities to which this Regulation applies is each municipal waste combustor unit with a combustion capacity greater than 250 tons per day of municipal solid waste for which construction commenced on or before September 20, 1994.
- (b) Any municipal waste combustion unit that is capable of combusting more than 250 tons per day of municipal solid waste and is subject to a federally enforceable permit limiting the maximum amount of municipal solid waste that may be combusted in the unit to less than or equal to 11 tons per day is not subject to this Regulation if the owner or operator:
 - (1) Notifies the Director of an exemption claim;
 - (2) Provides a copy of the Federally enforceable permit that limits the firing of municipal solid waste to less than 11 tons per day; and
 - (3) Keeps records of the amount of municipal solid waste fired on a daily basis.
- (c) A qualifying small power production facility, as defined in Section 3(17)(C) of the Federal Power Act (16 U.S.C. 796(17)(C)) , that burns homogeneous waste (such as automotive tires or used oil, but not including refuse-derived fuel) for the production of electric energy is not

- (d) A qualifying cogeneration facility, as defined in Section 3(18)(B) of the Federal Power Act (16 U.S.C. 796(18)(B)), that burns homogeneous waste (such as automotive tires or used oil, but not including refuse-derived fuel) for the production of electric energy and steam or forms of useful energy (such as heat) that are used for industrial, commercial, heating, or cooling purposes, is not subject to this Regulation if the owner or operator of the facility notifies the Director of this exemption and provides data documenting that the facility qualifies for this exemption.
- (e) Any unit combusting a single-item waste stream of tires is not subject to this Regulation if the owner or operator of the unit:
 - (1) Notifies the Director of an exemption claim; and
 - (2) Provides data documenting that the unit qualifies for this exemption.
- (f) Any unit required to have a permit under section 3005 of the Solid Waste Disposal Act is not subject to this Regulation.
- (g) Any materials recovery facility (including primary or secondary smelters) that combusts waste for the primary purpose of recovering metals is not subject to this Regulation.
- (h) Any cofired combustor is not subject to this Regulation if the owner or operator:
 - (1) Notifies the Director of an exemption claim;
 - (2) Provides a copy of the Federally enforceable permit; and
 - (3) Keeps a record on a calendar quarter basis of the weight of municipal solid waste combusted at the cofired combustor and the weight of all other fuels combusted.
- (i) Physical or operational changes made to an existing municipal waste combustor unit to comply with the emission guidelines of this Regulation are not considered a modification or reconstruction and would not bring an existing municipal waste combustor unit under the provisions of 40 CFR, Part 60, Subpart Ea, “Standards of Performance for Municipal Waste Combustors” and Subpart Eb, “Standards of Performance for Large Municipal Waste Combustors for which construction commenced after September 20, 1994.”

SECTION 12-3: Emission Standards

- (a) The emission limits for particulate matter and opacity contained in the gases discharged to the atmosphere from an affected facility are:

Emission Limits	
Particulate Matter* (Milligrams/DSCM)	Opacity** (Percent)
27 (0.012 gr/dscf)	10

<p>* corrected to seven (7) percent oxygen ** six (6) minute average</p>

- (b) The emission limits for cadmium and lead contained in the gases discharged to the atmosphere from an affected facility are:

Emission Limits (Milligrams/DSCM*)	
<u>Cadmium</u>	<u>Lead</u>
0.040 (17.5 gr/10 ⁶ dscf)	0.44 (192 gr/10 ⁶ dscf)
* corrected to seven (7) percent oxygen	

- (c) The emission limit for mercury contained in the gases discharged to the atmosphere from an affected facility is 0.080 milligrams per dry standard cubic meter (35 gr/10⁶ dscf) or 15 percent of the potential mercury emission concentration (85 percent reduction by weight) corrected to seven (7) percent oxygen, whichever is less stringent.
- (d) The emission limits for sulfur dioxide and hydrogen chloride contained in the gases discharged to the atmosphere from an affected facility are:

Emission Limits	
<u>Sulfur Dioxide*</u> <u>PPMV</u>	<u>Hydrogen Chloride*</u> <u>PPMV</u>
29** or 75% reduction***	29 or 95% reduction***
<p>* corrected to seven (7) percent oxygen, dry basis **compliance is based on a 24-hour daily geometric mean ***Percent reduction by weight or volume, whichever is less stringent</p>	

- (e) The emission limit for organics, expressed as total mass dioxins/furans contained in the gases discharged to the atmosphere from an affected facility that employs other than an

ESP-based emission control system is 30 nanograms per dry standard cubic meter (total mass), corrected to seven (7) percent oxygen.

- (f) The emission limits for nitrogen oxides contained in the gases discharged to the atmosphere from an affected facility are as follows:

TABLE 1	
NITROGEN OXIDES GUIDELINES FOR DESIGNATED FACILITIES	
Municipal Waste Combustor Technology	Nitrogen Oxides Emission Limit (Parts per million by volume) ^a
Mass Burn Waterwall	200
Mass Burn Rotary Waterwall	250
Refuse-Derived Fuel Combustor	250
Fluidized Bed Combustor	180
Mass Burn Refractory Combustors	No Limit

^a Corrected to 7 percent oxygen, dry basis.

- (1) The owner or operator of a MWC plant may elect to implement a nitrogen oxides emissions averaging plan for the affected facilities that are located at that plant, except as specified in Paragraphs (f)(1)(i) and (ii).
 - (i) Municipal waste combustor units subject to 40 CFR, Part 60, Subpart Ea, “Standards of Performance for Municipal Waste Combustors” or Eb, “Standards of Performance for Large Municipal Waste Combustors for which construction commenced after September 20, 1994.”
 - (ii) Mass burn refractory municipal waste combustor units and other municipal waste combustion technologies not listed in Paragraph (f)(2) of this Section.
- (2) The affected facilities included in the nitrogen oxides emissions averaging plan must be identified in the initial compliance report specified in Section 12-7 (b)(13) or the annual report specified in Section 12-7 (c), as applicable, prior to implementing the averaging plan. The affected facilities being included in the averaging plan may be redesignated each calendar year.
- (3) To implement the emissions averaging plan, the average daily (24-hour) nitrogen oxides emission concentration level for gases discharged to the atmosphere from the affected facilities included in the emission averaging plan shall be no greater than the levels specified in Table 2 of this Section.

TABLE 2	
NITROGEN OXIDES LIMITS FOR EXISTING DESIGNATED FACILITIES INCLUDED IN AN EMISSIONS AVERAGING PLAN AT A MUNICIPAL WASTE COMBUSTOR PLANT^a	
Municipal Waste Combustor Technology	Nitrogen Oxides Emission Limit (parts per million by volume) ^b
Mass Burn Waterwall	180
Mass Burn Rotary Waterwall	220
Refuse-Derived Fuel Combustor	230
Fluidized Bed Combustor	165
^a Mass burn refractory municipal waste combustors and other MWC technologies not listed above may not be included in an emissions averaging plan. ^b Corrected to 7 percent oxygen, dry basis.	

- (4) Under the emissions averaging plan, the average daily nitrogen oxides emissions specified in Paragraph (f)(3) of this Section shall be calculated using equation (1). Designated facilities that are off-line shall not be included in calculating the average daily nitrogen oxides emission level.

$$(1)$$

$$NO_{x24-hr} = \frac{\sum_{i=1}^h (NO_{x_i}) (S_i)}{\sum_{i=1}^h (S_i)}$$

Where:

- NO_{x24-hr} = 24-hr daily average nitrogen oxides emission concentration level for the emissions averaging plan (parts per million by volume corrected to 7 percent oxygen, dry basis)
- NO_{x_i} = 24-hr daily average nitrogen oxides emission concentration level for designated facility i (parts per million by volume, corrected to 7 percent oxygen, dry basis), calculated according to the procedures in Section 12-6 (i) of this Regulation.
- S_i = maximum demonstrated municipal waste combustor unit load for designated facility i (pounds per hour steam or feedwater flow as determined in the most recent dioxin/furan performance test).

h = total number of designated facilities being included in the daily emissions average.

(5) For any day in which any designated facility included in the emissions averaging plan is off-line, the owner or operator of the municipal waste combustor plant must demonstrate compliance according to either Paragraph (i) or both Paragraphs (ii) and (iii) of this Section.

(i) Compliance with the applicable limits specified in Table 2 of this Regulation shall be demonstrated using the averaging procedure specified in Paragraph (4) of this Section for the designated facilities that are on-line.

(ii) For each of the designated facilities included in the emissions averaging plan, the nitrogen oxides emissions on a daily average basis shall be calculated and shall be equal to or less than the maximum daily nitrogen oxides emission level achieved by that designated facility on any of the days during which the emissions averaging plan was achieved with all designated facilities on-line during the most recent calendar quarter. The requirements of this Paragraph do not apply during the first quarter of operation under the emissions averaging plan.

(iii) The average nitrogen oxides emissions (kilograms per day) calculated according to Paragraph (f)(5)(iii)(B) shall not exceed the average nitrogen oxides emissions (kilograms per day) calculated according to Paragraph (f)(5)(iii)(A).

(A) For all days during which the emissions averaging plan was implemented and achieved and during which all designated facilities were on-line, the average nitrogen oxides emissions shall be calculated. The average nitrogen oxides emissions (kilograms per day) shall be calculated on a calendar year basis according to Paragraphs (I) through (III) of this Section.

(I) For each affected facility included in the emissions averaging plan, the daily amount of nitrogen oxides emitted (kilograms per day) shall be calculated based on the hourly nitrogen oxides data required in Section 12-6 (i)(5), the flue gas flow rate determined using Table 19-1 of EPA's Reference Method 19 and the hourly average steam or feed water flow rate.

(II) The daily total nitrogen oxides emissions shall be calculated as the sum of the daily nitrogen oxides emissions from each designated facility calculated under Paragraph (f)(5)(iii)(A)(I) of this section.

(III) The average nitrogen oxides emissions (kilograms per day) on a calendar year basis shall be calculated as the sum of all daily total nitrogen oxides emissions calculated under Paragraph (f)(5)(iii)(A)(II) of this Section divided by the number of calendar days for which a daily total was calculated.

(B) For all days during which one or more of the designated facilities under the emissions averaging plan was off-line, the average nitrogen oxides emissions shall be calculated. The average nitrogen oxides emissions

(kilograms per day) shall be calculated on a calendar year basis according to Paragraphs (f)(5)(iii)(B)(I) through (f)(5)(iii)(B)(III) of this Section.

- (I) For each designated facility included in the emissions averaging plan, the daily amount of nitrogen oxides emitted (kilograms per day) shall be calculated based on the hourly nitrogen oxides data required under Section 12-6 (i)(5) the flue gas flow rate determined using Table 19-1 of EPA Reference Method 19 and the hourly average steam or feedwater flow rate.
- (II) The daily total nitrogen oxides emissions shall be calculated as the sum of the daily nitrogen oxides emissions from each designated facility calculated under Paragraph (I) of this Section.
- (III) The average nitrogen oxides emissions (kilograms per day) on a calendar year basis shall be calculated as the sum of all daily total nitrogen oxides emissions calculated under Paragraph (II) of this Section divided by the number of calendar days for which a daily total was calculated.

(g) The emission limits for carbon monoxide contained in the gases discharged to the atmosphere from an affected facility are as follows:

MWC Type	Carbon Monoxide (Parts/Million by volume)*	Averaging Time
Modular starved-air and excess-air	50 ppmv	4-hour
Mass burn waterwall and refractory	100 ppmv	4-hour
Mass burn rotary refractory	100 ppmv	4-hour
Fluidized-bed combustion	100 ppmv	4-hour
Pulverized coal/RDF mixed fuel-fired	150 ppmv	4-hour
Spreader stoker coal/RDF mixed fuel-fired	150 ppmv	24-hour
RDF stoker	150 ppmv	24-hour
Mass burn rotary waterwall	100 ppmv	24-hour

*corrected to 7% oxygen, dry basis.

(h) No owner or operator of an affected facility shall cause such facility to operate at a load level greater than 110 percent of the maximum demonstrated MWC unit load except as specified in Paragraph (h)(1) and (h)(2) of this Section. The averaging time is specified in Section 12-6, Paragraph (j)(6)

- (1) During the annual dioxin/furan performance test and the 2 weeks preceding the annual dioxin/furan performance test, no municipal waste combustor unit load limit is applicable.
- (2) The municipal waste combustor unit load limit may be waived in accordance with permission granted by the Director or delegated representative for the purpose of

evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

- (i) No owner or operator of an affected facility shall cause such facility to operate at a temperature, measured at the particulate matter control device inlet, exceeding 17° C (63° F) above the maximum demonstrated particulate matter control device temperature, except as specified in Paragraphs (i)(1) and (i)(2) of this Section. The average time is specified in Section 12-6, Paragraph (j)(7). The requirement specified in this Paragraph applies to each particulate matter control device utilized at the affected facility.
 - (1) During the annual dioxin/furan performance test and the 2 weeks preceding the annual dioxin/furan performance test, no particulate matter control device temperature limitations are applicable.
 - (2) The particulate matter control device temperature limits may be waived in accordance with permission granted by the Director or delegated representative for the purpose of evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

SECTION 12-4: Emission Standards for Fugitive Ash

- (a) No owner or operator of an affected facility shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of five (5) percent of the observation period (9 minutes per three-hour period) as determined by EPA Reference Method 22, except as provided in Paragraphs (b) and (c) of this Section.
- (b) The emission limit specified in Paragraph (a) of this Section does not cover visible emissions discharged inside buildings or enclosures of ash conveying systems; however, the emission limit specified in Paragraph (a) of this Section does cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems.
- (c) The provisions specified in Paragraph (a) of this section do not apply during maintenance and repair of ash conveying systems.

SECTION 12-5: Standards for Municipal Waste Combustor Operator Training and Certification

- (a) Each chief facility operator and shift supervisor of an affected facility, within twelve (12) months of the effective date of this Regulation, shall have completed full certification or shall have scheduled a full certification exam with the American Society of Mechanical Engineering (QRO-1-1994).
- (b) No owner or operator of an affected facility shall allow the facility to be operated at any time unless one of the following persons is on duty and at the affected facility:
 - (1) A fully certified chief operator; or

- (2) A fully certified shift supervisor.

This requirement shall take effect twelve (12) months after the effective date of this Regulation.

- (c) All chief facility operators, shift supervisors, and control room operators must complete the EPA or State municipal waste combustor operator training course within twelve (12) months of the effective date of this Regulation.
- (d) The owner or operator of an affected facility shall develop and update on a yearly basis a site specific operating manual that shall, at a minimum, address the following elements of MWC unit operation:
 - (1) A summary of the applicable standards contained in this Regulation;
 - (2) A description of basic combustion theory applicable to the affected MWC unit(s);
 - (3) Procedures for receiving, handling, and feeding MSW;
 - (4) MWC unit startup, shutdown, and malfunction procedures;
 - (5) Procedures for maintaining proper combustion air supply levels;
 - (6) Procedures for operating the MWC unit within the standards established by this Regulation;
 - (7) Procedures for responding to periodic upset or off-specification conditions;
 - (8) Procedures for minimizing particulate matter carryover;
 - (9) Procedures for handling ash;
 - (10) Procedures for monitoring MWC unit emissions; and
 - (11) Reporting and record keeping procedures.
- (e) The owner or operator of an affected facility shall establish a training program to review the operating manual with each person who has responsibilities affecting the operation of the affected facility including, but not limited to, chief facility operator, shift supervisor, control room operator, ash handler, maintenance personnel, and crane/load handlers according to the following schedule:
 - (1) Twelve (12) months after the effective date of this Regulation or prior to the day the person assumes responsibilities, whichever is later, provided that the person is hired more than 12 months after the effective date of the Regulation; and
 - (2) Annually, following the initial review required in Paragraph (1).
- (f) The operating manual required by Paragraph (d) of this Section shall be kept in a readily accessible location for all persons required to undergo training under Paragraph (e) of this Section. This operating manual and records of training shall be available for inspection by the Director upon request.

SECTION 12-6: Compliance and Performance Testing

- (a) The standards outlined in this Regulation apply at all times, except during periods of startup, shutdown or malfunction; provided, however, that the duration of startup, shutdown, or malfunction shall not exceed 3 hours per occurrence.
 - (1) The startup period commences when the affected facility begins the continuous burning of MSW and does not include any warm-up period when the affected facility is combusting only a fossil fuel or other non-MSW fuel and no MSW is being combusted.
 - (2) Continuous burning is the continuous, semi-continuous, or batch feeding of MSW for purpose of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of MSW solely to provide thermal protection of the grate or hearth during the startup period shall not be considered to be continuous burning.
- (b) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a continuous emission monitoring system and record the output of the system for measuring the oxygen or carbon dioxide content of the flue gas at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides emissions are monitored and shall comply with the test procedures and test methods specified in Paragraphs (1) through (6) of this Section.
 - (1) The span value of the oxygen (or carbon dioxide) monitor shall be 25 percent oxygen (or carbon dioxide).
 - (2) The monitor shall be installed, evaluated, and operated in accordance with Section 60.13 of 40 CFR, Part 60, Subpart A.
 - (3) The monitor shall conform to Performance Specification 3 in 40 CFR, Part 60, Appendix B, except for Section 2.3 (relative accuracy requirement).
 - (4) The quality assurance procedures of 40 CFR, Part 60, Appendix F shall apply except for Section 5.1.1 (relative accuracy test audit).
 - (5) If carbon dioxide is selected for use in diluent corrections, the relationship between oxygen and carbon dioxide shall be established during the initial performance test according to the procedures and methods specified in Paragraph (i) through (iv) of this Section. This relationship may be reestablished during performance compliance tests.
 - (i) The fuel factor equation in Method 3B shall be used to determine the relationship between oxygen and carbon dioxide at a sampling location. Method 3, 3A or 3B as applicable, shall be used to determine the oxygen concentration at the same location as the carbon dioxide monitor.
 - (ii) Each sample shall be taken for at least 30 minutes in each hour.
 - (iii) Each sample shall represent a 1-hour average.
 - (iv) A minimum of three runs shall be performed.
 - (6) The relationship between carbon dioxide and oxygen concentrations that is established in accordance with Paragraph (5) of this Section shall be submitted to the Director as part of the initial performance test report and if applicable, as part of the annual test report if the relationship is reestablished during the annual performance test.

- (c) The procedures and test methods specified in Paragraphs (c)(1) through (c)(9) of this Section shall be used to determine compliance with the emission limits for particulate and opacity under Section 12-3, Paragraph (a).
- (1) Method 1, as outlined in 40 CFR, Part 60, Appendix A, "Reference Methods," shall be used to select the sampling site and number of traverse points.
 - (2) Method 3, 3A or 3B as applicable, as outlined in 40 CFR, Part 60, Appendix A, shall be used for gas analysis.
 - (3) Method 5, as outlined in 40 CFR, Part 60, Appendix A shall be used for determining compliance with the particulate matter emission limits. The minimum sample volume shall be 1.7 cubic meters (60 cubic feet). The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than $160 \pm 14^{\circ}$ C. An oxygen or carbon monoxide measurement shall be obtained simultaneously with each Method 5 run.
 - (4) An owner or operator of an affected facility may request that compliance with the particulate matter emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in Paragraph (b)(5) of this Section.
 - (5) All particulate matter compliance tests shall consist of three test runs. The average of the particulate matter emission concentrations from the three test runs is used to determine compliance.
 - (6) Method 9, as outlined in 40 CFR, Part 60, Appendix A shall be used for determining compliance with the opacity standard.
 - (7) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a continuous opacity monitoring system for measuring opacity and shall follow the methods specified in Paragraphs (c)(7)(i) through (c)(7)(iii) of this Section.
 - (i) The output of the continuous opacity monitoring system shall be recorded on a 6-minute average basis.
 - (ii) the continuous opacity monitoring system shall be installed, evaluated, and operated in accordance with Section 60.13 of 40 CFR, Part 60, Subpart A.
 - (iii) The continuous opacity monitoring system shall conform to Performance Specification 1 in 40 CFR, Part 60, Appendix B.
 - (8) Following the date of the initial compliance test for particulate matter or the date required for compliance testing in Section 12-8 for an affected facility, the owner or operator shall conduct a performance test for particulate matter on an annual basis (no more than 12 calendar months following the previous compliance test).
 - (9) Following the date of the initial compliance test for opacity or the date required for compliance testing in Section 12-8 for an affected facility the owner or operator shall conduct a performance test for opacity on an annual basis (no more than 12 calendar months following the previous compliance test) using the test method specified in Paragraph (c)(6) of this Section.

- (d) The procedure and test method specified in Paragraphs (d)(1) through (d)(7) of this Section shall be used to determine compliance with the emission limits for cadmium and lead under Section 12-3, Paragraph (b).
- (1) Method 1, as outlined in 40 CFR, Part 60, Appendix A, "Reference Methods," shall be used to select the sampling site and number of traverse points.
 - (2) Method 3, 3A or 3B as applicable, as outlined in 40 CFR, Part 60, Appendix A, shall be used for gas analysis.
 - (3) Method 29, as outlined in 40 CFR, Part 60, Appendix A, shall be used for determining compliance with the cadmium and lead emission limits.
 - (4) An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 29 test run for cadmium and lead required under Paragraph (d)(3).
 - (5) An owner or operator of an affected facility may request that compliance with the cadmium or lead emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels shall be established as specified in Paragraph (b)(5) of this Section.
 - (6) All performance tests shall consist of three test runs conducted under representative full-load operating conditions. The average of the cadmium or lead emission concentrations from three test runs shall be used to determine compliance.
 - (7) Following the date of the initial compliance test for cadmium and lead or the date required for compliance testing in Section 12-8 for an affected facility, the owner or operator of an affected facility shall conduct a performance compliance test for cadmium and lead on an annual basis (no more than 12 calendar months following the previous compliance test).
- (e) The procedure and test methods specified in Paragraph (1) through (9) shall be used to determine compliance with the emission limits for mercury under Section 12-3, Paragraph (c).
- (1) Method 1, as outlined in 40 CFR, Part 60, Appendix A, "Reference Methods," shall be used to select the sampling site and number of traverse points.
 - (2) Method 3, 3A or 3B as applicable, as outlined in 40 CFR, Part 60, Appendix A, shall be used for gas analysis.
 - (3) Method 29, as outlined in 40 CFR, Part 60, Appendix A shall be used to determine the mercury emission concentration. The minimum sample volume when using Method 29 for mercury shall be 1.7 cubic meters (60 cubic feet).
 - (4) An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 29 test run for mercury required under Paragraph (e)(3) of this Section.
 - (5) The percent reduction in the potential mercury emissions ($\%P_{Hg}$) is computed using Equation (1):

$$(\% P_{\text{Hg}}) = \frac{E_i - E_o}{E_i} \times 100 \quad (1)$$

Where:

%Phg = Percent reduction of the potential mercury emissions achieved.

E_i = Potential mercury emission concentration measured at the control device inlet, corrected to 7 percent oxygen (dry basis).

E_o = Controlled mercury emission concentration measured at the mercury control device outlet, corrected to 7 percent oxygen (dry basis).

- (6) All performance tests shall consist of three test runs conducted under representative full load operating conditions. The average of the mercury emission concentrations or percent reductions from three test runs is used to determine compliance.
 - (7) An owner or operator of an affected facility may request that compliance with the mercury emission limits be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels shall be established as specified in Paragraph (b)(5) of this Section.
 - (8) Following the date of the initial compliance test for mercury or the date required for compliance testing in Section 12-8 for an affected facility, the owner or operator shall conduct a performance compliance test for mercury on an annual basis (no more than 12 calendar months following the previous compliance test).
 - (9) The owner or operator of an affected facility where activated carbon injection is used to comply with the mercury emission limit shall follow the procedures specified in Paragraph (m) of this Section for measuring and calculating carbon usage.
- (f) The procedure and test methods specified in Paragraphs (f)(1) through (f)(13) shall be used to determine compliance with the emission limits for sulfur dioxide under Section 12-3, Paragraph (d).
- (1) Method 19, as outlined in 40 CFR, Part 60, Appendix A, Section 4.3, shall be used to calculate the daily geometric average sulfur dioxide emission rate.
 - (2) Method 19, as outlined in 40 CFR, Part 60, Appendix A, Section 5.4, shall be used to determine the daily geometric average percent reduction in the potential sulfur dioxide emission rate.
 - (3) An owner or operator of an affected facility may request that compliance with the sulfur dioxide emissions limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen (dry basis). The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in Paragraph (b)(5) of this Section.
 - (4) The owner or operator of an affected facility shall conduct an initial compliance test for sulfur dioxide as required by Section 12-8. Compliance with the sulfur dioxide emission limit (concentration or percent reduction) shall be determined by using a CEMS to measure sulfur dioxide and calculating a 24-hour daily geometric mean emission concentration or a 24-hour daily geometric mean percent reduction using

- (5) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a CEMS for measuring sulfur dioxide emissions discharged to the atmosphere and record the output of the system.
- (6) Following the date of the initial compliance test or the date on which the initial compliance test is required by Section 12-8, compliance with the sulfur dioxide emission limit or percent reduction shall be determined based on the 24-hour daily geometric mean of the hourly arithmetic average emission concentration using: CEMS inlet and outlet data, if compliance is based on a percent reduction; or CEMS outlet data if compliance is based on an emission limit.
- (7) At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in Paragraphs (f)(7)(i) and (f)(7)(ii) for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that the affected facility is combusting MSW.
 - (i) At least two data points per hour shall be used to calculate each 1-hour arithmetic average.
 - (ii) Each sulfur dioxide 1-hour arithmetic average shall be corrected to 7 percent oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) continuous emission monitoring system data.
- (8) The 1-hour arithmetic average required under Paragraph (f)(6) of this Section shall be expressed in parts per million by volume corrected to 7 percent oxygen (dry basis) and used to calculate the 24-hour daily geometric average emission concentrations and daily geometric average emission percent reduction.
- (9) All valid continuous emission monitoring system data shall be used in calculating average emission concentrations and percent reduction even if the minimum continuous emission monitoring system data requirements of Paragraph (f)(7) of this Section are not met.
- (10) The monitor shall be installed, evaluated, and operated in accordance with Section 60.13 of 40 CFR, Part 60, Subpart A.
- (11) The CEMS shall be operated according to Performance Specification 2 of Appendix B of 40 CFR, Part 60.
 - (i) During each relative accuracy test run of the continuous emission monitoring system required by Performance Specification 2, sulfur dioxide and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified in Paragraphs (f)(11)(i)(A) and (f)(11)(i)(B) of this Section.
 - (A) Method 6, 6A or 6C, as outlined in 40 CFR, Part 60, Appendix A shall be used for sulfur dioxide.
 - (B) Method 3, 3A or 3B as applicable, as outlined in 40 CFR, Part 60, Appendix A shall be used for oxygen (or carbon dioxide).

- (ii) The span value of the CEMS at the inlet to the sulfur dioxide control device shall be 125 percent of the maximum estimated hourly potential sulfur dioxide emissions of the MWC unit, and the span value of the CEMS at the outlet of the sulfur dioxide control device shall be 50 percent of the maximum estimated hourly potential sulfur dioxide emissions of the MWC unit.
- (12) Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with Procedure 1 of Appendix F of 40 CFR, Part 60.
- (13) When sulfur dioxide emissions data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the EPA Administrator and Director or Method 19 to provide, as necessary, valid emission data for a minimum of 75 percent of the hours per day for 90 percent of the days per calendar quarter the unit is operated and combusting MSW.
- (g) The procedure and test methods specified in Paragraph (g)(1) through (g)(7) of this Section shall be used to determine compliance with the emission limits for hydrogen chloride under Section 12-3, Paragraph (d).
 - (1) Method 26 or 26A, as outlined in 40 CFR, Part 60, Appendix A, as applicable, shall be used for determining the hydrogen chloride concentration. The minimum sampling time for Method 26 shall be one hour.
 - (2) An oxygen (or carbon dioxide) measurement shall be obtained simultaneously with each Method 26 test run for hydrogen chloride.
 - (3) The percentage reduction in the potential hydrogen chloride emissions (%P_{HCl}) is computed using the following Equation (2):

$$\%P_{HCl} = \frac{E_i - E_o}{E_i} \times 100 \quad (2)$$

Where:

- %P_{HCl} = The percent reduction of the potential hydrogen chloride emissions achieved.
- E_i = The potential hydrogen chloride emission rate measured at the inlet of the acid gas control device, corrected to 7% oxygen (dry basis).
- E_o = The hydrogen chloride emission rate measured at the outlet of the acid gas control device, corrected to 7 percent oxygen (dry basis).

- (4) An owner or operator of an affected facility may request that compliance with the hydrogen chloride emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in Paragraph (b)(5) of this Section.

- (5) All performance tests for hydrogen chloride shall consist of three test runs. The average of the hydrogen chloride emission concentrations or percent reductions from the three test runs is used to determine compliance.
 - (6) The owner or operator of an affected facility shall conduct an initial compliance test for hydrogen chloride as required by Section 12-8.
 - (7) Following the date of the initial compliance test or the date on which the initial compliance test is required by Section 12-8, the owner or operator of an affected facility shall conduct a performance test for hydrogen chloride on an annual basis (no more than 12 calendar months following its previous compliance test).
- (h) The procedure and test methods specified in Paragraphs (h)(1) through (h)(8) of this Section shall be used to determine compliance with the emission limits for dioxin/furan under Section 12-3, Paragraph (e).
- (1) Method 1, as outlined in 40 CFR, Part 60, Appendix A, "Reference Methods," shall be used to select the sampling site and number of traverse points.
 - (2) Method 3, 3A or 3B as applicable, as outlined in 40 CFR, Part 60, Appendix A, shall be used for gas analysis.
 - (3) Method 23, as outlined in 40 CFR, Part 60, Appendix A, shall be used for determining compliance with the dioxin/furan emission limits.
 - (i) The minimum sample time shall be 4 hours per test run.
 - (ii) An oxygen (or carbon dioxide) measurement shall be obtained simultaneous with each Method 23 test run for dioxin/furans.
 - (4) Following the date of the initial compliance test for dioxin/furans or the date on which initial compliance test is required to be complete under Section 12-8, the owner or operator shall conduct performance tests for dioxin/furan emissions in accordance with Paragraph (h)(3) of this Section, according to one of the following schedules:
 - (i) Performance tests shall be on an annual basis (no more than 12 calendar months following the previous performance test); and
 - (ii) For affected facilities where all performance tests over a 2-year period indicate that dioxin/furan emissions are equal to or less than 7 nanograms per dry standard cubic meter (total mass) for all affected facilities located within a MWC plant, the owner or operator of the MWC plant may elect to conduct annual performance test for one affected facility (i.e., unit) per year at the MWC plant. At a minimum, a performance test for dioxin/furan emissions shall be conducted annually (no more than 12 months following the pervious performance test) for one affected facility at the MWC plant. Each year a different affected facility at the municipal waste combustor plant shall be tested, and the affected facilities at the plant shall be tested in sequence (e.g., unit 1, unit 2, unit 3, as applicable). If each annual performance test continues to indicate a dioxin/furan emission level less than or equal to 7 nanograms per dry standard cubic meter (total mass), the owner or operator may continue conducting a performance test on only one affected facility per year. If any annual performance test indicates a dioxin/furan emission level

- (5) The owner or operator of an affected facility that selects to follow the performance testing schedule specified in Paragraph (h)(4)(ii) shall follow the procedures specified in Section 12-7 for reporting the selection of this schedule.
- (6) The owner or operator of an affected facility where activated carbon is used to comply with the dioxin/furan emission limits shall follow the procedures specified in Paragraph (m) for measuring and calculating the carbon usage rate.
- (7) An owner or operator of an affected facility may request that compliance with the dioxin/furan emissions limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen (dry basis). The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in Paragraph (b)(5) of this Section.
- (8) All performance tests shall consist of three test runs conducted under representative full load operating conditions. The average of the dioxin/furan emission concentrations or percent reductions from three test runs is used to determine compliance.
- (i) The procedure and test methods specified in Paragraphs (i)(1) through (i)(12) shall be used to determine compliance with the emission limits for nitrogen oxides under Section 12-3, Paragraph (f) for MWC units located at affected facilities.
 - (1) Method 19, as outlined in 40 CFR, Part 60, Appendix A, Section 4.1, shall be used for determining the daily arithmetic average nitrogen oxides emission concentration.
 - (2) An owner or operator of an affected facility may request that compliance with the nitrogen oxides emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in Paragraph (b)(5) of this Section.
 - (3) The owner or operator of an affected facility shall conduct an initial compliance test for nitrogen oxides as required by Section 12-8. Compliance with the nitrogen oxides emission limit shall be determined by using a continuous emission monitoring system specified in Paragraph (4) for measuring nitrogen oxides and calculating the 24-hour daily arithmetic average emission concentrations using Method 19, as outlined in 40 CFR, Part 60, Appendix A, Section 4.1.
 - (4) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a CEMS for measuring nitrogen oxides discharged to the atmosphere and record the output of the system.
 - (5) Following the date of the initial compliance test or the date on which the initial compliance test is required by Section 12-8, compliance with the nitrogen oxides emission limit shall be determined based on the 24-hour daily arithmetic average of the hourly emission concentrations using CEMS outlet data.

- (6) At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in Paragraphs (i)(6)(i) and (i)(6)(ii) of this Section for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that the affected facility is combusting MSW.
 - (i) At least two data points per hour shall be used to calculate each 1-hour arithmetic average.
 - (ii) Each nitrogen dioxide 1-hour arithmetic average shall be corrected to 7 percent oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) continuous emission monitoring system data.
- (7) The 1-hour arithmetic average required under Paragraph (i)(5) of this Section shall be expressed in parts per million by volume corrected to 7 percent oxygen (dry basis) and used to calculate the 24-hour daily arithmetic average emission concentrations. The 1-hour arithmetic average shall be calculated using the data points required under Section 60.13 of 40 CFR, Part 60, Subpart A.
- (8) All valid continuous emission monitoring system data shall be used in calculating average emission concentrations even if the minimum continuous emission monitoring system data requirements of Paragraph (i)(6) of this Section are not met.
- (9) The monitor shall be installed, evaluated, and operated in accordance with Section 60.13 of 40 CFR, Part 60, Subpart A.
- (10) The CEMS shall be operated according to Performance Specification 2 of Appendix B of 40 CFR, Part 60 and shall follow the procedures and methods specified in Paragraphs (i)(10)(i) and (i)(10)(ii) of this Section.
 - (i) During each relative accuracy test run of the continuous emission monitoring system required by Performance Specification 2, nitrogen oxides and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified in Paragraphs (i)(10)(i)(A) and (i)(10)(i)(B) of this Section .
 - (A) Method 7, 7A, 7C, 7D, or 7E, as outlined in 40 CFR, Part 60, Appendix A, shall be used for nitrogen oxides.
 - (B) Method 3, 3A or 3B as applicable, as outlined in 40 CFR, Part 60, Appendix A shall be used for oxygen or carbon dioxide.
 - (ii) The span value of the CEM system shall be 125 percent of the maximum estimated hourly potential nitrogen oxides emissions of the MWC unit.
- (11) Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with Procedure 1 of Appendix F of 40 CFR, Part 60.
- (12) When nitrogen oxides emissions data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the EPA Administrator and Director or Method 19 to provide, as necessary, valid emission data for a minimum of 75 percent of the hours per day for 90 percent of the days per calendar quarter the unit is operated and combusting MSW.

- (j) The procedure specified in Paragraphs (j)(1) through (j)(12) of this Section shall be used for determining compliance with the operating requirements under Section 12-3.
- (1) Compliance with the carbon monoxide emission limits in Section 12-3 shall be determined using a 4-hour block arithmetic average for all types of affected facilities except mass burn rotary waterwall MWC's and RDF stokers.
 - (2) For affected mass burn rotary waterwall MWC's and RDF stokers, compliance with the carbon monoxide emission limits in Section 12-3 shall be determined using a 24-hour daily arithmetic average.
 - (3) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a CEMS for measuring carbon monoxide at the combustor outlet and record the output of the system and shall follow the procedures and methods specified in Paragraphs (j)(3)(i) through (j)(3)(iii) of this Section.
 - (i) The CEMS shall be operated according to Performance Specification 4A in Appendix B of 40 CFR, Part 60.
 - (ii) During each relative accuracy test run of the continuous emission monitoring system required by Performance Specification 4A, carbon monoxide and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified in Paragraphs (j)(3)(ii)(A) and (j)(3)(ii)(B) of this Section.
 - (A) Method 10, 10A, or 10B as outlined in 40 CFR, Part 60, Appendix A shall be used for carbon monoxide.
 - (B) Method 3, 3A or 3B as applicable, as outlined in 40 CFR, Part 60, Appendix A shall be used for oxygen or carbon dioxide.
 - (iii) The span values of the CEMS system shall be 125 percent of the maximum estimated hourly potential carbon monoxide emissions of the MWC.
 - (4) The 4-hour block and 24-hour daily arithmetic averages in Paragraphs (j)(1) and (j)(2) of this Section shall be calculated from 1-hour arithmetic averages expressed in parts per million by volume corrected to 7% oxygen (dry basis). The 1-hour arithmetic average shall be calculated using the data points generated by the CEMS. At least two data points shall be used to calculate each 1-hour arithmetic average.
 - (5) An owner or operator of an affected facility may request that compliance with the carbon monoxide emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in Paragraph (b)(5) of this Section.
 - (6) The following procedures shall be used to determine compliance with load level requirements of Section 12-3, Paragraph (h) of this Regulation.
 - (i) The owner or operator of an affected facility with steam generation capability shall install, calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; measure steam (or feedwater) flow in kilograms per hour (or pounds per

- (ii) The method included in the “American Society of Mechanical Engineers Power Test Codes: Test Code for Steam Generating Units, Power Test Code 4.1 -- 1964 (R1991),” Section 4 shall be used for calculating the steam (or feedwater) flow requirement under Paragraph (j)(6)(i). The recommendations in “American Society of Mechanical Engineering Interim Supplement 19.5 on Instruments and Apparatus: Application, Part II of Fluid Meters, 6th edition (1971),” Chapter 4 shall be followed for design, construction, installation, calibration, and use of nozzles and orifices except as specified in (j)(6)(iii) of this Section.
 - (iii) Measurement devices such as flow nozzles and orifices are not required to be recalibrated after they are installed.
 - (iv) All signal conversion elements associated with steam (or feedwater flow) measurements must be calibrated according to the manufacturer’s instructions before each dioxin/furan performance test, and at least once per year.
- (7) To determine compliance with the maximum particulate matter control device temperature requirements of Section 12-3, Paragraph (i) of this Regulation, the owner or operator of an affected facility shall install, calibrate, maintain, and operate a device for measuring on a continuous basis the temperature of the flue gas stream at the inlet to each particulate matter control device utilized by the affected facility. Temperature shall be calculated in 4-hour block arithmetic averages.
- (8) The maximum demonstrated municipal waste combustor unit load shall be determined during the initial performance test for dioxins/furans and each subsequent performance test during which compliance with the dioxin/furan emission limit specified in Section 12-3 Paragraph (e) is achieved. The maximum demonstrated municipal waste combustor unit load shall be the highest 4-hour arithmetic average load achieved during four consecutive hours during the most recent test during which compliance with the dioxin/furan emission limit was achieved.
- (9) For each particulate matter control device employed at the affected facility, the maximum demonstrated particulate matter control device temperature shall be determined during the initial performance test for dioxins/furans and each subsequent performance test during which compliance with the dioxin/furan emission limit specified in Section 12-3, Paragraph (e) is achieved. The maximum demonstrated particulate matter control device temperature shall be the highest 4-hour arithmetic average temperature achieved at the particulate matter control device inlet during four consecutive hours during the most recent test during which compliance with the dioxin/furan limit was achieved.
- (10) At a minimum, valid continuous emission monitoring system hourly averages shall be obtained as specified in Paragraphs (j)(10)(i) and (j)(10)(ii) of this Section for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that the affected facility is combusting municipal solid waste.

- (i) At least two data points per hour shall be used to calculate each 1-hour arithmetic average.
 - (ii) At a minimum, each carbon monoxide 1-hour arithmetic average shall be corrected to 7 percent oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) continuous emission monitoring system data.
- (11) All valid continuous emission monitoring system data must be used in calculating the parameters specified under Paragraph (j)(10)(i) even if the minimum data requirements of Paragraph (j)(10) are not met. When carbon monoxide continuous emission data are not obtained because of continuous emission monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained using other monitoring systems as approved by the Director or EPA Reference Method 10 to provide, as necessary, the minimum valid emission data.
- (12) Quarterly accuracy determination and daily calibration drift tests for the carbon monoxide continuous emission system shall be performed in accordance with Procedure 1 of 40 CFR, Part 60, Appendix F.
- (k) For municipal waste combustor units capable of combusting municipal solid waste continuously for a 24-hour period, municipal waste combustor unit capacity, in megagrams per day of municipal solid waste combusted, shall be calculated based on 24 hours of operation at the maximum charging rate. The maximum charging rate shall be determined as specified in Paragraphs (k)(1) and (k)(2) of this Section.
 - (1) For combustors that are designed based on heat capacity, the maximum charging rate shall be calculated based on the maximum design heat input capacity of the unit and a heating value of 12,800 kilojoules per kilogram for combustors firing refuse derived fuel and a heating value of 10,500 kilojoules per kilogram for combustors firing municipal solid waste that is not refuse derived fuel.
 - (2) For combustors that are not designed based on heat capacity, the maximum charging rate shall be the maximum design charging rate.
- (l) The procedure specified in Paragraphs (l)(1) through (l)(4) of this Section shall be used for determining compliance with the fugitive ash emission limit under Section 12-4 of this Regulation.
 - (1) Method 22, as outlined in 40 CFR, Part 60, Appendix A, shall be used for determining compliance with the fugitive ash emission limit under Section 12-4. The minimum observation time shall be a series of three 1-hour observations. The observation period shall include times when the facility is transferring ash from the municipal waste combustor unit to the area where ash is stored or loaded into containers or trucks.
 - (2) The average duration of visible emissions per hour shall be calculated from the three 1-hour observations. The average shall be used to determine compliance with Section 12-4.
 - (3) The owner or operator of an affected facility shall conduct an initial compliance test for fugitive ash as required by Section 12-8.

- (4) Following the date of the initial compliance test for fugitive ash emissions or the date on which the initial compliance test is required to be completed under Section 12-8, the owner or operator shall conduct a compliance test for fugitive ash emissions on an annual basis (no more than 12 calendar months following the previous compliance test).
- (m) The owner or operator of an affected facility where activated carbon injection is used to comply with the emission limit under Section 12-3 Paragraph (c) or the dioxin/furan limits under Section 12-3 Paragraph (e) shall follow the procedures specified in Paragraphs (m)(1) through (m)(3) of this Section.
 - (1) During the performance tests for dioxins/furans and mercury, as applicable, the owner or operator shall estimate an average carbon mass feed rate based on carbon injection system operating parameters such as the screw feeder speed, hopper volume, hopper refill frequency, or other parameters appropriate to the feed system being employed, as specified in Paragraphs (m)(1)(i) and (m)(1)(ii) of this Section.
 - (i) An average carbon mass feed rate in kilograms per hour or pounds per hour shall be estimated during the initial performance test for mercury emissions and each subsequent performance test for mercury emissions.
 - (ii) An average carbon mass feed rate in kilograms per hour or pounds per hour shall be estimated during the initial performance test for dioxin/furan emissions and each subsequent performance test for dioxin/furan emissions.
 - (2) During operation of the affected facility, the carbon injection system operating parameter(s) that are the primary indicator(s) of the carbon mass feed rate (e.g., screw feeder setting) must equal or exceed the level(s) documented during the performance tests specified under Paragraphs (m)(1)(i) and (m)(1)(ii) of this Section.
 - (3) The owner or operator shall estimate the total carbon usage of the plant (kilograms or pounds) for each calendar quarter by two independent methods, according to the procedures in Paragraphs (m)(3)(i) and (m)(3)(ii) of this Section.
 - (i) The weight of carbon delivered to the plant.
 - (ii) Estimate the average carbon mass feed rate in kilograms per hour or pounds per hour for each hour of operation for each affected facility based on the parameters specified under Paragraph (m)(1), and sum the results for all affected facilities at the plant for the total number of hours of operation during the calendar quarter.

SECTION 12-7: Reporting and Recordkeeping Requirements

- (a) The owner or operator of an affected facility with a capacity greater than 250 tons per day shall provide notification to the Director within sixty (60) days after the date of adoption of this Regulation of the type(s) of fuels that they combust in the affected facility. The MWC unit capacity and MWC plant capacity and supporting capacity calculations shall be provided at the time of the notification. At the time of notification owners or operators of cofired combustors must provide documentation of the types and amounts of each fuel they combust or plan to combust and the date on which they plan to start combusting MSW or RDF and shall submit a copy of a federally enforceable permit limiting the maximum

- (b) The owner or operator of an affected facility and subject to the standards under Sections 12-3, 12-4, 12-5, and 12-6 of this Regulation shall maintain records of the following information for each affected facility for a period of at least five (5) years:
- (1) Calendar date of each record.
 - (2) The emission rates and parameters measured using CEMS as specified under (b)(2)(i) and (b)(2)(ii):
 - (i) The following measurements shall be recorded in computer-readable format and on paper:
 - (A) All 6-minute average opacity levels required under Paragraph (c)(7)(i) of Section 12-6.
 - (B) All 1-hour average sulfur dioxide emission rates at the inlet and outlet of the acid gas control device if compliance is based on a percent reduction, or at the outlet if compliance is based on an emission limit, as specified under Paragraph (f)(6) of Section 12-6.
 - (C) All 1-hour average nitrogen oxides emission concentrations specified under Paragraph (i)(3) of Section 12-6.
 - (D) All 1-hour average carbon monoxide emission rates, MWC unit load measurements, and particulate matter control device inlet temperatures as specified under Paragraph (j) of Section 12-6.
 - (ii) The average concentrations and percent reductions, as applicable, specified in Paragraphs (b)(2)(ii)(A) through (b)(2)(ii)(D) of this Section shall be completed and recorded, and shall be available for submittal to the Director or review on site.
 - (A) All 24-hour daily geometric average percent reductions in sulfur dioxide emissions and all 24-hour daily geometric average sulfur dioxide emission concentrations as specified under Paragraph (f) of Section 12-6.
 - (B) All 24-hour daily arithmetic average nitrogen oxides emission concentrations under Paragraph (i) of Section 12-6.
 - (C) All 4-hour block or 24-hour daily arithmetic average carbon monoxide emission concentrations, as applicable, as specified under Paragraph (j) of Section 12-6.
 - (D) All 4-hour block arithmetic average MWC unit load levels and particulate matter control device inlet temperatures as specified under Paragraph (j) of Section 12-6.
 - (3) Identification of the operating days when any of the average emission concentrations, percent reductions, or operating parameters recorded under Paragraph (b)(2)(ii) or the opacity level recorded under Paragraph (b)(2)(i) exceeded the applicable limits, with reasons for such exceedances as well as a description of corrective actions taken.

- (4) For affected facilities that apply activated carbon for mercury or dioxin/furan control, the following records must be maintained:
 - (i) The average carbon mass feed rate (in kilograms or pounds per hour) estimated as required under Section 12-6(m)(1)(i) during the initial mercury performance test and all subsequent annual performance tests, with supporting calculations.
 - (ii) The average carbon mass feed rate (in kilograms or pounds per hour) estimated as required under Section 12-6(m)(1)(ii) during the initial dioxin/furan performance test and all subsequent annual performance tests, with supporting calculations.
 - (iii) The average carbon mass feed rates (in kilograms or pounds per hour) estimated for each hour of operation as required under Section 12-6(m)(3)(ii).
 - (iv) The total carbon usage for each calendar quarter estimated as specified in Section 12-6(m)(3), with supporting calculations.
 - (v) Carbon injection system operating parameter data for the parameter(s) that are the primary indicator(s) of carbon feed rate (e.g. screw feed speed).
- (5) Identification of the calendar dates for which the minimum number of hours of any of the data specified in Paragraphs (b)(5)(i) through (b)(5)(v) of this Section have been obtained including reasons for not obtaining sufficient data and a description of corrective actions taken.
 - (i) Sulfur dioxide emissions data;
 - (ii) Nitrogen oxides emissions data;
 - (iii) Carbon monoxide emissions data;
 - (iv) MWC unit load data; and
 - (v) Particulate matter control device temperature data.
- (6) Identification of the times when sulfur dioxide emissions data, nitrogen oxide emissions data, or operational data (carbon monoxide emissions, unit load, particulate matter control device temperature) have been excluded from the calculation of average emission rates or parameters and the reasons for excluding data.
- (7) The results of daily sulfur dioxide, and carbon monoxide CEMS drift tests and quarterly accuracy assessments as required under Appendix F, Procedure 1 of 40 CFR, Part 60.
- (8) The results of all annual performance tests conducted to determine compliance with the particulate matter, opacity, cadmium, lead, mercury, dioxin/furan, hydrogen chloride, and fugitive ash emission limits. For all annual dioxin/furan tests, the maximum demonstrated MWC unit load and maximum demonstrated particulate matter control device temperature shall be recorded along with supporting calculations.
- (9) The records specified in Paragraph (b)(9)(i) through (b)(9)(iii) of this Section:
 - (i) Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have been provisionally certified by the American Society of Mechanical Engineers or an equivalent State-

- (ii) Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have been fully certified by the American Society of Mechanical Engineers or an equivalent State-approved certification program including the dates of initial and renewal certifications and documentation of current certification.
 - (iii) Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course including documentation of training completion.
- (10) Records showing the names of persons who have completed a review of the operating manual, including the date of the initial review and subsequent annual review.
- (11) For affected facilities that apply activated carbon for mercury or dioxin/furan control, identification of the calendar dates when the average carbon mass feed rates recorded under (b)(4)(iii) of this Section were less than either of the hourly carbon feed rates estimated during performance tests for mercury or dioxin/furan emissions and recorded under Paragraphs (b)(4)(i) and (b)(4)(ii), respectively, with reasons for such feed rates and a description of corrective actions taken.
- (12) For affected facilities that apply activated carbon for mercury or dioxin/furan control, identification of the calendar dates when the carbon injection system operating parameter(s) that are the primary indicator(s) of carbon mass feed rate (e.g., screw feeder speed) recorded under Paragraph (b)(4)(v) are below the level(s) estimated during the performance tests as specified in Section (m)(1)(i) and (ii) with reasons for such occurrences and a description of corrective actions taken.
- (13) Following the initial compliance test(s) as required under Section 12-6, the owner or operator of an affected facility shall submit to the Director the information specified in (b)(13)(i) through (b)(13)(vi) of this Section.
- (i) The initial performance test data (b)(2)(ii)(A) through (D) for the initial performance test for sulfur dioxide, nitrogen dioxide, carbon monoxide, municipal waste combustor unit load, and particulate matter control device inlet temperature.
 - (ii) The test report documenting the initial performance test recorded under Paragraph (b)(8) of this Section for particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emissions.
 - (iii) The performance evaluation of the CEM system using the applicable performance specification of Appendix B of 40 CFR, Part 60.
 - (iv) The maximum demonstrated municipal waste combustor unit load and maximum demonstrated particulate matter control device inlet temperature(s) established during the initial dioxin/furan performance test as recorded under Paragraph (b)(8) of this Section.

- (v) For affected facilities that apply activated carbon injection for mercury control, the owner or operator shall submit the average carbon mass feed rate recorded under Paragraph (b)(4)(i) of this Section.
 - (vi) For those affected facilities that apply activated carbon injection for dioxin/furan control, the owner or operator shall submit the average carbon mass feed rate recorded under Paragraph (b)(4)(ii) of this Section.
- (c) Following the initial compliance test as required by Section 12-6, the owner or operator of an affected facility shall submit an annual report including the information specified in Paragraphs (c)(1) through (c)(3), as applicable, no later than February 1st each year following the calendar year in which the data was collected.
- (1) A summary of data collected for all pollutants and parameters regulated in this Regulation; including the information specified below:
 - (i) A list of the particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission levels achieved during the performance tests recorded under Paragraph (b)(8) of this Section.
 - (ii) A list of the highest emission level recorded for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, and particulate matter control device inlet temperature based on the data recorded under Paragraph (b)(2)(ii)(A) through (b)(2)(ii)(B) of this Section.
 - (iii) List the highest opacity level measured, based on the data recorded under Paragraph (b)(2)(i)(A) of this Section.
 - (iv) The total number of days that the minimum number of hours of data for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load, and particulate matter control device temperature data were not obtained based on the data recorded under Paragraph (b)(5) of this Section.
 - (v) The total number of hours that data for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load, and particulate matter control device temperature were excluded from the calculation of average emission concentrations or parameters based on the data recorded under Paragraph (b)(6) of this Section.
 - (2) The summary of data including the information specified in Paragraph (c)(3) of this Section, shall highlight any emission or parameter levels that did not achieve the emission or parameter limits specified in this Regulation.
 - (3) A notification of intent to begin the reduced dioxin/furan performance testing schedule specified in Section 12-6(h)(5)(ii) during the following calendar year.
- (d) The owner or operator of an affected facility, shall submit a semiannual report that includes the information specified in Paragraphs (d)(1) through (d)(5) for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit specified in this Regulation according to the schedule specified in Paragraph (d)(6) of this Section.
- (1) The semiannual report shall include information recorded under Paragraph (b) of this Section for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste

- (2) For each date recorded as required by Paragraph (b)(3) of this Section and reported as required by Paragraph (d)(1), the semiannual report shall include the sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, particulate matter control device inlet temperature, or opacity data, as applicable, recorded under Paragraph (b) as applicable.
- (3) If the test reports recorded under Paragraph (b)(8) document any particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission levels that were above the applicable pollutant limits, the semiannual report shall include a copy of the test report documenting the emission levels and the corrective actions taken.
- (4) The semiannual report shall include the information recorded under Paragraph (b)(12) for the carbon injection system operating parameter(s) that are the primary indicator(s) of carbon mass feed rate.
- (5) For each operating date reported as required by Paragraph (d)(4) of this Section, the semiannual report shall include the carbon feed rate data recorded under Paragraph (b)(4)(iii).
- (6) Semiannual reports shall be submitted according to the schedule specified in Paragraphs (d)(6)(i) and (d)(6)(ii) of this Section.
 - (i) If the data reported in accordance with Paragraphs (d)(1) through (d)(5) were collected during the first calendar half, then the report shall be submitted by August 1, following the first calendar half.
 - (ii) If the data reported in accordance with Paragraphs (d)(1) through (d)(5) were collected during the second calendar half, then the report shall be submitted by February 1 following the second calendar half.
- (e) All reports specified under Paragraphs (a), (b), (c), and (d) of this Section shall be submitted on paper copy, postmarked on or before the submittal dates specified, and shall be maintained on site in either paper or computer readable form, for a period of five (5) years.

SECTION 12-8: Compliance Schedule

- (a) The owner or operator of any affected facility shall demonstrate compliance with the emission limits outlined in Section 12-3, 12-4, and 12-5 in accordance with the requirements of Section 12-6, "Compliance and Performance Testing." Any compliance tests or other documentation required by Section 12-7 for the purpose of demonstrating compliance shall be submitted to the Director no later than 36 months after the date of adoption of this Regulation by the Metropolitan Board of Health or no later than May 15, 1999.
- (b) The owner or operator of a MWC facility shall perform a test for dioxin/furan emissions for each MWC unit and submit performance test results to the Director by September 30, 1996. The performance test shall be conducted according to the procedures of Section 12-6, Paragraph (h). Any owner or operator of a MWC unit that conducted performance tests for

- (c) Within twelve (12) months after the date of adoption of this Regulation by the Metropolitan Board of Health, the owner or operator of a MWC shall be in compliance with the operator training certification requirements of Section 12-5.
- (d) The owner or operator of an affected facility shall submit a compliance schedule to the Director within sixty (60) days of adoption of this Regulation by the Metropolitan Board of Health. This schedule shall include the following steps of progress:
 - (1) Date for obtaining services of an architectural and engineering firm regarding the air pollution control device(s);
 - (2) Date for obtaining design drawings of the air pollution control device(s);
 - (3) Date for submittal of permit modifications, if necessary;
 - (4) Date for submittal of the final control plan to the Director;
 - (5) Date for ordering the air pollution control device(s);
 - (6) Date for obtaining the major components of the air pollution control device(s);
 - (7) Date for initiation of site preparation for installation of the air pollution control device(s);
 - (8) Date for initiation of installation of the air pollution control device(s);
 - (9) Date for initial startup of the air pollution control device(s); and
 - (10) Date for initial performance test(s) of the air pollution control device(s).

Approved this _____ day of _____, 1996,
by the Members of the Board of Health
