



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



July 31, 2000

Regulation Review Committee
Room 1800
Legislative Office Building
Hartford, CT 06106

Re: R.C.S.A. section 22a-174-38, Municipal Waste Combustors.

Ladies and Gentlemen:

Pursuant to section 4-170 of the Connecticut General Statutes, I submit for your consideration and approval the enclosed amendment to the Regulations of Connecticut State Agencies ("RCSA"). This amendment concerns the adoption of RCSA section 22a-174-38, Abatement of Air Pollution, Municipal Waste Combustors.

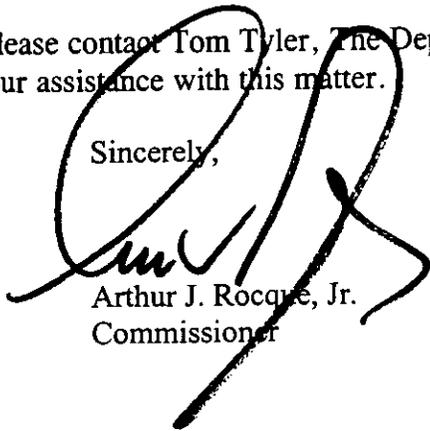
This proposed amendment establishes additional limits on emission of nitrogen oxides from municipal waste combustors beginning on May 1, 2003. Although more stringent than otherwise required by federal regulation, the emission reductions expected from the proposed regulations are necessary for the Department of Environmental Protection (Department):

- to further reduce emissions in Connecticut to offset an in-state emissions reduction shortfall,
- to meet our commitments to the United States Environmental Protection Agency (EPA) under the federal Clean Air Act, and
- to demonstrate to EPA that Connecticut will be able to meet the federal one-hour health based ozone standard by 2007.

The Department has committed to EPA to make every effort to identify these emission reductions in Connecticut and submit them to EPA by the end of calendar year 2000. EPA is under a court-ordered schedule to either approve Connecticut's ozone attainment demonstration by the end of this summer or begin the process of imposing a federal implementation plan on sources in Connecticut.

If there are any questions regarding this proposal, please contact Tom Tyler, The Department's Legislative Liaison, at 424-3001. Thank you for your assistance with this matter.

Sincerely,


Arthur J. Rocque, Jr.
Commissioner

AJR/PEF

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STATE OF CONNECTICUT
REGULATION

OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

concerning

SUBJECT MATTER OF REGULATION

MUNICIPAL WASTE COMBUSTORS

Section 1.

Subsection (a) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(a) **Definitions.** For purposes of this section:

- (1) "Calendar quarter" means a consecutive three-month period (nonoverlapping) beginning on January 1, April 1, July 1 or October 1.
- (2) "Chief operator" means an individual who is in direct charge of the operation of a municipal waste combustor plant and who is responsible for overall on-site supervision, technical direction, management and performance of the plant.
- (3) "Cofired combustor" means an emissions unit that combusts municipal solid waste with nonmunicipal solid waste fuel (e.g., coal, industrial process waste) and that is subject to a federally enforceable permit limiting the unit to combusting a fuel feed stream, thirty percent (30%) or less of the weight of which is composed, in the aggregate, of municipal solid waste as measured on a calendar quarter basis.
- (4) "Continuous burning" means the continuous, semi-continuous or batch feeding of municipal solid waste for purposes of waste disposal, energy production or providing heat to the combustion system in preparation for waste disposal or energy production. Continuous burning does not include the use of municipal solid waste solely to provide thermal protection of the grate or hearth during the startup period when municipal solid waste is not being fed to the grate.
- (5) "Continuous emission monitoring system" or "CEM system" means a monitoring system for continuously measuring the emissions of any pollutant from a MWC unit.
- (6) "Dioxin/furan" means tetra-chlorinated dibenzo-p-dioxins and dibenzofurans through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.
- (7) "Dscf/mmBTU" means dry cubic feet at standard conditions per million British thermal unit.
- (8) "F-factor," "fc" or "fd" means a ratio of combustion gas volumes to heat inputs either unit-specific or as defined in 40 CFR Part 60, Appendix A, Method 19.
- (9) "Four-hour block average" or "4-hour block average" means the average of all

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

hourly emission concentrations when a municipal waste combustor is operating and combusting municipal solid waste measured over 4-hour periods from midnight to 4 a.m., 4 a.m. to 8 a.m., 8 a.m. to noon, noon to 4 p.m., 4 p.m. to 8 p.m., and 8 p.m. to midnight.

- (10) "Historical actual twenty-four hour daily NOx average" means one or more calendar years of CEM data from no earlier than 1994 or another period of data approved by the commissioner as representative of NOx emissions.
- (11) "Malfunction" means any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment or a process to operate in a normal or usual manner. A failure that is caused in part by poor maintenance or negligent or careless operation shall not be considered a malfunction.
- (12) "Mass burn waterwall combustor" means a field-erected combustor that combusts primarily unprocessed municipal solid waste (i.e., municipal solid waste that is not processed-municipal solid waste) in a waterwall furnace.
- (13) "Maximum demonstrated municipal waste combustor unit load" means the highest 4-hour arithmetic average municipal waste combustor unit load achieved during four consecutive hours of operation that corresponds to a test run during the most recent dioxin/furan emissions performance test that demonstrates compliance with the applicable limit for dioxin/furan specified in subsection (c) of this section.
- (14) "Maximum demonstrated particulate matter control device temperature" means the highest 4-hour arithmetic average flue gas temperature measured at the particulate matter control device inlet during four consecutive hours of operation that corresponds to a test run during the most recent dioxin/furan emissions performance test that demonstrates compliance with the applicable limit for dioxin/furan specified in subsection (c) of this section.
- (15) "mg/dscm" means milligrams of air pollutant per dry standard cubic meter.
- (16) "Municipal solid waste" means municipal solid waste as defined in section 22a-207 of the general statutes.
- (17) "Municipal waste combustor," "municipal waste combustor unit" or "MWC" means any part or activity of any stationary source which part or activity emits or has the potential to emit any regulated air pollutant or any hazardous air pollutant, exclusive of associated air pollution control equipment, that combusts municipal solid waste, inclusive of those emissions units combusting a single-item waste stream of tires. Combustors that combust landfill gases collected by landfill gas collection systems are not municipal waste combustors.
- (18) "Municipal waste combustor plant" or "plant" means any premises at which one or more municipal waste combustor units are situated.
- (19) "Municipal waste combustor unit load" means the rate at which steam is produced at a municipal waste combustor (measured in lbs/hr or kg/hr).

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

- (20) "ng/dscm" means nanograms of air pollutant per dry standard cubic meter.
- (21) "NO_x Emissions Reductions Credit" or "ERC" means an [allocation] AIR POLLUTANT REDUCTION created in the nitrogen oxides emissions trading program described by this section.
- (22) "NO_x Trading Baseline" means that value, determined as specified in subsection (d) of this section, used to calculate the quantity of ERCs created or used by a MWC unit.
- (23) "Ozone season" means the period of any calendar year beginning on May 1 and ending on September 30.
- (24) "Premises" means the grouping of all stationary sources at any one location and owned by or under the control of the same person or persons.
- (25) "Processed-municipal solid waste" means a type of municipal solid waste produced by sorting municipal solid waste by size and/or altering the size of municipal solid waste through mechanical means.
- (26) "Processed-municipal solid waste combustor" means a steam-generating MWC that burns processed-municipal solid waste in a semisuspension firing mode using air-fed distributors.
- (27) "Reciprocating grate waste tire fired incinerator/boiler" means a combustor that burns tires as its principal fuel.
- (28) "Scf/mmBTU" means cubic feet at standard conditions per million British thermal unit.
- (29) "Shift operator" means an individual who is in direct charge of the operation of a shift of a municipal waste combustor plant and who is responsible for on-site supervision, technical direction, management and overall performance of the plant during a shift.
- (30) "Shutdown period" means the period of time commencing when a municipal waste combustor operator discontinues the feed of municipal solid waste to the combustor in order to cease operation.
- (31) "Six-minute arithmetic average" or "6-minute arithmetic average" means the arithmetic mean calculated from thirty-six (36) or more data points equally spaced over each 6-minute period.
- (32) "Standard conditions" means a temperature of 20 degrees centigrade and a pressure of 101.3 kilopascals.
- (33) "Startup period" means that period of time commencing when a municipal waste combustor begins the continuous burning of municipal solid waste, exclusive of any warmup period when a municipal waste combustor is combusting fossil fuel

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

or other nonmunicipal solid waste fuel, and no municipal solid waste is being fed to the combustor.

- (34) "Total mass" or "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 subdivision (4) of subsection (i) of this section.
- (35) "Twenty-four hour daily average" means the arithmetic mean of all hourly emission concentrations as required by this section when a unit is operating and combusting municipal solid waste measured over a 24-hour period between midnight and the following midnight.
- (36) "Twenty-four hour geometric average" means the geometric mean of hourly emission concentrations regulated by this section when a unit is operating and combusting municipal solid waste measured over a 24-hour period between midnight and the following midnight. The geometric mean shall be calculated using the following equation:

$$E_{ga} = e^{\left(\frac{1}{n} \sum_{j=1}^n [\ln(E_{hj})]\right)}$$

where:

E_{ga} = daily geometric average pollutant concentration, corrected to 7% O₂ or equivalent percent CO₂;

E_{hj} = hourly arithmetic average pollutant concentration, corrected to 7% O₂ or equivalent percent CO₂;

n = total number of hourly averages for which pollutant concentrations are available within the 24 hour midnight to midnight daily period;

\ln = natural log of the indicated value; and

e = the natural logarithmic base (2.718) raised to the value enclosed by the brackets.

- (37) "Waterwall furnace" means a combustion unit having energy (heat) recovery in the furnace (i.e., radiant heat transfer section) of the combustor.

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Sec. 2.

Subsection (c) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(c) Emission limits.

- (1) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor for which construction commenced prior to September 20, 1994 shall cause or allow the emission of any air pollutant in excess of the applicable emission limit identified in Tables 38-1 and 38-1a of this subdivision.

Table 38-1. Air Pollutant Emission Limits for MWCs for which Construction Commenced Prior to September 20, 1994.

Air pollutant	Emission limit
Particulate matter	27 mg/dscm
Cadmium	0.040 mg/dscm
Lead	0.44 mg/dscm
Mercury	0.080 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section
Sulfur dioxide -- Reciprocating grate waste tire fired incinerator/boilers	51 parts per million by volume (ppmvd), or 75% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
<u>SULFUR DIOXIDE -- MASS BURN WATERWALL COMBUSTORS FOR WHICH CONSTRUCTION COMMENCED AFTER <u>DECEMBER 20, 1989</u></u>	<u>29 PARTS PER MILLION BY VOLUME (ppmvd), OR 80% REDUCTION BY WEIGHT OR VOLUME MEASURED AS REQUIRED BY SUBDIVISION (7) OF SUBSECTION (c) OF THIS SECTION</u>
Sulfur dioxide -- All other MWCs	29 parts per million by volume (ppmvd), or 75% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Hydrogen chloride	29 parts per million by volume (ppmvd), or 95% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
<u>HYDROGEN CHLORIDE -- MASS BURN WATERWALL COMBUSTORS FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 20, 1989</u>	<u>25 PARTS PER MILLION BY VOLUME (ppmvd), OR 95% REDUCTION BY WEIGHT OR VOLUME MEASURED AS REQUIRED BY SUBDIVISION (7) OF SUBSECTION (c) OF THIS SECTION</u>
Dioxin/furan	30 ng/dscm total mass
Opacity	10%

Table 38-1a. Additional Air Pollutant Emission Limits for MWCs for which Construction Commenced Prior to September 20, 1994.

Air pollutant	Emission limit
Mercury	0.028 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section

- (2) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor for which construction, modification or reconstruction commenced on or after September 20, 1994 shall cause or allow the emission of any air pollutant in excess of the applicable emission limit identified in Tables 38-2 and 38-2a of this subdivision.

Table 38-2. Air Pollutant Emission Limits for MWCs for which Construction, Modification or Reconstruction Commenced on or after September 20, 1994.

Air pollutant	Emission limit
Particulate matter (PM)	24 mg/dscm
Cadmium (Cd)	0.020 mg/dscm
Lead (Pb)	0.20 mg/dscm
Mercury (Hg)	0.080 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Sulfur dioxide (SO ₂)	29 ppmvd, or 80% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
Hydrogen chloride (HCl)	25 ppmvd, or 95% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
Dioxin/furan	13 ng/dscm total mass
Opacity	10%

Table 38-2a. Additional Air Pollutant Emission Limits for MWCs for which Construction, Modification or Reconstruction Commenced on or after September 20, 1994.

Air pollutant	Emission limit
Mercury	0.028 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section

- (3) Continuous compliance with the particulate matter, cadmium, lead, mercury, hydrogen chloride and/or dioxin/furan emission limits shall be determined based on an initial performance test, annual performance test or other appropriate performance test, as determined in writing by the commissioner unless otherwise allowed by this section. Such tests shall be performed as required by subsection (i) of this section.
- (4) Continuous compliance with the sulfur dioxide emission limits contained herein shall be based on a 24-hour daily geometric average of the hourly arithmetic average emission concentrations using CEM system outlet data if compliance is based on an emission concentration, or CEM system inlet and outlet data if compliance is based on a percent reduction.
- (5) Continuous compliance with the opacity emission limit contained herein shall be based on a six-minute arithmetic average.
- (6) For an air pollutant for which this subsection provides for an emission limit measured either as a concentration or as a percentage reduction by weight or volume, the less stringent emission limit shall prevail.
- (7) For an air pollutant for which this subsection provides for an emission limit measured either as a percent reduction by weight or a percent reduction by volume, compliance shall be determined by measuring the concentration of air pollutant at the outlet of the air pollution control device that discharges directly to the stack, subtracting it from the concentration at the inlet of the air pollution control device that receives exhaust gases directly from the combustion chamber, dividing the difference by the concentration of air pollutant at the inlet to the air pollution control device that receives exhaust gases directly from the combustion chamber and then multiplying that result by a factor of one-hundred (100).
- (8) On and after the date specified in subsection (m) of this section, no owner or

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

operator of a municipal waste combustor shall cause or allow the emission of nitrogen oxides (NO_x) in excess of the applicable emission limit identified in [Table 38-3] TABLES 38-3 AND 38-3A of this subdivision.

Table 38-3. Nitrogen Oxides Emission Limits.

Municipal waste combustor technology	Nitrogen oxides emission limit, measured in parts per million volume, corrected to seven percent oxygen, dry basis, or equivalent percentage carbon dioxide as specified in subdivision (12) of this subsection
Mass burn refractory combustor	185
Mass burn waterwall combustor for which construction commenced [prior to September 20, 1994] ON OR BEFORE <u>DECEMBER 20, 1989</u>	205
<u>MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 20, 1989 AND ON OR BEFORE SEPTEMBER 20, 1994</u>	<u>180</u>
Mass burn waterwall combustor for which construction commenced [on or] after September 20, 1994	180 for the one-year period beginning on the date of completion of the initial performance test required by this section, and 150 for that period of time subsequent to the one-year period identified above
Processed-municipal solid waste combustor	220
Reciprocating grate waste tire fired incinerator/boiler	79

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

TABLE 38-3A. ADDITIONAL NITROGEN OXIDES EMISSION LIMITS.

<u>MUNICIPAL WASTE COMBUSTOR TECHNOLOGY</u>	<u>NITROGEN OXIDES EMISSION LIMIT, MEASURED IN PARTS PER MILLION VOLUME, CORRECTED TO SEVEN PERCENT OXYGEN, DRY BASIS, OR EQUIVALENT PERCENTAGE CARBON DIOXIDE AS SPECIFIED IN SUBDIVISION (12) OF THIS SUBSECTION</u>
<u>MASS BURN REFRACTORY COMBUSTOR</u>	<u>177</u>
<u>MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED ON OR BEFORE DECEMBER 31, 1985</u>	<u>200</u>
<u>MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 31, 1985 AND ON OR BEFORE SEPTEMBER 20, 1994</u>	<u>177</u>
<u>MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER SEPTEMBER 20, 1994</u>	<p><u>177</u> FOR THE ONE-YEAR PERIOD BEGINNING ON THE DATE OF COMPLETION OF THE INITIAL PERFORMANCE TEST REQUIRED BY THIS SECTION, AND</p> <p><u>150</u> FOR THAT PERIOD OF TIME SUBSEQUENT TO THE ONE-YEAR PERIOD IDENTIFIED ABOVE</p>
<u>PROCESSED-MUNICIPAL SOLID WASTE COMBUSTOR</u>	<u>146</u>

- (9) Continuous compliance with the nitrogen oxides emission limits contained herein shall be based on a 24-hour daily arithmetic average.
- (10) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor shall cause or allow an emission of carbon monoxide in excess of the applicable emission limit identified in Table 38-4 of this subdivision.

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Table 38-4. Carbon Monoxide Emission Limits.

Municipal waste combustor technology	Carbon monoxide emission limit, measured in parts per million volume at the combustor outlet and corrected to seven percent oxygen, dry basis, or equivalent percentage carbon dioxide as specified in subdivision (c)(12) of this section	Averaging time, in hours, calculated as an arithmetic average
Mass burn refractory combustor	100	4
Mass burn waterwall combustor	100	4
Processed-municipal solid waste combustor for which construction commenced prior to September 20, 1994	200	24
Processed-municipal solid waste combustor for which construction commenced on or after September 20, 1994	150	24
Reciprocating grate waste tire fired incinerator/boiler	180	4

- (11) [Except as provided by this subsection, the] THE emission limits specified in this subsection SHALL apply at all times except during periods of startup, shutdown or malfunction AS SPECIFIED IN THIS SUBDIVISION:
- (A) The duration of each startup, shutdown or malfunction period shall be limited to three hours per occurrence[.] FOR ALL MWC UNITS EXCEPT MASS BURN REFRACTORY UNITS FOR WHICH THE SHUTDOWN PERIOD SHALL BE LIMITED TO EIGHT HOURS PER OCCURRENCE; AND
- (B) [This exemption] THE PROVISIONS OF SUBPARAGRAPH (A) OF THIS SUBDIVISION shall not apply to opacity limits. However, during each period of startup, shutdown or malfunction, the opacity limits shall not be exceeded during more than five (5) 6-minute arithmetic average measurements.

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

- (12) All emission limits in this subsection, except for those identified for opacity, shall be corrected to seven percent oxygen (7% O₂), unless the owner or operator submits information to justify a correction to an equivalent percent carbon dioxide (% CO₂) and receives the commissioner's written approval. If the owner or operator of a MWC seeks to use an equivalent % CO₂, the owner or operator must demonstrate the relationship between O₂ and CO₂ levels as specified in subparagraph (J) of subdivision (4) of subsection (i) of this section and submit a written report to the commissioner summarizing the results of the demonstration. This relationship may be reestablished during any performance test conducted pursuant to subsection (i) of this section.
- (13) During the operation of a MWC unit, 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 subsection (i) of this section, based on a 24-hour daily average.
- (14) Notwithstanding subparagraphs (D), (E) and (F) of subdivision (4) of subsection (i) of this section, for the purpose of submitting compliance certifications or for the purpose of the commissioner establishing whether the owner or operator has violated or is in violation of any emission limit or standard in this subdivision, nothing shall preclude the commissioner's use, including the exclusive use, of any appropriate performance test results, credible evidence or information relevant to demonstrating compliance with the applicable requirements of this section.

Sec. 3.

Subsection (m) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(m) Compliance schedule.

- (1) The owner or operator of a MWC for which construction commenced prior to September 20, 1994 shall achieve final compliance with the applicable emission limits specified in subsections (c) and (f) of this section, with the exception of the emission [limit of Table 38-1a,] LIMITS OF TABLES 38-1A AND 38-3A, no later than December 19, 2000.
- (2) The owner or operator of a MWC for which construction commenced prior to September 20, 1994 shall achieve final compliance with THE emission limit specified in Table 38-1a of subsection (c) of this section no later than the date thirty-six months following the effective date of this section.
- (3) The owner or operator of a MWC for which construction, modification or reconstruction commenced on or after September 20, 1994 [and prior to the effective date of this section] shall achieve final compliance with the applicable emission limits specified in subsections (c) and (f) of this section, with the exception of THE emission [limit of Table 38-2a,] LIMITS OF TABLES 38-2A AND 38-3A, no later than December 19, 2000 OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.

STATE OF CONNECTICUT
REGULATION
OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

- (4) The owner or operator of a MWC for which construction, modification or reconstruction commenced on or after September 20, 1994 [and prior to the effective date of this section] shall achieve final compliance with the emission limit specified in Table 38-2a of subsection (c) of this section no later than the date thirty-six months following the effective date of this section OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.
- ~~[(5) The owner or operator of a MWC for which construction commences on or after the effective date of this section shall achieve compliance with all applicable requirements of this section upon the date of initial operation.]~~
- (5) THE OWNER OR OPERATOR OF ANY MWC SHALL ACHIEVE FINAL COMPLIANCE WITH THE APPLICABLE EMISSION LIMIT SPECIFIED IN TABLE 38-3A OF SUBSECTION (c) OF THIS SECTION NO LATER THAN MAY 1, 2003 OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.
- (6) The owner or operator of a MWC subject to this section who is unable to comply with the requirements of this section within the final compliance dates specified in this subsection shall cease operation. Within one year of the effective date of this section such an owner or operator shall either immediately cease operation or, at the discretion of the commissioner, enter into a legally enforceable cease operation agreement with the commissioner that includes a date no later than December 19, 2000 on which operation will cease.
- (7) On and after the date one year from the effective date of this section, any MWC that has been operated in full compliance with all requirements of this section for nitrogen oxides shall be exempt from the following provisions of the Regulations of Connecticut State Agencies:
- (A) Section 22a-174-22(k) concerning nitrogen oxides emissions testing and monitoring; and
- (B) Section 22a-174-22(l) concerning reporting and record keeping for nitrogen oxides.
- (8) Any MWC that is operating in full compliance with all requirements of this section for nitrogen oxides, as determined by the commissioner, shall be exempt from the May 31, 1999 deadline contained in Section 22a-174-22, subsection (e), subdivision (2) of the Regulations of Connecticut State Agencies as of the effective date of this section.

Statement of Purpose: This amendment establishes nitrogen oxides limits for municipal waste combustors in 2003 necessary to attain ozone reductions consistent with U.S. Environmental Protection Agency requirements, regional policy and state policy; adds nitrogen oxides, sulfur dioxide and hydrogen chloride emission limits conforming to the requirements of 40 C.F.R. Part 60, Subpart Ea; adds a provision for startup, shutdown and malfunction necessary to address a characteristic of mass burn refractory combustor technology; and modifies a definition for consistency with other Department usage.

CERTIFICATION

R-39 REV. 1/77

Be it known that the foregoing:

- Regulations Emergency Regulations

Are:

- Adopted Amended as hereinabove stated Repealed

By the aforesaid agency pursuant to:

- Section 22a-174 of the General Statutes.
- Section _____ of the General Statutes, as amended by Public Act No. _____ of the _____ Public Acts.
- Public Act No. _____ of the Public Acts.

publication in the Connecticut Law Journal on February 22 2000, of the notice of the proposal to:

- Adopt Amend Repeal such regulations

(If applicable): And the holding of a public hearing on 28th day of March 2000

WHEREFORE, the foregoing regulations are hereby:

- Adopted Amended as hereinabove stated Repealed

Effective:

- When filed with the Secretary of State.

(OR)

- The _____ day of _____ 20 ____.

In Witness Whereof:	DATE <u>7/6/00</u>	SIGNED (Head of Board, Agency or Commission) <i>[Signature]</i>	OFFICIAL TITLE, DULY AUTHORIZED <u>Deputy Commissioner</u>
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Approved by the Attorney General as to legal sufficiency in accordance with Sec. 4-169, as amended, C.G.S.:	SIGNED <i>[Signature]</i>	OFFICIAL TITLE, DULY AUTHORIZED <u>Assoc. Atty. General</u>
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- Approved
- Disapproved
- Disapproved in part, (Indicate Section Numbers disapproved only)
- Rejected without prejudice.

By the Legislative Regulation Review Committee in accordance with Sec. 4-170, as amended, of the General Statutes.	DATE	SIGNED (Clerk of the Legislative Regulation Review Committee)
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Two certified copies received and filed, and one such copy forwarded to the Commission on Official Legal Publications in accordance with Section 4-172, as amended, of the General Statutes.

DATE	SIGNED (Secretary of the State.)	BY
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INSTRUCTIONS

1. One copy of all regulations for adoption, amendment or repeal, except emergency regulations, must be presented to the Attorney General for his determination of legal sufficiency. Section 4-169 of the General Statutes
2. Seventeen copies of all regulations for adoption, amendment or repeal, except emergency regulations, must be presented to the standing Legislative Regulation Review Committee for its approval. Section 4-170 of the General Statutes.
3. Each regulation must be in the form intended for publication and must include the appropriate regulation section number and section heading. Section 4-172 of the General Statutes.
4. Indicate by "(NEW)" in heading if new regulation. Amended regulations must contain new language in capital letters and deleted language in brackets. Section 4-170 of the General Statutes.



**STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION.**



AGENCY FISCAL ESTIMATE OF PROPOSED AMENDMENT

AGENCY SUBMITTING REGULATION DEP DATE August 16, 1999

SUBJECT MATTER OF REGULATION Municipal Waste Combustors

REGULATION SECTION NO. 22a-174-38 STATUTORY AUTHORITY § 22a-174
OTHER AGENCIES AFFECTED None

EFFECTIVE DATE USED IN COST ESTIMATE December 31, 1999

ESTIMATE PREPARED BY Merrily A. Gere TELEPHONE 424-3416

**SUMMARY OF STATE COST AND REVENUE IMPACT OF
PROPOSED AMENDMENT**

Agency	<u>DEP</u>	Fund Affected		
		<u>None</u>	1st Year 2000	2nd Year 2001
Number of Positions	0	0	0	0
Personal Services	0	0	0	0
Other Expenses	0	0	0	0
Grants	0	0	0	0
Total State Cost (Savings)	-	-	-	-
Estimated Revenue Gain (Loss)	-	-	-	-
Total Net Cost (Savings)	-	-	-	-

EXPLANATION OF STATE IMPACT OF AMENDMENT:

No direct and quantifiable impact is anticipated. MWC owners and operators will not install additional air pollution control equipment to meet the amendment's proposed emission limits, and thus will not experience any additional costs to meet these requirements. Indirect costs may result from optimization of the operation of existing equipment.

EXPLANATION OF MUNICIPAL IMPACT OF AMENDMENT:

No direct and quantifiable impact is anticipated. See explanation above.

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of air pollutants would not be subject to a BACT review. The Department will continue to maintain oversight of the installation and operation of the air pollution control equipment.

In addition to accepting written comments, the Department of Environmental Protection will also hold a public hearing as described below. Persons appearing at this public hearing are requested to submit a written copy of their statement. However, oral comments will also be made a part of the hearing record and are welcome.

PUBLIC HEARING
Tuesday March 28, 2000 at 2:00 PM
Department of Environmental Protection
Holcombe Conference Room, 5th Floor
79 Elm Street, Hartford, CT

Copies of the amendments described above are available for public inspection during normal business hours and may be obtained from Ellen Walton at the Bureau of Air Management, Planning and Standards Division, 5th Floor, 79 Elm Street, Hartford, CT. Additional copies are also available for review at the Law Reference Desk at the Connecticut State Library, the Torrington Public Library, the New London Public Library and the Bridgeport Public Library. For further information, contact Ellen Walton of the Bureau of Air Management at (860) 424-3027.

The Department of Environmental Protection supports the goals of the Americans with Disabilities Act of 1990. Any individual who needs auxiliary aids for effective communication during this public hearing or in submitting public comments should contact Betty Lirot, ADA Coordinator at (860) 424-3033 or TDD (860) 424-3333 at least one week before the public hearing.

The authority to adopt this amendment is granted by sections 22a-6 and 22a-174 of the Connecticut General Statutes (C.G.S.). This notice is required pursuant to C.G.S. sections 22a-6, 4-168 and 40 Code of Federal Regulations Part 51.102.

Arthur J. Rocque, Jr.
Commissioner

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Notice of Intent to Amend Regulations of Connecticut State Agencies and to Revise the State Plan to Implement the Municipal Waste Combustor Emission Guidelines and New Source Performance Standards

The Commissioner of Environmental Protection hereby gives notice of a public hearing as part of a rulemaking proceeding. The purpose of this proceeding is to amend the Regulations of Connecticut State Agencies (R.C.S.A.) concerning the abatement of air pollution. The public hearing will address proposed revisions to R.C.S.A. section 22a-174-38 concerning municipal waste combustors. This amendment will be submitted to the U.S. Environmental Protection Agency (EPA) for review and approval as a revision to the state plan to implement and enforce federal requirements for municipal waste combustors as required pursuant to the Clean Air Act Amendments of 1990.

All interested persons are invited to comment on the proposed amendment. Comments should be submitted to the Department of Environmental Protection, Bureau of Air Management, Planning and Standards Division, 79 Elm Street, Hartford, Connecticut 06106-5127. All comments should be directed to the attention of Ellen Walton and must be received by 4:30 PM on March 31, 2000. Comments may be submitted by post, facsimile to (860) 424-4063 or by electronic mail to ellen.walton@pa.state.ct.us.

R.C.S.A. section 22a-174-38 – Municipal Waste Combustors: This amendment is proposed to establish nitrogen oxides emission limits for municipal waste combustors in 2003 necessary to attain ozone reductions consistent with EPA requirements, regional policy and state policy; adds nitrogen oxides, sulfur dioxide and hydrogen chloride emission limits conforming to the requirements of 40 Code of Federal Regulations (C.F.R.) Part 60, Subpart Ea; adds a provision for startup, shutdown and malfunction necessary to address a characteristic of mass burn refractory combustor technology; clarifies the determination of the date of final compliance; and modifies a definition for consistency with other Department usage.

Specifically, the proposed changes to R.C.S.A. section 22a-174-38 include the following:

Subsection (a). Definitions

- Subdivision (21) is revised to delete the term "allocation" and replace with "air pollutant reduction" for consistency with Department usage;

Subsection (c). Emission limits

- A sulfur dioxide limit of 29 parts per million by volume or 80% reduction is added to Table 38-1 for combustors constructed after December 20, 1989;
- A hydrogen chloride limit of 25 parts per million by volume or 95% reduction is added to Table 38-1 for combustors constructed after December 20, 1989;
- New Table 38-3A adds new nitrogen oxides emission limits;
- An eight-hour shutdown period is added in subdivision (11) for mass burn refractory units;

Subsection (m). Compliance schedule

- New subdivision (5) is added to require compliance with the new nitrogen oxides emission limits of Table 38-3A as of May 1, 2003; and
- New subdivision (6) is added to clarify the determination of the date of final compliance.

In addition to accepting written comments, the Department of Environmental Protection will also hold the public hearing described below. Any person appearing at the hearing is requested to submit a written copy of his or her statement. However, oral comments will also be made a part of the hearing record and are welcome.

PUBLIC HEARING
Tuesday, March 28, 2000, 3:00 PM
Department of Environmental Protection, 5th Floor, Holcombe Room
79 Elm Street, Hartford, CT

Copies of the amendments described above are available for public inspection during normal business hours and may be obtained from Ellen Walton at the Bureau of Air Management, Planning and Standards Division, 5th Floor, 79 Elm Street, Hartford, CT. Additional copies are also available for review at the Law Reference Desk at the Connecticut State Library, Torrington Public Library, New London Public Library and Bridgeport Public Library. For further information, contact Ellen

Walton of the Bureau of Air Management at (860) 424-3027.

The Department of Environmental Protection supports the goals of the Americans with Disabilities Act of 1990 (ADA). Any individual who needs auxiliary aids for effective communication during this public hearing or in submitting public comments should contact Betty Lirot, ADA Coordinator at (860) 424-3033 or TDD (860) 424-3333 at least one week before the public hearing.

The authority to adopt these amendments is granted by sections 22a-6 and 22a-174 of the Connecticut General Statutes (C.G.S.). This notice is required pursuant to C.G.S. sections 22a-6 and 4-168 and 40 C.F.R. 60.23.

Arthur J. Rocque, Jr.
Commissioner



**STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION**



HEARING REPORT

**Prepared Pursuant to Section 4-168(d)
of the Connecticut General Statutes and
Section 22a-3a-3(d)(5) of the Department of Environmental Protection Rules of Practice**

**Regarding Amendment to the
Regulations of Connecticut State Agencies Section 22a-174 -38:
Municipal Waste Combustors**

Hearing Officer: Merrily A. Gere

Date of Hearing: March 28, 2000

On February 9, 2000, the Commissioner of the Department of Environmental Protection ("Department") signed a notice of intent to amend section 22a-174-38 of the Regulations of Connecticut State Agencies ("R.C.S.A.") concerning municipal waste combustors. Pursuant to such notice, a public hearing was held on March 28, 2000. The public comment period for the proposed amendment closed on March 31, 2000.

I. Overview

This report describes compliance with the requirements of Section 22a-6(h) of the General Statutes; the amendment to the R.C.S.A. as proposed for hearing; the principal reasons in support of the Department's proposed amendment; the principal consideration presented in written comment in opposition to the Department's proposed amendment; all additional comments on the proposed amendment and responses thereto; and the final wording of the proposed amendment. The individual who submitted comment is identified in Attachment 1.

II. Compliance with Section 22a-6(h) of the General Statutes

Section 22a-6(h) of the General Statutes requires the Commissioner of Environmental Protection to distinguish clearly all provisions of a proposed amendment that differ from adopted federal standards and procedures, provided such proposed amendment pertains to activities addressed by adopted federal standards and procedures and such adopted federal standards and procedures apply to persons subject to the provisions of such proposed regulation. The Commissioner must clearly distinguish any such provisions either on the face of such proposed regulation or through supplemental documentation accompanying such proposed regulation at the time of public hearing. In addition, the Commissioner must provide an explanation for all such provisions in the regulation-making record required under Title 4, Chapter 54 of the General Statutes.

In accordance with the requirements of section 22a-6(h) of the general statutes, the

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Hearing Officer made a statement at the public hearing. Such statement, incorporated into the administrative record for this matter, indicated the provision of the proposed amendment that differs from adopted federal standards and procedures. The Environmental Protection Agency imposes air quality standards on "large" municipal waste combustors pursuant to Clean Air Act Sections 111(d) and 129 and 40 Code of Federal Regulations, Part 60, Subpart Eb and 40 CFR Part 62, Subpart FFF ("the federal standards"). The amendment differs from those adopted federal standards in one respect: nitrogen oxide standards to take effect in 2003 are more stringent than the federal standards in order to attain ozone reductions consistent with other EPA requirements, regional policy and state policy.

III. Summary and Text of the Amendment as Proposed

The proposed amendment to R.C.S.A. section 22a-174-38 ("Section 38") establishes nitrogen oxides emission limits for municipal waste combustors ("MWCs") as of May 1, 2003 necessary to attain ozone reductions consistent with EPA requirements, regional policy and state policy; adds nitrogen oxides, sulfur dioxide and hydrogen chloride emission limits conforming to the requirements of 40 Code of Federal Regulations (C.F.R.) Part 60, Subpart Ea; adds a provision for startup, shutdown and malfunction necessary to address a characteristic of mass burn refractory combustor technology; clarifies the determination of the date of final compliance; and modifies a definition for consistency with other Department usage.

Section 1.

Subsection (a) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(a) Definitions. For purposes of this section:

- (1) "Calendar quarter" means a consecutive three-month period (nonoverlapping) beginning on January 1, April 1, July 1 or October 1.
- (2) "Chief operator" means an individual who is in direct charge of the operation of a municipal waste combustor plant and who is responsible for overall on-site supervision, technical direction, management and performance of the plant.
- (3) "Cofired combustor" means an emissions unit that combusts municipal solid waste with nonmunicipal solid waste fuel (e.g., coal, industrial process waste) and that is subject to a federally enforceable permit limiting the unit to combusting a fuel feed stream, thirty percent (30%) or less of the weight of which is composed, in the aggregate, of municipal solid waste as measured on a calendar quarter basis.
- (4) "Continuous burning" means the continuous, semi-continuous or batch feeding of municipal solid waste for purposes of waste disposal, energy

production or providing heat to the combustion system in preparation for waste disposal or energy production. Continuous burning does not include the use of municipal solid waste solely to provide thermal protection of the grate or hearth during the startup period when municipal solid waste is not being fed to the grate.

(5) "Continuous emission monitoring system" or "CEM system" means a monitoring system for continuously measuring the emissions of any pollutant from a MWC unit.

(6) "Dioxin/furan" means tetra-chlorinated dibenzo-p-dioxins and dibenzofurans through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.

(7) "Dscf/mmBTU" means dry cubic feet at standard conditions per million British thermal unit.

(8) "F-factor," "fc" or "fd" means a ratio of combustion gas volumes to heat inputs either unit-specific or as defined in 40 CFR Part 60, Appendix A, Method 19.

(9) "Four-hour block average" or "4-hour block average" means the average of all hourly emission concentrations when a municipal waste combustor is operating and combusting municipal solid waste measured over 4-hour periods from midnight to 4 a.m., 4 a.m. to 8 a.m., 8 a.m. to noon, noon to 4 p.m., 4 p.m. to 8 p.m., and 8 p.m. to midnight.

(10) "Historical actual twenty-four hour daily NO_x average" means one or more calendar years of CEM data from no earlier than 1994 or another period of data approved by the commissioner as representative of NO_x emissions.

(11) "Malfunction" means any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment or a process to operate in a normal or usual manner. A failure that is caused in part by poor maintenance or negligent or careless operation shall not be considered a malfunction.

(12) "Mass burn waterwall combustor" means a field-erected combustor that combusts primarily unprocessed municipal solid waste (i.e., municipal solid waste that is not processed-municipal solid waste) in a waterwall furnace.

(13) "Maximum demonstrated municipal waste combustor unit load" means the highest 4-hour arithmetic average municipal waste combustor unit load achieved during four consecutive hours of operation that corresponds to a test run during the most recent dioxin/furan emissions performance test that demonstrates compliance with the applicable limit for dioxin/furan specified in subsection (c) of this section.

(14) "Maximum demonstrated particulate matter control device temperature" means the highest 4-hour arithmetic average flue gas temperature measured at the particulate matter control device inlet during four consecutive hours of operation that corresponds to a test run during the most recent dioxin/furan emissions performance test that demonstrates compliance with the applicable limit for dioxin/furan specified in subsection (c) of this section.

(15) "mg/dscm" means milligrams of air pollutant per dry standard cubic meter.

(16) "Municipal solid waste" means municipal solid waste as defined in section 22a-207 of the general statutes.

(17) "Municipal waste combustor," "municipal waste combustor unit" or "MWC" means any part or activity of any stationary source which part or activity emits or has the potential to emit any regulated air pollutant or any hazardous air pollutant, exclusive of associated air pollution control equipment, that combusts municipal solid waste, inclusive of those emissions units combusting a single-item waste stream of tires. Combustors that combust landfill gases collected by landfill gas collection systems are not municipal waste combustors.

(18) "Municipal waste combustor plant" or "plant" means any premises at which one or more municipal waste combustor units are situated.

(19) "Municipal waste combustor unit load" means the rate at which steam is produced at a municipal waste combustor (measured in lbs/hr or kg/hr).

(20) "ng/dscm" means nanograms of air pollutant per dry standard cubic meter.

(21) "NO_x Emissions Reductions Credit" or "ERC" means an [allocation] AIR POLLUTANT REDUCTION created in the nitrogen oxides emissions trading program described by this section.

(22) "NO_x Trading Baseline" means that value, determined as specified in subsection (d) of this section, used to calculate the quantity of ERCs created or used by a MWC unit.

(23) "Ozone season" means the period of any calendar year beginning on May 1 and ending on September 30.

(24) "Premises" means the grouping of all stationary sources at any one location and owned by or under the control of the same person or persons.

(25) "Processed-municipal solid waste" means a type of municipal solid waste

produced by sorting municipal solid waste by size and/or altering the size of municipal solid waste through mechanical means.

(26) "Processed-municipal solid waste combustor" means a steam-generating MWC that burns processed-municipal solid waste in a semisuspension firing mode using air-fed distributors.

(27) "Reciprocating grate waste tire fired incinerator/boiler" means a combustor that burns tires as its principal fuel.

(28) "Scf/mmBTU" means cubic feet at standard conditions per million British thermal unit.

(29) "Shift operator" means an individual who is in direct charge of the operation of a shift of a municipal waste combustor plant and who is responsible for on-site supervision, technical direction, management and overall performance of the plant during a shift.

(30) "Shutdown period" means the period of time commencing when a municipal waste combustor operator discontinues the feed of municipal solid waste to the combustor in order to cease operation.

(31) "Six-minute arithmetic average" or "6-minute arithmetic average" means the arithmetic mean calculated from thirty-six (36) or more data points equally spaced over each 6-minute period.

(32) "Standard conditions" means a temperature of 20 degrees centigrade and a pressure of 101.3 kilopascals.

(33) "Startup period" means that period of time commencing when a municipal waste combustor begins the continuous burning of municipal solid waste, exclusive of any warmup period when a municipal waste combustor is combusting fossil fuel or other nonmunicipal solid waste fuel, and no municipal solid waste is being fed to the combustor.

(34) "Total mass" or "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 subdivision (4) of subsection (i) of this section.

(35) "Twenty-four hour daily average" means the arithmetic mean of all hourly emission concentrations as required by this section when a unit is operating and combusting municipal solid waste measured over a 24-hour period between midnight and the following midnight.

(36) "Twenty-four hour geometric average" means the geometric mean of hourly emission concentrations regulated by this section when a unit is operating and combusting municipal solid waste measured over a 24-hour period between midnight and the following midnight. The geometric mean shall be calculated using the following equation:

$$E_{ga} = e^{\left[\frac{1}{n} \sum_{j=1}^n [\ln(E_{hj})] \right]}$$

where:

E_{ga} = daily geometric average pollutant concentration, corrected to 7% O₂ or equivalent percent CO₂;

E_{hj} = hourly arithmetic average pollutant concentration, corrected to 7% O₂ or equivalent percent CO₂;

n = total number of hourly averages for which pollutant concentrations are available within the 24 hour midnight to midnight daily period;

\ln = natural log of the indicated value; and

e = the natural logarithmic base (2.718) raised to the value enclosed by the brackets.

(37) "Waterwall furnace" means a combustion unit having energy (heat) recovery in the furnace (i.e., radiant heat transfer section) of the combustor.

Sec. 2.

Subsection (c) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(c) Emission limits.

(1) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor for which construction commenced prior to September 20, 1994 shall cause or allow the emission of any air pollutant in excess of the applicable emission limit identified in Tables 38-1 and 38-1a of this subdivision.

Table 38-1. Air Pollutant Emission Limits for MWCs for which Construction Commenced Prior to September 20, 1994.

Air pollutant	Emission limit
Particulate matter	27 mg/dscm
Cadmium	0.040 mg/dscm
Lead	0.44 mg/dscm
Mercury	0.080 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section
Sulfur dioxide -- Reciprocating grate waste tire fired incinerator/boilers	51 parts per million by volume (ppmvd), or 75% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
<u>SULFUR DIOXIDE --</u> <u>MASS BURN</u> <u>WATERWALL</u> <u>COMBUSTORS FOR</u> <u>WHICH</u> <u>CONSTRUCTION</u> <u>COMMENCED AFTER</u> <u>DECEMBER 20, 1989</u>	<u>29 PARTS PER MILLION BY VOLUME</u> <u>(ppmvd), OR 80% REDUCTION BY WEIGHT</u> <u>OR VOLUME MEASURED AS REQUIRED</u> <u>BY SUBDIVISION (7) OF SUBSECTION (c)</u> <u>OF THIS SECTION</u>
Sulfur dioxide -- All other MWCs	29 parts per million by volume (ppmvd), or 75% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
Hydrogen chloride	29 parts per million by volume (ppmvd), or 95% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
<u>HYDROGEN</u> <u>CHLORIDE --</u> <u>MASS BURN</u> <u>WATERWALL</u> <u>COMBUSTORS FOR</u> <u>WHICH</u> <u>CONSTRUCTION</u> <u>COMMENCED AFTER</u> <u>DECEMBER 20, 1989</u>	<u>25 PARTS PER MILLION BY VOLUME</u> <u>(ppmvd), OR 95% REDUCTION BY WEIGHT</u> <u>OR VOLUME MEASURED AS REQUIRED</u> <u>BY SUBDIVISION (7) OF SUBSECTION (c)</u> <u>OF THIS SECTION</u>
Dioxin/furan	30 ng/dscm total mass
Opacity	10%

Table 38-1a. Additional Air Pollutant Emission Limits for MWCs for which Construction Commenced Prior to September 20, 1994.

Air pollutant	Emission limit
Mercury	0.028 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section

(2) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor for which construction, modification or reconstruction commenced on or after September 20, 1994 shall cause or allow the emission of any air pollutant in excess of the applicable emission limit identified in Tables 38-2 and 38-2a of this subdivision.

Table 38-2. Air Pollutant Emission Limits for MWCs for which Construction, Modification or Reconstruction Commenced on or after September 20, 1994.

Air pollutant	Emission limit
Particulate matter (PM)	24 mg/dscm
Cadmium (Cd)	0.020 mg/dscm
Lead (Pb)	0.20 mg/dscm
Mercury (Hg)	0.080 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section
Sulfur dioxide (SO ₂)	29 ppmvd, or 80% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
Hydrogen chloride (HCl)	25 ppmvd, or 95% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
Dioxin/furan	13 ng/dscm total mass
Opacity	10%

Table 38-2a. Additional Air Pollutant Emission Limits for MWCs for which Construction, Modification or Reconstruction Commenced on or after September 20, 1994.

Air pollutant	Emission limit
Mercury	0.028 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section

(3) Continuous compliance with the particulate matter, cadmium, lead, mercury, hydrogen chloride and/or dioxin/furan emission limits shall be determined based on an initial performance test, annual performance test or other

appropriate performance test, as determined in writing by the commissioner unless otherwise allowed by this section. Such tests shall be performed as required by subsection (i) of this section.

(4) Continuous compliance with the sulfur dioxide emission limits contained herein shall be based on a 24-hour daily geometric average of the hourly arithmetic average emission concentrations using CEM system outlet data if compliance is based on an emission concentration, or CEM system inlet and outlet data if compliance is based on a percent reduction.

(5) Continuous compliance with the opacity emission limit contained herein shall be based on a six-minute arithmetic average.

(6) For an air pollutant for which this subsection provides for an emission limit measured either as a concentration or as a percentage reduction by weight or volume, the less stringent emission limit shall prevail.

(7) For an air pollutant for which this subsection provides for an emission limit measured either as a percent reduction by weight or a percent reduction by volume, compliance shall be determined by measuring the concentration of air pollutant at the outlet of the air pollution control device that discharges directly to the stack, subtracting it from the concentration at the inlet of the air pollution control device that receives exhaust gases directly from the combustion chamber, dividing the difference by the concentration of air pollutant at the inlet to the air pollution control device that receives exhaust gases directly from the combustion chamber and then multiplying that result by a factor of one-hundred (100).

(8) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor shall cause or allow the emission of nitrogen oxides (NOx) in excess of the applicable emission limit identified in [Table 38-3] TABLES 38-3 AND 38-3A of this subdivision.

Table 38-3. Nitrogen Oxides Emission Limits.

Municipal waste combustor technology	Nitrogen oxides emission limit, measured in parts per million volume, corrected to seven percent oxygen, dry basis, or equivalent percentage carbon dioxide as specified in subdivision (12) of this subsection
Mass burn refractory combustor	185
Mass burn waterwall combustor for which construction commenced [prior to September 20, 1994] ON OR BEFORE DECEMBER 20, 1989	205
MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 20, 1989 AND ON OR BEFORE SEPTEMBER 20, 1994	180
Mass burn waterwall combustor for which construction commenced [on or] after September 20, 1994	180 for the one-year period beginning on the date of completion of the initial performance test required by this section, and 150 for that period of time subsequent to the one-year period identified above
Processed-municipal solid waste combustor	220
Reciprocating grate waste tire fired incinerator/boiler	79

TABLE 38-3A. ADDITIONAL NITROGEN OXIDES EMISSION LIMITS.

MUNICIPAL WASTE COMBUSTOR TECHNOLOGY	NITROGEN OXIDES EMISSION LIMIT, MEASURED IN PARTS PER MILLION VOLUME, CORRECTED TO SEVEN PERCENT OXYGEN, DRY BASIS, OR EQUIVALENT PERCENTAGE CARBON DIOXIDE AS SPECIFIED IN SUBDIVISION (12) OF THIS SUBSECTION
MASS BURN REFRACTORY COMBUSTOR	177
MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED ON OR BEFORE DECEMBER 31, 1985	200
MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 31, 1985 AND ON OR BEFORE SEPTEMBER 20, 1994	177
MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER SEPTEMBER 20, 1994	177 FOR THE ONE-YEAR PERIOD BEGINNING ON THE DATE OF COMPLETION OF THE INITIAL PERFORMANCE TEST REQUIRED BY THIS SECTION, AND 150 FOR THAT PERIOD OF TIME SUBSEQUENT TO THE ONE-YEAR PERIOD IDENTIFIED ABOVE
PROCESSED-MUNICIPAL SOLID WASTE COMBUSTOR	146

(9) Continuous compliance with the nitrogen oxides emission limits contained herein shall be based on a 24-hour daily arithmetic average.

(10) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor shall cause or allow an emission of carbon monoxide in excess of the applicable emission limit identified in Table 38-4 of this subdivision.

Table 38-4. Carbon Monoxide Emission Limits.

Municipal waste combustor technology	Carbon monoxide emission limit, measured in parts per million volume at the combustor outlet and corrected to seven percent oxygen, dry basis, or equivalent percentage carbon dioxide as specified in subdivision (c)(12) of this section	Averaging time, in hours, calculated as an arithmetic average
Mass burn refractory combustor	100	4
Mass burn waterwall combustor	100	4
Processed-municipal solid waste combustor for which construction commenced prior to September 20, 1994	200	24
Processed-municipal solid waste combustor for which construction commenced on or after September 20, 1994	150	24
Reciprocating grate waste tire fired incinerator/boiler	180	4

- (11) [Except as provided by this subsection, the] THE emission limits specified in this subsection SHALL apply at all times except during periods of startup, shutdown or malfunction AS SPECIFIED IN THIS SUBDIVISION:

(A) The duration of each startup, shutdown or malfunction period shall be limited to three hours per occurrence[.] FOR ALL MWC UNITS EXCEPT MASS BURN REFRACTORY UNITS FOR WHICH THE SHUTDOWN PERIOD SHALL BE LIMITED TO EIGHT HOURS PER OCCURRENCE; AND

(B) [This exemption] THE PROVISIONS OF SUBPARAGRAPH (A) OF THIS SUBDIVISION shall not apply to opacity limits. However, during each period of startup, shutdown or malfunction, the opacity limits shall not be exceeded during more than five (5) 6-minute arithmetic average measurements.

(12) All emission limits in this subsection, except for those identified for opacity, shall be corrected to seven percent oxygen (7% O₂), unless the owner or operator submits information to justify a correction to an equivalent percent carbon dioxide (% CO₂) and receives the commissioner's written approval. If the owner or operator of a MWC seeks to use an equivalent % CO₂, the owner or operator must demonstrate the relationship between O₂ and CO₂ levels as specified in subparagraph (J) of subdivision (4) of subsection (i) of this section and submit a written report to the commissioner summarizing the results of the demonstration. This relationship may be reestablished during any performance test conducted pursuant to subsection (i) of this section.

(13) During the operation of a MWC unit, 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 subsection (i) of this section, based on a 24-hour daily average.

(14) Notwithstanding subparagraphs (D), (E) and (F) of subdivision (4) of subsection (i) of this section, for the purpose of submitting compliance certifications or for the purpose of the commissioner establishing whether the owner or operator has violated or is in violation of any emission limit or standard in this subdivision, nothing shall preclude the commissioner's use, including the exclusive use, of any appropriate performance test results, credible evidence or information relevant to demonstrating compliance with the applicable requirements of this section.

Sec. 3.

Subsection (m) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(m) Compliance schedule.

(1) The owner or operator of a MWC for which construction commenced prior to September 20, 1994 shall achieve final compliance with the applicable emission limits specified in subsections (c) and (f) of this section, with the exception of the emission [limit of Table 38-1a,] LIMITS OF TABLES 38-1A AND 38-3A, no later than December 19, 2000.

(2) The owner or operator of a MWC for which construction commenced prior to September 20, 1994 shall achieve final compliance with THE emission limit specified in Table 38-1a of subsection (c) of this section no later than the date thirty-six months following the effective date of this section.

(3) The owner or operator of a MWC for which construction, modification or

reconstruction commenced on or after September 20, 1994 [and prior to the effective date of this section] shall achieve final compliance with the applicable emission limits specified in subsections (c) and (f) of this section, with the exception of THE emission [limit of Table 38-2a,] LIMITS OF TABLES 38-2A AND 38-3A, no later than December 19, 2000 OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.

(4) The owner or operator of a MWC for which construction, modification or reconstruction commenced on or after September 20, 1994 [and prior to the effective date of this section] shall achieve final compliance with the emission limit specified in Table 38-2a of subsection (c) of this section no later than the date thirty-six months following the effective date of this section OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.

[(5) The owner or operator of a MWC for which construction commences on or after the effective date of this section shall achieve compliance with all applicable requirements of this section upon the date of initial operation.]

(5) THE OWNER OR OPERATOR OF ANY MWC SHALL ACHIEVE FINAL COMPLIANCE WITH THE APPLICABLE EMISSION LIMIT SPECIFIED IN TABLE 38-3A OF SUBSECTION (c) OF THIS SECTION NO LATER THAN MAY 1, 2003 OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.

(6) THE DATE OF FINAL COMPLIANCE SHALL BE THE EARLIER OF

(A) THE DAY UPON WHICH THE OWNER OR OPERATOR HAS INCORPORATED ANY NECESSARY PROCESS CHANGES OR COMPLETED RETROFIT CONSTRUCTION AND CONNECTED AIR POLLUTION CONTROL EQUIPMENT WITH A UNIT SO THAT UNIT MAY OPERATE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION; OR

(B) DECEMBER 19, 2000.

[(6)](7) The owner or operator of a MWC subject to this section who is unable to comply with the requirements of this section within the final compliance dates specified in this subsection shall cease operation. Within one year of the effective date of this section such an owner or operator shall either immediately cease operation or, at the discretion of the commissioner, enter into a legally enforceable cease operation agreement with the commissioner that includes a date no later than December 19, 2000 on which operation will cease.

[(7)](8) On and after the date one year from the effective date of this

section, any MWC that has been operated in full compliance with all requirements of this section for nitrogen oxides shall be exempt from the following provisions of the Regulations of Connecticut State Agencies:

(A) Section 22a-174-22(k) concerning nitrogen oxides emissions testing and monitoring; and

(B) Section 22a-174-22(l) concerning reporting and record keeping for nitrogen oxides.

~~[(8)]~~(9) Any MWC that is operating in full compliance with all requirements of this section for nitrogen oxides, as determined by the commissioner, shall be exempt from the May 31, 1999 deadline contained in Section 22a-174-22, subsection (e), subdivision (2) of the Regulations of Connecticut State Agencies as of the effective date of this section.

Statement of Purpose: This amendment establishes nitrogen oxides limits for municipal waste combustors in 2003 necessary to attain ozone reductions consistent with U.S. EnvironmentProtection Agency requirements, regional policy and state policy; adds nitrogen oxides, sulfur dioxide and hydrogen chloride emission limits conforming to the requirements of 40 C.F.R. Part 60, Subpart Ea; adds a provision for startup, shutdown and malfunction necessary to address a characteristic of mass burn refractory combustor technology; clarifies the determination of the date of final compliance; and modifies a definition for consistency with other Department usage.

IV. Principal Reasons in Support of the Proposed Amendment

The proposed amendment to Section 38 serves two principal purposes: establishes nitrogen oxides emission standards for MWCs in 2003 necessary to attain ozone reductions consistent with EPA requirements, regional policy and state policy; and makes technical corrections consistent with EPA requirements. The amendment also addresses the specific circumstances of a Connecticut MWC through inclusion of a revision specific to one combustor technology type.

V. Principal Considerations in Opposition to the Proposed Amendment

A single comment was submitted in opposition to one revision. The commenter, David S. Brown of the Connecticut Resources Recovery Authority, stated that the proposed addition of subdivision (6) to subsection (m) may require a facility to conduct an extra round of compliance testing if that facility completes retrofits to air pollution control equipment early enough in the year 2000. Such result is a disincentive for operators to so schedule retrofitting of air pollution control equipment. The commenter added that this proposed revision to subsection (m) also could inhibit a smooth transition regarding trading of emission reduction credits from trading under the current Trading Orders and Agreements to trading under the provisions of Section 38.

The Department added subdivision (6) to subsection (m) to clarify the meaning of final compliance date. However, in order to avoid the potential creation of a disincentive for early air pollution control retrofit completion and potential interference with the transition from trading under current Trading Orders and Agreements to trading under Section 38, I recommend the Department not incorporate subdivision (6) to subsection (m) in the final wording of Section 38. I also recommend that December 19, 2000 remain as the final compliance date by which all MWC owners and operators are required to have completed any air pollution control retrofits necessary to achieve compliance with the emission limits set forth in Section 38.

VI. Summary of Additional Comments

A single commenter submitted comments on the proposed amendment. In addition to the comment discussed in Section V, the commenter noted the following:

Additional Comments from David S. Brown, Connecticut Resources Recovery Authority

Comment 1: Connecticut Resources Recovery Authority ("CRRA") supports the proposed revision to subsection (c), subdivision (11), subparagraph (A), which recognizes the unique operating characteristics of mass burn refractory units by allowing a shutdown period of eight hours per occurrence.

Comment 2: CRRA notes that the proposed 2003 nitrogen oxide emission limits reflect correspondence and cooperative discussions between CRRA and the Department, and CRRA agrees with this change.

Response (to Comments 1 and 2): I recommend the Department make no change in the final wording of Section 38.

VII. Final Text of Proposed Amendment

Section 1.

Subsection (a) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

- (a) **Definitions.** For purposes of this section:
- (1) "Calendar quarter" means a consecutive three-month period (nonoverlapping) beginning on January 1, April 1, July 1 or October 1.
 - (2) "Chief operator" means an individual who is in direct charge of the operation of a municipal waste combustor plant and who is responsible for overall on-site supervision, technical direction, management and performance of the plant.
 - (3) "Cofired combustor" means an emissions unit that combusts municipal solid

waste with nonmunicipal solid waste fuel (e.g., coal, industrial process waste) and that is subject to a federally enforceable permit limiting the unit to combusting a fuel feed stream, thirty percent (30%) or less of the weight of which is composed, in the aggregate, of municipal solid waste as measured on a calendar quarter basis.

- (4) "Continuous burning" means the continuous, semi-continuous or batch feeding of municipal solid waste for purposes of waste disposal, energy production or providing heat to the combustion system in preparation for waste disposal or energy production. Continuous burning does not include the use of municipal solid waste solely to provide thermal protection of the grate or hearth during the startup period when municipal solid waste is not being fed to the grate.
- (5) "Continuous emission monitoring system" or "CEM system" means a monitoring system for continuously measuring the emissions of any pollutant from a MWC unit.
- (6) "Dioxin/furan" means tetra-chlorinated dibenzo-p-dioxins and dibenzofurans through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.
- (7) "Dscf/mmBTU" means dry cubic feet at standard conditions per million British thermal unit.
- (8) "F-factor," "fc" or "fd" means a ratio of combustion gas volumes to heat inputs either unit-specific or as defined in 40 CFR Part 60, Appendix A, Method 19.
- (9) "Four-hour block average" or "4-hour block average" means the average of all hourly emission concentrations when a municipal waste combustor is operating and combusting municipal solid waste measured over 4-hour periods from midnight to 4 a.m., 4 a.m. to 8 a.m., 8 a.m. to noon, noon to 4 p.m., 4 p.m. to 8 p.m., and 8 p.m. to midnight.
- (10) "Historical actual twenty-four hour daily NOx average" means one or more calendar years of CEM data from no earlier than 1994 or another period of data approved by the commissioner as representative of NOx emissions.
- (11) "Malfunction" means any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment or a process to operate in a normal or usual manner. A failure that is caused in part by poor maintenance or negligent or careless operation shall not be considered a malfunction.
- (12) "Mass burn waterwall combustor" means a field-erected combustor that combusts primarily unprocessed municipal solid waste (i.e., municipal solid waste that is not processed-municipal solid waste) in a waterwall furnace.

- (13) "Maximum demonstrated municipal waste combustor unit load" means the highest 4-hour arithmetic average municipal waste combustor unit load achieved during four consecutive hours of operation that corresponds to a test run during the most recent dioxin/furan emissions performance test that demonstrates compliance with the applicable limit for dioxin/furan specified in subsection (c) of this section.
- (14) "Maximum demonstrated particulate matter control device temperature" means the highest 4-hour arithmetic average flue gas temperature measured at the particulate matter control device inlet during four consecutive hours of operation that corresponds to a test run during the most recent dioxin/furan emissions performance test that demonstrates compliance with the applicable limit for dioxin/furan specified in subsection (c) of this section.
- (15) "mg/dscm" means milligrams of air pollutant per dry standard cubic meter.
- (16) "Municipal solid waste" means municipal solid waste as defined in section 22a-207 of the general statutes.
- (17) "Municipal waste combustor," "municipal waste combustor unit" or "MWC" means any part or activity of any stationary source which part or activity emits or has the potential to emit any regulated air pollutant or any hazardous air pollutant, exclusive of associated air pollution control equipment, that combusts municipal solid waste, inclusive of those emissions units combusting a single-item waste stream of tires. Combustors that combust landfill gases collected by landfill gas collection systems are not municipal waste combustors.
- (18) "Municipal waste combustor plant" or "plant" means any premises at which one or more municipal waste combustor units are situated.
- (19) "Municipal waste combustor unit load" means the rate at which steam is produced at a municipal waste combustor (measured in lbs/hr or kg/hr).
- (20) "ng/dscm" means nanograms of air pollutant per dry standard cubic meter.
- (21) "NO_x Emissions Reductions Credit" or "ERC" means an [allocation] AIR POLLUTANT REDUCTION created in the nitrogen oxides emissions trading program described by this section.
- (22) "NO_x Trading Baseline" means that value, determined as specified in subsection (d) of this section, used to calculate the quantity of ERCs created or used by a MWC unit.
- (23) "Ozone season" means the period of any calendar year beginning on May 1 and ending on September 30.

- (24) "Premises" means the grouping of all stationary sources at any one location and owned by or under the control of the same person or persons.
- (25) "Processed-municipal solid waste" means a type of municipal solid waste produced by sorting municipal solid waste by size and/or altering the size of municipal solid waste through mechanical means.
- (26) "Processed-municipal solid waste combustor" means a steam-generating MWC that burns processed-municipal solid waste in a semisuspension firing mode using air-fed distributors.
- (27) "Reciprocating grate waste tire fired incinerator/boiler" means a combustor that burns tires as its principal fuel.
- (28) "Scf/mmBTU" means cubic feet at standard conditions per million British thermal unit.
- (29) "Shift operator" means an individual who is in direct charge of the operation of a shift of a municipal waste combustor plant and who is responsible for on-site supervision, technical direction, management and overall performance of the plant during a shift.
- (30) "Shutdown period" means the period of time commencing when a municipal waste combustor operator discontinues the feed of municipal solid waste to the combustor in order to cease operation.
- (31) "Six-minute arithmetic average" or "6-minute arithmetic average" means the arithmetic mean calculated from thirty-six (36) or more data points equally spaced over each 6-minute period.
- (32) "Standard conditions" means a temperature of 20 degrees centigrade and a pressure of 101.3 kilopascals.
- (33) "Startup period" means that period of time commencing when a municipal waste combustor begins the continuous burning of municipal solid waste, exclusive of any warmup period when a municipal waste combustor is combusting fossil fuel or other nonmunicipal solid waste fuel, and no municipal solid waste is being fed to the combustor.
- (34) "Total mass" or "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 subdivision (4) of subsection (i) of this section.

- (35) "Twenty-four hour daily average" means the arithmetic mean of all hourly emission concentrations as required by this section when a unit is operating and combusting municipal solid waste measured over a 24-hour period between midnight and the following midnight.
- (36) "Twenty-four hour geometric average" means the geometric mean of hourly emission concentrations regulated by this section when a unit is operating and combusting municipal solid waste measured over a 24-hour period between midnight and the following midnight. The geometric mean shall be calculated using the following equation:

$$E_{ga} = e^{\left[\frac{1}{n} \sum_{j=1}^n [\ln(E_{hj})] \right]}$$

where:

E_{ga} = daily geometric average pollutant concentration, corrected to 7% O₂ or equivalent percent CO₂;

E_{hj} = hourly arithmetic average pollutant concentration, corrected to 7% O₂ or equivalent percent CO₂;

n = total number of hourly averages for which pollutant concentrations are available within the 24 hour midnight to midnight daily period;

\ln = natural log of the indicated value; and

e = the natural logarithmic base (2.718) raised to the value enclosed by the brackets.

- (37) "Waterwall furnace" means a combustion unit having energy (heat) recovery in the furnace (i.e., radiant heat transfer section) of the combustor.

Sec. 2.

Subsection (c) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(c) **Emission limits.**

- (1) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor for which construction commenced prior to September 20, 1994 shall cause or allow the emission of any air pollutant in excess of the applicable emission limit identified in Tables 38-1 and 38-1a of this subdivision.

Table 38-1. Air Pollutant Emission Limits for MWCs for which Construction Commenced Prior to September 20, 1994.

Air pollutant	Emission limit
Particulate matter	27 mg/dscm
Cadmium	0.040 mg/dscm
Lead	0.44 mg/dscm
Mercury	0.080 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section
Sulfur dioxide -- Reciprocating grate waste tire fired incinerator/boilers	51 parts per million by volume (ppmvd), or 75% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
SULFUR DIOXIDE -- MASS BURN WATERWALL COMBUSTORS FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 20, 1989	29 PARTS PER MILLION BY VOLUME (ppmvd), OR 80% REDUCTION BY WEIGHT OR VOLUME MEASURED AS REQUIRED BY SUBDIVISION (7) OF SUBSECTION (c) OF THIS SECTION
Sulfur dioxide -- All other MWCs	29 parts per million by volume (ppmvd), or 75% reduction by weight or volume measured as required by subdivision (7) of subsection (c)

	of this section
Hydrogen chloride	29 parts per million by volume (ppmvd), or 95% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
<u>HYDROGEN CHLORIDE -- MASS BURN WATERWALL COMBUSTORS FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 20, 1989</u>	<u>25 PARTS PER MILLION BY VOLUME (ppmvd), OR 95% REDUCTION BY WEIGHT OR VOLUME MEASURED AS REQUIRED BY SUBDIVISION (7) OF SUBSECTION (c) OF THIS SECTION</u>
Dioxin/furan	30 ng/dscm total mass
Opacity	10%

Table 38-1a. Additional Air Pollutant Emission Limits for MWCs for which Construction Commenced Prior to September 20, 1994.

Air pollutant	Emission limit
Mercury	0.028 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section

- (2) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor for which construction, modification or reconstruction commenced on or after September 20, 1994 shall cause or allow the emission of any air pollutant in excess of the applicable emission limit identified in Tables 38-2 and 38-2a of this subdivision.

Table 38-2. Air Pollutant Emission Limits for MWCs for which Construction, Modification or Reconstruction Commenced on or after September 20, 1994.

Air pollutant	Emission limit
Particulate matter (PM)	24 mg/dscm
Cadmium (Cd)	0.020 mg/dscm
Lead (Pb)	0.20 mg/dscm
Mercury (Hg)	0.080 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section
Sulfur dioxide (SO ₂)	29 ppmvd, or 80% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
Hydrogen chloride (HCl)	25 ppmvd, or 95% reduction by weight or volume measured as required by subdivision (7) of subsection (c) of this section
Dioxin/furan	13 ng/dscm total mass
Opacity	10%

Table 38-2a. Additional Air Pollutant Emission Limits for MWCs for which Construction, Modification or Reconstruction Commenced on or after September 20, 1994.

Air pollutant	Emission limit
Mercury	0.028 mg/dscm, or 85% reduction by weight measured as required by subdivision (7) of subsection (c) of this section

- (3) Continuous compliance with the particulate matter, cadmium, lead, mercury, hydrogen chloride and/or dioxin/furan emission limits shall be determined based on an initial performance test, annual performance test or other appropriate performance test, as determined in writing by the commissioner unless otherwise allowed by this section. Such tests shall be performed as required by subsection (i) of this section.
- (4) Continuous compliance with the sulfur dioxide emission limits contained herein shall be based on a 24-hour daily geometric average of the hourly arithmetic average emission concentrations using CEM system outlet data if compliance is based on an emission concentration, or CEM system inlet and outlet data if

compliance is based on a percent reduction.

- (5) Continuous compliance with the opacity emission limit contained herein shall be based on a six-minute arithmetic average.
- (6) For an air pollutant for which this subsection provides for an emission limit measured either as a concentration or as a percentage reduction by weight or volume, the less stringent emission limit shall prevail.
- (7) For an air pollutant for which this subsection provides for an emission limit measured either as a percent reduction by weight or a percent reduction by volume, compliance shall be determined by measuring the concentration of air pollutant at the outlet of the air pollution control device that discharges directly to the stack, subtracting it from the concentration at the inlet of the air pollution control device that receives exhaust gases directly from the combustion chamber, dividing the difference by the concentration of air pollutant at the inlet to the air pollution control device that receives exhaust gases directly from the combustion chamber and then multiplying that result by a factor of one-hundred (100).
- (8) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor shall cause or allow the emission of nitrogen oxides (NO_x) in excess of the applicable emission limit identified in [Table 38-3] TABLES 38-3 AND 38-3A of this subdivision.

Table 38-3. Nitrogen Oxides Emission Limits.

Municipal waste combustor technology	Nitrogen oxides emission limit, measured in parts per million volume, corrected to seven percent oxygen, dry basis, or equivalent percentage carbon dioxide as specified in subdivision (12) of this subsection
Mass burn refractory combustor	185
Mass burn waterwall combustor for which construction commenced [prior to September 20, 1994] ON OR BEFORE <u>DECEMBER 20, 1989</u>	205
<u>MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER DECEMBER 20, 1989 AND ON OR BEFORE SEPTEMBER 20, 1994</u>	<u>180</u>
Mass burn waterwall combustor for which construction commenced [on or] after September 20, 1994	180 for the one-year period beginning on the date of completion of the initial performance test required by this section, and 150 for that period of time subsequent to the one-year period identified above
Processed-municipal solid waste combustor	220
Reciprocating grate waste tire fired incinerator/boiler	79

TABLE 38-3A. ADDITIONAL NITROGEN OXIDES EMISSION LIMITS.

MUNICIPAL WASTE COMBUSTOR TECHNOLOGY	NITROGEN OXIDES EMISSION LIMIT, MEASURED IN PARTS PER MILLION VOLUME, CORRECTED TO SEVEN PERCENT OXYGEN, DRY BASIS, OR EQUIVALENT PERCENTAGE CARBON DIOXIDE AS SPECIFIED IN SUBDIVISION (12) OF THIS SUBSECTION
MASS BURN REFRACTORY COMBUSTOR	<u>177</u>
MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED ON OR BEFORE <u>DECEMBER 31, 1985</u>	<u>200</u>
MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER <u>DECEMBER 31, 1985</u> AND ON OR BEFORE <u>SEPTEMBER 20, 1994</u>	<u>177</u>
MASS BURN WATERWALL COMBUSTOR FOR WHICH CONSTRUCTION COMMENCED AFTER <u>SEPTEMBER 20, 1994</u>	<p><u>177</u> FOR THE ONE-YEAR PERIOD BEGINNING ON THE DATE OF COMPLETION OF THE INITIAL PERFORMANCE TEST REQUIRED BY THIS SECTION, AND</p> <p><u>150</u> FOR THAT PERIOD OF TIME SUBSEQUENT TO THE ONE-YEAR PERIOD IDENTIFIED ABOVE</p>
PROCESSED-MUNICIPAL SOLID WASTE COMBUSTOR	<u>146</u>

- (9) Continuous compliance with the nitrogen oxides emission limits contained herein shall be based on a 24-hour daily arithmetic average.

- (10) On and after the date specified in subsection (m) of this section, no owner or operator of a municipal waste combustor shall cause or allow an emission of carbon monoxide in excess of the applicable emission limit identified in Table 38-4 of this subdivision.

Table 38-4. Carbon Monoxide Emission Limits.

Municipal waste combustor technology	Carbon monoxide emission limit, measured in parts per million volume at the combustor outlet and corrected to seven percent oxygen, dry basis, or equivalent percentage carbon dioxide as specified in subdivision (c)(12) of this section	Averaging time, in hours, calculated as an arithmetic average
Mass burn refractory combustor	100	4
Mass burn waterwall combustor	100	4
Processed-municipal solid waste combustor for which construction commenced prior to September 20, 1994	200	24
Processed-municipal solid waste combustor for which construction commenced on or after September 20, 1994	150	24
Reciprocating grate waste tire fired incinerator/boiler	180	4

- (11) [Except as provided by this subsection, the] THE emission limits specified in this subsection SHALL apply at all times except during periods of startup, shutdown or malfunction AS SPECIFIED IN THIS SUBDIVISION:
- (A) The duration of each startup, shutdown or malfunction period shall be limited to three hours per occurrence[.] FOR ALL MWC UNITS EXCEPT

MASS BURN REFRACTORY UNITS FOR WHICH THE SHUTDOWN PERIOD SHALL BE LIMITED TO EIGHT HOURS PER OCCURRENCE; AND

- (B) [This exemption] THE PROVISIONS OF SUBPARAGRAPH (A) OF THIS SUBDIVISION shall not apply to opacity limits. However, during each period of startup, shutdown or malfunction, the opacity limits shall not be exceeded during more than five (5) 6-minute arithmetic average measurements.
- (12) All emission limits in this subsection, except for those identified for opacity, shall be corrected to seven percent oxygen (7% O₂), unless the owner or operator submits information to justify a correction to an equivalent percent carbon dioxide (% CO₂) and receives the commissioner's written approval. If the owner or operator of a MWC seeks to use an equivalent % CO₂, the owner or operator must demonstrate the relationship between O₂ and CO₂ levels as specified in subparagraph (J) of subdivision (4) of subsection (i) of this section and submit a written report to the commissioner summarizing the results of the demonstration. This relationship may be reestablished during any performance test conducted pursuant to subsection (i) of this section.
- (13) During the operation of a MWC unit, 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 subsection (i) of this section, based on a 24-hour daily average.
- (14) Notwithstanding subparagraphs (D), (E) and (F) of subdivision (4) of subsection (i) of this section, for the purpose of submitting compliance certifications or for the purpose of the commissioner establishing whether the owner or operator has violated or is in violation of any emission limit or standard in this subdivision, nothing shall preclude the commissioner's use, including the exclusive use, of any appropriate performance test results, credible evidence or information relevant to demonstrating compliance with the applicable requirements of this section.

Sec. 3.

Subsection (m) of section 22a-174-38 of the Regulations of Connecticut State Agencies is amended to read as follows:

(m) Compliance schedule.

- (1) The owner or operator of a MWC for which construction commenced prior to September 20, 1994 shall achieve final compliance with the applicable emission limits specified in subsections (c) and (f) of this section, with the exception of the

emission [limit of Table 38-1a,] LIMITS OF TABLES 38-1A AND 38-3A, no later than December 19, 2000. •

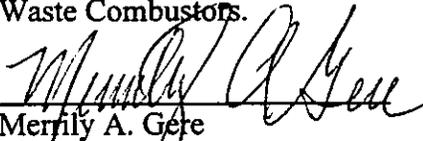
- (2) The owner or operator of a MWC for which construction commenced prior to September 20, 1994 shall achieve final compliance with THE emission limit specified in Table 38-1a of subsection (c) of this section no later than the date thirty-six months following the effective date of this section.
- (3) The owner or operator of a MWC for which construction, modification or reconstruction commenced on or after September 20, 1994 [and prior to the effective date of this section] shall achieve final compliance with the applicable emission limits specified in subsections (c) and (f) of this section, with the exception of THE emission [limit of Table 38-2a,] LIMITS OF TABLES 38-2A AND 38-3A, no later than December 19, 2000 OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.
- (4) The owner or operator of a MWC for which construction, modification or reconstruction commenced on or after September 20, 1994 [and prior to the effective date of this section] shall achieve final compliance with the emission limit specified in Table 38-2a of subsection (c) of this section no later than the date thirty-six months following the effective date of this section OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.
- [(5) The owner or operator of a MWC for which construction commences on or after the effective date of this section shall achieve compliance with all applicable requirements of this section upon the date of initial operation.]
- (5) THE OWNER OR OPERATOR OF ANY MWC SHALL ACHIEVE FINAL COMPLIANCE WITH THE APPLICABLE EMISSION LIMIT SPECIFIED IN TABLE 38-3A OF SUBSECTION (c) OF THIS SECTION NO LATER THAN MAY 1, 2003 OR THE DATE OF INITIAL OPERATION, WHICHEVER IS LATER.
- (6) The owner or operator of a MWC subject to this section who is unable to comply with the requirements of this section within the final compliance dates specified in this subsection shall cease operation. Within one year of the effective date of this section such an owner or operator shall either immediately cease operation or, at the discretion of the commissioner, enter into a legally enforceable cease operation agreement with the commissioner that includes a date no later than December 19, 2000 on which operation will cease.
- (7) On and after the date one year from the effective date of this section, any MWC that has been operated in full compliance with all requirements of this section for nitrogen oxides shall be exempt from the following provisions of the Regulations of Connecticut State Agencies:

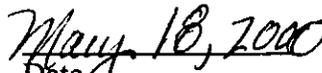
- (A) Section 22a-174-22(k) concerning nitrogen oxides emissions testing and monitoring; and
 - (B) Section 22a-174-22(l) concerning reporting and record keeping for nitrogen oxides.
- (8) Any MWC that is operating in full compliance with all requirements of this section for nitrogen oxides, as determined by the commissioner, shall be exempt from the May 31, 1999 deadline contained in Section 22a-174-22, subsection (e), subdivision (2) of the Regulations of Connecticut State Agencies as of the effective date of this section.

Statement of Purpose: This amendment establishes nitrogen oxides limits for municipal waste combustors in 2003 necessary to attain ozone reductions consistent with U.S. Environmental Protection Agency requirements, regional policy and state policy; adds nitrogen oxides, sulfur dioxide and hydrogen chloride emission limits conforming to the requirements of 40 C.F.R. Part 60, Subpart Ea; adds a provision for startup, shutdown and malfunction necessary to address a characteristic of mass burn refractory combustor technology; and modifies a definition for consistency with other Department usage.

VIII. Conclusion

Based upon the comments submitted by the interested party and addressed in this Hearing Report, I recommend the proposed final regulation, as contained herein, be submitted by the Commissioner of Environmental Protection for approval by the Attorney General and the Legislative Regulations Review Committee. Based upon the same considerations, I also recommend this proposed regulation, upon promulgation, be submitted to the U.S. Environmental Protection Agency as a revision to the Connecticut State Plan for Municipal Waste Combustors.


Merrily A. Gere
Hearing Officer


Date

Attachment 1
Commenter

David S. Brown
Connecticut Resources Recovery Authority
100 Constitution Plaza – 17th Floor
Hartford, CT 06103-1772

EXHIBIT F

REVISED AGENCY FISCAL ESTIMATE OF PROPOSED AMENDMENT

AGENCY SUBMITTING REGULATION DEP DATE May 15, 2000

SUBJECT MATTER OF REGULATION Municipal Waste Combustors

REGULATION SECTION NO. 22a-174-38 STATUTORY AUTHORITY § 22a-174
OTHER AGENCIES AFFECTED None

EFFECTIVE DATE USED IN COST ESTIMATE September 30, 2000

ESTIMATE PREPARED BY Merrily A. Gere TELEPHONE 424-3416

SUMMARY OF STATE COST AND REVENUE IMPACT OF PROPOSED AMENDMENT

Agency DEP

Fund Affected

None

		1st Year 2000	2nd Year 2001	3rd Year 2002
Number of Positions	0	0	0	0
Personal Services	0	0	0	0
Other Expenses	0	0	0	0
Grants	0	0	0	0
Total State Cost (Savings)	-	-	-	-
Estimated Revenue Gain (Loss)	-	-	-	-
Total Net Cost (Savings)	-	-	-	-

EXPLANATION OF STATE IMPACT OF AMENDMENT:

No direct and quantifiable impact is anticipated. MWC owners and operators will not install additional air pollution control equipment to meet the amendment's proposed emission limits, and thus will not experience any additional costs to meet these requirements. Indirect costs may result from optimization of the operation of existing equipment.

EXPLANATION OF MUNICIPAL IMPACT OF AMENDMENT:

No direct and quantifiable impact is anticipated. See explanation above.

**STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION****NOTICE OF AVAILABILITY OF REGULATIONS****Adoption of Amended R.C.S.A. Section 22a-174-38:
Municipal Waste Combustors**

The Department of Environmental Protection hereby gives notice that it has decided to take action on the proposed amendment to R.C.S.A. section 22a-174-38 concerning municipal waste combustors. The Department held a public hearing on March 28, 2000 to receive comment on the amendment. The Department proposes to amend the regulation with the changes recommended by the Hearing Officer.

A copy of the final wording of the proposed amendment, the Hearing Officer's report, which states the principal reasons in support of the amended regulation and the principal considerations in opposition to it as urged in written and oral comments, and the reasons for rejecting any such considerations is available from:

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Telephone: (860) 424-3027

July 6, 2000

Date