

61-62.5

Standard No. 3

Waste Combustion and Reduction

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SECTION I - APPLICABILITY

A. Except as provided for in paragraphs J and K of this section, this standard applies to any source, regardless of type or construction date, which burns any waste other than virgin fuel for any purpose.

B. Municipal Waste Combustion facilities constructed, reconstructed or modified on or before September 20, 1994, with a unit capacity greater than 250 tons per day of Municipal Solid Waste (MSW) shall be subject to 40 Code of Federal Regulations (CFR) 60, Subpart Cb, Emission Guidelines and Compliance Schedules for Municipal Waste Combustors, promulgated December 19, 1995, 60 Federal Register (FR) 65415, and amended August 25, 1997, 62 FR 45119 and 45125 and the South Carolina Air Quality Implementation Plan. For the purposes of this standard, the definitions contained in the various provisions of 40 CFR 60, adopted herein, shall apply except that the term “Administrator,” when used in 40 CFR 60, shall mean the Department. These Municipal Waste Combustors shall also be subject to any provision of this standard that would impose a more restrictive emission limit or requirement.

C. Sources burning more than one type of waste are subject to the most restrictive requirements of this standard for the wastes being burned.

D. Hospital/medical/infectious waste incinerators are subject to Standard No. 3.1 of Regulation 61-62.5.

E. Hospital/medical/infectious waste incinerators burning other waste in addition to medical waste are subject to the requirements of this standard that are more restrictive than those found in Standard No. 3.1 for the waste being burned.

F. Municipal waste combustors subject to 40 CFR 60, Subpart Ea; 40 CFR 60, Subpart Eb; or 40 CFR 60, Subpart Cb are subject to more restrictive requirements of this standard applicable to the waste being burned.

G. Municipal waste combustors, excluding air curtain incinerators, subject to this standard that meet the definition of retail business incinerators or commercial incinerators are subject only to the requirements of this standard applicable to those units.

H. Any unit that burns tires as its only MSW is not subject to the portions of this standard applicable to Municipal Waste Combustors if the owner or operator of the unit:

1. Notifies the Department of an exemption claim; and
2. Provides data documenting that the unit qualifies for this exemption.

I. Air curtain incinerators subject to this standard whose only municipal solid waste being burned is yard waste are subject only to those requirements of this standard applicable to air curtain incinerators. Air curtain incinerators subject to this standard that burn any other municipal solid waste other than yard waste are subject only to the requirement of having refractory lined pits that is applicable to air curtain incinerators and to all the requirements of this standard applicable to municipal waste combustors.

J. Exemptions

1. Industrial furnaces and boilers at pulp and paper facilities burning only black liquor, only total reduced sulfur (TRS) compounds, or only black liquor and/or TRS compounds and/or virgin fuel are not subject to this standard. Also, total reduced sulfur control devices burning only gaseous TRS and virgin fuel are not subject to this standard. Gaseous process streams containing TRS compounds that are regulated in

accordance with Section XI of Regulation 61-62.5, Standard No. 4, Emissions from Process Industries, and/or 40 CFR 60, Subpart BB, Standards of Performance for Kraft Pulp Mills, are also not subject to this standard. Exemptions for additional process streams will be considered on a case-by-case basis. Additions to black liquor for the purpose of waste disposal shall not be exempt from this standard.

2. Facilities utilizing a renewable energy resource burned for energy recovery may request an exemption from this standard by: 1) submitting a site-specific chemical analysis of the renewable energy resource and/or source testing results to the Department for review, and 2) providing additional documentation as necessary so that the Department can confirm that the exemption will be protective of human health and the environment. The Department reserves the right to deny a request for an exemption to Standard No. 3 for any renewable energy resource(s) that does not satisfy the above conditions.

3. A facility with an emission unit and/or control device that complies with all the requirements of an applicable Maximum Achievable Control Technology (MACT) Standard under 40 CFR 63, including the testing and reporting requirements, may request an exemption from this standard. Facilities requesting such an exemption shall provide any documentation as necessary in order for the Department to make a determination. Upon review of such a request, the Department may grant an exemption from this standard if it determines that compliance with the applicable MACT Standard(s) would be as protective of human health and the environment as the requirements of this standard. Any new waste and/or process stream must be evaluated by the Department in order to maintain this exemption. Also, any operational change that may impact emissions from the waste must be evaluated by the Department in order to maintain this exemption.

K. Space heaters engineered to burn used oil will be exempt from this standard provided the used oil is generated on-site or originates from “do-it-yourself” oil changes and provided also that the burners are rated at no more than 0.5×10^6 British thermal unit per hour (Btu/hr) heat input and the exhaust is vented to the ambient air. No construction or operating permit will be required.

L. This standard was effective on the date of publication in the State Register, which was originally February 26, 1988. Subsequent dates of effective revisions published in the State Register will be indicated at appropriate places as necessary in this standard.

M. For the purpose of this standard, existing sources are sources that are “in existence” on February 26, 1988, unless otherwise noted herein.

SECTION II - GENERAL

This standard will not supersede any other state or federal requirements including but not limited to federal New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), state or federal Prevention of Significant Deterioration (PSD) Regulations, Hazardous Waste Management Regulations, nor special permit conditions, unless a more restrictive emission limit or requirement is imposed by this standard.

SECTION III - EMISSION LIMITATIONS AND OPERATING REQUIREMENTS

A. Case-by-Case Limitations - Emission limitations other than those stated below, determined in part by material being incinerated or burned and/or by source testing, may be set on a case-by-case basis.

B. Retail Business Incinerators

1. Opacity shall not exceed 20 percent.

2. Particulate Matter (PM) - No established limit.

C. Crematory Incinerator

- 1. Opacity shall not exceed 10 percent.
- 2. PM - No established limit.

D. Sludge Incinerators

- 1. Opacity shall not exceed 20 percent.
- 2. Particulate matter emissions shall not exceed 1.3 pounds per ton (lb/ton) of dry sludge.
- 3. Mercury (Hg) emissions shall not exceed 3200 grams/day.

E. Hazardous Waste Incinerators

- 1. Opacity shall not exceed 10 percent.
- 2. Hydrochloric acid (HCl) emissions may exceed 4 pounds per hour (lb/hr) only if they are controlled with an efficiency of at least 99 percent.
- 3. Particulate matter emissions shall not exceed 0.08 grains/Dry Standard Cubic Feet (DSCF) corrected to 7 percent oxygen (O₂) measured on a dry basis.
- 4. Other emission limits are as follows:

TABLE I

Material	Emission Limit ^a
Nickel (Ni)	6.0 x 10 ⁻³ lb / 10 ⁶ Btu total heat input
Cadmium (Cd)	1.0 x 10 ⁻⁴ lb / 10 ⁶ Btu total heat input
Chromium (Cr)	5.0 x 10 ⁻⁴ lb / 10 ⁶ Btu total heat input
Arsenic (As)	2.5 x 10 ⁻⁴ lb / 10 ⁶ Btu total heat input
Lead (Pb)	5.0 x 10 ⁻³ lb / 10 ⁶ Btu total heat input

^a. The total heat input value shall include the Btu from the waste and virgin fuel used for production. Furthermore, the total heat input value shall not exceed the Btu used to affect the combustion of the waste and shall not include any Btu input from auxiliary burners located outside of the primary combustion chamber such as those found in secondary combustion chambers, tertiary combustion chambers or afterburners unless those auxiliary burners are fired with waste. In the case where waste is fired in the auxiliary burners located outside of the primary combustion chamber, only the Btu value of the fuel for the auxiliary burner which is from waste shall be added to the total heat input value.

5. All principal organic hazardous constituents (POHC) must be destroyed with an efficiency of at least 99.99 percent.

6. All POHC must be destroyed with an efficiency of at least 99.9999 percent when the waste being burned is hazardous wastes F020, F021, F022, F023, F026, or F027 as specified in the South Carolina Hazardous Waste Management Regulation 61-79.264.343(a)(2). A demonstration of this efficiency must

be performed as specified in the referenced paragraph. The definitions of hazardous wastes F020, F021, F022, F023, F026, and F027 can be found in the South Carolina Hazardous Waste Management Regulation 61- 79.261.31(a).

F. Municipal Waste Combustors (effective June 25, 1999)

1. Opacity shall not exceed 20 percent.

2. Particulate matter (PM) emissions shall not exceed:

a. Existing sources - 0.08 grains/DSCF corrected to 7 percent O₂.

b. New sources - “Best Available Control Technology” (BACT) as defined in Regulation 61-62.5, Standard No. 7, (b)(8).

3. Carbon monoxide (CO) emissions, as measured at a location upstream of the control devices, shall not exceed those values listed in Table II, corrected to 7 percent O₂ on a dry basis except as provided in paragraph 4 below.

TABLE II

Municipal Waste Combustor Technology ^a	CO emission limit (ppmv) ^b	Averaging time (hrs)
Mass burn waterwall	100	4
Mass burn refractory	100	4
Mass burn rotary refractory	100	24
Mass burn rotary waterwall	250	24
Modular starved air	50	4
Modular excess air	50	4
Refuse-derived fuel stoker	200	24
Bubbling fluidized bed combustor	100	4
Circulating fluidized bed combustor	100	4
Pulverized coal/refuse-derived fuel mixed fuel-fired combustor	150	4
Spreader stoker coal/refuse-derived fuel mixed fuel-fired combustor	200	24
Other	100	4

^a As defined in 40 CFR 60 Subpart Eb

^b Measured at the combustor outlet in conjunction with a measurement of oxygen concentration, corrected to 7 percent O₂, CO and O₂ shall be measured on a dry basis.

4. Cement kilns burning municipal solid waste may exceed the values listed in Table II provided they do not exceed 20 parts per million by volume (ppmv) total hydrocarbons (THC) hourly average, as propane (as determined by Environmental Protection Agency (EPA) Reference Method 25A (40 CFR 60, Appendix A) or from Continuous Emission Monitors (CEMs) meeting Performance Specification 2.2 of 40 CFR 266, Appendix IX), measured at the kiln outlet corrected to 7 percent O₂, both measured on a dry basis.

5. Hydrochloric acid (HCl) emissions shall not exceed:

a. Existing sources - 250 ppmv corrected to 7 percent O₂, both measured on a dry basis, hourly average; or a 50 percent reduction by weight or volume, whichever is less stringent.

b. New sources - 30 ppmv, hourly average, corrected to 7 percent O₂, both measured on a dry basis; or the facility shall install emission controls that, on the date of the permit to construct, meet the criteria of BACT as defined in Regulation 61-62.5, Standard No. 7, (b)(8).

6. Combustion efficiency (C.E.) shall be at least 99.9 percent on an hourly basis, computed as follows:

$$\text{C.E.} = [\text{CO}_2]/([\text{CO}_2] + [\text{CO}]) \times 100$$

where:

[CO₂] = Concentration of carbon dioxide (ppmv corrected to 7 percent O₂) measured on a dry basis; and
[CO] = Concentration of carbon monoxide (ppmv corrected to 7 percent O₂) measured on a dry basis.

7. The combustor shall maintain the combustion chamber exit gases at a required temperature greater than the temperature at which compliance was demonstrated through source test for particulate matter emissions, CO emissions and combustion efficiency. The combustor shall be equipped with automatically controlled auxiliary fuel burners to maintain the combustion at the required temperature under all waste firing conditions and to ensure that the combustor will reach the required temperature prior to the introduction of waste. To confirm the temperature, a thermocouple shall be appropriately located at the exit of the combustion chamber such that the flames do not impinge on the sensor.

8. The firing of the burners and the combustion air shall be modulated automatically to maintain the required combustion chamber exit temperature.

9. Large, bulky non-combustibles (for example, water heaters, refrigerators) and difficult to burn, bulky combustible materials (for example, mattresses, sofas) shall not be charged to the combustor.

10. Tipping areas shall be enclosed and maintained at a negative pressure. The evacuated air from the tipping area shall be used as primary combustion air in the combustor. Open storage of municipal waste is prohibited.

11. Open storage of ash is prohibited. Ash shall be loaded in an enclosed area or handled wet in enclosed containers.

12. Any visible emissions of ash from an ash conveying system including conveyor transfer points shall not exceed 5 percent of the observation period (that is, 9 minutes per 3-hour period), as determined by EPA Reference Method 22 (40 CFR 60, Appendix A) observations. The minimum observation time shall be a series of three one-hour observations that include times when the facility is transferring ash from the municipal waste combustor to the area where ash is stored or loaded into containers or trucks. The average duration of visible emissions per hour shall be calculated from the three 1-hour observations. This emission limit does not cover visible emissions discharged inside buildings or enclosures of ash conveying systems; however, this emission limit does cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems.

13. The source owner or operator shall prepare and submit for Department approval an inspection and maintenance plan and a plan of action for the facility prior to startup. The inspection and maintenance plan shall include calibration, inspection and maintenance schedules along with operating and monitoring parameters for the combustor, associated control equipment and monitoring devices. The plan of action shall identify the steps and procedures the operator will follow to avoid exceedances of the emission limits and operating conditions specified in paragraphs F.1 thru F.7 and F.12 of this section. The plan shall include

descriptions of startup and shutdown procedures, actions to be taken to correct anomalous operating conditions and training of plant operators.

14. The combustor shall be equipped with an automatic loader or a sealed feeding device and equipped with the interlocks specified in paragraph 15 below.

15. The charging of waste to the combustor shall automatically cease through the use of an interlock system when any of the following conditions exist:

- a. The average combustion chamber exit temperature drops below the required temperature for a rolling 15-minute period;
- b. The average flue gas oxygen level drops below 3 percent (dry basis) for a rolling 15-minute period;
- c. The average opacity of the visible emissions is equal to or greater than 20 percent for a rolling 15-minute period;
- d. The average combustion efficiency drops below 99.5 percent for a rolling 15-minute period; or
- e. The monitoring equipment required by Section VI.A.2.e of this standard is not functioning.

16. Some deviation from the above temperature, flue gas oxygen, and CO limits may be permissible for those combustors utilizing advanced combustion technologies or burning specially prepared municipal solid wastes.

17. Startup and Shutdown Requirements:

a. No waste shall be charged to the combustor until the required combustion chamber exit temperature reaches equilibrium. Control equipment shall be operating and functioning properly before waste is introduced into the combustor and until all the wastes are combusted or extinguished;

b. During shutdowns the required combustion chamber exit temperature is to be maintained using auxiliary burners until the wastes are completely combusted or extinguished; and

c. A detailed procedure for normal system startup and shutdown shall be submitted as a part of the application for approval including the duration of preheat and burnout cycles.

G. Air Curtain Incinerator

1. Opacity shall not exceed 20 percent, except that an opacity level of up to 35 percent is permitted during startup periods during the first 30 minutes of operation of the unit.

2. Air curtain incinerators shall be required for the burning of yard waste (excluding plastic bags), land clearing waste consisting of only untreated natural wood debris, and non-treated or unfinished woodwaste that does not occur on the premises on which it originates. This requirement may be waived for non-reoccurring instances.

3. Refractory lined pits shall be required.

4. Performance Requirements:

a. The amount of material to be incinerated shall not exceed 38,325 tons per year without a PSD review. Records of tons per year incinerated shall be kept and maintained for at least two years and made available to the Department upon request;

b. Onsite storage of debris to be incinerated shall be kept to a minimum;

c. Material to be incinerated shall be incinerated within one week of storage unless otherwise approved by the Department;

d. This air curtain incinerator is permitted to burn only yard waste (excluding plastic bags), land clearing waste consisting of only untreated natural wood debris, untreated or unfinished woodwaste, and clean wood;

e. An operation and maintenance program shall be developed and adhered to at all times to ensure the proper operation of this facility;

f. Good operation practices shall be exercised to minimize emissions from incineration. This shall include the wetting of ash prior to removal from the air curtain incinerator;

g. Winds during the time of burning or ash removal must be away from any area in which the ambient air may be significantly affected by the smoke or ash from this operation if that area contains a public roadway or a residential, commercial, or industrial site;

h. All ash shall be stored in compliance with the requirements of the South Carolina Solid Waste Management Regulation 61-107.12;

i. No burning shall take place if the air curtain incinerator is not operating properly or at its design air flow;

j. The air curtain incinerator shall be used at all times that the pit contains burning permitted material except during startup to get the fire ignited;

k. The air curtain incinerator shall be located so as to maximize the distance to business and residential areas and shall be located at least 500 feet from any business or residence located on adjacent properties;

l. Access roads and loader work areas shall be maintained in such a manner so as to minimize fugitive emissions. This shall include the use of water sprays, dust controlling chemicals (but not volatile organic compounds) or other Department approved dust suppression systems;

m. Stacking rakes or similar devices shall be utilized on loader equipment when loaders are used to charge the pit in order to minimize dirt on the material to be burned; and

n. Any change in location of the air curtain incinerator must have prior written approval from the Department.

5. PM - No established limit.

H. Commercial Incinerators (effective June 25, 1999)

1. Opacity shall not exceed 20 percent.

2. Particulate matter emissions shall not exceed 0.15 grains / DSCF corrected to 7 percent O₂ on a dry basis.

3. CO emissions shall not exceed 100 ppmv hourly average corrected to 7 percent O₂. CO and O₂ shall be measured on a dry basis.

4. The unit shall maintain the combustion gases at a temperature greater than the temperature at which compliance was demonstrated through source test for particulate matter and CO emissions. The unit shall be equipped with automatically controlled auxiliary fuel burners to maintain the combustion gases at the required temperature under all waste firing conditions and to ensure that the unit will reach the required temperature prior to the introduction of waste. To confirm the temperature, a thermocouple shall be appropriately located at the exit of the combustion chamber such that the flames do not impinge on the sensor.

5. The firing of the burners and the combustion air shall be modulated automatically to maintain the required temperature.

6. Open storage of ash is prohibited. Ash shall be loaded in an enclosed area or handled wet in enclosed containers.

7. Startup and Shutdown Requirements:

a. No waste shall be charged to the incinerator until the required combustion chamber exit temperature reaches equilibrium;

b. During shutdowns, the required combustion chamber exit temperature is to be maintained using auxiliary burners until the wastes are completely combusted or extinguished; and

c. A detailed procedure for normal system startup and shutdown shall be submitted as a part of the application for approval including the duration of preheat and burnout cycles.

I. Industrial Incinerators

1. Opacity shall not exceed 20 percent.

2. Particulate matter emissions shall not exceed 0.5 lbs/10⁶ Btu total heat input. The total heat input value from waste and virgin fuel used for production shall not exceed the Btus used to affect the combustion of the waste and shall not include any Btu input from auxiliary burners located outside of the primary combustion chamber such as those found in secondary combustion chambers, tertiary combustion chambers or afterburners unless those auxiliary burners are fired with waste. In the case where waste is fired in the auxiliary burners located outside of the primary combustion chamber, only the Btu value of the fuel for the auxiliary burner which is from waste shall be added to the total heat input value.

3. Industrial incinerators with a total design capacity of less than 1x10⁶ Btu/hr including auxiliary devices used to recondition parts shall be exempt from all requirements of this standard except for the following:

a. Opacity shall not exceed 20 percent; and

b. Records documenting the contaminant being removed and possible emissions from the process shall be maintained and made available for Department review.

J. Industrial Boilers and Utility Boilers

1. Emission limits as stated in Table III shall apply. More restrictive opacity and/or mass emission limits than specified in Regulation 61-62.5, Standard No. 1 may be imposed based on source test results to ensure compliance with these limits.

TABLE III^b

Material	Emission Limit ^a
Nickel (Ni)	6.0×10^{-3} lb / 10^6 Btu total heat input
Cadmium (Cd)	1.0×10^{-4} lb / 10^6 Btu total heat input
Chromium (Cr)	7.4×10^{-4} lb / 10^6 Btu total heat input
Arsenic (As)	1.7×10^{-3} lb / 10^6 Btu total heat input
Lead (Pb)	5.0×10^{-3} lb / 10^6 Btu total heat input
Hydrochloric Acid (HCl)	0.45 lb / 10^6 Btu total heat input

^a The total heat input value shall include the Btu from the waste and virgin fuel used for production. Furthermore, the maximum total heat input value to be used in determining the emission limitations shall be limited to the Btus necessary to maintain production. The Btu from other sources such as afterburners shall not be considered in determining this total heat input value unless those auxiliary burners are fired with waste. In the case where waste is fired in the auxiliary burners located outside of the primary combustion chamber, only the Btu value of the fuel for the auxiliary burner which is from waste shall be added to the total heat input value.

^b Source testing for metals or HCl will not be required at facilities burning waste with no metals or chlorine in the waste. Analysis showing these constituents to be nondetectable by reference method in the waste would be an alternative method for determining compliance with emission limits as allowed by Regulation 61-62.5, Standard No. 3, Section VIII(A).

2. HCl emissions may exceed 0.45 lb/ 10^6 Btu total heat input only if the HCl emissions are controlled with an efficiency of at least 99 percent.

3. All principal organic hazardous constituents (POHC) must be destroyed with an efficiency of at least 99.99 percent (only if burning hazardous waste).

4. All POHC must be destroyed with an efficiency of at least 99.9999 percent when the waste being burned is hazardous wastes F020, F021, F022, F023, F026, or F027 as specified in the South Carolina Hazardous Waste Management Regulation 61-79.264.343(a)(2). A demonstration of this efficiency must be performed as specified in the referenced paragraph. The definitions of hazardous wastes F020, F021, F022, F023, F026, and F027 can be found in the South Carolina Hazardous Waste Management Regulation 61-79.261.31(a).

5. Any boiler less than 10×10^6 Btu/hr rated heat input will be restricted to the use of virgin fuel and/or spec. oil.

6. Sources burning small quantities of waste that is generated by the owner/operator and is burned as described in Table IV below, are exempt from the requirements of this standard except as follows:

a. There must be a valid permit for the boiler which specifies the exact waste to be burned;

b. Analysis may be required to prove that the material to be burned is one of the substances authorized by the permit; and

c. Records of the material being burned (that is, gallons per month or tons per month) and its firing rate must be kept and made available to the Department upon request.

TABLE IV

Boiler Size (1 x 10 ⁶ Btu/hr)	Waste Firing Rate (heat input of waste/ design heat input of unit)
>10 - 50	0.1
>50	0.06

7. Sources burning specification used oil are exempt from the emissions limitations listed in Table III, provided paragraphs 6a and 6b above are complied with.

K. Non-Industrial Boilers - Regardless of size, non-industrial boilers, with the exception of utility boilers, are restricted to the use of virgin fuels and/or spec. oil.

L. Industrial Furnaces

1. Emission limits as stated in Section III, Table III, shall apply. More restrictive opacity and/or mass emission limits than specified in Regulation 61-62.5, Standard No. 4 may be required based on source test results to ensure compliance with these limits.

2. All principal organic hazardous constituents (POHC) must be destroyed with an efficiency of at least 99.99 percent (only if burning hazardous waste).

3. All POHC must be destroyed with an efficiency of at least 99.9999 percent when the waste being burned is hazardous wastes F020, F021, F022, F023, F026, or F027 as specified in the South Carolina Hazardous Waste Management Regulation 61-79.264.343(a)(2). A demonstration of this efficiency must be performed as specified in the referenced paragraph. The definitions of hazardous wastes F020, F021, F022, F023, F026, and F027 can be found in the South Carolina Hazardous Waste Management Regulation 61- 79.261.31(a).

4. Any furnace less than 10 x 10⁶ Btu/hr rated heat input will be restricted to the use of virgin fuel and/or spec. oil.

5. Sources burning small quantities of waste that is generated by the owner/operator and is burned as described in Table V below, are exempt from the requirements of this standard except as follows:

- a. There must be a valid permit for the furnace which specifies the exact waste to be burned;
- b. Analysis may be required to prove that the material to be burned is one of the substances authorized by the permit; and
- c. Records of the material being burned (that is, gallons per month or tons per month) and its firing rate must be kept and made available to the Department upon request.

TABLE V

Furnace Size (1 x 10 ⁶ Btu/hr)	Waste Firing Rate (heat input of waste/ design heat input of unit)
>10 - 50	0.1
>50	0.06

6. Sources burning specification used oil are exempt from the emissions limitations listed in Table III, provided paragraphs 5a and 5b above are complied with.

7. HCl emissions may exceed 0.45 lb/10⁶ Btu total heat input only if the HCl emissions are controlled with an efficiency of at least 99 percent.

M. Non-Industrial Furnaces - Regardless of size, non-industrial furnaces are restricted to the use of virgin fuels and/or spec. oil.

N. Combination Sources - When a source engages in activities that can be construed as being in more than one classification, the more restrictive limitations will apply.

SECTION IV - NOTIFICATION REQUIREMENTS AND COMPLIANCE SCHEDULES

A. Sources in Existence on the Effective Dates of the Standard

1. All sources subject to source testing must be in compliance within one year of February 26, 1988, unless otherwise stated in this standard. Other requirements for specific source types are listed below.

2. Specific Source Types

a. Retail Business Incinerators - Compliance will be required as of February 26, 1988.

b. Crematory Incinerator - Compliance will be required as of February 26, 1988.

c. Sludge Incinerators - Compliance with the opacity limitation will be required as of February 26, 1988.

d. Hazardous Waste Incinerators

(i) All hazardous waste incinerators must notify the Department in writing of their intent to operate, including information regarding the fuel and waste (amount, type(s), specification/analyses) and method of operation within 60 days of February 26, 1988, unless otherwise stated in this standard. The Department will notify the source within 30 days of receipt of this information if a formal permit application is needed.

(ii) Hazardous waste incinerators that require a permit application must make this submittal within 90 days of notification by the Department that a permit application is required.

(iii) Compliance with the opacity limitation will be required as of February 26, 1988.

e. Municipal Waste Combustors

(i) All municipal waste combustors must notify the Department in writing of their intent to operate, including information regarding the fuel and waste (amount, type(s), specification/analyses) and method of operation within 60 days of June 25, 1999, unless otherwise stated in this standard. The Department will notify the source within 30 days of receipt of this information if a formal permit application is needed.

(ii) Municipal waste combustors that require a permit application must make this submittal within 90 days of notification by the Department that a permit application is required.

(iii) Compliance with the opacity limitation will be required as of February 26, 1988.

f. Air Curtain Incinerators

(i) Compliance with Section III.G.1 will be required as of February 26, 1988.

(ii) Compliance with Section III.G.2. and G.4. will be required within 180 days of May 25, 1990.

(iii) Compliance with Section III.G.3. shall be required within 180 days of May 25, 1990, for all permanent sites (that is, sites used more than six months) and within three years of May 25, 1990, for all portable air curtain incinerators used at temporary sites.

g. Commercial Incinerators

(i) All commercial incinerators must notify the Department in writing of their intent to operate, including information regarding the fuel and waste (amount, type(s), specification/analyses) and method of operation within 60 days of June 25, 1999 unless otherwise stated in this standard. The Department will notify the source within 30 days of receipt of this information if a formal permit application is needed.

(ii) Commercial incinerators that require a permit application must make this submittal within 90 days of notification by the Department that a permit application is required.

(iii) Compliance with the opacity limitation will be required as of February 26, 1988.

h. Industrial Incinerators

(i) All industrial incinerators must notify the Department in writing of their intent to operate, including information regarding the fuel and waste (amount, type(s), specification/analyses) and method of operation within 60 days of February 26, 1988, unless otherwise stated in this standard. The Department will notify the source within 30 days of receipt of this information if a formal permit application is needed.

(ii) Industrial incinerators that require a permit application must make this submittal within 90 days of notification by the Department that a permit application is required.

(iii) Compliance with the opacity limitation will be required as of February 26, 1988.

i. Industrial Boilers and Utility Boilers

(i) All industrial boilers and utility boilers must notify the Department in writing of their intent to operate, including information regarding the fuel and waste (amount, type(s), specification/analyses) and method of operation within 60 days of February 26, 1988, unless otherwise stated in this standard. The Department will notify the source within 30 days of receipt of this information if a formal permit application is needed.

(ii) Industrial boilers and utility boilers that require a permit application must make this submittal within 90 days of notification by the Department that a permit application is required.

j. Non-Industrial Boilers - Compliance will be required as of February 26, 1988.

k. Industrial Furnaces

(i) All industrial furnaces must notify the Department in writing of their intent to operate, including information regarding the fuel and waste (amount, type(s), specification/analyses) and method of operation within 60 days of February 26, 1988, unless otherwise stated in this standard. The Department will notify the source within 30 days of receipt of this information if a formal permit application is needed.

(ii) Industrial furnaces that require a permit application must make this submittal within 90 days of notification by the Department that a permit application is required.

l. Non-Industrial Furnaces - Compliance will be required as of February 26, 1988.

B. New Sources - Any source to which this standard is applicable and which is not in existence on the effective dates of this standard must be in compliance with the applicable portions of this standard on the date operation of the source begins.

SECTION V - WASTE ANALYSIS (effective June 25, 1999)

A. Regardless of the type source involved, each waste stream (if the waste is deemed to be consistent in composition) or each waste batch/shipment (if the waste is deemed inconsistent in composition) that is to be burned shall be classified hazardous or non-hazardous utilizing the South Carolina Hazardous Waste Management Regulation 61-79.261. This classification decision may be based on generator knowledge of the waste determined from Material Safety Data Sheets (MSDS), waste profiles, or other process information.

B. Regardless of the type of source involved, with the exception of crematory and air curtain incinerators, each waste stream (if the waste is deemed to be consistent in composition) or each waste batch/shipment (if the waste is deemed inconsistent in composition) that is to be burned shall be analyzed for heat value British thermal unit per gallon (Btu/gal) and/or British thermal unit per pound (Btu/lb), total halogen, percent nitrogen and percent sulfur.

C. Regardless of the type of source involved (except retail business, crematory and air curtain incinerators) each waste stream (if the waste is deemed to be consistent in composition) or each waste batch/shipment (if the waste is deemed inconsistent in composition) that is to be burned shall be identified by waste analysis or special knowledge of the waste (MSDS, waste profiles, etc.) for those air toxic compounds identified in Regulation 61-62.5, Standard No. 8 that can reasonably be expected to be in the waste stream.

D. Regardless of the type of source involved, each burner of used oil shall have each batch or shipment of used oil analyzed in order to determine if the used oil is spec. oil or non-spec. oil.

E. If a source has an air pollutant emission rate established in a permit other than opacity, particulate matter, nitrogen oxides (NO_x), sulfur dioxide (SO₂), and/or carbon monoxide, each waste stream (if the waste is deemed to be consistent in composition) or each waste batch/shipment (if the waste is deemed inconsistent in composition) that is to be burned shall be analyzed for those pollutants for which the emission rate was established that may reasonably be expected to be in the waste. When an HCl emission rate is set, HCl

testing shall be required. Total halogens analysis may be performed as an alternative to HCl testing although this method will yield a high HCl bias.

F. Other analyses as may be required by the Department in order to demonstrate compliance with applicable state or federal regulations and/or permit conditions.

G. Waste may be exempted from all or part of the analyses required in paragraphs A-F above on a case-by-case basis for any of the following reasons at the facility's discretion, unless the Department has a valid reason to require the analyses:

1. Special knowledge of the waste;
2. The waste composition is deemed to be consistent through prior analysis or special knowledge;
3. The waste constitutes less than 0.1 percent by weight of the daily design capacity throughput;
4. Ambient air modeling for compliance with Regulation 61-62.5, Standards No. 2 and No. 8 indicates that at the maximum waste firing rate and storage volume a particular constituent at its maximum potential concentration will be in compliance with the applicable standard; or
5. The waste is non-hazardous municipal solid or hospital/medical/infectious waste.

H. Analytical methods to be utilized in paragraphs A-F above include but are not limited to ASTM Standard Test Methods; those methods contained in the South Carolina Hazardous Waste Management Regulation 61-79.261 Subpart C and Subpart D which are incorporated by reference in the South Carolina Hazardous Waste Management Regulation 61-79.260.11; and/or other methodologies (that is, Standard Methods, state or federal regulations, or proposed methods) approved by the Department as long as proper QA/QC is provided.

I. All waste analyses shall be performed by a laboratory certified by the Department to perform the methodology or in accordance with a Department approved methodology.

J. All information used to determine compliance with this section (that is, MSDS, waste manifests, waste analyses) must be kept on-site for a period of five years and made available to the Department upon request.

K. The Department reserves the right to require a facility to cease combustion of any waste stream which creates an undesirable level as determined by the Department.

L. The Department reserves the right to conduct quality assurance audits by 'spiking', splitting samples, or any other methods deemed appropriate.

M. Combustion of any new or modified waste stream must be consistent with terms and conditions of any applicable regulation or permit requirement. Written notification shall be submitted to the Director of the Division of Engineering Services of the Department's Bureau of Air Quality at least 30 days prior to combusting any new or modified waste stream unless otherwise approved through permit conditions.

SECTION VI - CONTINUOUS MONITORING REQUIREMENTS

A. Monitoring

1. The owner/operator shall install, calibrate, maintain and operate monitoring devices as indicated below within one year from February 26, 1988. Required monitoring devices must meet the specifications of Section VII of this standard. Alternative site-specific methods of monitoring, other than those cited below, may be used provided prior approval from the Department is obtained. Other monitors may be required by permits as conditions warrant.

2. Specific Source Types

- a. Retail Business Incinerators - None.
- b. Crematory Incinerator - None.
- c. Sludge Incinerator (effective June 25, 1999) - Monitoring devices if required by 40 CFR 60 Subpart O.
- d. Hazardous Waste Incinerators
 - (i) The temperature must be continuously recorded as measured at the point of incineration.
 - (ii) The pressure drop across baghouses and scrubbers must be continuously measured and recorded.
 - (iii) The concentration of carbon monoxide in the effluent gas stream must be continuously measured and recorded.
 - (iv) The concentration of oxygen in the effluent gas stream must be continuously measured and recorded.
 - (v) The waste feed rate to the incinerator must be continuously measured and recorded.
- e. Municipal Waste Combustor (effective June 25, 1999)
 - (i) The combustion chamber exit temperature shall be continuously measured and recorded. Sensors shall be located such that flames from the burners do not impinge on the sensors.
 - (ii) Pollution control performance gauges or meters as required by permit conditions.
 - (iii) Instruments for the continuous monitoring and recording of O₂, CO, CO₂, and opacity.
 - (iv) For cement kilns wishing to comply with the THC limit, instruments for the continuous monitoring and recording of THC.
 - (v) The Department reserves the right to require HCl monitors at any time if it is determined to be necessary.
 - (vi) The O₂, CO and CO₂ (and THC if applicable) monitors shall be co-located upstream of the air pollution control devices. If the applicant chooses to comply with the HCl emission limitations by meeting

the percent reduction or BACT reduction requirement, the HCl monitors, when required, shall be located upstream and downstream from the air pollution control device. If the applicant chooses to monitor the two locations with a single detector, the two locations should be sampled at an interval previously approved by the Department.

(vii) The Department reserves the right to require, at a later date, the owner/operator to provide telemetering of continuous monitoring data to the Department.

f. Air Curtain Incinerator - None.

g. Commercial Incinerator (effective June 25, 1999) - The combustion chamber exit temperature shall be continuously measured and recorded. Sensors shall be located such that flames from the burners do not impinge on the sensors.

h. Industrial Incinerators - Monitoring may be required as in item d. or e. above depending on the material being incinerated or burned and source test results.

i. Industrial Boilers and Utility Boilers - Monitoring may be required as in item d. or e. above depending on the material being incinerated or burned and source test results.

j. Non-Industrial Boilers - None.

k. Industrial Furnaces - Monitoring may be required as in item d. or e. above depending on the material being incinerated or burned and source test results.

l. Non-Industrial Furnaces - None.

B. Measurement and Recording Frequencies for Continuous Monitoring Systems

1. Temperature:

Monitors subject to this requirement shall take a minimum of one measurement every 15 seconds with this data recorded at least every successive 60 seconds. The minimum data recorder resolution shall be 50 degrees F (Fahrenheit).

2. Pressure Drop:

Monitors subject to this requirement shall take a minimum of one measurement every 15 minutes with this data recorded at least every successive 15 minutes. The minimum data recorder resolution shall be 0.2 inches H₂O (water).

3. Waste Flowmeters:

Monitors subject to this requirement shall take a minimum of one measurement every 60 seconds with this data recorded at least every successive 5 minutes. The minimum data recorder resolution shall be 5 percent of the design flow rate.

4. O₂ Monitor:

Monitors subject to this requirement shall take a minimum of one measurement every 15 minutes with this data recorded at least every successive 15 minutes. The minimum data recorder resolution shall be 0.2 percent O₂.

5. CO Monitor:

Monitors subject to this requirement shall take a minimum of one measurement every 15 minutes with this data recorded at least every successive 15 minutes. The minimum data recorder resolution shall be 5 parts per million (ppm).

6. CO₂ Monitor:

Monitors subject to this requirement shall take a minimum of one measurement every 15 minutes with this data recorded at least every successive 15 minutes. The minimum data recorder resolution shall be 0.2 percent CO₂.

7. HCl Monitor:

Monitors subject to this requirement shall take a minimum of one measurement every 15 minutes with this data recorded at least every successive 15 minutes. The minimum data recorder resolution shall be 5 ppm.

8. Opacity Monitor:

Monitors subject to this requirement shall complete a minimum of one cycle of sampling and analysis for each successive 10-second period and one cycle of data recording for each successive 6-minute period. The minimum data recorder resolution shall be 0.5 percent opacity.

9. THC Monitor:

Monitors subject to this requirement shall take a minimum of one measurement every 15 minutes with the data recorded at least every successive 15 minutes. The minimum data recorder resolution shall be 1 ppm.

C. Recordkeeping

1. Any owner or operator subject to any of the provisions of this standard shall maintain a file of all measurements, data and correspondence relating to continuous monitoring systems, other monitoring devices, performance testing measurements, all continuous monitoring system performance evaluations, all continuous monitoring system or monitoring device calibration checks, and adjustments and maintenance performed on these systems or devices.

2. The owner or operator of any source subject to any of the provisions of this standard shall record the daily waste(s) charge rates and hours of operation (effective June 25, 1999).

3. Copies of all records and reports required under this section shall be available for inspection during normal working hours and copies shall be furnished within 10-working days after receipt of a written request from the Department.

4. Copies of all records and reports required under this section shall be retained by the owner/operator for five years after the date on which the record was made or the report submitted.

D. Reporting and Corrective Action

1. All sources subject to the monitoring provisions of this section will be required to report quarterly all exceedances of limits specified in the source's permit and this standard. All quarterly reports must be postmarked by the 30th day following the end of each calendar quarter.

2. Any source subject to this standard must report any changes in operating or monitoring parameters and/or any equipment malfunctions which result in exceedances of the emissions limitations herein, within 24 hours after the occurrence unless otherwise approved in a Department approved malfunction plan. This report shall be made to the appropriate Regional Environmental Quality Control Office. In addition, the flow of hazardous waste fed to the combustion source must be stopped until proper operating conditions are restored.

3. For those sources not required to have a continuous emission monitor for the specified pollutant, a detailed report shall be submitted to the Department within 30 days following any exceedance of limits specified in the source's permit and/or this standard unless otherwise approved in a Department approved malfunction plan. The report shall include at a minimum all of the elements listed in Regulation 61-62.1, Section II.J.1.c.

SECTION VII - CALIBRATION AND QUALITY ASSURANCE OF MONITORING DEVICES

A. Provisions of this section or other procedures approved by the Department, unless superseded by federal air regulations, are applicable to monitoring devices required under Section VI or required by permit conditions to establish compliance with this standard. The daily zero and span calibrations for all categories of continuous emission monitors shall comply with the requirements of 40 CFR 60.13(d)(1) and (d)(2) unless superseded by federal air regulations.

B. Specific Monitoring Devices

1. Thermometers/Thermocouples

a. Initial Calibration:

- (i) Range: 3 points over the expected range of use.
- (ii) Accuracy: plus or minus (\pm) 2.5 percent.

(iii) Method: Calibrate using National Institute of Standards and Technology (NIST) traceable methods and manufacturer's specifications or other methods approved by the Department.

b. Quality Assurance:

Conduct weekly single or multipoint reference checks against NIST traceable thermometers/thermocouples or other methods approved by the Department, and recalibrate according to paragraph B.1.a above if this difference is greater than 2.5 percent.

2. Baghouse and Scrubber Pressure Drop Gauges

a. Initial Calibration:

(i) Range: 3 points over the expected range of use.

(ii) Accuracy: ± 5 percent.

(iii) Method: Calibrate against a certified gauge-oil manometer or other methods approved by the Department.

b. Quality Assurance:

Conduct weekly single point reference checks against a certified gauge-oil manometer and recalibrate according to paragraph B.2.a. above if the difference is greater than 5 percent.

3. Waste Flowmeters

a. Initial Calibration:

(i) Range: 3 flowrates over the expected range of use.

(ii) Accuracy: ± 3.0 percent.

(iii) Method: NIST traceable dynamic calibration procedure or other methods approved by the Department.

b. Quality Assurance:

Conduct weekly single point flowrate checks using a gravimetric vs. time procedure as described in manufacturer's specifications or other methods approved by the Department, and recalibrate according to paragraph B.3.a. above if the difference is greater than 3 percent.

4. O₂ Monitor

a. Initial Calibration:

The O₂ monitor must meet Performance Specifications 3, in 40 CFR 60, Appendix B and 40 CFR 60.13 (c), (d)(1), (e), (e)(2), and (f).

b. Quality Assurance (To Be Done Quarterly):

Challenge the monitor with low (25 percent of instrument span) and mid (50 percent of instrument span) EPA Protocol Number 1 or NIST traceable audit gases or challenge the monitor as prescribed in 40 CFR 60, Appendix F, Section 5.1.2. Recalibration according to paragraph B.4.a. above is required if the quarterly audit deviates by more than plus or minus (\pm) 15 percent from the audit gas concentrations. NOTE: Sufficient time for instrument stabilization must be allowed when challenging the monitor with audit gases.

5. CO Monitor

a. Initial Calibration:

The CO monitor must meet Performance Specification 4 or 4A if applicable, in 40 CFR 60, Appendix B, and 40 CFR 60.13 (c), (d)(1), (e), (e)(2), and (f).

b. Quality Assurance (To Be Done Quarterly):

Challenge the monitor with low (25 percent of instrument span) and mid (50 percent of instrument span) EPA Protocol Number 1 or NIST traceable audit gases or challenge the monitor as prescribed in 40 CFR 60, Appendix F, Section 5.1.2. Recalibration according to paragraph B.5.a. above is required if the quarterly audit deviates by more than plus or minus (\pm)15 percent from the audit gas concentrations. NOTE: Sufficient time for instrument stabilization must be allowed when challenging the monitor with audit gases.

6. CO₂ Monitor

a. Initial Calibration:

The CO₂ monitor must meet Performance Specifications 3, in 40 CFR 60, Appendix B, and 40 CFR 60.13 (c), (d)(1), (e), (e)(2), and (f).

b. Quality Assurance (To Be Done Quarterly):

Challenge the monitor with low (25 percent of instrument span) and mid (50 percent of instrument span) EPA Protocol Number 1 or NIST traceable audit gases or challenge the monitor as prescribed in 40 CFR 60, Appendix F, Section 5.1.2. Recalibration according to paragraph B.6.a. above is required if the quarterly audit deviates by more than plus or minus (\pm) 15 percent from the audit gas concentrations. NOTE: Sufficient time for instrument stabilization must be allowed when challenging the monitor with audit gases.

7. HCl Monitor:

Reserved (HCl continuous emission monitor performance specification currently under EPA development).

8. Opacity Monitor

a. Initial Calibration:

The opacity monitor must meet Performance Specification 1, in 40 CFR 60, Appendix B and 40 CFR 60.13 (c), (d)(1), (d)(2), (e), (e)(1), and (f).

b. Quality Assurance (To Be Done Annually):

Must be audited with low, medium and high neutral density filters.

9. THC Monitor

a. Initial Calibration:

The THC monitor must meet the Performance Specification 2.2 in 40 CFR 266, Appendix IX.

b. Quality Assurance and Recalibration:

As specified in Performance Specification 2.2 in 40 CFR 266, Appendix IX.

C.For monitoring devices not specified above, calibration and quality assurance of monitoring devices shall be approved by the Department on a case-by-case basis.

SECTION VIII - PERIODIC TESTING

A. An owner or operator of any source listed in paragraph D below shall ensure that scheduled periodic tests for the parameters associated with that source are conducted in accordance with Regulation 61-62.1, Section IV, Source Tests. These tests shall be performed within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of the facility and every two years thereafter, except as otherwise noted herein. This requirement to conduct tests may be waived if an alternative method for determining compliance with emission limits can be developed which is acceptable to the Department. Department approval of the alternative method for determining compliance must be given prior to the compliance demonstration.

B. Unless more frequent testing is required by an applicable federal requirement, sources subject to a more restrictive requirement in Resource Conservation and Recovery Act (RCRA) or a promulgated Maximum Achievable Control Technology (MACT) Standard shall be excluded from the testing frequency requirements of Section VIII provided any additional parameters required by this section (for example, nickel) are tested and compliance demonstrations are performed at least every three years. Compliance demonstrations must be performed with a maximum frequency of three years for all pollutants listed in Section VIII, as applicable. Spiking for metals and HCl are not required for these periodic retests, but sources must conduct these tests on their normal highest metals and HCl containing waste streams.

C. Other tests may be required by special permit conditions as indicated by a case-by-case evaluation of material being incinerated or burned and by source testing.

D. Tests Required

Sources	Parameters
1. Sludge Incinerators	a. Particulate Matter (PM) b. Mercury (Hg)
2. Hazardous Waste Incinerators	a. Hydrochloric Acid (HCl) b. PM c. Oxygen (O ₂) initially only d. Carbon Monoxide (CO) initially only e. Metals f. POHC Destruction & Removal Efficiency (DRE) initially only
3. Municipal Waste Combustors	a. PM b. HCl (effective 5/25/90) c. CO (effective 5/25/90) d. O ₂ (effective 5/25/90) e. CO ₂ (effective 5/25/90)
4. Commercial Incinerator (effective June 25, 1999)	a. PM b. CO
5. Industrial Incinerators	PM

Sources	Parameters
6. Industrial Boilers and Utility Boilers	a. PM b. Metals c. POHC Destruction & Removal Efficiency (DRE) initially only if burning hazardous waste d. CO if burning hazardous waste e. O ₂ if burning hazardous waste f. HCl
7. Industrial Furnaces	a. PM b. Metals c. POHC Destruction & Removal Efficiency (DRE) initially only if burning hazardous waste d. CO if burning hazardous waste e. O ₂ if burning hazardous waste f. HCl

E. A waiver of the POHC DRE test requirement may be granted for boilers operating under special conditions that ensure 99.99 percent DRE. Such conditions may include but are not limited to the following:

1. >50 percent of boiler heat input from fuel oil, natural gas, or pulverized coal;
2. Minimum waste heat value of 8000 Btu/lb;
3. Waste must be fired with an atomization system;
4. Boiler must be operated at >25 percent load; and
5. CO and O₂ flue gas limits with continuous monitoring requirements.

F. POHC DRE shall be determined by the following equation using mass emissions rates:

$$\text{DRE} = [(\text{Inlet Organics} - \text{Stack Outlet Organics}) \div \text{Inlet Organics}] \times 100$$

SECTION IX - OPERATOR TRAINING REQUIREMENTS

A. Prior to the startup for new facilities and within one year of May 25, 1990, for existing facilities, all incinerator operators shall be trained by the equipment manufacturers' representatives and/or other Department approved qualified individuals and/or organizations as to proper operating practices and procedures. The content of the training program shall be submitted to the Department for approval. The applicant shall submit certification verifying the satisfactory completion of a training program prior to issuance of the operating permit. The applicant shall not operate the incinerator without an operator on-site who has satisfactorily completed the training program.

B. The operator training requirement in paragraph A above is also applicable to all municipal waste combustors effective June 25, 1999.

C. An incinerator operator training program should include but not be limited to:

1. A summary of the applicable standards under this standard;

2. A description of basic combustion theory applicable to an incinerator;
3. Procedures for receiving, handling, and feeding waste as appropriate;
4. Incinerator startup, shutdown, and malfunction procedures;
5. Procedures for maintaining proper combustion air supply levels;
6. Procedures for operating the incinerator within the standards established under this standard;
7. Procedures for responding to periodic upset or off-specification conditions;
8. Procedures for minimizing particulate matter carryover;
9. Procedures for handling ash;
10. Procedures for monitoring incinerator emissions; and
11. Reporting and recordkeeping procedures.

D. The Department may exempt a facility from any or all of the above Operator Training Requirements on a case-by-case basis.