

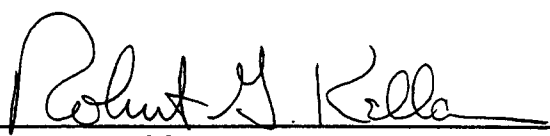


Municipal Waste Combustion: Summary of the Requirements for Section 111(d)/129 State Plans for Implementing the Municipal Waste Combustor Emission Guidelines



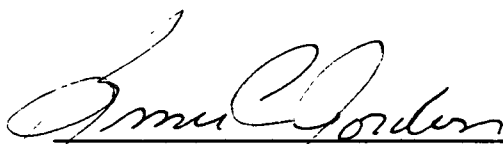
**Municipal Waste Combustion:
Summary of the Requirements for
Section 111(d)/129 State Plans for Implementing
the Municipal Waste Combustor Emission Guidelines**

Approved by:



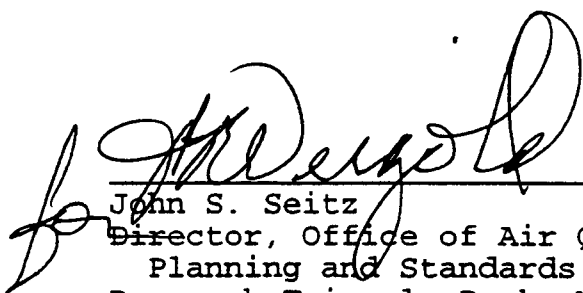
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**Municipal Waste Combustion:
Summary of the Requirements for Section 111(d)/129 State Plans
for Implementing the Municipal Waste Combustor
Emission Guidelines
(EPA-456R-96-003)**

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**Municipal Waste Combustion:
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(EPA-456R-96-003)**

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July 1996

Executive Summary

Air pollution emissions from the combustion of municipal solid waste are regulated by various federal regulations promulgated to implement the Clean Air Act of 1990. This document addresses the municipal waste combustor (MWC) regulations that have been developed under Sections 111 and 129 of the Clean Air Act. Section 111 of the Clean Air Act addresses Standards of Performance for Stationary Sources. Section 129 addresses Solid Waste Combustion.

Federal rules promulgated in the Code of Federal Regulations (CFR) that affect the combustion of municipal solid waste include: (1) Emission Guidelines and Compliance Times for MWC Units That Are Constructed on or Before September 20, 1994 [Title 40 CFR Part 60, Subpart Cb]; (2) rules governing the Adoption and Submittal of State Plans for Designated Facilities [40 CFR Part 60, Subpart B]; and (3) New Source Performance Standards for MWC Units for Which Construction is Commenced After September 20, 1994 [40 CFR Part 60 Subpart Eb].

The Subpart Cb Emission Guidelines apply to existing MWC units located at MWC plants with an aggregate plant combustion capacity of greater than 35 Mg of waste per day that were constructed before September 20, 1994.¹ The states that have MWC plants must implement the Emission Guidelines. The states must develop a State Plan and submit it for approval to the U.S. Environmental Protection Agency. Together, Subpart B and Subpart Cb specify the State Plan content and the general rules for adopting and submitting State Plans.

This document draws together the relevant information from the various Federal regulations that affect municipal waste combustion to give the state regulatory agencies the information they need to develop State Plans.

¹The Emission Guidelines are in metric units. The 35 Mg per day cutoff is equivalent to about 39 tons per day.

State Plan Content

On December 19, 1995 the EPA adopted (1) Emission Guidelines for existing MWC units and (2) New Source Performance Standards for new MWC units. The Clean Air Act requires that state regulatory agencies implement the Emission Guidelines according to a State Plan developed under Sections 111(d) and 129 of the Clean Air Act, and that they submit the State Plan to EPA within one year of EPA's adoption of the Emission Guidelines.

State Plans must contain specific information and legal mechanisms necessary to implement the Emission Guidelines. The minimum requirements are listed below.

- A demonstration of the state's legal authority to carry out the Section 111(d)/129 State Plan,
- Identification of enforceable state mechanisms selected by the state to implement the Emission Guidelines,
- An inventory of MWC plants/units in the state affected by the Emission Guidelines, including units that have ceased operation,
- An inventory of emissions from MWC units in the state,
- Emission limitations for MWC units that are at least as protective as those in the Emission Guidelines,
- Compliance schedules for each MWC unit,
- Testing, monitoring, recordkeeping, and reporting requirements,
- A record of public hearing(s) on the State Plan, and
- Provision for state progress reports to EPA.

The state must make available to the public the State Plan containing these elements and provide opportunity for discussion of the State Plan in a public hearing prior to submittal to EPA. The state must submit the final plan to EPA by December 19, 1996. EPA then has 180 days (six months) to approve or disapprove the State Plan. Plan approval or disapproval will be published in the Federal Register. If a

plan is disapproved, EPA will state the reasons for disapproval in the Federal Register. The state can respond to EPA's concerns and submit a revised plan. If a state does not submit an approvable State Plan by December 19, 1997, EPA will adopt and implement a Federal Plan.

This document outlines the requirements for developing and submitting a State Plan and provides information on the required contents of the State Plan. The following table summarizes the MWC inventory contained in Appendix F and estimates the required retrofit levels on a state-by-state basis. The appendices to this document contain reference and explanatory materials for the state regulatory agencies preparing the State Plans, including (1) frequently asked questions and answers; (2) copies of MWC regulations; (3) guidance memos; (4) fact sheets; (5) clarifications of the requirements of the Emission Guidelines; (6) EPA contacts for further information; (7) inventories of MWC plants and MWC units; (8) emission factors for calculating MWC air pollutant emissions; (9) dioxin emission data; and (10) explanations of the relationship between the requirements of the Emission Guidelines for MWC units and the requirements of other regulatory programs.

Municipal Waste Combustors in Each State

EPA Region	State	Total Number of MWC Plants ^a	Inactive Plants ^b	Number of Plants Requiring Significant Retrofits ^c
I	Connecticut	10	3	1
	Massachusetts	11	1	5
	Maine	5	1	0
	New Hampshire	4	1	2
	Rhode Island	4	0	2
	Vermont	1	1	0
II	New York	26	9	9
	New Jersey	7	0	1
	Puerto Rico	1	0	0
III	Virginia	11	4	4
	Delaware	3	1	2
	District of Columbia	1	1	0
	Maryland	4	0	3
	Pennsylvania	11	2	2
	West Virginia	0	0	0
IV	Florida	15	0	8
	Georgia	1	0	0
	North Carolina	6	1	4
	Alabama	2	1	0
	Kentucky	3	1	2
	Mississippi	1	0	1
	South Carolina	2	0	0
	Tennessee	4	2	2

EPA Region	State	Total Number of MWC Plants ^a	Inactive Plants ^b	Number of Plants Requiring Significant Retrofits ^c
V	Minnesota	12	0	10
	Wisconsin	8	3	4
	Illinois	5	0	1
	Indiana	2	0	0
	Michigan	8	0	0
	Ohio	6	3	2
VI	Arkansas	5	1	4
	Louisiana	0	0	0
	New Mexico	0	0	0
	Oklahoma	2	0	2
	Texas	4	1	3
VII	Iowa	0	0	0
	Kansas	0	0	0
	Missouri	2	1	0
	Nebraska	0	0	0
VIII	Colorado	0	0	0
	Montana	1	0	1
	North Dakota	0	0	0
	South Dakota	0	0	0
	Utah	1	0	1
	Wyoming	0	0	0
IX	Arizona	0	0	0
	California	4	1	0
	Hawaii	2	1	0
	Nevada	0	0	0

EPA Region	State	Total Number of MWC Plants ^a	Inactive Plants ^b	Number of Plants Requiring Significant Retrofits ^c
X	Alaska	2	0	1
	Idaho	1	0	1
	Oregon	2	0	1
	Washington	5	0	2
Total		205	40	81

^a Plant list is from EPA 1995 Inventory (Appendix F) and number presented includes all MWC plants that are operating, inactive, under retrofit, and under construction and includes both large and small MWC plants.

^b Numbers presented are MWC plants that are inactive. Inactive MWC units must be addressed in State Plans to either (1) maintain MWC unit closure or (2) require MWC unit emission control retrofit before MWC unit restarts operation.

^c The number of plants requiring retrofit is an estimate. Includes operating MWC plants (large and small) without scrubbing systems (spray dryer systems for large and dry sorbent injection or spray dryer systems for small).

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D	MWC Unit Implementation Timeline
E	National, State, and Regional Contacts
F	Inventory of MWC Plants and Units
G	MWC Emission Inventory
H	Pollutant Data
I	Operator Certification and Training Requirements
J	Title V Permit Requirements for MWCs
K	NSR Permit Requirements for MWCs
L	1987 NSR Guidance for MWCs
M	Clean Air Act Section 111(d)
N	Clean Air Act Section 129
O	40 CFR 60 Subpart B
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Q	Key Elements of an Acceptable Section 111(d)/129 State Plan

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List of Acronyms and Abbreviations

AFS	Aerometric Emissions Information Retrieval System Facility Subsystem
APCD	Air Pollution Control Device
CAA	Clean Air Act (of 1990)
Cd	Cadmium
CFR	Code of Federal Regulations
CO	Carbon Monoxide
Dioxin	Tetra- through octa- chlorinated dibenzo-p-dioxins and dibenzofurans
EG	Emission Guidelines
EPA	U.S. Environmental Protection Agency
FR	<u>Federal Register</u>
HCl	Hydrogen Chloride
Hg	Mercury
Mg	Megagram (2204 lb)
MSW	Municipal Solid Waste
MWC	Municipal Waste Combustor
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
Pb	Lead
PM	Particulate Matter

List of Acronyms and Abbreviations (continued)

PSD	Prevention of Significant Deterioration
SIP	State Implementation Plan
SO₂	Sulfur Dioxide
tpd	Tons per day

1.0 Introduction

The purpose of this document is to assist the state air regulatory agencies in developing State Plans that implement regulations controlling air pollutant emissions from municipal waste combustor (MWC) units. Under the Clean Air Act of 1990, the United States Environmental Protection Agency (EPA) was required to develop regulations to control air pollutant emissions from MWC units. Emissions from new MWC units were to be addressed by standards of performance for new sources (New Source Performance Standards [NSPS]), and emissions from existing MWC units were to be addressed by standards of performance for existing sources (Emission Guidelines). EPA promulgated the NSPS (Subpart Eb) and Emission Guidelines (Subpart Cb) for MWC units on December 19, 1995. States are required to develop State Plans to implement the Emission Guidelines for existing sources and submit the State Plans to EPA by December 19, 1996. This document provides state agencies information on the required content of these State Plans.

1.1 Organization of this Document

This document brings together the information on the relevant parts of the various regulations that affect existing MWC units built before September 20, 1994. These regulations were developed under Section 111(d) and Section 129 of the Clean Air Act. The regulations are codified in Title 40 of the Code of Federal Regulations (CFR). The CFR rules include (1) Adoption and Submittal of State Plans for designated facilities, Subpart B, and (2) the Emission Guidelines for existing MWC units (Subpart Cb).

This document provides information on the relevant requirements of the Clean Air Act and the Emission Guidelines, and the required contents of State Plans, including an overview of Clean Air Act, regulatory, and State Plan requirements (Section 1); information on the timeline and responsibilities for developing and

submitting State Plans (Section 2); the elements of a State Plan (Section 3); and answers to some general questions about preparing State Plans (Section 4).

The appendices of this document (Table 1-1) include reference materials that states may find useful when developing the State Plans. The appendices include copies of Sections 129 and 111(d), relevant regulations, policy memos, an inventory of MWC plants, emission factors (for estimating MWC emissions), dioxin emissions information, and contact lists. Appendix A provides answers to additional frequently asked questions.

1.2 Clean Air Act Requirements

Section 111(d) has been included in the Clean Air Act since the 1970's and required EPA to establish procedures for submitting State Plans for implementing Emission Guidelines. The first health-based Emission Guideline adopted was for sulfuric acid plants in 1977. Other health- and welfare-based Emission Guidelines have been adopted since that time. The State Plans implement and provide for enforcing the Emission Guidelines. Section 129 was added to the Clean Air Act in 1990 and specifically addresses solid waste combustion. It requires EPA to establish Emission Guidelines for MWC units and requires states to develop State Plans for implementing the Emission Guidelines. The Subpart Cb Emission Guidelines for MWC units differ from other Emission Guidelines adopted in the past because the Subpart Cb Emission Guidelines address both Section 111(d) and Section 129 requirements, and Section 129 overrides some aspects of Section 111(d).

Detailed procedures for submitting and approving State Plans were promulgated by EPA in 1975 as 40 CFR Part 60, Subpart B and amended in 1979, 1989, and 1995. The 1995 amendments to Subpart B were adopted on December 19, 1995 in the same action that promulgated the Subpart Cb Emission Guidelines. The revisions to Subpart B address differences between Sections 129 and 111(d) of the Clean Air Act. In particular, Section 129 requires that State Plans for MWC units be submitted to EPA

Table 1-1. Appendices to this Document

Appendix	Title
A	Answers to Questions about the Emission Guidelines and State Plan Process
B	Emission Guideline Fact Sheet (40 CFR 60 Subpart Cb)
C	Applicability Criteria for 40 CFR 60 Subparts Cb, Ea, and Eb
D	MWC Implementation Timeline
E	National, State, and Regional Contacts
F	Inventory of MWC Plants and MWC Units
G	MWC Emission Inventory
H	Pollutant Data
I	Operator Certification and Training Requirements
J	Title V Permit Requirements for MWCs
K	NSR Permit Requirements for MWCs
L	1987 NSR Guidance for MWCs
M	Clean Air Act Section 111(d)
N	Clean Air Act Section 129
O	40 CFR 60 Subpart B
P	40 CFR 60 Subparts Cb and Eb
Q	Key Elements of an Acceptable Section 111(d)/129 State Plan

within one year after promulgation of Emission Guidelines; whereas the Subpart B procedures developed to implement Section 111(d) plans have a different schedule. Also, Section 129 requires Section 111(d)/129 State Plans to be "at least as protective as the guidelines"; whereas Section 111(d) allows states flexibility to consider the remaining useful life of the source and other factors in developing State Plans and standards. The December 19, 1995 revisions to Subpart B result in the Emission Guidelines for MWC units superseding otherwise applicable requirements of Subpart B, where Section 129 conflicts with Section 111(d). (See Appendices M, N, and O for the full text of Section 111(d), Section 129, and Subpart B.)

1.3 Emission Guidelines

The Emission Guidelines for MWC units (Table 1-2) were promulgated on December 19, 1995 (60 FR 65414), and codified in 40 CFR Part 60, Subpart Cb. The Emission Guidelines apply to existing MWC units that commenced construction on or before September 20, 1994 that are located at a MWC plant with an aggregate plant combustion capacity of 35 Mg per day (approximately 39 tpd) or greater. The pollutants regulated by Subpart Cb include metals (cadmium [Cd], lead [Pb], and mercury [Hg]); particulate matter (PM); (acid gases sulfur dioxide [SO₂], nitrogen oxides [NO_x], and hydrogen chloride [HCl]); organic compounds (dioxins and furans); carbon monoxide (CO); and visible emissions. The Emission Guidelines are summarized in a fact sheet included in this document (see Appendix B). The full text of the Emission Guidelines (Subpart Cb) is also provided (see Appendix P). The Emission Guidelines apply to individual MWC units at MWC plants larger than 35 Mg per day capacity.

1.4 Requirements for State Plans

States are required to develop Section 111(d)/129 State Plans to implement the MWC Emission Guidelines and to submit plans to EPA for approval. The first step for meeting the State Plan requirement is to identify MWC plants (and MWC units) that are subject to the Emission Guidelines that are located in the state. If

**Table 1-2. Outline of the Emission Guidelines for MWC Units
(40 CFR Part 60, Subpart Cb)**

Section	Contents
60.30b	Scope
60.31b	Definitions
60.32b	Designated facilities
60.33b	Emission guidelines for municipal waste combustor metals, acid gases, organic compounds, and nitrogen oxides
60.34b	Guidelines for operating practices
60.35b	Guidelines for operator training and certification
60.36b	Guidelines for fugitive ash emissions
60.37b	Guidelines for air curtain incinerators
60.38b	Compliance and performance testing
60.39b	Reporting and recordkeeping guidelines and compliance schedules

there are no MWC plants in the state with an aggregate combustion capacity greater than 35 Mg per day then the state need only submit a letter of certification to that effect, which is called a negative declaration, and no plan is submitted. However, MWC units at MWC plants that have ceased operation and have an aggregate plant combustion capacity of greater than 35 Mg per day must be included in the MWC inventory if the plant has not been partially or totally dismantled. Furthermore, in order for a MWC unit that has ceased operation to reopen, the state would need to revise the State Plan to require air pollution control device retrofit before the MWC unit restarts operation. The revised plan for the non-operating unit must contain increments of progress, a final compliance date, and that the MWC unit would complete retrofit before reopening.

States that do have MWC plants larger than 35 Mg per day capacity are required to submit a Section 111(d)/129 State Plan. As a minimum, the State Plan must include the following elements:

- A demonstration of the state's legal authority to carry out the Section 111(d)/129 State Plan as submitted;
- Identification of enforceable state mechanisms selected by the state for implementing the Emission Guidelines;
- An inventory of MWC plants/units in the state affected by the Emission Guidelines, including MWC units that have ceased operation and are not partially or totally dismantled;
- An inventory of emissions from MWC units in the state;
- Emission limitations for MWC units that are at least as protective as those in the Emission Guidelines;
- Compliance schedules, extending no later than December 19, 2000¹;
- Testing, monitoring, recordkeeping, and reporting requirements;
- A record of public hearing(s) on the State Plan; and
- Provision for annual state progress reports to EPA on implementation of the State Plan.

The State Plans are due to EPA by December 19, 1996. Table 1-3 summarizes the regulations for adopting and submitting State Plans, as codified in Subpart B of 40 CFR Part 60, and specifies the required elements of the plans. Table 1-3 also indicates where the MWC Emission Guidelines (Subpart Cb) or Section 129 of the Clean Air Act override specific provisions of Subpart B.

¹Compliance schedules would extend no later than December 19, 2000, except when a cease operation agreement is contained in the State Plan. The unit would cease operation and complete retrofits before reopening.

**Table 1-3. Regulations for Adopting and Submitting State Plans
(40 CFR 60 Subpart B)**

Section Number and Title	General Contents	Does the Section Apply to MWC Units?
60.20 Applicability	Subpart B applies when final guidelines are promulgated (i.e., Subpart Cb).	Yes, final MWC guidelines (Subpart Cb) were published 12/19/95 so Subpart B now applies to MWC units.
60.21 Definitions	Defines key terms.	<p>Definition of "designated pollutant" in Subpart B does not apply to MWC units. Subpart Cb lists nine MWC pollutants that are covered.</p> <p>Definition of "designated facility" in Subpart B is defined in Subpart Cb as each MWC unit at an MWC plant with an aggregate plant combustion capacity of greater than 35 Mg per day.</p>
60.22 Publication of guideline documents, Emission Guidelines, and final compliance times	Describes contents of Emission Guidelines to be developed by EPA.	Yes. Guidelines for MWC units (Subpart Cb) have been developed and published as required (60 FR 65414, 12/19/95).
60.23 Adoption and submittal of State Plans, public hearings	Schedules and procedures for states to follow in developing and submitting State Plans. Requirements for public hearings on State Plans.	Yes, except for 60.23(a). Section 129 specifies that State Plans for MWC units are required to be submitted one year after publication of Subpart Cb (i.e., 12/19/96).

Table 1-3. Continued

Section Number and Title	General Contents	Does the Section Apply to MWC Units?
60.24 Emission standards ² and compliance schedules	State Plans must include emission standards and compliance schedules. State Plans may be more or less stringent than the guidelines.	Yes, except 60.24(f) does not apply. Subpart Cb and Section 129 specify that State Plans must be "at least as protective" as the guidelines.
60.25 Emission inventories, source surveillance, reports	Plans must include a plant inventory and an emissions inventory and provisions for monitoring compliance. States must submit progress reports to EPA.	Yes.
60.26 Legal authority	Plans must demonstrate that the state has legal authority to carry out the plan as submitted.	Yes.
60.27 Actions by the Administrator	Procedures for EPA review and approval or disapproval of plans. Federal plans will be developed if states have not submitted approvable plans.	The schedules in 60.27 do not apply. For MWC units, Section 129(b)(2) of the Clean Air Act allows six months for EPA to approve or disapprove State Plans. If approvable plans are not submitted by December 1997 (two years after promulgation) EPA must implement a Federal Plan per Section 129(b).

²Note that "emission standards" can include any state enforceable mechanisms including, but not limited to, state rules (see Section 3.2 in this document).

Table 1-3. Continued

Section Number and Title	General Contents	Does the Section Apply to MWC Units?
60.28 Plan revisions by the state	Procedures for revision of plans.	Yes.
60.29 Plan revisions by the Administrator	Procedures for revision of plans.	Yes.

EPA published policy guidance on Subpart B in 1977, and that guidance applies to the MWC Emission Guidelines except where overridden by the changes introduced by Section 129 of the Clean Air Act of 1990 and Subpart Cb. This document provides a summary of federal regulations that govern the development of Section 111(d)/129 State Plans for MWC units.

1.5 Relationship Between the Section 111(d)/129 State Plan and SIP

The State Plans for implementing the MWC Emission Guidelines are different from State Implementation Plans (SIP) required by Sections 110 or 172 of the Clean Air Act. The State Plan and the SIP are both programs for state implementation of federal requirements. For both, the administrative procedures, particularly the public hearing process, are the same. Both programs are designed to achieve emission reductions at sources by identifying the pollutant to be controlled, establishing the emission limits for the source, and establishing procedures to ensure that emission limits are met.

However, the states and EPA fulfill different responsibilities under the two programs. The goal of Section 111(d) State Plans is to control the emissions of

designated pollutants³ by establishing standards of performance for existing sources. Section 111(d) Emission Guidelines (including emission limitations or performance levels) are technologically based and are established by EPA on a national level, and the states are responsible for developing and implementing a program to achieve compliance with these technologically-based standards. The goal of the SIPs, on the other hand, is to attain and maintain National Ambient Air Quality Standards (NAAQS) or ambient concentrations for certain criteria pollutants (lead, SO₂, PM₁₀, NO₂, CO, and ozone) in a given area. Hence, in the SIP program, the state establishes emission limitations or standards based on the sources' contributions to local air quality, meteorology, and other local factors. The emission control requirements for a regulated source category under a SIP may vary from plant to plant based on local factors.

The states are responsible for implementing both Section 111(d)/129 State Plans and SIP programs, and both programs complement each other. Where the SIP requirements are adequate to meet the 111(d)/129 standard, the state may elect to submit a Section 111(d)/129 State Plan that relies on the requirements in the SIP, Section 110, to meet the Section 111(d)/129 emission standard. In addition, where the Section 111(d)/129 requirements protect the NAAQS, the state may elect to rely on these requirements in the control strategy in the SIP.

³Section 111(d)/129 Plans apply to PM, SO₂, HCl, CO, NO_x, Pb, Cd, Hg, and dioxin/furan [Sections 129(a)(4) and 129(b)(2)].

2.0 Schedule and Responsibilities

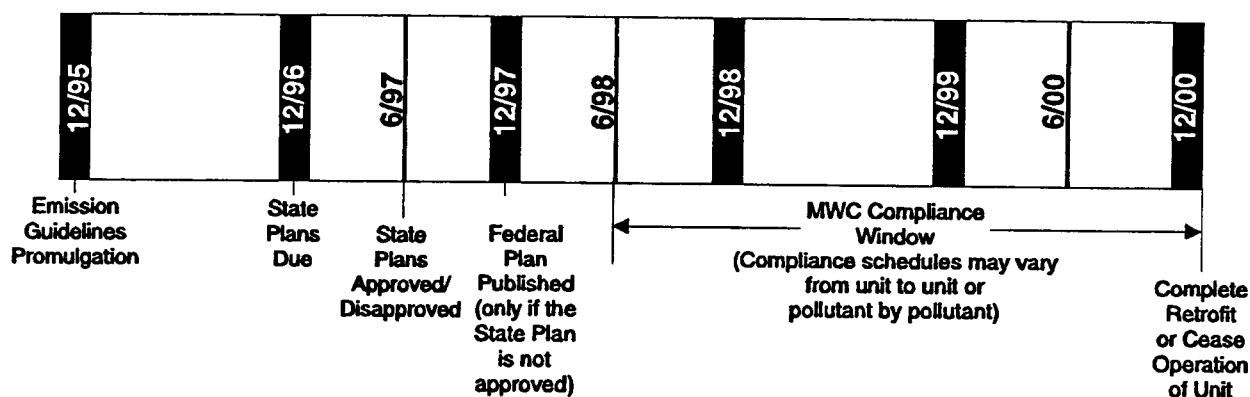
Sections 111(d) and 129 of the Clean Air Act require each state to adopt and submit plans that implement the MWC Emission Guidelines within one year after EPA publication of the final Emission Guidelines. Emission Guidelines for MWC units (40 CFR Part 60, Subpart Cb) were published on December 19, 1995 (60 FR 65414) and State Plans must be submitted to EPA on or before December 19, 1996 (Figure 2-1).

2.1 State Plan Schedule

States need to develop the Section 111(d)/129 State Plan as soon as possible and complete required public hearings in order to submit the Section 111(d)/129 State Plan by December 19, 1996. The steps that are necessary for the states to follow to submit the State Plan are listed in Table 2-1, along with an example schedule.

After the State Plan is submitted, EPA is required to approve or disapprove the State Plan within six months (approximately June 19, 1997). EPA's decision to approve or disapprove each State Plan will be published in the Federal Register (FR). Final decisions will be codified in 40 CFR Part 62, "Approval and Promulgation of State Plans for Designated Facilities and Pollutants." If a plan is not approved, the basis for disapproval will be discussed in the FR notice. If the plan is disapproved, the state should submit a revised plan addressing the concerns. If the state has not submitted an approvable plan by December 19, 1997, the EPA will develop, implement, and enforce a Federal Plan that is applicable to MWC units in the state.

The Section 111(d)/129 State Plans must include compliance schedules for all the MWC units located in MWC plants with an aggregate plant capacity greater than 35 Mg per day that are located in the state. Compliance schedules can allow up to three years from State Plan approval for the MWC units to comply. Section 129(b)(2) requires all MWC units to be in compliance no later than three years after State Plan



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MWC Implementation Timeline
Figure 2-1. MWC Implementation Timeline

approval by EPA or December 19, 2000, whichever is earlier. Compliance can be achieved by either completing air pollution control device (APCD) retrofit (retrofit) or by ceasing plant operation.

More restrictive requirements apply to MWC units at large plants than MWC units at small plants. The Emissions Guidelines give MWC units at large MWC plants up to three years after Section 111(d)/129 State Plan approval by EPA, or until December 19, 2000, whichever is earlier, to complete retrofits or cease operation; however, if the compliance schedule for a MWC unit is longer than one year, the State Plan must include enforceable increments of progress or a cease operation agreement that establishes the date the unit will cease operation. Large MWC plants are defined as MWC plants with plant capacities of 225 Mg/day or greater (about 250 tpd). Additional requirements apply to MWC units at large plants constructed since June 1987. MWC units at these plants must comply with the mercury and dioxin/furan emission limits within one year of State Plan approval. All MWC units at large MWC plants constructed since June 1987 already have the scrubber technology installed that serves as the basis of the air pollution control system required to meet the Emission Guidelines.

Table 2-1. Example Schedule for Section 111(d)/129 State Plans

Action	Date
Emission Guidelines promulgated by EPA	December 19, 1995
Decide what state authority to use	February 1996
Start state rulemaking or other procedure needed to ensure state authority	March 1996
Start drafting State Plan	July 1996
EPA issues guidance on Section 111(d)/129 State Plans	July 1996
Notice of public hearings	September 1996 (30 days before hearing)
Complete state rulemaking or other procedure needed	October 1996
Complete public hearing on State Plan	October 1996
State Plans due to EPA (Regional Office)	December 19, 1996
Respond to any clarifications requested by EPA	During the 180 day period following December 19, 1996
EPA approval/disapproval of the State Plan	June 19, 1997
If disapproved, submit revised approvable State Plan	December 19, 1997

MWC units at large MWC plants constructed since 1987 were required by NSR permits to install Best Available Control Technology (BACT), which was determined in June 1987 to be acid gas scrubbing and PM control (see Appendix L). Therefore, MWC units at large MWC plants constructed since June 1987 would not need to make major retrofits to meet the requirements of the Emission Guidelines. The post-1987 MWC plants will require some additional controls to meet the dioxin and mercury limits, but the controls can be installed in less than one year since the acid gas scrubbing system is already in place. States may establish compliance schedules that are shorter than the times allowed by the Emission Guidelines, but they may not establish compliance schedules that are longer than the Emission Guidelines.

The MWC Emission Guidelines, 40 CFR Part 60, Subpart Cb, also allow MWC units at small MWC plants up to three years after Section 111(d)/129 State Plan

approval by EPA, or December 19, 2000, whichever is earlier, to complete retrofits or cease operation. Small MWC plants are defined as MWC plants with plant capacities greater than 35 Mg per day but less than 225 Mg/day (approximately 39 to 250 tpd). As with a large plant, if the compliance schedule for a MWC unit that extends beyond one year after State Plan approval, the State Plan must include enforceable increments of progress. A difference between the requirements for MWC units located at small plants versus large plants is that cease operation agreements are not required to be submitted for MWC units located at small MWC plants. However, the state must identify authority to take enforcement action if the MWC does not either cease operation or achieve compliance by the specified date in the plan.

2.2 Responsibilities

EPA, the states, and owners and operators of MWC units are responsible for implementing the Emission Guidelines. The primary responsibilities are outlined below.

2.2.1 EPA Responsibilities

Assisting State and Local Programs and MWC Owners and Operators.

EPA assists state and local agencies to develop approvable Section 111(d)/129 State Plans. EPA provides information, answers questions, and interprets federal requirements for the state and for MWC owners and operators. EPA conducts outreach and compliance assistance programs. EPA identifies contact persons to answer states' questions, clarify approval criteria, and address specific implementation issues as necessary. States' questions should be directed to the the appropriate EPA contact to ensure efficient and consistent responses. (See Appendix E for a list of national, state, and regional contacts.)

Review of State Plans. Section 129 of the CAA requires EPA to approve or disapprove State Plans within six months of submittal. States must develop their

Section 111(d)/129 State Plans according to the criteria in this document and 40 CFR Part 60, Subpart B (as revised December 19, 1995 to conform with Section 129). EPA will inform the state if the EPA has questions about the State Plan before making a decision on the approval or disapproval of the State Plan.

Federal Plan. EPA anticipates that all states will develop approvable Section 111(d)/129 State Plans; however, in the event an approvable State Plan is not submitted, EPA will develop and implement a Federal Plan.

Related Section 129 Programs. EPA reviews and comments on state development of Title V operating permits. Title V permits are not a required component of State Plan submittal, nor are they required for EPA approval of the State Plan.

2.2.2 State Responsibilities

Developing a State Plan. The state develops and submits a State Plan that meets the criteria presented in Sections 111(d) and 129, the Emissions Guidelines, and this document. This document outlines how states can meet this responsibility.

Establishing Compliance Schedules. The State Plan must develop emission limits and compliance schedules for all MWC units in the state located at MWC plants with greater than 35 Mg per day plant capacity. States should meet with MWC owners and operators to develop retrofit schedules to ensure a workable Section 111(d)/129 State Plan. All MWC units addressed by the State Plan must complete retrofit or cease operation within three years of EPA approval of the State Plan, but no later than December 19, 2000. (See MWC closure agreements discussed below for extended schedule.)

Establishing Closure Agreements. State Plans must identify MWC units that have already ceased operation or intend to cease operation. Plants must either

comply (i.e., complete retrofits) or cease operation by the dates established in the Section 111(d)/129 State Plans. These compliance dates can be no later than three years after plan approval or December 19, 2000, whichever is earlier. For MWC units located at large MWC plants that will cease operations more than one year after State Plan approval by EPA, the State Plan must include enforceable closure agreements (i.e., agreements to cease operation) in the State Plan. Closure agreements are not required for MWC units located at small MWC plants, but State Plans must demonstrate authority to maintain small plant closure.

MWC units that cease operation can be divided into two groups. The first group is MWC units that have ceased or will cease operation and are not planned to be restarted. Such MWC units are shut down, and cannot restart operation without a State Plan revision and retrofit of air pollution control equipment prior to restart. The second group is MWC units that cease operation as an element of their retrofit activities. For these MWC units, schedules for ceasing operation and completing retrofit activities would be included in the State Plan. The State Plan must include the five enforceable increments of progress for retrofit activities (discussed in Section 3.7.4) along with a sixth increment, a date for ceasing operation. Under the Plan, the MWC unit would cease operation by the specified date and could not restart until the other increments of progress including retrofit of controls is complete. Performance testing would occur within 180 days after restart of the retrofitted unit.

Submitting Progress Reports. States must report annually to the EPA on the progress of implementing the plan, including meeting increments of progress and achieving final compliance. The states must also include in an annual report (as specified in Section 3.9) compliance status, enforcement actions, and updates on inventory.

Related Section 129 Programs. Section 129 requires the state's emission limitations, which implement the Emission Guidelines and are included in the State Plan,

to be incorporated into Title V operating permit requirements. This is a state responsibility and is not a required component of related Section 111(d)/129 State Plans.

2.2.3 Municipal Waste Combustor Owners and Operators Responsibilities

Developing Compliance Plans and Schedules. MWC owners and operators must work with the state to develop a compliance plan and retrofit schedule for the State Plan that are both workable and meet requirements established by the state to implement the Emission Guidelines. All MWC plants must complete retrofits to comply with the emission limits or cease operation not later than three years after Section 111(d)/129 State Plan approval or by December 19, 2000, whichever is sooner. Compliance with mercury and dioxin provisions is required within one year of Section 111(d)/129 State Plan approval for large MWC plants constructed since June 1987. All MWC plants must complete retrofits or cease operation by December 19, 2000. Critical information is needed about each MWC unit such as controls in place and extent of retrofit needed in order to support State Plan development. Additionally, MWC owners and operators must supply dioxin testing information to the state to aid in developing a compliance schedule longer than one year (see Section 3.4.5). An emission inventory is required for all affected MWC units for the public participation process (see Section 3.4).

Upgrading or Retrofitting Facilities. Owners and operators must retrofit or upgrade their facilities to meet the emission limits on the compliance schedules established by the state.

Meeting Additional Emission Guideline Requirements. Owners and operators are responsible for meeting other Emission Guideline requirements, including implementing an operator training program and reporting progress towards compliance to the states. They will also report ongoing testing and monitoring results and keep required records to demonstrate compliance.

Related Section 129 Programs. Owners and operators must apply for a Title V operating permit according to state requirements. These permits would include all applicable federal and state requirements pertaining to air emissions, including the applicable requirements of the Section 111(d)/129 State Plan.

3.0 Required Elements of an Acceptable State Plan

This section of this document and Appendix Q contain summaries of existing information on the required elements of a State Plan. States may find this summary helpful in preparing Section 111(d)/129 State Plans, and EPA will use it in reviewing the plans. A Section 111(d)/129 State Plan for MWC units has nine essential elements:

1. A demonstration of the state's legal authority to carry out the Section 111(d)/129 State Plan as submitted,
2. Identification of enforceable state mechanisms selected by the state for implementing the Emission Guidelines,
3. An inventory of MWC plants/units in the state affected by the Emission Guidelines, including MWC units that have ceased operation and are not partially or totally dismantled,
4. An inventory of emissions from MWC units in the state,
5. Emission limitations for MWC units that are at least as protective as those in the Emission Guidelines,
6. Compliance schedules (retrofits),
7. Testing, monitoring, recordkeeping, and reporting requirements,
8. A record of public hearing(s) on the State Plan, and
9. Provision for annual state progress reports to EPA on implementation of the State Plan.

Table 3-1 summarizes these elements of the State Plan for MWC units, provides citations from Subparts B and Cb, and identifies the sections of this chapter that discuss each element.

Some components of a Section 111(d)/129 State Plan duplicate existing state requirements and therefore will not add additional requirements. For example, most states require public notice for rulemaking consistent with 40 CFR Part 60,

Table 3-1. Summary of Requirements for Section 111(d)/129 State Plans^a

Required Item	Reference in 40 CFR Part 60, Subpart B or Cb	Section of this Document
Show that state has legal authority to carry out plan	60.26(a) of Subpart B	3.1
Identify enforceable mechanisms selected by the state to implement the guidelines	60.24(a) of Subpart B	3.2
An inventory of MWC plants and units and emissions and information related to emissions	60.25(a) and 60.25(c) of Subpart B	3.3 and 3.4
Allowable emission rates	60.24(b)(1) of Subpart B and 60.33b, 60.34b, 60.35b, 60.36b, and 60.37b of Subpart Cb	3.5
Test methods and procedures used for determining compliance with the emissions standards	60.24(b)(2) of Subpart B and 60.38b of Subpart Cb	3.6
Provisions for monitoring a MWC unit's compliance status, including: 1. Legally enforceable procedures for requiring the maintenance of records and periodic reporting to the state for the determination of compliance, 2. Periodic inspections and testing, and 3. Specific testing, monitoring, recordkeeping, and reporting requirements specified by Subpart Cb.	60.25(b) of Subpart B and 60.38b and 60.39b of Subpart Cb	3.6
Compliance schedules and legally enforceable increments of progress for MWC units to achieve compliance	60.24(a) and 60.24(e)(1) of Subpart B	3.7
Certification that a public hearing was held before the State Plan was adopted and list of the attendees at the hearing and their affiliation, with a summary of their presentations and handouts	60.23(f)(1) and (2) of Subpart B	3.8
State progress reports	60.25(f) of Subpart B	3.9

^a See text of Section 3 and Appendix Q of this document for additional discussion of the required elements of a State Plan.

Subpart B. Similarly, Section 112 and Title V of the CAA require various demonstrations of legal authority. To the extent that earlier demonstrations by the state of legal authority meet the requirements of 40 CFR Part 60, Subpart B, the state will simply need to include copies of such demonstrations in the State Plan submittal.

3.1 Demonstration of Legal Authority

The Section 111(d)/129 State Plan must demonstrate that the state has the legal authority under current state law to adopt and implement the emission standards and compliance schedules in the Section 111(d)/129 State Plan. The legal authority must support the legal mechanism selected by the state to implement the emission limits for MWC units. The legal authority must be available to the state at the time the state submits its Section 111(d)/129 State Plan to EPA [40 CFR Part 60, Subpart B, Section 60.26(c)]. States must submit with the Section 111(d)/129 State Plan copies of the laws or regulations that demonstrate the state's legal authority, unless: (1) such laws or regulations were approved when previously submitted under either 40 CFR Part 60, Subpart B or other sections of the CAA, and (2) the state can demonstrate that such previously submitted laws or regulations are applicable to the pollutants¹ for which the plan is submitted [§ 60.26(b)].

A state may use existing demonstrations of legal authority to meet the requirements of Subpart B. Which existing authorities the state uses to implement the Section 111(d)/129 requirements depends on the legislative structure of the state. This implementation guidance provides the minimum requirements of Section 111(d) and 129 pertaining to MWC units, and leaves the state flexibility to implement the requirements as long as provisions are enforceable under state law.

¹For MWCs, the pollutants are PM, SO₂, HCl, CO, NO_x, Pb, Cd, Hg, and dioxin/furan.

A state must include in its demonstration of existing legal authority a showing that it has the authority to:

1. Adopt emission standards and enforceable conditions (see Section 3.2) as well as compliance schedules applicable to the designated facilities and pollutants for which the Section 111(d)/129 State Plan is submitted;
2. Enforce the relevant laws, regulations, standards and compliance schedules referenced in Section 111(d) and Section 129 and seek injunctive relief and prevent restart of MWC units that have ceased operation;
3. Obtain information necessary to determine compliance;
4. Require recordkeeping, make inspections, and conduct tests;
5. Require the use of monitors and require emission reports of MWC owners or operators and;
6. Make emission data available to the public.

Demonstrations of legal authority can take several forms. States that use a legal mechanism other than rulemaking to implement the Emission Guidelines should submit legal documentation, preferably an opinion by the state's Attorney General that the state possesses the adequate authority to implement and enforce the Section 111(d)/129 State Plan using that legal mechanism.

A state governmental agency other than the state air pollution control agency may be assigned responsibility for carrying out a portion of a Section 111(d)/129 State Plan, provided that the state demonstrates that the state governmental agency has adequate authority [Section 60.26(e)]. The state may authorize a local agency to implement a portion of the Section 111(d)/129 State Plan provided that the local agency demonstrates that it has adequate legal authority to implement that portion of the plan and the state is not relieved of responsibility [Section 60.26(e)].

According to a survey of EPA Regional Offices conducted in April 1995, most states that have MWC units covered by the guidelines are developing Section 111(d)/129 State Plans that will use state rules as the legal instrument to enforce the Emission Guidelines. However, some states may use alternative mechanisms to implement the Emission Guidelines. An essential element of a Section 111(d)/129 State Plan requires the plan to include emission standards, which 40 CFR Part 60, Subpart B Section 60.20(f) defines as "a legally enforceable regulation setting forth an allowable rate of emissions into the atmosphere, or prescribing equipment specifications for control of air pollution emissions." For Section 111(d)/129 State Plans, EPA interprets the term "regulation" in Section 60.22(f) to include, in addition to a uniform state requirement or state rule, other mechanisms that are legally enforceable under state law. For example, depending on the applicable state law, enforceable mechanisms that might be used as the vehicle for implementing MWC Emission Guidelines may include a regulatory or administrative order, a compliance order, or a state operating permit. A state may select other enforceable mechanisms provided that the state demonstrates that the state has the underlying authority and demonstrates that the selected mechanism is state enforceable. In addition, a state may have the authority under their state law to incorporate the Emission Guidelines directly into their Title V permit applications as their enforceable mechanism. Whether a state can use Title V as the enforceable mechanism is a question of state law. The Title V operating permit program is not sufficient on its own to confer federal recognition of emission limits and other requirements contained in the Emission Guidelines as meeting the requirements listed in Table 3-1; that is, there must be underlying state authority.

Note that the pollutants that must be regulated under the MWC Emission Guidelines are a combination of criteria and hazardous air pollutants. Generally, states have adequate authority under their air pollution statutes to regulate both criteria pollutants and hazardous air pollutants through a variety of mechanisms. As mentioned earlier, the state legal authority must be in place and effective by December 19, 1996.

If the state relies on a mechanism that is not a state rule to implement the Emission Guidelines, such as a regulatory order, the state must document in the State Plan how the selected mechanism meets the emission standards for the pollutants regulated by Section 129,² and attach a copy of the enforceable mechanism. If a state rule is used, only citations of the overall rule and copies of the sections pertaining to MWC units are required. The state does not have to submit a copy of the entire rule. The state may submit a Section 111(d)/129 State Plan that relies on the requirements in the SIP to meet the Section 111(d)/129 emission standard for a particular pollutant, where they are found to be adequate. If the state relies on existing or revised SIP emission limits to implement the Section 111(d)/129 MWC emission standards, the state must submit the Section 111(d)/129 State Plan citing the SIP and the date when it became effective and document how the SIP assures that the requirements of 111(d)/129 are met. In all cases the mechanism(s) must be in place at the time of plan submittal.

A reduced demonstration of authority is allowed where all units in a state have already ceased operation or will cease operation within one year of plan approval. Such demonstration of legal authority does not need to point to an enforceable mechanism which orders a plant to cease operations. Instead, the state needs only to demonstrate what mechanisms (e.g., state operating permit program) are available to the state to prevent plants from resuming operations until an appropriate State Plan revision is approved.

The EPA emphasizes that the determination whether a particular mechanism may be used to enforce the Emission Guidelines in a particular state is a question of state law; the state law must give the state the requisite authority to enforce the emission limit using the legal mechanism identified by the state. Thus, a mechanism (e.g., a regulatory order) that is approvable for one state under its state law might not be approvable if selected by another state under the law in that state.

²For MWCs, the pollutants are PM, SO₂, HCl, CO, NO_x, Pb, Cd, Hg, and dioxin/furan.

After a state incorporates a requirement in the State Plan, and the plan is reviewed and approved by EPA, the state requirement becomes federally enforceable.

3.3 Source Inventory

A complete source inventory of affected MWC plants and units in the state regulated by the Emission Guidelines must be submitted as part of the Section 111(d)/129 State Plan [40 CFR Part 60, Subpart B, Section 60.25(a)]. The inventory includes both operating and non-operating MWC units; however, non-operating MWC units that have been partially or totally dismantled do not have to be included in the inventory.

To aid states in identifying MWC units that are subject to the Emission Guidelines, this document includes EPA's current MWC database (Appendix F), which lists operating and closed MWC plants. There are 165 MWC plants listed in the EPA's current database that have plant capacities of 35 Mg per day (approximately 39 tpd) or larger that were known to be in operation or under construction on or before September 20, 1994. The MWC units at the 165 MWC plants (205 total MWC plants minus 40 inactive plants) are subject to the MWC Emission Guidelines. The 165 MWC plants include approximately 322 individual MWC units. In addition, 40 inactive (non-operating) plants with plant capacities of 35 Mg per day or more are listed. The MWC plants that have ceased operation include approximately 100 units. As discussed earlier, both operating and non-operating plants must be included in state inventories and addressed in State Plans (see Section 3.7.5 regarding non-operating plants).

The current EPA database of existing MWC units was compiled to support EPA's development of the Emission Guidelines (proposed September 20, 1994 and promulgated December 19, 1995). The information contained in the database is based on surveys of the MWC industry, test reports, telephone contacts, and facility permits as of 1995 and has not been updated.

The Integrated Waste Services Association (IWSA), which represents owners and operators of MWC plants, prepares a survey of MWC plants every year. Their most recent survey is for June 1996 and is included in Appendix F. The IWSA inventory is provided as another tool states may use in preparing State Plans. The EPA has not investigated any of the differences between the 1996 IWSA inventory and the 1995 EPA inventory.

Based on the 165 MWC plants (322 MWC units) operating or under construction and subject to the Emission Guidelines, the total capacity of the MWC plants subject to the Emission Guidelines is approximately 103,300 tpd combustion capacity. Of these 165 plants, 158 plants are operating, and seven plants are under construction. The 165 plants contain approximately 322 MWC units, of which approximately 94 units are located at small plants and 228 units are located at large MWC plants. The number of MWC units located at each plant ranges from one to six, with an average of two combustion units per plant. The age of the MWC units located at MWC plants ranges from three to 40 years old, with an average age of about 10 years.

The MWC design affects the emission factors used to estimate emissions. Three main MWC types are used to combust municipal solid waste: mass burn, refuse-derived fuel (RDF), and modular. A fourth type, fluidized-bed combustors (FBCs), is less common and can be considered a subset of the RDF technology. The inventory in Appendix F identifies the technology used at each MWC plant.

According to the database, 91 percent of the MWC plants, which represent 99 percent of the MWC capacity, employ some kind of air pollution control device. The nine percent that do not are small plants with capacities less than or equal to 225 Mg per day (about 250 tpd). Furthermore, 139 of the 165 existing MWC plants employ heat recovery technology. This represents 95 percent of the existing MWC capacity in the United States. About half of the existing MWC plants, 84 plants, already have scrubbers.

The database also indicates the geographic distribution of the MWC facility population (Table 3-2). Of the 165 MWC plants subject to the Emission Guidelines, the highest concentration is found in the Northeast. New York, Massachusetts, Pennsylvania, New Jersey, and Connecticut have between seven and 17 active existing facilities in each state. Florida has the greatest total capacity, with about 19,000 tpd and 15 plants. New York, Massachusetts, Pennsylvania, Virginia, and Connecticut have the next largest capacities, ranging from 6,900 to 15,500 tpd state combustion capacity. It is thought that Minnesota has the largest number of MWC units that will require extensive retrofit (see Appendix F).

3.4 Emission Inventory

An emission inventory, based on the MWC source inventory, for the pollutants regulated by the Emission Guidelines is required by 40 CFR Part 60, Subpart B, Section 60.25(a) to be included in the Section 111(d)/129 State Plan. The inventory data should include estimates of 1995 emissions where practicable. The inventory must be made available to the general public and presented with the applicable emission standards.

3.4.1 Emission Estimation Methods

Estimates of emissions for the emission inventory can be derived from a variety of methods. Emission factors are included in Appendix G and can be used for developing the required emission inventory. Where emissions data from actual testing are already available from 1995 or earlier and are thought to be representative, they should be used in place of the emission factors. However, where data are not available, additional testing is not required for the inventory in the State Plan except as follows. Subpart Cb Emission Guidelines, Section 60.39b(c)(2), require states to submit tests for dioxin/furan as part of the Section 111(d)/129 State Plan for units at large MWC plants with compliance schedules longer than one year after approval of the State Plan.

Table 3-2. MWC Plants and Estimated Retrofit Level

EPA Region	State	Total Number of MWC Plants^a	Inactive Plants^b	Number of Plants Requiring Significant Retrofits^c
I	Connecticut	10	3	1
	Massachusetts	11	1	5
	Maine	5	1	0
	New Hampshire	4	1	2
	Rhode Island	4	0	2
	Vermont	1	1	0
II	New York	26	9	9
	New Jersey	7	0	1
	Puerto Rico	1	0	0
III	Virginia	11	4	4
	Delaware	3	1	2
	District of Columbia	1	1	0
	Maryland	4	0	3
	Pennsylvania	11	2	2
	West Virginia	0	0	0
IV	Florida	15	0	8
	Georgia	1	0	0
	North Carolina	6	1	4
	Alabama	2	1	0
	Kentucky	3	1	2
	Mississippi	1	0	1
	South Carolina	2	0	0
	Tennessee	4	2	2

Table 3-2. Continued

EPA Region	State	Total Number of MWC Plants^a	Inactive Plants^b	Number of Plants Requiring Significant Retrofits^c
V	Minnesota	12	0	10
	Wisconsin	8	3	4
	Illinois	5	0	1
	Indiana	2	0	0
	Michigan	8	0	0
	Ohio	6	3	2
VI	Arkansas	5	1	4
	Louisiana	0	0	0
	New Mexico	0	0	0
	Oklahoma	2	0	2
	Texas	4	1	3
VII	Iowa	0	0	0
	Kansas	0	0	0
	Missouri	2	1	0
	Nebraska	0	0	0
VIII	Colorado	0	0	0
	Montana	1	0	1
	North Dakota	0	0	0
	South Dakota	0	0	0
	Utah	1	0	1
	Wyoming	0	0	0
IX	Arizona	0	0	0
	California	4	1	0
	Hawaii	2	1	0
	Nevada	0	0	0

Table 3-2. Continued

EPA Region	State	Total Number of MWC Plants ^a	Inactive Plants ^b	Number of Plants Requiring Significant Retrofits ^c
X	Alaska	2	0	1
	Idaho	1	0	1
	Oregon	2	0	1
	Washington	5	0	2
Total		205	40	81

^a Plant list is from EPA 1995 Inventory (Appendix F) and number presented includes all MWC plants that are operating, inactive, under retrofit, and under construction and includes both large and small MWC plants.

^b Numbers presented are MWC plants that are inactive. Inactive MWC units must be addressed in State Plans to either (1) maintain MWC unit closure or (2) require MWC unit emission control retrofit before MWC unit restarts operation.

^c The number of plants requiring retrofit is an estimate. Includes operating MWC plants (large and small) without scrubbing systems (spray dryer systems for large and dry sorbent injection or spray dryer systems for small).

Dioxin/furan emissions measured for these tests should be used for the basis of the dioxin emission inventory for the particular MWC plant.

Where emission factors are used, the document, *Preferred and Alternative Methods for Estimating Air Emissions from Boilers, Volume II: Chapter 2*,³ provides an overview of available estimation methods. This document, which was prepared by the Emission Inventory Improvement Program, lists preferred estimation methods specific to boilers. These methods apply to MWC units, since boilers are used for burning waste.

³*Preferred and Alternative Methods for Estimating Air Emissions from Boilers Volume II: Chapter 2*, Final Report, Radian Corporation, August 1995.

AP-42, the *Compilation of Air Pollutant Emission Factors*,⁴ also provides preferred emission estimation methods.

To the degree that a variety of types of data are available, the usually preferred hierarchy for estimating emissions is listed below:

1. Where already available, continuous emission monitoring systems (CEMs) data that provides a continuous record of emissions over an extended and uninterrupted period of time.
2. Where already available, stack sampling results.
3. Emission factors:
 - a. AP-42/FIRE⁵ emission factors rated "A" through "D"--based on source tests performed at one or more facilities within an industry ("A" is the highest rating).
 - b. State emission factors--possibly more optimized to local or regional conditions.
 - c. Industry emission factors.
 - d. AP-42/FIRE emission factors rated "E" and "U" ("E" is the lowest rating on the A through E scale, and "U" is unratable).

Procedures for calculating emissions from emission factors and measured data are provided in *Preferred and Alternative Methods for Estimating Air Emissions from Boilers*. AP-42 also gives example calculations for estimating emissions from emission factors. Example calculations for estimating annual emissions from either mass or concentration of pollutant are included in this document in Appendix G. These equations are related to those appearing in the "Boilers" document; the primary

⁴AP-42 is the common name for the EPA document entitled *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition*, January 1995, available from GPO or from the CHIEF bulletin board.

⁵The *Factor Information Retrieval System* (FIRE) is factor retrieval software that is available from the CHIEF bulletin board or by calling Info-CHIEF hotline at (919) 541-5285.

difference is in the emission rate units. The "Boilers" document also provides examples of emission rate calculations and useful background information.

AP-42 emission factors that apply to MWC units are also provided in Appendix G. These emission factors are current as of March 26, 1996 and are appropriate for developing the emission inventory to be submitted in the Section 111(d)/129 State Plans due December 19, 1996; however, since AP-42 emission factors are updated periodically, the factors in Appendix G should not be used for subsequent emissions inventories unless verified to be current.

3.4.2 Required Emission Summary Reports

A summary of emissions should be submitted with the Section 111(d)/129 State Plan. It should include, at a minimum, the emission rate of each of the designated pollutants for each MWC unit in each affected MWC facility. These values should be provided with the corresponding emission standards to show the relationship between measured or estimated amounts of emissions and the amounts of such emissions allowed by the standard.

3.4.3 Annual Emission Reporting

In addition to the initial emission inventory that is required for the Section 111(d)/129 State Plan, 40 CFR Part 60, Subpart B Section 60.25(e) also requires states to submit progress reports as part of the annual report to EPA submitted under 40 CFR Part 51, Section 51.321. These annual reports, specified in Sections 51.321 through 51.323, must update the emission inventory for sources that achieve compliance, sources that are new or modified, sources ceasing operation, or sources whose emissions have changed more than 5 percent from the most recently submitted emission data. If emissions from a MWC unit have not changed more than 5 percent, then the state must update the year of record of the previously reported data.

3.4.4 Reporting to AFS

Emission data must be reported to the Aerometric Emissions Information Retrieval System Facility Subsystem (AFS) as specified in Appendix D to 40 CFR Part 60. AFS is a repository of emission information for stationary sources that has now superseded the National Emissions Data System (NEDS) described in 40 CFR Part 60 Appendix D.

3.4.5 Post-1990 Dioxin Test for Large MWC Plants

State Plans for a MWC unit at a large MWC plant with a compliance schedule or closure date that extends more than one year beyond approval of the State Plan (approximately June 1998) must include dioxin test data from a test conducted during or after 1990. Because Section 111(d)/129 State Plans are due by December 19, 1996 and will be approved within six months (if acceptable), the date of State Plan approval is expected to be approximately June 19, 1997. The dioxin test data should be submitted for each MWC unit at a large MWC plant that will have a compliance date later than June 19, 1998. The dioxin test data are due to the state agency for consideration in time for the public hearings on the State Plan.

The Emission Guidelines require that each separate MWC unit at large plants be tested for dioxin emissions. Under the Emission Guidelines, the State Plan could use one dioxin test as representative of all similar units in cases where the state can demonstrate that multiple units have the same design, operate with the same fuel, have the same operating parameters, and are expected to have similar emission levels; however, the State Plan would have to demonstrate that the reduced testing was "at least as protective" under provisions of Section 129(b)(2) of the Clean Air Act to allow EPA to approve the alternative sampling procedure. Alternatively, where available, the State could consider pre-1990 dioxin test data to identify the single MWC unit at the plant with the highest dioxin concentration and only retest that unit. In this case the state would not need operating parameters to identify the unit to test. Again, the State Plan

would have to demonstrate that the reduced testing was "at least as protective" under provisions of Section 129(b)(2) to allow EPA to approve the alternative sampling procedure.

To assist state agencies and the public to evaluate the dioxin test data relative to typical dioxin levels for other MWC units, EPA's data on dioxin emissions from MWC units is provided with this document (Appendix H).

3.5 Compliance with Emission Limitations or Cease Operations

MWC units must either retrofit controls to comply with the emission limitations in the State Plan or cease operations. The State Plan must include emission limitations that are at least as protective as the Emission Guidelines and also must address non-operating MWC units and MWC units that will cease operation rather than retrofit air pollution control equipment.

Emission Limitations

Under Section 129(b)(2), the Section 111(d)/129 State Plans must include emission limits that are "at least as protective as" those in the MWC Emission Guidelines (40 CFR Part 60, Subpart Cb). The emission limits for the nine MWC pollutants are found in Subpart Cb (Appendix P) and the Fact Sheet (Appendix B).

The Section 111(d)/129 State Plan must include limitations for all of the pollutants in Subpart Cb. Section 60.33b of Subpart Cb specifies emission limits for PM, Cd, Pb, Hg, SO₂, HCl, dioxins/furans, and NO_x. Section 60.34b contains limits for CO. All of these limits are in units of concentration. For example, the PM and metals limits are in units of milligrams per dry standard cubic meter exhaust from the pollution control device. The dioxin/furan limit is also a concentration limit (nanograms per dry standard cubic meter). The SO₂ and HCl limits are expressed as either a concentration (parts per million by volume) or a percent reduction at the outlet of the pollution control

device prior to discharge to the atmosphere. The NO_x and CO limits are concentration limits in parts per million by volume.

To be approvable, the Section 111(d)/129 State Plan must include emission limits in dimensions identical to the guidelines, or alternative formats demonstrated to be at least as protective as the concentration limits and percent reductions specified for each pollutant in Subpart Cb. Other state programs and permits may include limitations in the form of emission rates, e.g., pounds per hour or ambient air concentrations; these types of limitations are not required to be included in the Section 111(d)/129 State Plan. If a State Plan uses any format for emission limitations other than those in Subpart Cb, the state must demonstrate that these emission limitations are at least as protective as those in Subpart Cb.

In addition to emission limits for the nine pollutants regulated by the Emission Guidelines, Section 111(d)/129 State Plans must also include MWC operating practices [Section 60.34b(b)], operator training and certification requirements [Section 60.35b], fugitive ash visible emission standards [Section 60.36b], and air curtain incinerator opacity requirements [Section 60.37b].

3.6 Testing, Monitoring, Recordkeeping and Reporting

Following retrofit, the Section 111(d)/129 State Plan must include requirements for the ongoing testing, monitoring, recordkeeping, and reporting provisions from the Emission Guidelines.

The testing, monitoring, recordkeeping, and reporting provisions are specified in the MWC Emission Guidelines (Subpart Cb). These include, in particular:

- The performance testing methods listed in Section 60.58b of Subpart Eb [40 CFR Part 60, Subpart Cb, Section 60.38b], and
- The reporting and recordkeeping provisions listed in Section 60.59b of Subpart Eb [40 CFR Part 60, Subpart Cb, Section 60.39b].

Subpart Eb requires periodic performance tests or continuous emission monitors (CEMs) for the nine pollutants. The MWC plant must maintain records of the performance test or CEM data and specified operating parameters for two years. The MWC plant must submit annual reports if it is in compliance and semiannual reports if it exceeds emission standards. Details of these requirements are contained in Subpart Cb and Subpart Eb (Appendix P).

A State Plan that incorporates the testing, monitoring, reporting, and recordkeeping requirements specified in Subpart Cb will be consistent with the State Plan requirements in Subpart B. Under Section 60.25b of Subpart B, State Plan requirements for monitoring compliance must include the following:

- Legally enforceable requirements that require owners and operators to keep records of the nature and amount of emissions and any other information that may be necessary to enable the state to judge compliance. This information must be reported periodically to the state. (Subpart Cb requires such records and reports.)
- Legally enforceable requirements that provide for periodic inspection and testing. (Subpart Cb requires periodic testing and monitoring.)
- Provisions for making reports of emission data, correlated with the emission standards that apply, available to the general public.

3.7 Compliance Schedules

To comply with the emission limits contained in the Section 111(d)/129 State Plan, existing MWC units may need to retrofit emission controls. The State Plan must contain schedules for retrofitting these MWC units. The elements included in a compliance schedule are listed in Table 3-3.

The retrofit schedule for MWC units at an MWC plant are developed by the state air pollution control agency considering input from the public and input from the MWC owners and operators. The Emission Guidelines place certain restrictions on retrofit schedules. With two exceptions, retrofit schedules (or cease operation

Table 3-3. Schedule for MWC Unit Compliance with MWC Emission Guidelines

Dioxin test data ^a	October 1996 (suggested date)
State Plan submittal	December 19, 1996
State Plan approval	June 19, 1997
If not in compliance by this date, need enforceable increments of progress for MWC units at large MWC plants	June 19, 1998
MWC units at large MWC plants constructed after June 26, 1987 must be in compliance for mercury and dioxin	June 19, 1998
Submit a final control plan	A set date in State Plan
Award contracts for control system	A set date in State Plan
Initiate construction or installation of control system	A set date in State Plan
Complete construction or installation of control system	A set date in State Plan
Final compliance date for MWC unit	No later than 3 years from approval of State Plan ^b or December 19, 2000, whichever is earlier, or cease operations by that date
Initial performance test for MWC unit	As scheduled in State Plan but no later than 3 1/2 years after approval of the State Plan or 180 days after December 19, 2000 for an operating MWC unit. If a MWC unit has ceased operation as part of a delayed retrofit schedule according to a State Plan, 180 days after startup of the retrofitted MWC unit if a component of a delayed retrofit under a cease operation agreement
Reports of periodic performance test data and CEMs data	Annually after compliance date, if in compliance. Semiannually after compliance date, if the emission limits are exceeded

^a Dioxin test data are required for MWC units at large MWC plants with closure dates or compliance schedules that extend more than one year after approval of the State Plan. If State Plans are submitted on December 19, 1996 and are approved on

Table 3-3. Continued

June 19, 1997, a MWC unit with closure or compliance dates later than June 19, 1998 will need to submit dioxin data. Data submitted must be for 1990 or later.

^b Nothing in Section 129 precludes a state from requiring earlier compliance dates.

agreements) can extend up to three years after Section 111(d)/129 State Plan approval, but no retrofit schedule can extend beyond December 19, 2000, except if a MWC unit ceases operation in accordance with a State Plan (see Section 3.7.5). Second, MWC units at large MWC plants that commenced construction after June 26, 1987 must comply with the dioxin/furan and mercury emission limits within one year of plan approval or permit modification.

The Section 111(d)/129 State Plan must also specify legally enforceable increments of progress toward compliance for MWC units that have compliance or retrofit schedules that extend past one year beyond approval of the Section 111(d)/129 State Plan. In some cases, MWC units may cease operation as of December 19, 2000 or three years after state approval, whichever is earlier, complete a retrofit, and then reopen when retrofits are completed.

3.7.1 Retrofit Required

A State Plan may specify different retrofit schedules for existing MWC plants in the state or even at different MWC units within a MWC plant. Also, retrofit schedules may vary within the same MWC unit for different pollutants because different control systems may be required. The Subpart Cb guidelines are "performance standards," with no control technology specified, and MWC owners and operators will determine the actual equipment selected for retrofit at a plant. The emission limits in the Emission Guidelines, however, are based on the performance of specific control technologies. This text discusses control technology retrofits as if a specific technology would be required because certain technologies are expected to be selected for retrofit

and because discussing a specific technology assists in defining what must be accomplished in the three-year retrofit time period.

Control systems for the regulated MWC pollutants can be considered as four sub-groups: (1) combustion system upgrades -- referred to as good combustion practices (GCP); (2) acid gas/PM scrubbing systems (with activated carbon injection); (3) post-combustion NO_x control systems; and (4) fugitive ash control systems. The acid gas/PM scrubbing system is the most expensive control system. The acid gas/PM scrubbing system with carbon injection controls multiple pollutants, including dioxin/furan, Pb, Cd, Hg, PM, SO₂, and HCl. Other control systems primarily control one pollutant. For example, GCP controls CO and organic emissions. Fugitive ash control systems reduce visible emissions from ash conveyance.

About half of the MWC units at large MWC plants will require extensive retrofit. Extensive retrofit is retrofit of an acid gas scrubbing system (see Table 3-2 and Appendix F). Currently 84 plants out of the total population of 165 active plants are already equipped with acid gas/PM scrubbing systems. The remaining 81 plants will require significant retrofit at all or some of their MWC units.

3.7.2 Retrofit Schedules for MWC Units at Large MWC Plants

Large MWC plants, or those with an aggregate plant combustion capacity larger than 225 Mg per day (about 250 tpd), must be in compliance three years after State Plan approval or by December 19, 2000, whichever is earlier, except if a cease operation agreement is used. (Plant closure and ceasing operation are discussed in Section 3.7.5.) That means the MWC units must be in compliance by June 19, 2000, if a State Plan is submitted on December 19, 1996 and approved by EPA on June 19, 1997. Additionally, MWC units with compliance schedules extending more than one year after State Plan approval⁶ must also include for those MWC units the following:

⁶This date is approximately June 19, 1998.

(1) measurable and enforceable increments of progress toward compliance (see Section 3.7.4) and (2) dioxin data from a test conducted during or after 1990 (see Section 3.4.5 and Appendix H). MWC units constructed after June 26, 1987 are currently equipped with scrubbing systems and are allowed up to one year to retrofit activated carbon injection for enhanced scrubber performance in order to control mercury and dioxin. For other pollutants, such as NO_x and CO, the retrofit schedule can extend up to three years after State Plan approval or December 19, 2000, whichever is earlier.

3.7.3 Retrofit Schedule for MWC Units at Small MWC Plants

Under Subpart Cb, small MWC plants are those with an aggregate plant combustion capacity between 35 and 225 Mg per day (about 39 to 250 tpd). The compliance schedule for small MWC plants is somewhat less restrictive than for large plants. MWC units at small plants are allowed to have compliance schedules extending up to three years after State Plan approval or December 19, 2000, whichever is earlier. As with large MWC plants, enforceable increments of progress are required for units with compliance schedules extending more than one year after State Plan approval. However, the dioxin test from 1990 or later is not required and cease operation agreements do not have to be submitted. Again, State Plans may allow units to cease operation by the specified date, and restart after completing the retrofit.

3.7.4 Increments of Progress

Compliance schedules for MWC units with compliance dates that extend more than one year beyond the date of State Plan approval must include legally enforceable increments of progress towards compliance as required by Section 60.24(e)

of Subpart B.⁷ Each increment of progress in Section 60.21(h) of Subpart B must have an enforceable compliance date in the Section 111(d)/129 State Plan. The Section 111(d)/129 State Plan may include such additional increments of progress as may be necessary for close and effective supervision of progress toward final compliance.

The minimum five increments of progress required by Section 60.21(h) of Subpart B for each MWC unit within a state are as follows:

1. Submitting a final control plan. This may be a brief document or letter describing the controls that the source will use to comply with the emission limitations and other requirements. In most cases, the source, public, and state will have discussed this information as part of the state process for development of the compliance schedule for the draft State Plan before the State Plan is submitted to EPA;
2. Awarding contracts for control systems or process modifications or orders for purchase of components;
3. Initiating on-site construction or installation of the air pollution control device(s) or process changes;
4. Completing on-site construction or installation of control equipment or process changes;
5. Final compliance.

All five increments of progress for MWC units can be fixed calendar dates or set as floating dates. For increments one to four, the floating dates can be tied to either the date of the approval of the State Plan or the date of permit issuance, if a permit is required. For example, the date for submitting a final control plan could be set as three months following approval of the State Plan. If an increment of progress is tied to the date of a permit issuance, the State Plan must identify the specific permit.

⁷Subpart Cb suggests increments of progress only for MWC unit at large MWC plants with compliance schedules that extend more than one year after State Plan approval or permit issuance, if a permit is required. However, Subpart B requires five enforceable increments of progress for all MWC units subject to the Emission Guidelines that have a compliance schedule extending more than one year beyond State Plan approval. The requirements of Subpart B must be met.

The fifth increment of progress, the date for final compliance, can be set as a calendar date or a floating date. As a floating date, it can be tied only to the date of the approval of the State Plan, not to the date of permit issuance, and must include the limitation that the date in no case can be later than three years from State Plan approval or December 19, 2000, whichever is earlier (unless the MWC unit ceases operation). A sixth increment of progress, ceasing of operation, is required for MWC units that plan to cease operation by the specified date and restart with the retrofit completed after December 19, 2000 (see Section 3.7.5).

Additional suggested increments of progress are listed in Sections 60.39b(c)(1)(i)(A) through (J) of Subpart Cb (see Appendix P). Some of these suggested increments of progress are already required by Subpart B. The remaining suggested increments of progress may be included in the Section 111(d)/129 State Plan as enforceable increments of progress with compliance dates, as non-enforceable increments of progress with reporting requirements only, or they may be left out of the Section 111(d)/129 State Plan entirely.

The additional suggested increments of progress from Subpart Cb are:

1. Date for obtaining services of an architectural and engineering firm regarding the air pollution control device;
2. Date for obtaining design drawings of the air pollution control device(s);
3. Date for submitting permit modifications, if necessary;
4. Date for obtaining the major components of the air pollution control device(s);
5. Date for initial startup of the air pollution control device(s); and
6. Date for initial performance test(s) of the air pollution control device(s).

EPA strongly recommends that a date for the initial official performance test of the retrofitted control device be included in the Section 111(d)/129 State Plan.

Following installation of the air pollution control device and restarting the MWC unit, a performance test must be completed within 180 days. In addition, the Section 111 general provisions (40 CFR 60 Subpart A) require a 30-day notice before a performance test. The report of the performance test results must be submitted within 60 days after the test is conducted. These test results are for demonstrating whether or not the MWC unit is in compliance with the emission standards after the retrofits are completed. This performance test timing is consistent with other EPA air regulations for existing sources, such as the NESHAP general provisions (40 CFR 63 Subpart A). Note that the "initial" official performance test denoted above does not mean the first ever test but rather the first official test for determining compliance; that is, EPA would expect MWC owners and operators to conduct preliminary tests for their own use (similar to other industry owners and operators who typically conduct preliminary tests to tune equipment) at least two to three months before the scheduled initial official performance test. Preliminary tests enable MWC plant owners to make any necessary "shakedown" adjustments and retest before the initial official performance test. EPA does not have to be notified of the unofficial tests nor do they have to be on site for the unofficial tests.

The Section 111(d)/129 State Plan may include one set of increments with compliance dates applicable to all MWC units within the state or it may vary the compliance dates from MWC unit to unit to address specific issues relevant to individual plants or units at a plant. In all cases, the enforceable increments of progress must be arranged chronologically, and the compliance dates must be set to ensure full compliance with the applicable requirements *as expeditiously as practicable* [Section 60.24(c) of Subpart B]. For example, a State Plan that requires a large plant to "submit a final control plan and to award contracts no later than the third year of the compliance schedule" will likely be disapproved because the increments are too close to the end of the compliance window, do not appear to ensure expeditious progress, and thus jeopardize timely compliance, unless the MWC unit plans to cease operation. Although there may be unit-specific reasons for other schedules, EPA would expect contracts to be awarded within the first year for large plants taking longer than one year to comply.

Depending on the extent of the retrofit, EPA would expect on-site construction to be completed in the second or third year of the compliance schedule.

3.7.5 Plant Closure (Cease Operations)

All MWC units, whether at large or small MWC plants, that plan to cease operation are required under 60.39(c) to cease operation within three years following approval of the Section 111(d)/129 State Plan, but no later than December 19, 2000. In particular, the Section 111(d)/129 State Plan needs to address MWC units which:

- Cease operation rather than comply with the Emission Guidelines, or
- Cease operation as an enforceable component of their retrofit schedule.

Subpart Cb [Section 60.39(c)] provides that if MWC units at large MWC plants are going to cease operation, they must cease operations within one year of approval of the State Plan by EPA, or the State Plan must contain a legally enforceable "closure agreement" (i.e., a cease operation agreement) that includes the date operation will cease. MWC units at small MWC plants do not need a cease operation agreement for MWC units that cease operations prior to three years after State Plan approval or December 2000.

MWC Units That Have Already Ceased Operations or Are Planning to Cease Operation Within One Year After State Plan Approval

MWC units that have already ceased operations must be identified in the inventory in Section 111(d)/129 State Plans. MWC units that will cease operations within one year of State Plan approval⁸ must also be identified in the State Plan and the State Plan must specify that the MWC unit will cease operations by a specific calendar

⁸By June 19, 1998 if the Section 111(d)/129 State Plan is submitted on December 19, 1996 and is approved by June 19, 1997.

date. If the MWC unit does not cease operation by that date, enforcement action would be taken. The inventory is a component of the State Plan, and a MWC unit designated to have ceased operations in the inventory may not operate without a revision of the State Plan and retrofit to achieve compliance with the emission limits. All State Plans that included requirements for MWC units that have ceased operation but that will restart must incorporate increments of progress for the MWC unit and require it to complete air pollution control device retrofit before restarting.

MWC Units Planning to Cease Operations Later Than One Year After State Plan Approval

States with MWC units at large MWC plants planning to cease operations more than one year after State Plan approval need to submit a legally enforceable cease operation agreement that includes a date that operations will cease. MWC units at large MWC plants that are ceasing operations more than one year after State Plan approval must also submit data from dioxin/furan emission tests per Section 60.39b(c)(2) of Subpart Cb.

The cease operations agreement ensures that the MWC units will cease operation by an agreed-upon enforceable date. The date in the cease operations agreement becomes federally enforceable upon EPA approval of the Section 111(d)/129 State Plan.

MWC units at small plants under State Plans are not required to submit dioxin/furan test data or to have cease operation agreements. However, the State Plan must require that all operating MWC units at small plants must comply with the Emission Guidelines or cease operations by three years after State Plan approval, or by December 19, 2000, whichever is earlier.

MWC Units That Have Ceased Operation and Plan to Restart

MWC units covered by a State Plan that specifies that the units have or will cease operation can be restarted as provided below. These MWC units fall into two groups. The first group includes MWC units that have ceased operation or are scheduled in the State Plan to cease operation that had not originally planned to restart. These MWC units may not restart operations without a State Plan revision, and the retrofit would have to be completed prior to restart. The second group includes MWC units that plan to cease operations, complete retrofits, and restart as part of their retrofit schedule under the State Plan. In either case the MWC unit is not likely to be considered a new source under the NSPS applicability criteria when it restarts, and must be addressed in the State Plan to prevent reopening as an existing source that is not subject to the Emission Guidelines' control requirements.

Any MWC unit that ceases operation in the State Plan as its final enforceable increment may not reopen until the State Plan is revised. Provisions for states to revise their State Plans are contained in 40 CFR Part 60, Subpart B, Section 60.28. The revised State Plan must contain enforceable increments of progress for MWC units to comply before they restart (see Section 3.7.4).

A State Plan may include provisions for a MWC unit that plans to cease operation and restart as part of its retrofit schedule. The state would list enforceable increments of progress for that MWC unit in the initial Section 111(d)/129 State Plan, and ceasing operation would be an additional increment of progress. For example, the Section 111(d)/129 State Plan could specify that an MWC plant will complete retrofits on two of its three MWC units before December 19, 2000 and the two units will remain in operation. The third unit could cease operation on December 19, 2000 and follow the required increments of progress toward retrofit, and complete retrofitting prior to restarting. (Performance testing on the third unit would be conducted within 180 days of restart of the retrofitted MWC unit.)

In all cases, the State Plan for units to be retrofitted would include the five enforceable incremental steps of progress (with specific dates) for retrofitting control at the plant and MWC units that cease operations as part of their retrofit plan would include a sixth increment of progress. Ceasing operation could serve as increment one or two of the six increments.

States in Which All MWC Units have Ceased Operation or Plan to Cease Operation Within One Year of State Plan Approval

States in which all of the existing MWC units are non-operating or planning to cease operation must still submit a Section 111(d)/129 State Plan, unless the non-operating MWC unit has been partially or totally dismantled. These State Plans are reduced in scope but still need to include (1) a demonstration that the state has the legal authority to maintain closure of a MWC unit if needed, (2) the inventory of MWC units in the state, (3) provision for a public hearing on the State Plan, and (4) provision for state progress reports. The State Plan identifies the requirement that would be used to prevent the MWC unit from reopening. If the state wishes to allow any non-operating MWC units to restart, a State Plan revision would be required and the plan would have to address all the requirements of an operating MWC unit.

3.8 Public Hearings

Public participation, under the provisions of the CAA, is an important right and responsibility of citizens in the state process of developing, adopting, and implementing Section 111(d)/129 State Plans. As with State Implementation Plans (SIPs) for criteria pollutants, EPA regulations in 40 CFR Part 60, Subpart B, make it clear that citizen input on Section 111(d)/129 State Plans is encouraged in order to help define appropriate emission standards and retrofit schedules. Under Subpart B, some minimum public participation requirements are as follows:

1. Reasonable notice of opportunity for one or more public hearing(s) at least 30 days before the hearing.

2. One or more public hearing(s) on the Section 111(d)/129 State Plan (or revision) conducted at location(s) within the state, if requested.
3. Date, time, and place of hearing(s) prominently advertised in each region affected.
4. Availability of draft Section 111(d)/129 State Plan for public inspection in at least one location in each region to which it will apply.
5. Notice of hearing provided to:
 - a. EPA Regional Administrator
 - b. Local affected agencies
 - c. Other states affected
6. Certification that the public hearing, if held, was conducted in accordance with Subpart B and state procedures.
7. Hearing records must be retained for a minimum of two years. These records must include the list of commentors, their affiliation, summary of each presentation and/or comments submitted, and the state's responses to those comments.

3.9 State Progress Reports to EPA

States must commit in the Section 111(d)/129 State Plan to submit annual reports on progress in the implementation of the Emission Guidelines to the EPA. These reports can be incorporated into the reports required by 40 CFR Section 51.321. Inclusion in this SIP report is intended to avoid duplicative reports. Each progress report should include compliance status, enforcement actions, increments of progress, identification of sources that have ceased operation or started operation, emission inventory information for sources that have started operation, updated emission inventory and compliance information, and copies of technical reports on all performance testing and monitoring, including concurrent process data.

States may want to include additional information on periodic inspection and testing activities, emission and parameter exceedances, QA/QC, outreach activities, Title V or other permit condition compliance status, and compliance assistance activities.

Some states and EPA regional offices have developed more specific or tailored reporting and recordkeeping procedures via Memoranda of Agreements, Program Specific Guidance for Section 105 Grants, and the Timely and Appropriateness Guidance. For example, some EPA offices prefer that the states retain the performance test reports until EPA requests review as part of a compliance determination or other action. The state and EPA will continue to have discretion on the format of the annual reports.

4.0 Answers to Some General Questions About Section 111(d)/129 State Plans
(See Appendix A for additional questions and answers)

Question No. 1: If a state uses a SIP regulation as a basis for the enforceable mechanism in a State Plan, does the state need to demonstrate legal authority?

Answer: A state can select from a range of legal mechanisms as described in this summary document provided that the state can show it has adequate legal authority. A demonstration of legal authority is required in all cases except for state rules. If a SIP rule is used, citations, rather than copies of actual state legal authority is adequate. It is unlikely the SIP will address all of the HAPs (see Section 60.26[b]).

Question No. 2: Do emission limits in the State Plan need to be the same as the emission limits in the Subpart Cb guidelines?

Answer: The emission limits in the State Plan must be "at least as protective" as the Emission Guidelines, and EPA recommends that the limits be presented in the same regulatory format as the Emission Guidelines, e.g. concentration limits or percent reductions. If a regulatory format other than that used in the Emission Guidelines is used in a State Plan, then the state must show how the format correlates to the format in the Emission Guidelines and demonstrate that it is at least as protective as the Emission Guidelines.

Question No. 3: Does the State Plan need to address each MWC unit located in the state in the inventory?

Answer: Yes, each MWC unit located at an MWC plant larger than 35 Mg/day must be addressed by the State Plan.

The State Plan must address all MWC units that are operating whether they plan to retrofit or plan to cease operation, with the exception of partially or totally dismantled units.

Additionally, a State Plan must include a complete MWC unit inventory including both operating and non-operating units.

Question No. 4: Can a State Plan identify only air pollution control equipment to be retrofitted or must it include emission limits?

Answer: A State Plan must include emission standards at least as protective as the Emission Guidelines, and they must apply them to each MWC unit. Equipment specification is not required, and alone is unacceptable.

Question No. 5: For MWC plants with plant capacities over 225 Mg/day, is a baseline dioxin test required before retrofit?

Answer: Yes, if compliance with the dioxin standard will take longer than one year. The test data are available to aid the public and the state in developing a retrofit schedule.

Following retrofit, a compliance test must be completed. The initial compliance test must be conducted no later than three and a half years from plan approval or within 180 days after December 19, 2000 (whichever is sooner). If a MWC unit ceases operation and then completes a retrofit and restarts, the initial compliance test must be conducted within 180 days of restarting. Annual compliance tests must be performed every year during operation of the plant. If they do have a cease operation agreement, then operations must cease no later than three and a half years from plan approval or within 180 days after December 19, 2000.

Note: Annual dioxin testing does not apply to MWC units that qualify for reduced monitoring under Sections 60.38b(b) and (c) of Subpart Cb.

Question No. 6: Do reporting requirements in State Plans apply to MWC operators or just state agencies?

Answer: The requirements apply to both. The state has responsibilities to develop the State Plan and to report implementation progress to EPA. The MWC owner must show expeditious progress on achieving compliance by the

dates set and then show continuing compliance with the standard by annual compliance tests and CEM data for the various pollutants, as specified in subpart Cb.

Question No. 7: Are fixed calendar dates required in increments of progress?

Answer: Yes and no. There are five mandatory increments of compliance. These are: 1) submittal of a final control plan; 2) awarding of contracts; 3) initiation of on-site construction; 4) completion of on-site construction, and 5) final compliance. Either calendar dates or floating dates can be used for these increments of progress.

The state may submit a schedule that uses either all calendar dates or a mix of calendar and floating dates, or a state could submit a schedule with dates that all float. For the first four increments of progress, dates may float from date of State Plan approval or date of issuance of a permit, if a permit is required. If a permit is cited in the State Plan as the significant date from which the increments will be referenced, the specific permit must be identified.

For the fifth increment of progress, final compliance, if a floating date is used that date must be no later than three years after State Plan approval or December 19, 2000, whichever is earlier, except if a cease operation agreement is part of a retrofit plan. If they do have a cease operation agreement, then operations must cease no later than three and a half years from plan approval or within 180 days after December 19, 2000.

Question No. 8: Are public hearings required prior to submittal of a State Plan?

Answer: Adequate opportunity for public hearings is required. The requirements described in Section 3.8 of this document apply and require the opportunity for public hearings on State Plans prior to submittal. If after adequate notice, no one requests a hearing, the hearing is not required.

Question No. 9: Can the states incorporate the MWC progress reports into their 40 CFR Part 51, Section 51.321 annual report for SIPs?

Answer: Yes, EPA encourages states/EPA coordination to work with the EPA to minimize any potential duplication of reporting requirements and to tailor the reports to ensure the most productive compliance and enforcement activities.

Appendix A

Answers to Questions about the Emission Guidelines and State Plan Process

APPENDIX A--ANSWERS TO SOME FREQUENTLY ASKED QUESTIONS ON THE EMISSION GUIDELINES

This appendix includes frequently asked questions received by EPA about the MWC emission guidelines adopted on December 19, 1995 and answers them. Many of these questions were submitted to EPA during workshops offered on March 5 and April 10, 1996, broadcast by satellite. The questions are divided into questions about Section 111(d)/129 State Plan requirements and questions about the Subpart Cb Emission Guidelines requirements. Within these two divisions, the following topics are discussed:

A. Content of the State Plans

1. Compliance Schedule and Increments of Progress
2. Legal Authority and Enforceable Mechanisms
3. Approval Process
4. Contents of Plan

B. Regulatory Requirements

5. Applicability
6. Definitions
7. Dioxin Limits
8. NO_x Emission Limits
9. SO₂/HCl Emission Limits
10. Control Technologies
 - Spray Dryer/Fabric Filter
 - Carbon Injection
 - SNCR
11. Good Combustion Practices
12. Operator Training and Certification
13. Fugitive Ash Standards
14. Compliance and Performance Testing
15. NSR/PSD Issues
16. Other

A. CONTENT OF THE STATE PLANS

1. COMPLIANCE SCHEDULE AND INCREMENTS OF PROGRESS

Question: Under the Emission Guidelines, the "clock" for the MWC retrofit schedule starts at EPA approval of the State Plan. Is this the controlling date in all cases?

Answer: No. All MWC units covered by a State Plan must complete retrofit or cease operation no later than three years after State Plan approval or by December 19, 2000, whichever is earlier (see Sections 3.7.1 and 3.7.5). Additionally, the actual State Plan may reformat the various compliance dates. In the State Plan the state may elect to tie the enforceable increments of progress to (1) fixed calendar dates, (2) "float" dates from EPA approval of the State Plan, or (3) with the exception of increment 5, "float" dates from issuance of permits necessary for retrofit activities.

Question: Can a plant submit a closure agreement as an alternative compliance plan, and decide later to retrofit controls?

Answer: Yes. The State Plan must specify a compliance date for a MWC unit to complete retrofit or to cease operations. If a State Plan specified that a MWC unit would cease operations by a given date, and the MWC owner later decides to retrofit controls, the state must modify the State Plan to include a new compliance date for the MWC (including meeting all requisite public notice and comment requirements and five increments of progress). The plan revision would need to be approved by the EPA. If an MWC owner already knows the cease operations agreement is an interim step toward retrofit and restart of the MWC units, the requirement to cease operation can be added to the five required enforceable increments of progress toward compliance in the initial State Plan. The unit would have to cease operation on or before December 19, 2000 and would complete its retrofit before restarting operations (see Section 3.7.5).

Question: Have we interpreted the Emission Guidelines correctly that MWC units must be in compliance within three years after EPA approves the State Plan?

Answer: Yes. Under Section 129, MWC units must be in compliance within three years of EPA's approval of the State Plan, or December 19, 2000, whichever is earlier. Additionally, the State Plan could include a requirement to cease operations on or before December 19, 2000 as part of an extended retrofit schedule that exceeded December 19, 2000.

Question: Every state must submit a Section 111(d)/129 Plan by December 19, 1996, which includes a compliance schedule for each MWC unit in the state. It is reasonable to assume that some states will not have their enforceable mechanisms in place and their plans prepared until the last quarter of 1996. An affected facility cannot begin to prepare for compliance with the emission guidelines before the state in which

the facility is located has established an enforceable mechanism. For example, we plan to have the standards adopted in late October. A MWC plant will not be able to decide whether to keep an existing ESP, retrofit that ESP, or replace it with a baghouse until the standards are finally adopted by the state. Additionally, the plant will not be able to design a scrubbing system or carbon injection system and send these design parameters out to bid until November 1996. How can anyone know what the compliance schedule for that facility will be until after the bidding process is complete and the contracts have been signed? How binding are the compliance schedules included in the State Plan submittal? Can the compliance schedules in the State Plan just be a best guess?

Answer: As a minimum, the State Plan must include the five enforceable increments of progress for each MWC unit as required by Subpart B. The required increments are:

- submitting a final control plan,
- awarding contracts for controls,
- initiating on-site construction or installation of controls,
- completing on-site construction or installation of controls, and
- final compliance.

(These steps are further explained in Section 3.7.4 of this document.) Additional increments of progress may also be included in the plan. The State Plan must include binding and enforceable compliance dates for the five increments. The compliance dates can be calendar dates or floating dates set a certain time from State Plan approval. The first four increments can also have floating compliance dates set a certain time from issuance of a specific permit. But the fifth increment, final compliance, can be set only from State Plan approval and cannot extend beyond three years from State Plan approval or December 19, 2000, whichever is earlier, unless it includes a requirement to cease operations on or before December 19, 2000 as part of an extended retrofit schedule that exceeded December 19, 2000.

The schedules in the State Plan are enforceable but the State Plans can be revised provided they meet the requirements above and the public is given adequate notice of an opportunity for public comment. That is, if the state and MWC agree that more time is necessary for an increment of progress, the state could submit a State Plan revision to EPA for approval after following the procedures for plan revision specified in 40 CFR Part 60, Subpart B, but the final retrofit date or cease operation date would still need to be within three years of State Plan approval and no later than December 19, 2000.

The state and MWC will need to review the emission limits in the Subpart Cb emission guidelines (promulgated December 19, 1995) and draft state standards being developed to implement the guidelines and make judgments about the likely retrofit requirements in order to include a schedule in the State Plan. Except for those few states that already have more stringent standards or broader coverage, most states propose to match the Emission Guidelines requirements.

Question: Paragraph 60.39b(c)(1)(i) of Subpart Cb specifies "suggested" measurable and enforceable activities to be included as steps of progress in compliance schedules. Item (D) specifies inclusion of a date for submittal of the "final control plan". Section 60.21(h)(1) of Subpart B requires this submittal, but does not define it. Where is this term defined? Since it seems more reasonable to include a schedule (increments of progress) as a part of a compliance plan ("control plan"), is it acceptable to specify submittal of a compliance plan which includes increments of progress for meeting the items contained in the plan, i.e., the measurable and enforceable activities?

Answer: Under Subpart B, the State Plan must include dates for a minimum of five enforceable increments of progress. These dates cannot be included only in a control plan developed after State Plan approval. The increments of progress that must be included with enforceable dates (including the control plan) are identified and further discussed in Section 3.7 of this document.

Question: Suppose a MWC plant with three units will have to shut units down in stages in order to retrofit emission controls. Would shutdown of the third unit constitute compliance with the subpart or does the third unit have to be retrofitted and tested within three-year period of approval of the State Plan?

Answer: The State Plan must include increments of progress or a cease operation agreement for each MWC unit with a compliance schedule that extends beyond one year from State Plan approval. The State Plan could include increments of progress for retrofitting two units and a cease operations agreement within the 3-year period for the third unit. However, if the third unit plans to restart in the future, the State Plan would need to include the five required increments of progress with specific dates. The third unit could not restart until the retrofit had been completed. The initial compliance test must be completed within 180 days of restart. Any dates for the increments that occur after operation ceased would be enforceable even though the unit has ceased operation and is being retrofitted.

Question: For MWC units at large plants, Subpart Cb requires that the State Plan submit dioxin/furan test data for each unit requiring more than one year to retrofit. There is some confusion whether the units must comply with all of the requirements of Subpart Cb within one year or just the dioxin/furan limit. For example, a plant that has three units with scrubbers is able to install carbon injection within one year and demonstrate compliance with the dioxin/furan limit but requires more than one year to complete the installation of selective non-catalytic reduction (SNCR) for NO_x control. Since the plant is not complying with all of the requirements of Subpart Cb at the end of the first year, will the plant owner be required to include dioxin/furan test data for all three units in the State Plan?

Answer: Subpart Cb requires dioxin/furan test data for each MWC unit that will not comply with all of the emission limits and other requirements of Subpart Cb within one year of plan approval. Thus the state will have to include dioxin test data for these

units. However, the State Plan may exclude dioxin test data for such a unit if the dioxin standard and metals standards (cadmium, mercury, and lead) are being met within one year, and the State Plan demonstrates that the reduced dioxin testing is "at least as protective" under Section 129(b)(2), thus enabling EPA to approve the State Plan.

Question: Can the compliance plan requirements for State Plans be met by including generic MWC compliance plan requirements and schedules (i.e., not MWC plant specific) in a promulgated state regulation? In this case, the state would not need to submit individual compliance plans for each MWC unit in the state as part of the State Plan submittal.

Answer: Yes. A state regulation could establish compliance dates and dates for the five required increments of progress for the entire MWC category. As long as the state regulation has enforceable dates that apply to each MWC unit in the state and includes each of the required increments of progress, the dates for each MWC do not need to be listed separately.

Question: Is an actual public hearing required, or is a public comment period with the opportunity for the public to request a hearing sufficient to satisfy the requirement of a public hearing?

Answer: A public comment period with the opportunity to have a public meeting if requested by the public, is satisfactory. The public notice would have to offer the public hearing and identify to whom to send the meeting request and when the request must be made (see Section 3.8).

Question: Can a state tie the compliance date for the MWC units to the date of state adoption of the rule?

Answer: Yes, as long as there is the backstop of compliance (retrofit completed or cease operation) occurring no later than three years after State Plan approval or December 19, 2000 (five years after Emission Guidelines publication), whichever is earlier.

2. LEGAL AUTHORITY AND ENFORCEABLE MECHANISMS

Question: State Plan submittal must include a letter documenting legal authority for the instrument used to implement the Section 111(d)/129 State Plan -- Can the demonstration be "waived" if a general state regulation (i.e., SIP) is used as the implementing instrument?

Answer: A detailed demonstration of authority is not required for the State Plan if the basis is SIP regulations. The State Plan may cite the regulation. For all other legal instruments demonstration of authority is required. The EPA strongly recommends that states include a certification letter from the Attorney General of the state for such a

demonstration if a mechanism other than a state regulation is used. (Several states have originally thought they had other authority but later their Attorney General explained that they did not.)

Question: If a state already has enforceable regulations in place, can the state submit them as the enforceable mechanism in a State Plan?

Answer: Yes, if the existing state regulation is at least as protective as the emission guidelines and meets all other criteria as discussed in Section 3.2 of this document.

3. APPROVAL PROCESS

Question: What are the timelines for submission and approval of State Plans following promulgation of federal guidelines for MWC units?

Answer: The states must submit plans within one year of EPA promulgation of the Emission Guidelines. Because MWC Emission Guidelines were promulgated on December 19, 1995 (60 FR 65414), state plans are due by December 19, 1996. As discussed in Sections 2.2 and 2.4 of this document, the EPA must approve or disapprove the plan within six months of submittal. If a plan is disapproved, specific reasons will be given. The state is encouraged to address the concerns and resubmit the plan. If a state fails to submit an approvable plan by December 19, 1997, a federal plan will be implemented and enforced.

Question: Under Section 129(b)(2) of the Clean Air Act, will EPA's approval or disapproval of a State Plan be a letter, Federal Register notice, or both?

Answer: The approval or disapproval will be published in the Federal Register. The notice will include reasons for disapproval if the plan is not approved.

4. CONTENTS OF PLAN

Question: If a state agency develops an air pollution control device retrofit schedule longer than one year after plan approval by EPA for MWC units located at a large MWC plant, the State Plan submittal must include a dioxin test (post 1990) for each of the MWC units at the plant. If a plant has multiple and identical units, can a performance test conducted on a single unit meet this requirement for all units at the plant?

Answer: Section 60.39b(c)(2) of Subpart Cb requires performance test results for dioxin/furan emissions for each MWC unit that has a compliance schedule longer than one year following State Plan approval. Thus, all units at the plant that will not be in compliance within one year following State Plan approval must be tested. However, the state agency may elect to include dioxin data from only one unit at a MWC plant under

the "at least as protective" provisions of Section 129(b)(2). The State Plan would have to demonstrate to EPA that the reduced dioxin testing was "at least as protective" under Section 129(b)(2) to enable EPA to approve the alternative sampling procedure. This demonstration could be done in a number of ways. The State Plan could identify multiple units that have the same design, operate with the same fuel, have the same operating parameters, and are expected to have similar emission levels. Alternatively, the state could review the available plant data and identify the single MWC unit at the plant expected to have the highest dioxin emissions and only test that unit. The plan could also use pre-1990 dioxin test data, if they existed for all the units at the plant, to identify the unit with the highest dioxin emissions and retest only that unit. In all cases, the State Plan would have to demonstrate that the reduced testing was "at least as protective."

Question: On a case-by-case basis, under Section 111(d) plan requirement [40 CFR Subpart B Section 60.24(f)], states have the flexibility to submit plans that contain the application of less stringent emission standards or longer compliance times than required under the applicable emission guidelines. Does the "at least as protective as the guidelines" requirement of Section 129 of the Clean Air Act now eliminate the plan flexibility provided under 40 CFR Section 60.24(f)?

Answer: Yes. State Plans for MWC units are Section 111(d)/129 plans and have additional requirements than State Plans developed under only Section 111(d). The "at least as protective" language in Section 129 of the Clean Air Act applies to MWC units, and Section 60.24(f) of Subpart B is superseded. Section 60.24(f) of Subpart B was revised on December 19, 1995 (see 60 FR 65414) to allow Subpart Cb to specify that states could not allow less stringent limits or longer compliance times than specified in Subpart Cb.

Question: Can a state develop a MWC unit-specific plan rather than a generic MWC plan?

Answer: The state must submit a State Plan. The plan must include the elements discussed in Section 3 and Appendix Q of this document. The plan may include MWC unit-specific emission limits and compliance schedules or uniform state-wide limits and schedules.

Question: If there are conflicting requirements under Sections 111(d) and 129, what requirements take precedence?

Answer: If there are conflicting requirements, Section 129 takes precedence over Section 111(d) and the Subpart B rules developed to implement Section 111(d). Chapter 1 presents a table showing the portions of Subpart B that apply to MWC units and the portions that are revised by Section 129.

B. REGULATORY REQUIREMENTS

5. APPLICABILITY

Question: Does the applicability date mean the date of initial construction, initial startup, or when the MWC finally reaches full production?

Answer: The applicability date is the date construction is commenced. For example, the Subpart Cb applies to units for which construction is commenced on or before September 20, 1994. "Commenced" is defined in the NSPS General Provisions in 40 CFR Part 60 Subpart A, Section 60.2.

Question: If a MWC unit constructed before 1990 consists of two small units [20 Mg per day each], such that the total capacity is 40 Mg per day, are the units subject to the MWC rules?

Answer: Yes. The Emission Guidelines apply to MWC units located at plants with aggregate capacities to combust greater than 35 Mg per day, (about 39 tpd) of MSW.

Question: Does Subpart Cb (Emission Guidelines) or Eb (NSPS) apply to the following units? A MWC plant with three units (each >250 tpd) shut down in 1980. Two units were restarted in 1986 with ESP control. The MWC owner wants to restart the third unit (with SD/FF controls) and submitted a permit application on March 29, 1995.

Answer: All three units appear to be subject to the Emission Guidelines. Restarting a unit does not in itself make the unit subject to the NSPS. However, if a unit commences "modification" or "reconstruction" after June 19, 1996, it would be subject to the Subpart Eb NSPS. If it commences "modification" or "reconstruction" between December 20, 1989 and June 19, 1996, it is subject to the Subpart Ea NSPS. Definitions of "modification" and "reconstruction" are contained in Subparts Ea and Eb. (Installing pollution control equipment and implementing good combustion practices are not considered modifications.) In the commenter's example, the first two units would be subject to the Subpart Cb Emission Guidelines. If the third unit is not modified or reconstructed in some extensive way prior to restart (air pollution control device retrofit does not count), it also is subject to the Subpart Cb Emission Guidelines. The NSPS would not apply.

Question: If you have a boiler firing coal and MSW that has the potential to combust >35 Mg per day of MSW (e.g., shredded tires, paper pellets made from office waste), does Subpart Cb apply? Does Subpart Eb apply?

Answer: If a boiler fires MSW, and is capable of combusting > 35 Mg per day of MSW, then the boiler may be subject to Subpart Cb, unless it qualifies for one of the

following two exemptions: (1) the boiler has a federally enforceable permit limiting MSW combustion to <10 Mg per day of MSW, or (2) the boiler is a cofired unit with a federally enforceable permit limiting it to combusting a fuel feed stream that is < 30% MSW by weight per calendar quarter. The owner or operator must report that the boiler is exempt and keep records of the amount of MSW fired. (See Subpart Eb Section 60.150(b) and (j) and the definitions in Section 63.151 for details.)

Question: Are tire-fueled facilities covered by the MWC regulations?

Answer: A 100 percent tire-fueled facility is exempt from these Emission Guidelines if it qualifies for the exemptions specified in Section 60.32b(d), (e), or (f) of Subpart Cb. See Appendix P for a copy of the Emission Guidelines.

Question: If a 360 tpd MWC plant with four 90 tpd modular incinerator units being vented through a common stack would like to be classified as a small incinerator designation under CAAA 1990, what is your opinion?

Answer: The determination of whether a plant is large or small is based on the aggregate capacity of all units at the plant, whether or not the units vent to a common stack. Unless two of the units are closed, the plant described above would be a large plant. If two units are closed, the plant would have an aggregate capacity of 180 tpd (approximately 163 Mg per day) and would be considered a small plant.

6. DEFINITIONS

Question: The definition of municipal solid waste has changed for Subpart Eb and Cb in comparison to Subpart Ea and Ca. Specifically, sewage sludge has been excluded from the definition. Please (1) confirm that the materials excluded in the definition of municipal solid waste are not intended to limit the types of municipal solid wastes which can be processed and (2) identify the purpose of excluding certain materials from the MSW definition.

Answer: The change in the definition of MSW was not intended to limit the types of wastes that can be combusted at MWC plants. The changes were made to exclude combustors burning 100% sewage sludge, medical waste, or other excluded items from being covered by the MWC rule and reduce regulatory overlap. Combustion of sewage sludge and medical wastes will be regulated by other rules.

Question: Regarding the definitions of municipal solid waste in Subparts Eb and Cb, what is "industrial and commercial waste"?

Answer: The definition of MSW in Subpart Eb specifies that commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments.

Industrial process or manufacturing wastes are excluded from the definition of MSW, but are scheduled to be regulated under separate regulations in the future.

Question: Cb defines "municipal waste combustor plant" and "municipal waste combustor unit". However, reference is made numerous times to "designated facility" and "affected facility". The latter terms appear to identify the same entity. For clarity and consistency, is it acceptable to use the term "municipal waste combustor unit" in place of "designated facility" and "affected facility"?

Answer: Yes. Under Subpart Cb a designated facility and an affected facility are equal to MWC units which are located at MWC plants with an aggregate plant capacity of more than 35 Mg per day.

Question: "MWC unit" is defined in Subpart Eb to include the incinerator with or without heat recovery but does not include the air pollution control equipment. Subpart Cb requires that CO measurements be made at the outlet of the combustor. Is the outlet immediately following the economizer or just prior to the air pollution control device, or should we even be concerned?

Answer: Subpart Cb specifies that carbon monoxide be measured at the combustor outlet. In general, any location between the economizer and the air pollution control device should be acceptable.

7. DIOXIN LIMITS

Question: Could you discuss the formation of dioxins in the control equipment? What temperatures or ranges are known to enhance the secondary formation of dioxins?

Answer: One of the main dioxin formation pathways occurs at temperatures commonly found in some air pollution control systems. Available data indicate that rates of dioxin formation increase significantly at temperatures above 450°F and reactions appear to be greatest at approximately 600°F.

8. NO_x EMISSION LIMITS

Question: What would be the NO_x limits for a MWC units at large RDF unit built in 1986?

Answer: MWC units at large RDF unit built in 1986 would be subject to the Subpart Cb Emission Guidelines. The applicable NO_x emission limit is 250 ppmv.

9. SO₂/HCl EMISSION LIMITS

Question: According to what baseline should compliance with Subpart Cb be verified? For example, 31 ppmv or 75% reduction in sulfur dioxide emissions. What is the 75% reduction measured from?

Answer: The format of the standard allows a unit to demonstrate compliance *either* by meeting the 31 ppmv emission limit *or* by showing that the air pollution control device reduces the flue gas SO₂ concentration by 75% before it exits the stack. The percent reduction is determined by the difference between the concentration at the inlet to the air pollution control device and the concentration at the outlet of the air pollution control device. The inlet and outlet concentrations must be measured with CEMS, and the percent reduction is calculated as a 24-hour geometric mean.

10. CONTROL TECHNOLOGIES

Spray Dryer/Fabric Filter

Question: Why was a baghouse chosen instead of an ESP for the basis of the NSPS?

Answer: The combination of a spray dryer and fabric filter (SD/FF) (i.e., baghouse) is part of the basis of the standards for new MWC units, and a SD/FF or SD/ESP is part of the basis of the standards for existing large MWC plants. A FF is more effective than an ESP for removal of PM, metals, and condensed organics, and a FF is generally less costly than an ESP. However, the MWC standards are expressed in terms of emission limits and do not mandate that a specific control technology be used. Thus, any technology that achieves the emission limits can be used.

Question: Describe the feed control process for the lime/limestone into the spray dryer to ensure control of acid gases.

Answer: The lime/limestone feed rate may be controlled manually or automatically. Typically, feed rate control is automatic, based on flue gas temperature and SO₂ readings at the outlet from the continuous emission monitor (CEM).

Question: Describe how a baghouse can withstand the heat from the combustor?

Answer: A spray dryer (SD) is used upstream of the FF (baghouse) for acid gas removal. The SD cools the exhaust gas rapidly, such that the temperature at the FF inlet is less than 300°F.

Question: How do you control the corrosion due to acid gases in the baghouse?

Answer: The acid gases (SO₂ and HCl) have been neutralized by the lime injected in the SD upstream of the FF.

Carbon Injection

Question: How is activated carbon injected? How is the amount of activated carbon determined?

Answer: Activated carbon is usually injected pneumatically upstream of the fabric filter. The amount will be determined by system design. The carbon feed rate must be sufficient to achieve compliance with the emission limits. Carbon feed rates will vary depending on the design and operation of the combustion and air pollution control systems. Based on typical operating conditions, carbon feed rates of 0.3 to 1.0 lb per ton of MSW combusted are expected for most MWC units.

Question: If a facility can meet the Hg and dioxin standards with a scrubber alone, must they retrofit with carbon?

Answer: The standards are emission limits and do not specify any particular control technology, and carbon injection may not be used in all cases. For example, RDF plants with SD/FF air pollution control devices alone are expected to meet the standards without carbon injection.

SNCR

Question: For the SNCR process for NO_x control, is "ammonia slip" of concern? What are high amounts of ammonia slip?

Answer: The NO_x levels promulgated for MWC units at large plants represent a 35- to 55-percent NO_x reduction from uncontrolled levels. Data show that this level of control is not associated with noticeable levels of ammonia slip. Higher performance levels by SNCR, if the SNCR is not carefully designed and operated, can lead to ammonia slip.

11. GOOD COMBUSTION PRACTICES

Question: Is there a standardized format or procedure for "good combustion practices" or are they based on manufacturer's specifications and design for each MSW? If there is a standard procedure, from whom is it available?

Answer: Good combustion practices sets limits for: (1) CO emissions, (2) load level, and (3) PM control device inlet temperature. The CO levels are specified in the rules and are achievable with a well designed and operated combustor. The allowable

load levels and PM control device inlet temperature are based on the actual load level and temperature during each MWC unit's dioxin/furan performance test. In addition, MWC plants must develop site-specific training manuals that address topics listed in Section 60.54b(e). Chief facility operators and shift supervisors must undergo additional operator training and certification (see additional questions below).

12. OPERATOR TRAINING AND CERTIFICATION

Question: What do states have to do to have a state operator training program instead of ASME certification? If a state already has an operator training program, is it automatically approved?

Answer: State Plans must require training of MWC operators by the ASME or by a state program. A state may develop and implement a state program in lieu of the ASME certification program. A state determines what constitutes a program equivalent to ASME. State training programs are only good within the state of issuance. ASME training is acceptable nationally.

Question: Explain what we should do when a state's operator certification program does not equal or exceed the ASME's program. Is the ASME's program the model?

Answer: State program can be developed by a state in place of ASME programs but are only good for the state of issuance.

Question: Our state has developed a Provisional Certification program for operators, which includes the requirements in Subpart Ea. Subpart Eb now requires full certification. Does EPA have any guidelines in developing a full certification program? ASME has told us in writing: (1) they will not accept our Provisional Certification program as a step towards full certification through ASME; (2) they will not share their full certification program with us.

Answer: The EPA does not have specific guidelines for developing a state certification program.

Question: Where can I get a copy of the EPA Operator Training Course? Where are EPA operator training courses offered? What subject areas and how much depth does the EPA want in operator training?

Answer: The EPA operator training program was published in 1993. States may adopt the EPA program or use it as a guide in developing their own training courses. Copies are available through National Technical Information Services (NTIS). Ask for the EPA "Municipal Waste Combustor Operator Training Program" (course manual EPA-453/B-93-020 and instructor's guide EPA-453/B-93-021).

Question: The Emission Guidelines require the plant supervisor and shift supervisors at a MWC plant to complete ASME QRO certification (or state equivalent). Is recertification by the ASME QRO required when air pollution control retrofits are completed at the MWC plant?

Answer: Under the Emission Guidelines, the MWC plant supervisor and shift supervisors must complete initial ASME QRO (or state equivalent) certification by 6 months after startup, or 18 months after State Plan approval at small plants, or 12 months after State Plan approval at large plants, whichever is later. The ASME QRO requires a certification "update" every five years. Any changes or retrofits at a MWC that occur after the initial certification are addressed in the five year update.

Question: Paragraph 60.39b addresses training and certification requirement schedules of "the date 6 months after startup" and 12 or 18 months "after State Plan approval, whichever is later." How is "startup" defined here? Can "the date 6 months after startup" be deleted?

Answer: The "6 months after startup" language is included for those plants that began construction before September 1994, and are subject to the Subpart Cb, but that have not yet begun operation.

Question: Are there specific requirements for a state-run operator training program?

Answer: The guidelines reference the certification and training requirements in the NSPS. There are two distinct requirements: operator certification and operator training.

1. Certification applies to chief facility operators and shift supervisors. This may be obtained through ASME or a state-run program. States may develop their own criteria but state certification is only good within the state where issued.
 2. Training applies to chief facility operators, shift supervisors, and control room operators. This may be obtained by using the EPA training course or a state-run program. A state may use the EPA course as a guide for developing its own program. Again, a state program is only good within the state where issued.
- Note that there is also an on-site training requirement for certain personnel which requires review of a site-specific manual that each MWC plant must develop based on the topics specified in Sections 60.54b(e)(1) through (e)(11). Refer to Appendix I for more detail on the certification and training requirements.

13. FUGITIVE ASH STANDARDS

Question: Do the visible emission standards for fugitive ash apply to ash trucks and ash landfills?

Answer: The visible emission standards apply only to ash conveying systems, including conveyor transfer points, but they do not apply to moving trucks.

Question: Please clarify that fugitive ash standards apply outside buildings. Fugitive ash emissions within buildings are not included unless the fugitive ash migrates out of the building.

Answer: The visible emission standards do not apply to emissions inside buildings or within enclosures of ash conveying systems. However, if visible emissions are discharged to the atmosphere from buildings or enclosures of ash conveying systems, the visible emission standards apply.

14. COMPLIANCE AND PERFORMANCE TESTING

Question: Please define/discuss "load level." Is it total refuse fired, (net basis/dry basis), steam production, etc.? (This applies to dioxin testing.)

Answer: Under GCP, MWC unit load level means the steam load (in lb/hr or kg/hr). This can be measured with a steam flow meter or feedwater flow meter. Specific measurement procedures are described in Section 60.58b(i)(6) of Subpart Eb.

Question: Are the emission limits for metals the average of the test results of all the units on a MWC plant? Also, are the limits for SO₂ and HCl averages?

Answer: The emission limits apply to each individual MWC unit at a MWC plant. The SO₂ limit is a 24-hour daily geometric average emission rate determined by CEM. Compliance with the HCl emission limit is determined by periodic performance testing, and is the average of three test runs.

Question: Please give a summary of Reference Method 22 for visible emissions testing. Describe equipment and location of test apparatus setup.

Answer: Method 22 requires continuous visual observation of the location of potential emissions during a series of three one-hour periods. If visible emissions are observed, the observer starts a stopwatch and times the duration of all periods when visible emissions are observed. Following the rest, the minutes of visible emissions are divided by the total minutes observed to determine percentage of time of visible emissions.

Question: Does Method 22 require additional certification other than Method 9 certification?

Answer: Since Method 22 requires only the determination of whether a visible emission occurs and does not require the determination of opacity levels, Method 9 certification is not required. However, the observer must be educated in the general procedures for determining the presence of visible emissions, and understand the effects on visibility caused by background contrast, ambient lighting, observer position, and the presence of condensing water vapor.

Question: The Emission Guidelines require Method 29 be used to demonstrate compliance with the mercury, cadmium, and lead standards. Has EPA promulgated Method 29? If not, when will it be promulgated?

Answer: Method 29 was promulgated in the Federal Register on April 25, 1996 (61 FR 18260).

Question: Please verify that steam load is the means by which U.S. EPA intends for states to determine MWC throughput and that EPA does not intend to require the measurement of solid waste by crane load cells or other methods. We believe crane load cells are inherently labor intensive to maintain and of limited applicability relative to longer term means of determining process rate (by truck scales, pit inventory, etc).

Answer: MWC unit capacity for purposes of calculating whether MWC plants are subject to the large or small plant standards is the maximum design charging rate of the MWC plant expressed in Mg per day of MSW. For MWC units that are designed based on heat input capacity, the maximum charging rate can be calculated based on the design maximum heat input capacity of the unit on a heating value of 10,500 kiloJoules (kJ) per kg waste fired.

Question: Did EPA intend for Subpart Cb facilities to comply with all of the testing and monitoring in Subpart Eb? (Reference 60.38b(a) which says the State Plan shall include testing methods in 60.58b)

Answer: Yes.

Question: Will the guideline allow previous stack test results to be reused to determine compliance after retrofit? Can the stack test be used as part of the three consecutive tests for small MWC plants?

Answer: After retrofit, previous stack tests may not be used to determine compliance. If there is no retrofit, stack tests performed prior to the compliance date may be used as part of the three consecutive tests for initial compliance if the state determines that such tests were conducted in accordance with the required test methods

and procedures, and that the operating conditions (steam load and temperature, in particular) were similar to current operating conditions.

Question: What happens if a post-1990 dioxin/furan test indicated levels in excess of the standard? Is this an enforceable violation?

Answer: Prior to the applicable compliance date in the State Plan, a post-1990 dioxin test in excess of the standard does not constitute an enforceable violation of the emission guidelines. As described in Appendix H, EPA conducted a survey of dioxin emissions from MWC units in 1994 and 1995 which resulted in interim actions being taken at plants to reduce dioxin emissions until the emission guidelines were promulgated and retrofits completed. EPA does not expect additional plants to require interim actions.

15. NSR/PSD ISSUES

Question: Will the retrofit action be considered a pollution control project and eligible for exemption from major NSR per the John Seitz memo dated July 1994?

Answer: EPA has concluded that the air pollution control retrofits anticipated as a result of this rule are eligible for the pollution control project exemption from major NSR. Refer to Appendix K1 for specific details.

Question: For existing non PSD permitted MWC plants which are only modifying to comply with Cb requirements, but which are now major under current PSD regulations (i.e., existing potential emissions greater than 100 tpy), will PSD review be required (i.e., prior actual vs. future potential de minimis test)? Also, for existing PSD permitted MWC plants which are only modifying to comply with Cb requirements, will PSD review be required (i.e., prior actual vs. future potential de minimis test)? Can these MWC units apply for the "Pollution Control Project" exemption?

Answer: EPA has concluded that the air pollution control retrofits anticipated as a result of this rule are eligible for the pollution control project exemption from major NSR. Refer to Appendix K1 for specific details.

16. OTHER

Question: Is municipal waste typically sorted before combustion to remove metals, glass, or other noncombustibles? Are metals recovered after incineration?

Answer: MSW is not usually sorted at the MWC before combustion. However, state and local regulations may prohibit disposal or combustion of certain materials in MSW. There are also many state and local recycling programs. Many state programs are based on source separation (separation at the household prior to disposal), but others have central facilities where the combined waste stream is separated.

Question: Please provide references (dates, FR publications, etc.) for the following: 40 CFR 51.18; 40 CFR 51.24; and Reference Method 29.

Answer: EPA Reference Method 29 was promulgated and published in the Federal Register on April 25, 1996 (61 FR 18260). 40 CFR Sections 51.18 and 51.24 were redesignated as 40 CFR Part 51, Subpart I, Sections 51.165 and 51.166, respectively. [(See 51 FR 40669 (November 7, 1986), as amended at 58 FR 31636 (June 3, 1993).]

Appendix B

Emission Guideline Fact Sheet (40 CFR 60 Subpart Cb)

APPENDIX B--EMISSION GUIDELINE FACT SHEET (40 CFR 60 SUBPART Cb)

FACT SHEET

Existing Municipal Waste Combustors -- Subpart Cb Emission Guidelines (1995)

APPLICABILITY

The subpart Cb emission guidelines apply to existing MWC's¹ with aggregate plant capacities to combust greater than 35 Mg/day of MSW, that commence construction, modification, or reconstruction on or before September 20, 1994. Municipal waste combustors that commenced construction between December 20, 1989 and September 20, 1994 are also subject to the requirements of the subpart Ea standards of performance for new sources.

The intent of the guidelines is to initiate State action to develop State regulations controlling MWC emissions from existing MWC's. Modification of an existing MWC to comply with State regulations that result from these guidelines would not bring an existing MWC unit under the standards for new MWC's. Plants with Federally-enforceable permits limiting the amount of MSW that may be combusted to less than 10 Mg/day are not subject to the guidelines. The State regulations developed in response to these guidelines would apply to about 370 existing MWC units located at about 180 existing MWC plants.

BACKGROUND

On February 11, 1991, subpart Ca guidelines were promulgated for MWC's with unit combustion capacities above 225 Mg/day (56 FR 5514). The subpart Ca guidelines were developed under section 111(d) of the Act. These subpart Cb guidelines are developed under both section 111(d) and section 129 of the Act as amended in 1990. Section 129 of the Act required that the 1991 guidelines be revised to: (1) reflect MACT; (2) specify guideline emission levels for additional pollutants not covered under subpart Ca; and (3) apply to MWC's with capacities to combust less than 225 Mg/day of MSW. Thus, the subpart Cb guidelines are more stringent and cover more MWC's than the subpart Ca guidelines. The subpart Ca guideline have been withdrawn and are replaced with the subpart Cb guidelines.

MUNICIPAL WASTE COMBUSTOR SIZE CATEGORIES

Existing MWC's located at plants with aggregate plant capacities to combust 35 Mg/day or less of MSW are not subject to State regulations required by the guidelines. Existing MWC's

¹Abbreviations are defined at the end of this fact sheet.

located at plants with aggregate capacities to combust more than 35 Mg/day are subject to State plans containing both GCP and air emission limits required by the guidelines.

The guidelines divide the population of existing MWC's into two size categories: (1) existing MWC's located at MWC plants with aggregate plant capacities to combust more than 35 Mg/day but less than or equal to 225 Mg/day of MSW (referred to as small MWC plants); and (2) existing MWC's located at MWC plants with aggregate plant capacities to combust more than 225 Mg/day of MSW (referred to as large MWC plants).

POLLUTANTS TO BE REGULATED

Consistent with section 129 of the Act, the subpart Cb guidelines establish emission limits for MWC acid gases (SO₂ and HCl), MWC metals (PM, opacity, Cd, Pb, and Hg), MWC organics (dioxins/furans), MWC operating practices (CO, flue gas temperature, and load level), and NO_x. Guideline emission levels are also included for fugitive ash emissions.

EMISSION LIMITS

The guidelines reduce emissions from MWC's by requiring States to develop regulations that would limit MWC emissions from existing MWC's at MWC plants with aggregate plant capacities greater than 35 Mg/day. The subpart Cb emission limits are equal to or more stringent than the subpart Ca limits adopted in 1991 for dioxins/furans, opacity, PM, SO₂ and HCl. Emission limits have also been added for Cd, Pb, Hg, and NO_x. For NO_x, provisions have been added allowing States to include emissions averaging between MWC units at large plants and emissions trading between plants. In addition, the guidelines require visible emissions from ash handling to be limited to no more than 5 percent of the time. The guidelines have minor changes in the MWC operating practice guidelines as compared to the subpart Ca guidelines. Numerical emission levels and operating guidelines are summarized in the attached table -- Summary of Guidelines for Existing MWC's.

In addition, the guidelines require provisional ASME or State operator certification of the MWC chief facility operator and shift supervisors by 18 months after State plan approval for small plants and by 1 year after State plan approval for large plants or by 6 months after startup (small and large plants), whichever is later. The guidelines also require full ASME or State operator certification of the MWC chief facility operator and shift supervisors by 18 months after State plan approval for small plants and 1 year after State plan approval for large plants or by 6 months after startup (small or large plants), whichever is later. Alternatively, State plans may require that chief facility operators and shift supervisors be scheduled to take the full certification exam within the same timeframe. The

State plans may also allow control room operators who have obtained provisional certification from the ASME or a State program to "stand in" during times the chief facility operator or shift supervisor is offsite. A certified individual is required to be onsite at all times during operation of the MWC. The guidelines require that State plans require all MWC chief facility operators, MWC shift supervisors, and control room operators to complete the EPA or a State MWC training program. Also, the guidelines require that State plans require a site-specific training manual be developed for each MWC. Each employee involved with the operation of the MWC is required to review the training manual developed for the MWC. The site-specific manual and training are required to be updated annually.

COMPLIANCE, TESTING, AND REPORTING

The guidelines require that State regulations include testing and monitoring requirements for MWC organic emissions (dioxins/furans), MWC metal emissions (PM, opacity, Cd, Pb, and Hg), MWC acid gas emissions (SO₂ and HCl), MWC operating parameters (CO, load level, and flue gas temperature), and NO_x (the NO_x monitoring requirements apply only to large plants). Sulfur dioxide, NO_x, and CO emissions are required to be determined using a CEMS. Opacity is required to be monitored using a COMS and measured annually by a visible emissions test. The guidelines also require that State regulations require annual visible emissions testing to determine compliance with fugitive ash emissions requirements. Emissions of other pollutants are to be determined by an annual stack test. However, if an MWC at a small MWC plant passes all three annual performance tests in a 3-year period, then the MWC can elect not to conduct the annual test for that particular pollutant for the next two years. If any subsequent test indicates noncompliance, then annual testing is again required until three annual tests in a row indicate compliance. In addition to this 3-year testing option for small plants, less frequent dioxin/furan testing is possible for small and large plants if all MWC units at a plant consistently achieve emission levels lower than 15 ng/dscm for large plants and 30 ng/dscm for small plants. Other than this provision, all MWC units at large plants are to be tested annually. Reporting requirements are annual; however, if any emission limits are exceeded, then semiannual reports are required.

COMPLIANCE SCHEDULE

The guidelines require that State plans for large MWC plants include one of the following three retrofit schedules for compliance with the guideline requirements: (1) Full compliance or closure within 1 year following EPA approval of the State plan; (2) full compliance in 1 to 3 years following issuance of a revised construction or operation permit if a permit modification is required or in 1 to 3 years following EPA approval of the State plan if a permit modification is not required, provided the

State plan includes measurable and enforceable incremental steps of progress toward compliance, but no later than December 19, 2000; or (3) closure in 1 to 3 years following approval of the State plan, but no later than December 19, 2000, provided the State plan includes a closure agreement. If a State plan allows the second or third scheduling options (i.e., more than 1 year), the State plan submittal to the EPA must contain 1990 or later dioxins/furans test data for all MWC units at large plants under the extended schedule. (See § 60.21(h) of subpart B of 40 CFR 60 for additional information relating to measurable and enforceable incremental steps of progress toward compliance).

State plans for small MWC plants must require full compliance or closure with regulatory requirements in 3 years or less following issuance of a revised construction or operation permit if a permit modification is required, or within 3 years following EPA approval of the State plan if a permit modification is not required, but no later than December 19, 2000.

Due to recent concern about dioxin/furan and Hg emissions, the guidelines require that State plans include an accelerated compliance schedule for large plants for these two pollutants. Under the accelerated schedule, existing MWC units for which construction commenced after June 26, 1987 (i.e., those facilities equipped with spray dryer/fabric filters or spray dryer/electrostatic precipitators as required by the New Source Review program) and that are located at large MWC plants would be required to be in compliance with the dioxin/furan and Hg guidelines within 1 year following issuance of a revised construction or operation permit, if a permit modification is required, or within 1 year following approval of the State plan, whichever is later.

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a

Applicability

The final guidelines apply to existing MWC's located at plants with capacities to combust greater than 35 Mg/day of residential, commercial, and/or institutional discards.^b Industrial manufacturing discards are not covered by the guidelines. Any medical, industrial manufacturing, municipal, or other type of waste combustor plant with capacity to combust greater than 35 Mg/day of MSW and with a federally enforceable permit to combust less than 10 Mg/day of MSW is not covered.

Plant Size (MSW combustion capacity)

Requirement

≤ 35 Mg/day	Not covered by guidelines
> 35 Mg/day but ≤ 225 Mg/day (referred to as small MWC plants)	Subject to provisions listed below
> 225 Mg/day (referred to as large MWC plants)	Subject to provisions listed below

Good Combustion Practices

- o Applies to large and small MWC plants.
- o A site-specific operator training manual is required to be developed and made available to MWC personnel.
- o The EPA or a State MWC operator training course would be required to be completed by the MWC chief facility operator, shift supervisors, and control room operators.
- o The ASME (or State-equivalent) provisional and full operator certification must be obtained by the MWC chief facility operator (mandatory), shift supervisors (mandatory), and control room operators (optional).
- o The MWC load level is required to be measured and not to exceed 110 percent of the maximum load level measured during the most recent dioxin/furan performance test.

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

- o The maximum PM control device inlet flue gas temperature is required to be measured and not to exceed the temperature 17°C above the maximum temperature measured during the most recent dioxin/furan performance test.
- o The CO level is required to be measured using a CEMS, and the concentration in the flue gas is required not to exceed the following:

<u>MWC Type</u>	<u>CO level</u>	<u>Averaging time</u>
Modular starved-air and excess-air	50 ppmv	4-hour
Mass burn waterwall and refractory	100 ppmv	4-hour
Mass burn rotary refractory	100 ppmv	24-hour
Fluidized-bed combustion	100 ppmv	4-hour
Pulverized coal/RDF mixed fuel-fired	150 ppmv	4-hour
Spreader stoker coal/RDF mixed fuel-fired	200 ppmv	24-hour
RDF stoker	200 ppmv	24-hour
Mass burn rotary waterwall	250 ppmv	24-hour

MWC Organic Emissions (measured as total mass dioxins/furans)

- o Dioxins/furans (performance test by EPA Reference Method 23)

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

Large MWC plants

MWC units utilizing an ESP-based air pollution control system	60 ng/dscm total mass (mandatory) or 15 ng/dscm total mass (optional to qualify for less frequent testing) ^{c,d}
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MWC units utilizing a nonESP-based air pollution control system	30 ng/dscm total mass (mandatory) or 15 ng/dscm total mass (optional to qualify for less frequent testing) ^{c,d}
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Small MWC plants	125 ng/dscm total mass (mandatory) or 30 ng/dscm total mass (optional to qualify for less frequent testing) ^{c,d}
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o Basis for dioxin/furan limits

Large MWC plants	GCP and SD/ESP or GCP and SD/FF, as specified above
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Small MWC plants	GCP and DSI/ESP
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MWC Metal Emissions

o PM (performance test by EPA Reference Method 5)

Large MWC plants	27 mg/dscm (0.012 gr/dscf)
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Small MWC plants	70 mg/dscm (0.030 gr/dscf)
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o Opacity (performance test by EPA Reference Method 9)

Large and small MWC plants	10 percent (6-minute average)
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o Cd (performance test by EPA Reference Method 29)^e

Large MWC plants	0.040 mg/dscm (18 gr/million dscf)
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Small MWC plants	0.10 mg/dscm (44 gr/million dscf)
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o Pb (performance test by EPA Reference Method 29)^e

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

Large MWC plants	0.49 mg/dscm (200 gr/million dscf)
Small MWC plants	1.6 mg/dscm (700 gr/million dscf)
o Hg (performance test by EPA Reference Method 29) ^e	
Large and small MWC plants	0.080 mg/dscm (35 gr/million dscf) or 85-percent reduction in Hg emissions
o Basis for PM, opacity, Cd, Pb, and Hg limits	
Large MWC plants	GCP and SD/ESP/CI or GCP and SD/FF/CI
Small MWC plants	GCP and DSI/ESP/CI
<u>MWC Acid Gas Emissions</u>	
o SO ₂ (performance test by CEMS)	
Large MWC plants	31 ppmv or 75-percent reduction in SO ₂ emissions
Small MWC plants	80 ppmv or 50-percent reduction in SO ₂ emissions
o HCl (performance test by EPA Reference Method 26)	
Large MWC plants	31 ppmv or 95-percent reduction in HCl emissions
Small MWC plants	250 ppmv or 50-percent reduction in HCl emissions
o Basis for SO ₂ and HCl limits	
Large and small MWC plants	See basis for MWC metals

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

Nitrogen Oxides Emissions

o NO_x (performance test by CEMS)

Large MWC plants

Mass burn waterwall 200 ppmv^f

Mass burn rotary
waterwall 250 ppmv^f

Refuse-derived fuel
combustor 250 ppmv^f

Fluidized bed combustor 240 ppmv^f

Mass burn refractory No NO_x control
requirement^f

Other 200 ppmv^f

Small MWC plants No NO_x control
requirement

o Basis for NO_x limits

Large MWC plants SNCR

Refractory MWC plants No NO_x control
requirement

Small MWC plants No NO_x control
requirement

Fugitive Ash Emissions

o Fugitive Emissions (performance test by EPA Reference
Method 22)

Large and small plants Visible emissions less
than 5 percent of the
time from ash transfer
systems except during
maintenance and repair
activities

o Basis for fugitive
emission limit Wet ash handling or
enclosed ash handling

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

Performance Testing and Monitoring Requirements

- | | | |
|---|---|---|
| o | Reporting frequency | Annual (semiannual if violation) |
| o | Load, flue gas temperature | Continuous monitoring, 4-hour block arithmetic average |
| o | CO | CEMS, 4-hour block or 24-hour daily arithmetic average, as applicable |
| o | Dioxins/furans, PM, Cd, Pb, HCl, and Hg ^{C, G} | |
| | Large MWC plants | Annual stack test |
| | Small MWC plants | Annual or third year stack test ^h |
| o | Opacity | COMS (6-minute average) and annual stack test |
| o | SO ₂ | CEMS, 24-hour daily geometric mean |
| o | NO _x (large MWC plants only) | CEMS, 24-hour daily arithmetic average |
| o | Fugitive ash emissions | Annual test |

Compliance Schedule

- o Large MWC plants

State plans for large MWC plants are required to include one of the following three retrofit schedules for compliance with the guideline requirements: (1) Full compliance or closure within 1 year following EPA approval of the State plan; (2) full compliance in 1 to 3 years following issuance of a revised construction or operation permit if a permit modification is required or in 1 to 3 years following EPA approval of the State plan if a permit modification is not required, provided the State plan includes measurable and enforceable incremental steps of progress toward compliance, but no later than December 19, 2000; or (3) closure in 1 to 3 years following approval of the State plan, provided the

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

State plan includes a closure agreement, but no later than December 19, 2000. If a State plan allows the second or third scheduling options (i.e., more than 1 year), the State plan submittal must include 1990 or later dioxins/furans test data for all MWC units at large plants under the extended schedule. (See § 60.21(h) of subpart B of 40 CFR 60 for additional information relating to measurable and enforceable incremental steps of progress toward compliance).

State plans for large MWC plants are required to specify that all MWC's at large MWC plants for which construction was commenced after June 26, 1987 comply with the guidelines for Hg and dioxins/furans within 1 year following issuance of a revised construction or operation permit if a permit modification is required, or within 1 year following EPA approval of the State plan, whichever is later.

State plans for large MWC plants are required to specify that owners or operators of large MWC plants comply with the ASME (or State) operator training and certification requirements by 6 months after startup or 1 year after State plan approval by the EPA, whichever is later.

o Small MWC plants

State plans for small MWC plants must require full compliance or closure with regulatory requirements in 3 years or less following issuance of a revised construction or operation permit if a permit modification is required, or within 3 years following EPA approval of the State plan if a permit modification is not required, but no later than December 19, 2000.

State plans for small MWC plants are required to specify that owners or operators of small MWC plants comply with the ASME or State operator training and certification requirements by 6 months after startup or 18 months after State plan approval by the EPA, whichever is later.

- ^a All concentration levels in the table are converted to 7 percent O₂, dry basis.
- ^b Air curtain incinerators that combust only yard waste are subject only to an opacity limit. Air curtain incinerators

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART cb)^a
(CONTINUED)

that combust other MSW are subject to all requirements under the final emission guidelines (clean wood is not a MSW).

- c The emission guidelines include provisions that allow large and small MWC plants to conduct performance tests for dioxins/furans on only one unit per year if all units at the MWC plant achieve an emission level of 15 ng/dscm total mass (large plants) or 30 ng/dscm total mass (small plants) for 2 consecutive years.
- d Although not part of the dioxin/furan limit, the dioxin/furan total mass limits of 30 ng/dscm, 60 ng/dscm, and 125 ng/dscm are equal to about 0.4 to 0.7 ng/dscm, about 0.8 to 1.3 ng/dscm, and about 1.8 to 2.8 ng/dscm in 2,3,7,8-tetrachlorinated dibenzo-p-dioxin toxic equivalents, respectively, based on the 1989 international toxic equivalency factors. The optional reduced testing limits of 15 ng/dscm and 30 ng/dscm total mass are equal to about 0.2 to 0.3 ng/dscm and about 0.4 to 0.7 ng/dscm in 2,3,7,8-tetrachlorinated dibenzo-p-dioxin toxic equivalents, respectively, based on the 1989 international toxic equivalency factors.
- e Method 29 was promulgated in the Federal Register on April 25, 1996 (61 FR 18260).
- f State plans may allow NO_x emissions averaging between existing MWC units at a large MWC plant. The daily weighted average NO_x emissions concentration from the MWC units included in the emissions averaging plan must comply with the following 24-hour limits: 180 ppmv for mass burn waterwall combustors; 220 ppmv for mass burn rotary waterwall combustors; 230 ppmv for refuse-derived fuel combustors; 220 ppmv for fluidized bed combustors; and 180 ppmv for other combustor types (excluding mass burn refractory combustors). Refer to the regulatory text of the emission guidelines for additional details and procedures. State plans may also establish a program to allow emissions trading between noncontiguous MWC plants. Such a program shall meet the requirements of the Open Market Trading Rule of Ozone Smog Precursors, proposed August 3, 1995 (60 FR 39668) as finally promulgated.

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

- g For Hg and dioxins/furans, the hourly carbon injection rate must be calculated and compared to the hourly carbon injection rates established during the most recent performance tests for Hg and dioxins/furans. If the calculated hourly carbon feed rate falls below the carbon feed rate established during either the Hg or dioxin/furan performance test, then the MWC owner or operator is required to notify the regulatory agency, and may be required to retest.
- h The emission guidelines include provisions that would allow small MWC plants to conduct performance tests for dioxin furans, PM, Cd, Pb, Hg, or HCl every third year if the MWC passes the annual performance test for the pollutants for three years in a row. If any subsequent annual test indicates noncomplance, then annual testing will again be required until three annual tests in a row indicate compliance.

Abbreviations Used in this Fact Sheet and Summary Table

Act	=	Clean Air Act
ASME	=	American Society of Mechanical Engineers
Cd	=	cadmium
CEMS	=	continuous emission monitoring system
CO	=	carbon monoxide
COMS	=	continuous opacity monitoring system
DSI/ESP/CI	=	dry sorbent injection/electrostatic precipitator/activated carbon injection
GCP	=	good combustion practices
gr/dscf	=	grains per dry standard cubic foot
gr/million dscf	=	grains per million dry standard cubic feet
HCl	=	hydrogen chloride
Hg	=	mercury
mg/dscm	=	milligrams per dry standard cubic meter (100 mg/dscm = 0.044 gr/dscf)
Mg/day	=	megagrams per day (1 Mg/day = 1.1 short tons/day)
MSW	=	municipal solid waste
MWC	=	municipal waste combustor
ng/dscm	=	nanograms per dry standard cubic meter (1,000,000 ng = 1 mg)
NO _x	=	nitrogen oxides
Pb	=	lead
PM	=	particulate matter
ppmv	=	parts per million by volume
RDF	=	refuse-derived fuel
SD/ESP/CI	=	spray dryer/electrostatic precipitator/activated carbon injection system
SD/FF/CI	=	spray dryer/fabric filter/activated carbon injection system
SNCR	=	selective noncatalytic reduction
SO ₂	=	sulfur dioxide
Total mass	=	total mass of tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.

Appendix C

Applicability Criteria for Emission Guidelines and NSPS

APPENDIX C--APPLICABILITY CRITERIA FOR EMISSION GUIDELINES AND NSPS

This document pertains to the MWC Emission Guidelines (40 CFR 60 Subpart Cb). The Emission Guidelines apply to MWC units located at MWC plants with capacities greater than 35 Mg per day that commenced construction before September 20, 1994. There are also three new source performance standards (NSPS) that apply to MWCs as described below.

The first NSPS for MWC units, 40 CFR 60 Subpart E, was promulgated in 1971. It applies to incinerators charging more than 45 Mg per day (50 tons per day) of MSW that were constructed or modified after August 17, 1971. The only pollutant regulated by Subpart E is PM, and the PM limit is higher than the limit in the Emission Guidelines. Thus, MWC units complying with the Emission Guidelines PM limit would also comply with the Subpart E NSPS emission limit for PM.

The second NSPS, Subpart Ea, was promulgated on February 11, 1991 and revised on December 19, 1995. This NSPS applies to MWC units with capacities greater than 225 Mg per day (250 tons per day) that:

- Commenced construction after December 20, 1989 and on or before September 20, 1994, or
- Commenced modification or reconstruction after December 20, 1989 and on or before June 19, 1996. ("Modification" and "reconstruction" are defined in the regulation.)

MWC units that started construction between December 20, 1989 and September 20, 1994 are subject to both Subpart Cb (the Emission Guidelines) and Subpart Ea NSPS. Table 1 presents an applicability summary for Subparts E, Cb, Ea, and Eb, illustrating this dual coverage. Table 2 compares the emission limits in the Subpart Cb Emission Guidelines with the Subpart Ea NSPS. MWC units must comply with the most stringent emission limit. As seen on Table 2, the emission limits in Subpart Ea NSPS are as stringent or more stringent than the Emission Guidelines, except for the PM limit. The PM limit in the guidelines is slightly more stringent. Also the Emission Guidelines have limits for three metals which are not regulated by Subpart Ea. Units already complying with Subpart Ea should already meet the Subpart Cb guideline emission limits, but will need to verify that the slightly more stringent PM limit and the metals limit are being met.

The third NSPS, Subpart Eb, applies to MWC units that (1) commence construction after September 20, 1994 or (2) commence modification or reconstruction after June 19, 1996. There is no overlap between the Emission Guidelines and the Subpart Eb NSPS -- sources would not be subject to both rules as shown on Table 1. The emission limits in Subpart Eb are as or more stringent than Subpart Cb.

Table 1. Applicability Summary for MWC Units

Date Commenced	Applicable Subpart			
	E ^a	Cb ^b	Ea ^c	Eb ^d
Construction, Modification, or Reconstruction after August 17, 1971	X			
Construction, Modification, or Reconstruction on or before December 20, 1989	X	X		
Construction, Modification, or Reconstruction after December 20, 1989 and on or before September 20, 1994	X	X	X	
Construction after September 20, 1994	X			X
Modification or Reconstruction after September 20, 1994 and on or before June 19, 1996	X		X	
Modification or Reconstruction after June 19, 1996	X			X

- ^a Subpart E applies to units charging more than 45 Mg per day (approximately 50 tons per day) of MSW.
- ^b Subpart Cb applies only to MWC units located at MWC plants with capacities greater than 35 Mg per day (approximately 39 tons per day) of MSW.
- ^c Subpart Ea applies to MWC units with capacities greater than 225 Mg per day (approximately 250 tons per day) of MSW.
- ^d Subpart Eb applies only to MWC units located at MWC plants with capacities greater than 35 Mg per day (approximately 39 tons per day) of MSW.

**Table 2. Comparison of Subpart Cb and Ea Emission Limits
for MWC Units at Large MWC Plants**

Pollutant	MWC Type	Subpart Cb Level	Subpart Eb Level
Organics: Dioxins/Furans	MWC units utilizing an ESP-based air pollution control system	60 ng/dscm total mass (mandatory) or 15 ng/dscm total mass (optional to qualify for less frequent testing)	30 ng/dscm total mass
	MWC units utilizing a non ESP-based air pollution control system	30 ng/dscm total mass (mandatory) or 15 ng/dscm total mass (optional to qualify for less frequent testing)	30 ng/dscm total mass
Metals: PM	All	27 mg/dscm (0.012 gr/dscf)	34 mg/dscm (0.015 gr/dscf)
Opacity	All	10% (6-minute average)	10% (6-minute average)
Cd	All	0.040 mg/dscm (18 gr/million dscf)	NA
Pb	All	0.49 mg/dscm (200 gr/million dscf)	NA
Hg	All	0.080 mg/dscm (35 gr/million dscf) or 85% reduction in Hg emissions	NA
Acid Gas: SO ₂	All	31 ppmv or 75% reduction in SO ₂ emissions	30 ppmv or 80% reduction in SO ₂ emissions
HCl	All	31 ppmv or 95% reduction in HCl emissions	25 ppmv or 95% reduction in HCl emissions

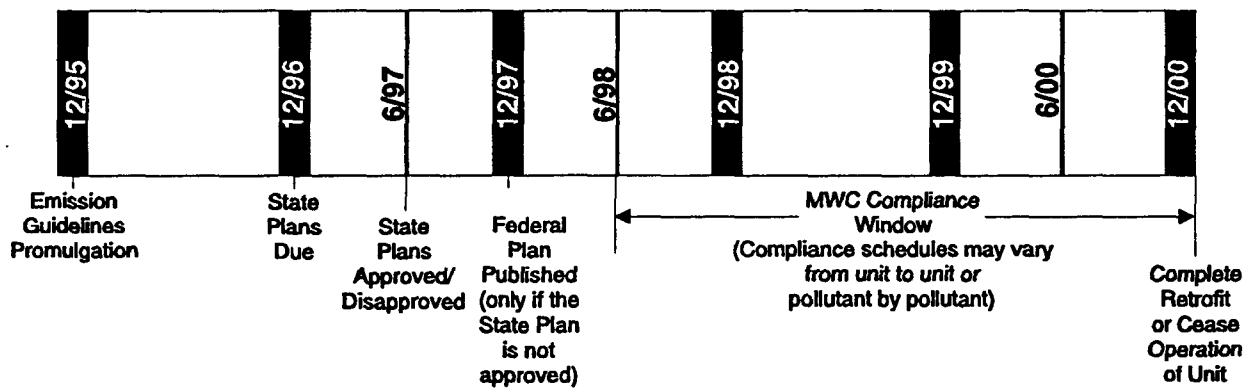
Table 2. Continued

Pollutant	MWC Type	Subpart Cb Level	Subpart Eb Level
NO _x	Mass burn waterwall	200 ppmv	180 ppmv
	Mass burn rotary waterwall	250 ppmv	
	Refuse-derived fuel combustor	250 ppmv	
	Fluidized bed combustor	240 ppmv	
	Mass burn refractory	No NO _x control requirement	
	Other	200 ppmv	
CO	Modular starved-air and excess air	50 ppmv	50 ppmv
	Mass burn waterwall and refractory	100 ppmv	100 ppmv
	Mass burn rotary refractory	100 ppmv	NA
	Fluidized-bed combustor	100 ppmv	100 ppmv
	Pulverized coal/RDF mixed fuel-fired	150 ppmv	150 ppmv
	Spreader stoker coal/RDF mixed fuel-fired	200 ppmv	150 ppmv
	RDF stoker	200 ppmv	150 ppmv
	Mass burn rotary waterwall	250 ppmv	100 ppmv
Fugitive Ash	All	Visible emissions less than 5% of the time from ash transfer systems except during maintenance and repair activities	NA

Appendix D

MWC Implementation Timeline

APPENDIX D--MWC IMPLEMENTATION TIMELINE



MWC Implementation Timeline

980143-LN-CRTP

Appendix E

Contacts

- E1 EPA Regional Municipal Waste Combustor Rule Contacts**
- E2 State Contacts**
- E3 Office of Enforcement and Compliance Assurance
Contacts**

Appendix E1

EPA Regional Municipal Waste Combustor Rule Contacts

**EPA REGIONAL MUNICIPAL WASTE
COMBUSTOR RULE CONTACTS**

Regional Contact	Phone #	Fax #
Janet Beloin U.S. EPA Region I (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont) John F. Kennedy Federal Bldg. Boston , MA 02203-0001	617/565-3595	617/565-4940
Christine DeRosa U.S. EPA Region II (New York, New Jersey, Puerto Rico) 290 Broadway New York, NY 10007-1866	212/637-4070	212/637-3998
James B. Topsale U.S. EPA/3AT22 Region III (Virginia, Delaware, District of Columbia, Maryland, Pennsylvania, West Virginia) 841 Chestnut Bldg. Philadelphia, PA 19107	215/566-2190	215/566-2124
Brian Beals Scott Davis U.S. EPA/APTMD Region IV (Florida, Georgia, North Carolina, Alabama, Kentucky, Mississippi, South Carolina, Tennessee) 345 Courtland St., N.E. Atlanta, GA 30365	404/347-3555 ext. 4167 ext. 4144	404/347-3059
Douglas Aburano (MN, WI) Mark Palermo (ILL, IN, OH) Rick Tonielli (MI) U.S. EPA/AT18J Region V (Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio) 77 W. Jackson Blvd. Chicago, IL 60604	312/353-6960 /886-6082 /886-6068	312/886-5824 As above As above

**EPA REGIONAL MUNICIPAL WASTE
COMBUSTOR RULE CONTACTS**

Regional Contact	Phone #	Fax #
Mick Cote U.S. EPA Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas) 1445 Ross Av., Suite 1200 Dallas, TX 75202-2733	214/665-7219	214/665-7263
Joshua Tapp U.S. EPA Region VII (Iowa, Kansas, Missouri, Nebraska) 726 Minnesota Av. Kansas City, KS 66101	913/551-7606	913/551-7065
Ron Rutherford Dennis Woljan U.S. EPA Region VIII (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming) 999 18th Street, Suite 500 Denver, CO 80202-2466	303/312-6180 303/312-6740	303/312-6409
Patrica Bowlin U.S. EPA/A-1 Region IX (Arizona, California, Hawaii, Nevada) 75 Hawthorne Street San Francisco, CA 94105	415/744-1188	415/744-1076
John Keenan Tamara Langton Elizabeth Waddell U.S. EPA Region X (Alaska, Idaho, Oregon, Washington) 1200 Sixth Av. Seattle, WA 98101	206/553-1817 /553-2709 /553-4303	206/553-0110

Appendix E2

State Contacts

STATE CONTACTS

State Contact	Phone #	Fax #
Alabama Department of Environmental Management Air Division 1751 Cong. W.L. Dickenson Drive Montgomery, AL 36130 Chief: Richard E. Grusnick	(334) 271-7861	(334) 279-3044
Alaska Department of Environmental Conservation Air & Water Quality Division 410 Willoughby Avenue Suite 105 Juneau, AK 99801-1795 Director: Leonard D. Verrelli	(907) 465-5100	(907) 465-5129
Arizona Department of Environmental Quality Air Quality Division 3033 North Central Avenue 5th Floor Phoenix, AZ 85012 Director: Nancy C. Wrona	(602) 207-2308	(602) 207-2366
California Air Resources Board P.O. Box 2815 Sacramento, CA 95812 Executive Officer: James D. Boyd	(916) 445-4383	(916) 322-6003
Colorado Department of Health Air Pollution Control Division B-1 4300 Cherry Creek Drive South Denver, CO 80222-1530 Acting Division Director: Margie M. Perkins	(303) 692-3100	(303) 782-5493 782-0278
Connecticut Department of Environmental Protection Bureau of Air Management 79 Elm Street Hartford, CT 06106 Chief: Carmine DiBattista	(860) 424-3026	(860) 424-4063

STATE CONTACTS

State Contact	Phone #	Fax #
Delaware Department of Natural Resources and Environmental Control Division of Air and Waste Management Air Quality Management Section 89 Kings Highway, P.O. Box 1401 Dover, DE 19903 Administrator: Darryl Tyler	(302) 739-4791	(302) 739-3106
District of Columbia D.C. Department of Consumer and Regulatory Affairs Environmental Regulation Administration Air Resources Management Division 2100 MLK Avenue, SE, Suite 203 Washington, DC 20020-5732 Program Manager: Donald E. Wambsgans II	(202) 645-6093 x3067	(202) 645-6102
Florida Department of Environmental Protection Air Resources Management Mail Station 5500 2600 Blair Stone Road Tallahassee, FL 32399-2400 Division Director: Howard Rhodes	(904) 488-0114	(904) 922-6979
Georgia Department of Natural Resources Environmental Protection Division Air Protection Branch 4244 International Parkway Suite 120 Atlanta, GA 30354 Chief: Ronald Methier	(404) 363-7000	(404) 363-7100
Hawaii Department of Health Clean Air Branch P.O. Box 3378 Honolulu, HI 96801 Chief: Wilfred Nagamine	(808) 586-4200	(808) 586-4359

STATE CONTACTS

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Idaho Division of Environmental Quality Permits and Enforcement 1410 North Hilton, 3rd Floor Boise, ID 83706 Assistant Administrator: Orville Green	(208) 373-0502	(208) 373-0417
Illinois Environmental Protection Agency Bureau of Air 2200 Churchill Road P.O. Box 19276 Springfield, IL 62794-9276 Chief: Bharat Mathur	(217) 785-4140	(217) 782-2465
Indiana Department of Environmental Management Office of Air Management P.O. Box 6015 105 South Meridian Street Indianapolis, IN 46206-6015 Deputy Commissioner: Timothy J. Method Assistant Commissioner: Felicia R. George	(317) 233-0178	(317) 233-5967
Iowa Department of Natural Resources Air Quality Bureau Henry Wallace Building 900 East Grand Des Moines, IA 50319 Chief: Pete Hamlin	(515) 281-8852	(515) 281-8895
Kansas Department of Health and Environment Bureau of Air and Radiation Forbes Field, Building 740 Topeka, KS 66620 Director: John C. Irwin	(913) 296-1593	(913) 296-1545

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Kentucky Department for Environmental Protection Division for Air Quality 803 Schenkel Lane Frankfort, KY 40601 Division Director: John E. Hornback	(502) 573-3382	(502) 573-3787
Louisiana Department of Environmental Quality Office of Air Quality and Radiation Protection P.O. Box 82135 Baton Rouge, LA 70884-2135 Assisstant Secretary: Gustave Von Bodungen	(504) 765-0219	(504) 765-0222
Maine Department of Environmental Protection Bureau of Air Quality Control State House, Station 17 Augusta, ME 04333 Director: James P. Brooks	(207) 287-2437	(207) 287-7641
Maryland Department of the Environment Air and Radiation Management Administration 2500 Broening Highway Baltimore, MD 21224 Director: Merrylin Zaw-Mon	(410) 631-3255	(410) 631-3391
Massachusetts Department of Environmental Protection Division of Air Quality Control One Winter Street, 7th Floor Boston, MA 02108 Director: Barbara A. Kwetz	(617) 292-5630	(617) 292-5778
Michigan Department of Environmental Quality Air Quality Division P.O. Box 30260 Lansing, MI 48909-7760 Chief: Dennis Drake	(517) 373-7023	(517) 335-6993

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Minnesota Pollution Control Agency Air Quality Division 520 Lafayette Road St. Paul, MN 55155 Manager: Rod Massey	(612) 296-7512	(612) 297-7709
Mississippi Department of Environmental Quality Office of Pollution Control - Air Division P.O. Box 10385 Jackson, MS 39289 Chief: Dwight Wylie	(601) 961-5171	(601) 961-5742
Missouri Department of Natural Resources Division of Environmental Quality Air Pollution Control Program P.O. Box 176 Jefferson City, MO 65102 Staff Director: Roger Randolph	(573) 751-4817	(573) 751-2706
Montana Department of Environmental Quality Air Quality Division Medcalf Building P.O. Box 200901 Helena, MT 59620-0901 Division Administrator: Jeffrey Chaffee	(406) 444-3454	(406) 444-5275
Nebraska Department of Environmental Quality Air and Waste Management Division 1200 N Street, Suite 400 Box 98922 Lincoln, NE 68509-8922 Assistant Director: Joe Francis	(402) 471-0001	(402) 471-2909

STATE CONTACTS

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Nevada Division of Environmental Protection Bureau of Air Quality 333 West Nye Lane Carson City, NV 89710 Bureau Chief: Jolaine Johnson	(702) 687-4670	(702) 687-6396
New Hampshire Department of Environmental Services Air Resources Division 64 North Main Street Caller Box 2033 Concord, NH 03301 Director: Kenneth A. Colburn	(603) 271-1370	(603) 271-1381
New Jersey Department of Environmental Protection Office of Air Quality Management 401 East State Street 7th Floor West Trenton, NJ 08625 Administrator: John Elston	(609) 292-6710	(609) 633-6198
New Mexico Environment Department Environmental Protection Division Air Quality Bureau Harold Runnels Building Room S2100 P.O. Box 26110 Santa Fe, NM 87502 Chief: Cecilia Williams	(505) 827-0031	(505) 827-0045
New York Department of Environmental Conservation Division of Air Resources 50 Wolf Road Albany, NY 12233-3250 Director: Arthur J. Fossa	(518) 457-7230	(518) 457-0794

STATE CONTACTS

State Contact	Phone #	Fax #
North Carolina Department of Environment, Health, and Natural Resources Division of Environmental Management Air Quality Section P.O. Box 29580 Raleigh, NC 27626-0580 Chief: Alan Klimek	(919) 715-6233	(919) 715-7175
North Dakota Department of Health Division of Environmental Engineering 1200 Missouri Avenue, Room 304 P.O. Box 5520 Bismarck, ND 58506-5520 Director: Dana K. Mount	(701) 328-5188	(701) 328-5200
Ohio Environmental Protection Agency Division of Air Pollution Control P.O. Box 1049 Columbus, OH 43216-0149 Chief: Robert Hodanbosi	(614) 644-2270	(614) 644-3681
Oklahoma Department of Environmental Quality Air Quality Division 4545 North Lincoln Boulevard - Suite 250 Oklahoma City, OK 73105-3483 Director: Larry Byrum	(405) 271-5220	(405) 271-7508
Oregon Department of Environmental Quality Air Quality Division 811 SW 6th Avenue Portland, OR 97204 Administrator: Gregory A. Green	(503) 229-5359	(503) 229-5675

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Pennsylvania Department of Environmental Resources Bureau of Air Quality Control 400 Market Street P.O. Box 8468 Harrisburg, PA 17105-8468 Director: James M. Salvaggio	(717) 787-9702	(717) 772-2303
Rhode Island Department of Environmental Management Division of Air Resources 291 Promenade Street Providence, RI 02908-5767 Chief: Stephen Majkut	(401) 277-2808	(401) 277-2017
South Carolina Department of Health and Environmental Control Bureau of Air Quality Control 2600 Bull Street Columbia, SC 29201 Chief: James A. Joy III	(803) 734-4750	(803) 734-4556
South Dakota Department of Environment and Natural Resources Air and Surface Water Program 523 East Capitol Avenue Joe Foss Building Pierre, SD 57501 Air Director: Tim Tollefsrud	(605) 773-3351	(605) 773-5286
Tennessee Department of Environment and Conservation Division of Air Pollution Control 401 Church Street, 9th Floor L & C Annex Nashville, TN 37243-1531 Director: John W. Walton	(615) 532-0554	(615) 532-0614

STATE CONTACTS

State Contact	Phone #	Fax #
Texas Texas Natural Resource Conservation Commission Office of Policy and Regulatory Development P.O. Box 13087 Austin, TX 78711-3087 Deputy Director: Beverly Hartsock	(512) 239-5818	(512) 239-4808
Utah Department of Environmental Quality Division of Air Quality 150 North 1950 West Salt Lake City, UT 84114-4820 Director: Russell Roberts	(801) 536-4000	(801) 536-4099
Vermont Agency of Natural Resources Air Pollution Control Division 103 South Main Street Building 3 South Waterbury, VT 05676 Director: Richard Valentinetti	(802) 241-3840	(802) 241-2590
Virginia Department of Environmental Quality Air Division P.O. Box 10009 Richmond, VA 23240 Director: John M. Daniel, Jr.	(804) 698-4311	(804) 698-4510
Washington Department of Ecology Air Program P.O. Box 47600 Olympia, WA 98504-7600 Director: Joseph Williams	(360) 407-6800	(360) 407-6802
West Virginia Division of Environmental Protection Office of Air Quality 1558 Washington Street, East Charleston, WV 25311 Chief: G. Dale Farley	(304) 558-3286	(304) 558-3287

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Wisconsin Department of Natural Resources Bureau of Air Management (AM/10) P.O. Box 7921 Madison, WI 53707 Director: Donald F. Theiler	(608) 266-7718	(608) 267-0560
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Appendix E3

Office of Enforcement and Compliance Assurance Contacts

OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE CONTACTS

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Joyce Chandler, Chemical Engineer (2224A) Chemical, Commercial Services and Municipal Division Office of Compliance Office of Enforcement and Compliance Assurance 401 M Street, S.W. Washington, DC 20460	202-564-7073	202-564-0037

Appendix F

Inventory of MWC Plants

- F1 EPA Inventory of MWC Plants**
- F2 IWSA Inventory of MWC Plants**

APPENDIX F--EPA INVENTORY OF MWC PLANTS

Attached is the EPA inventory of municipal waste combustor (MWC) plants used to develop the emission guidelines (Subpart Cb).^{*} The inventory lists MWC plants with a total plant combustion capacity of 35 Mg per day or more (39 tons per day) and identifies the number of MWC units at each plant (where the information is available). The 35 Mg per day plant capacity level is the lower size cutoff for Subpart Cb. As discussed below, the inventory places MWC plants in a number of status categories including "under construction", "operating" and "inactive". The full inventory lists 205 MWC plants, including inactive plants, plants on hold, plants under construction, and plants being planned. All of these should be considered in determining which MWC plants are subject to the Subpart Cb emission guidelines and which are subject to the Subpart Eb (NSPS). At a minimum the 128 operating MWC plants and 40 inactive MWC plants in the inventory are considered to be subject to Subpart Cb and must be addressed by State Plans (see Section 3.7.5).

The inventory presents data on MWC plant name, MWC plant capacity, number of MWC units at the plant, start-up date, current air pollution control equipment, ownership, operator, and other information of interest. All of these data are used in developing State Plans. Plant name and location data are important for identifying MWC units for control under Subpart Cb and considering location(s) for public hearings on State Plans. Plant capacity data are used to determine if the MWC plant is a "small" or "large" plant. Different guideline emission levels apply to different size plants.

The data on the number of MWC units at a plant are considered in developing retrofit schedules for each MWC unit. Retrofit schedules are normally more flexible for plants with more units (a four-unit plant generally has more flexibility with its retrofit schedule than a two-unit plant). The data on current air pollution control equipment indicate the level of retrofit required. A plant already equipped with a spray dryer/fabric filter scrubbing system (SD/FF) will need less retrofit than a plant equipped with only an electrostatic precipitator.

Particular attention should be paid to Columns 6 and 10 of the inventory. Column 6 places a plant into one of six plant status categories as follows:

<u>Symbol</u>	<u>Status Category</u>
OP	operating
IA	inactive
IR	retrofit underway
P	planning

^{*}Docket A-90-45, item IV-B-2.

<u>Symbol</u>	<u>Status Category</u>
OH	on hold
UC	under construction

It is suggested that states update the 1995 EPA inventory as necessary, particularly Column 6. A number of MWC units in the OP (operating) category have changed to the IA (inactive) category [e.g., the Pulaski (Maryland) MWC plant]. State Plans for inactive MWC plants can focus on cease operations agreements. Over the past few years the number of inactive plants has increased as plants have ceased operations. Some plants have been "mothballed" and others have been dismantled (e.g., Philadelphia-Northwest MWC plant). Dismantled MWC units do not have to be addressed in State Plans (beyond identification of dismantlement).

The data on UC (under construction) plants should be reviewed to determine if the plant being reviewed has completed construction and moved to the operating category [e.g., Lee County (Florida) and Montgomery County (Maryland) MWC plants]. The under construction category should also be reviewed to determine if the plant is subject to Subpart Cb (the Emission Guidelines) or Subpart Eb (NSPS). Plants subject to Subpart Eb do not have to be addressed in State Plans other than to identify them as Subpart Eb plants.

Column 10, total plant capacity, also provides important data for the State Plan. MWC plants above 225 Mg per day capacity (about 250 tons/day) are classified as large MWC plants. MWC plants between 35 and 225 Mg per day capacity (about 39 to 250 tons/day) are classified as small MWC plants. Each MWC unit located at a MWC plant (there are typically 2 to 4 units at a plant) is an affected facility and must comply with the Emission Guidelines. One set of regulatory requirements and compliance schedules applies to MWC units located at large plants, and another set of requirements applies to MWC units located at small plants.

In summary, the attached EPA inventory (1995) is used to identify MWC plants to be addressed by State Plans. It is suggested that State Plans update the listing as appropriate. The IWSA inventory (1996) is also attached to aid states in their update efforts. The EPA has not attempted to verify differences between the 1995 EPA inventory and the 1996 IWSA inventory. Any changes made to the EPA inventory (1995) must be noted in the State Plan with support information provided as necessary.

Appendix F1

EPA Inventory of MWC Plants

MEMORANDUM

TO: Walt Stevenson, EPA/Combustion Group

FROM: Denise Bevington, Brian Palmer, Rich Potter, and Brad Nelson, Radian Corporation

DATE: March 1, 1995 (Memo corrected on May 17, 1995)

SUBJECT: Municipal Waste Combustor Inventory Database

The current database of existing municipal waste combustor (MWC) facilities (Attachment 1) was compiled primarily to identify and characterize all MWC plants that would be subject to the emission guidelines for existing MWC facilities proposed on September 20, 1994. The information contained in the database is based on past surveys of the MWC industry, test reports, telephone contacts, and facility permits.

The current database updates the database delivered to the EPA on March 9, 1992. The database lists 130 MWC facilities that have plant capacities of 39 tons per day (tpd) or more and that were known to be in operation or under construction on or before September 20, 1994 (i.e., that are subject to the proposed emission guidelines). In addition, the database lists 39 inactive facilities with plant capacities of 39 tpd or more.

The database presents 62 fields of information; however, most of these apply to the control devices. A detailed description of each field is included as Attachment 2.

Based on the 130 MWC facilities operating or under construction and subject to the proposed emission guidelines, the total MWC capacity in the United States is approximately 103,300 tpd. For the purpose of this memorandum, reference to "total MWC capacity" and "total MWC units" refers to the population of MWC facilities subject to the proposed emission guidelines. Of these 130 plants, 128 plants (100 units at small plants and 207 units at large plants) are operating, and 2 plants are under construction. A total of at least 307 units are operating at these facilities (for two operating facilities the

number of units is unknown, and it was assumed they are each operating with two units). The number of units located at each facility ranges from one to six, with the average being two. Unit capacity ranges from 20 to 1,100 tpd, and total facility capacity ranges from 40 to 3,000 tpd. The average facility capacity is 700 tpd. The age of the facilities ranges from 3 to 40 years old. About 94 percent of the existing MWC capacity is located at plants with total plant capacities greater than 250 tpd. Plants with total plant capacities greater than 250 tpd account for 63 percent of all existing MWC's.

There are three main types of technologies used to combust municipal solid waste: mass burn, modular, and refuse-derived fuel (RDF). A fourth type, fluidized-bed combustors (FBCs), is less common and can be considered a subset of the RDF technology. Of the 130 facilities, 73 (56 percent) are mass burn, 37 (29 percent) are modular, and 20 (15 percent) are RDF (including FBC). Of the total MWC capacity in the United States (103,300 tpd), 70 percent (72,300 tpd) is at mass burn facilities, about 25 percent (26,200 tpd) is at RDF facilities, and 4 percent (4,400 tpd) is at modular facilities. The remaining MWC's are other technologies such as co-fired RDF combustors.

According to the database, 91 percent of the MWC facilities (99 percent of the MWC capacity) employ some kind of APCD. The 9 percent that do not are plants with capacities less than or equal to 250 tpd. Furthermore, 116 of the 130 existing MWC facilities employ heat recovery technology. This represents 95 percent of the existing MWC capacity in the United States.

The database also indicates the geographic distribution of the MWC facility population. Of the 130 MWC facilities subject to the emission guidelines, the highest concentration is found in the Northeast. New Jersey, Connecticut, Pennsylvania, Massachusetts, and New York have between 6 and 13 existing

Memorandum
March 1, 1995
Page 3

facilities each. In terms of total capacity, however, Florida is the leader with a capacity of about 17,050 tpd. New York, Massachusetts, Pennsylvania, Virginia, and Connecticut have the next largest capacities, ranging from 6,050 to 11,000 tpd.

ATTACHMENT 1
MUNICIPAL WASTE COMBUSTOR DATABASE

Reference Name	Unit Name	County	Location	State	Project Status	Const. Start	Unit Start	Non/Attain for Ozone	Total Plant Capacity (TPD)	Number of Units	Combustor Type
Juneau	Juneau RRF	Juneau Borough	Juneau	AK	OP	1985	1985		70	2	MOD/SA
Sitka	Sitka WTE Plant	Sitka Borough	Sitka	AK	OP	1984	1985		50	1	MOD/EA
Huntsville	Huntsville Refuse-Fired Steam Fac.	Madison and Limestone	Huntsville	AL	OP	1988	1991		690	2	MB/WW
Tuscaloosa	Tuscaloosa Solid Waste Fac.	Tuscaloosa	Tuscaloosa	AL	IA		1984		300	4	MOD/SA
Batesville	Batesville	Independence	Batesville	AR	OP		1981		100	2	MOD/SA
Blytheville	Blytheville Incinerator	Mississippi	Blytheville	AR	OP		1975		70	2	MOD/SA
North Little Rock	North Little Rock RRF	Pulaski	North Little Rock	AR	IA		1977		100	4	MOD/SA
Osceola	Osceola	Mississippi	Osceola	AR	OP		1980		50	2	MOD/SA
Stuttgart	Stuttgart Incinerator	Arkansas	Stuttgart	AR	OP		1971		63	5	MOD/SA
Commerce	Commerce Refuse-to-Energy Fac.	Los Angeles	Commerce	CA	OP	1985	1987	NON	380	1	MB/WW
Lassen Co.	Lassen Community College	Lassen	Susanville	CA	IA		1985		100		MOD
Long Beach	Long Beach (SERRF)	Los Angeles	Long Beach	CA	OP	1986	1989	NON	1380	3	MB/WW
Modesto	Modesto	Stanislaus	Crows Landing	CA	OP	1986	1989	NON	800	2	MB/WW
Bridgeport	Bridgeport RESCO	Fairfield	Bridgeport	CT	OP	1985	1988	NON	2250	3	MB/WW
Bristol	Bristol RRF	Hartford	Bristol	CT	OP	1985	1988	NON	650	2	MB/WW
Lisbon	Lisbon RRF	New London	Lisbon	CT	UC		1995	NON	500		MB/WW
Hartford	Mid-Connecticut Project	Hartford	Hartford	CT	OP	1985	1988	NON	2000	3	RDF
New London Co.	Southeastern Connecticut RRF	New London	Preston	CT	OP		1992	NON	600	2	MB/WW
Stamford I	Stamford I	Fairfield	Stamford	CT	IA		1958	NON	150	1	MB/REF
Stamford II	Stamford II Incinerator	Fairfield	Stamford	CT	IA (1994)		1973	NON	360	1	MB/REF
New Canaan	Town of New Canaan Volume Reduction Plant	Fairfield	New Canaan	CT	OP		1971	NON	125	1	MB/REF
Wallingford	Wallingford RRF	New Haven	Wallingford	CT	OP	1987	1989	NON	420	3	MOD/EA
Windham RRF	Windham RRF	Windham	Windham	CT	IA		1981	NON	108	3	MOD/SA
D.C.	Solid Waste Reduction Center No.1	District of Columbia	Washington	DC	IA		1972	NON	1000	4	MB/REF
Pigeon Point	Pigeon Point	New Castle	Wilmington	DE	IA		1987	NON	600	5	MOD
Sussex	Sussex	Sussex		DE	On Hold		1996	NON	600		
Kent	Kent	Kent		DE	On Hold		1996	NON	1800		MB
Bay Co.	Bay Resource Mgt. Center	Bay	Panama City	FL	OP	1985	1987		510	2	MB/RC
North Broward Co.	Broward Co. RRF North	Broward	Pompano Beach	FL	OP	1989	1992	NON	2250	3	MB/WW
South Broward Co.	Broward Co. RRF South	Broward	Pompano Beach	FL	OP	1989	1991	NON	2250	3	MB/WW
Dade Co.	Dade Co. RRF	Dade	Miami	FL	OP		1982	NON	3000	4	RDF
Dade Co. Expansion	Dade Co. RRF Expansion	Dade	Miami	FL	On Hold		1995	NON	750		
Tampa	Hillsborough Co. RRF	Hillsborough	Tampa	FL	OP	1985	1987	NON	1200	3	MB/WW
Lake Co.	Lake Co. RR	Lake	Okahumpka	FL	OP	1988	1991		528	2	MB/WW
Lee Co.	Lee Co. RRF	Lee	Fort Myers	FL	UC		1995		1200	2	MB/WW
Mayport	Mayport NAS	Duval	Mayport NAS	FL	OP		1979		50	1	MOD/EA
McKay Bay	McKay Bay REF	Hillsborough	Tampa	FL	OP	1983	1985	NON	1000	4	MB/WW
Miami Airport	Miami International Airport	Dade	Miami	FL	OP		1984	NON	60	1	MOD/SA
West Palm Beach	North Co. Region RR Project	West Palm Beach	West Palm Beach	FL	OP	1985	1989	NON	2000	2	RDF
Pasco Co.	Pasco Co. Solid Waste RRF	Pasco	Hudson	FL	OP	1989	1991		1050	3	MB/WW
Monroe Co.	Southernmost WTE	Monroe	Key West	FL	OP		1986		150	2	MB/WW
Wheelabrator Pinellas RRF	Wheelabrator Pinellas RRF	Pinellas	St. Petersburg	FL	OP	1980	1983	NON	3000	3	MB/WW
Savannah	Savannah RRF	Chatham	Savannah	GA	OP		1987		500	2	MB/WW
Honolulu	Honolulu Resource Recovery Venture	Honolulu	Honolulu	HI	OP	1987	1990		2160	2	RDF
Waipahu	Waipahu Incinerator	Honolulu	Honolulu	HI	IA		1970		600	2	MB/REF
Burley	Burley	Cassia	Burley	ID	OP	1978	1981		50	1	MOD/SA
Beardstown	Beardstown	Cass	Beardstown	IL	P	1995	1998		1800		RDF
Havana	Havana WTE Fac.	Mason	Havana	IL	P		1997		1800		RDF
Northwest	Northwest WTE	Cook & DuPage Co.	Chicago	IL	OP		1970	NON	1600	4	MB/WW
Cook Co.	Robbins RRF	Cook	Robbins	IL	P	1994	1996	NON	1600		RDF/FB

Reference Name	Air Pollution Control Devices	Owner	Operator	Energy	References
Juneau	ESP	Channel Sanitation Corp.	Channel Sanitation Corp.	None	I,SW,Tele
Sitka	ESP DSI	Sitka	Sheldan Jackson College	Stm	I,SW,Tele
Huntsville	FF SD	SW Disposal Authority of Huntsville	Ogden Martin	Stm	I,SW
Tuscaloosa	ESP	Public	Consumat	Stm	I,SW
Batesville	none	City of Batesville	Public	STM	
Blytheville	none	City of Blytheville	Public	None	
North Little Rock	none	Public	Public	Stm	
Osceola	none	Public	Public	Stm	I,SW,Fax
Stuttgart	none	Public	Public	None	I,SW,Fax
Commerce	FF SD SNCR	Commerce Refuse-to-Energy Authority	LA Sanitation Dist.	Ele	I,SW,Report
Lassen Co.	FF DSI	Lassen Community College			I,SW
Long Beach	FF SD SNCR	SERRF	Montenay Pacific Power	Ele	I,SW,Report
Modesto	FF SD SNCR	Ogden Martin	Ogden Martin	Ele	I,SW,Report
Bridgeport	FF SD	Connecticut Resource Recovery Authority	Wheelabrator	Ele	I,SW,Tele
Bristol	FF SD	Ogden Martin	Ogden Martin	Ele	I,SW
Lisbon	FF SD SNCR	Wheelabrator	Wheelabrator	Ele	I,SW,Art
Hartford	FF SD	Connecticut RR Authority	ABB RRS	Ele	I,SW
New London Co.	FF SD	Connecticut RR Authority	American Ref-Fuel	Ele	I,SW
Stamford I	ESP	Public	Public	None	
Stamford II	ESP	Public	Public	None	I,SW,Fax,Memo
New Cansan	WS	Public	Public	None	I,SW
Wallingford	FF SD	Ogden Projects	Ogden Projects	COG	I,SW,Tele
Windham RRF	FF SD	Public	Public	COG	SW,Tele
D.C.	ESP	Public	Public	None	SW,Fax
Pigeon Point	ESP	General Electric Capital SW Authority	United Assoc. of Delaware	COG	I,SW,Art,Fax
Sussex	none	Delaware Solid Waste Authority.		Ele	
Kent	none	Delaware Solid Waste Authority			SW,Tele
Bay Co.	ESP	Ford Motor Credit Corp.	Westinghouse	Ele	I,SW,Tele
North Broward Co.	FF SD	Wheelabrator	Wheelabrator	Ele	I,SW,Art
South Broward Co.	FF SD	Wheelabrator	Wheelabrator	Ele	I,SW
Dade Co.	ESP	Dade Co.	Montenay Power Corp.	Ele	I,SW,Art,Fax
Dade Co. Expansion	FF SD SNCR CI	Dade Co.	Montenay Power Corp	Ele	I,SW,Tele
Tampa	ESP	Hillsborough Co.	Ogden Martin	Ele	I,SW,Memo
Lake Co.	FF SD	Ogden Martin	Ogden Martin	Ele	I,SW
Lee Co.	FF SD SNCR CI	Lee Co.	Ogden Martin	Ele	I,SW,Report,Letter
Mayport	Cyc	US Navy	US Navy	Stm	I,SW
McKay Bay	ESP	City of Tampa	Wheelabrator	Ele	I,SW,Tele
Miami Airport	none	Dade Co.	Dade Co.	Stm	I,SW
West Palm Beach	ESP SD	Solid Waste Authority of Palm Beach	Babcock & Wilcox	Ele	I,SW
Pasco Co.	FF SD	Pasco Co.	Ogden Martin	Ele	I,SW
Monroe Co.	ESP	Catalyst WTE Corp.	City of Key West	Ele	I,SW,Art
Wheelabrator Pinellas RRF	ESP	Pinellas Co.	Wheelabrator	Ele	I,SW,Fax
Savannah	ESP FF(r) SD(r)	Katy-Seghers	Katy Industries	COG	I,SW,Art,Fax
Honolulu	ESP SD	Ford Motor Credit Corp.	Ogden Martin	Ele	I,SW
Waipahu	ESP	City & County of Honolulu	City & County of Honolulu	None	Fax, Reg IX,Telecon
Burley	none	Public	Public	Stm	Fax
Beardstown	FF SD SNCR	Energy Answer & Kirby - Coffman		Ele	I,Tele
Havana	FF SD SNCR	Havana SW Energy Answers Inc./Kirby-Coffman	Not Selected	Ele	I,SW
Northwest	ESP	City of Chicago	City of Chicago	Stm	I,SW,Art
Cook Co.	FF SD SNCR	Reading Energy/Foster Wheeler	Foster Wheeler	Ele	I,SW,Art

Reference Name	Cyclone				ESP				Fabric Filter				Duct Sorbent Injection				Furnace Sorbent Injection			
	Cyclone Info	Original (x=orig)	Retrofit (year)	Inactive (year)	ESP Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FF Info	Original (x=orig)	Retrofit (year)	Inactive (year)	DSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Juneau					ESP	x														
Sitka					ESP	x							DSI	x						
Huntsville									FF	x										
Tuscaloosa				x	ESP	x														
Batesville																				
Blytheville																				
North Little Rock																				
Osceola																				
Stuttgart																				
Commerce									FF	x										
Lassen Co.									FF	x			DSI	x						
Long Beach									FF	x										
Modesto									FF	x										
Bridgeport									FF	x										
Bristol									FF	x										
Lisbon									FF	x										
Hartford									FF	x										
New London Co.									FF	x										
Stamford I					ESP	x														
Stamford II					ESP	x														
New Canaan																				
Wallingford									FF	x										
Windham RRF									FF	x										
D.C.					ESP	x														
Pigeon Point					ESP	x														
Sussex																				
Kent																				
Bay Co.					ESP	x														
North Broward Co.									FF	x										
South Broward Co.									FF	x										
Dade Co.					ESP	x														
Dade Co. Expansion									FF	x										
Tampa					ESP	x														
Lake Co.									FF	x										
Lee Co.									FF	x										
Mayport	Cyc	x																		
McKay Bay					ESP	x														
Miami Airport																				
West Palm Beach					ESP	x														
Pasco Co.									FF	x										
Monroe Co.					ESP	x														
Wheelabrator Pinellas RRF					ESP	x														
Savannah					ESP	x			FF(I)		1998									
Honolulu					ESP	x														
Waipahu					ESP	x														
Burley																				
Beardstown									FF	x										
Havana									FF	x										
Northwest					ESP	x														
Cook Co.									FF	x										

Reference Name	Spray Dryer				Wet Scrubber				Venturi Scrubber				Electrified Gravel Bed				SNCR				Reagent Type	Carbon Injection			
	SD Info	Original (x=orig)	Retrofit (year)	Inactive (year)	WS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	VS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	EGB Info	Original (x=orig)	Retrofit (year)	Inactive (year)	SNCR Info	Original (x=orig)	Retrofit (year)	Inactive (year)		CI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Juneau																									
Sitka																									
Huntsville	SD	x																							
Tuscaloosa																									
Batesville																									
Blytheville																									
North Little Rock																									
Osceola																									
Stuttgart																									
Commerce	SD	x															SNCR	x			NH3				
Lassen Co.																									
Long Beach	SD	x															SNCR	x			NH3				
Modesto	SD	x															SNCR	x			NH3				
Bridgeport	SD	x																							
Bristol	SD	x																							
Lisbon	SD	x															SNCR	x							
Hartford	SD	x																							
New London Co.	SD	x																							
Stamford I																									
Stamford II																									
New Canaan					WS	x																			
Wallingford	SD	x																							
Windham RRF	SD	x																							
D.C.																									
Pigeon Point																									
Sussex																									
Kent																									
Bay Co.																									
North Broward Co.	SD	x																							
South Broward Co.	SD	x																							
Dade Co.																									
Dade Co. Expansion	SD	x															SNCR	x				CI	x		
Tampa																									
Lake Co.	SD	x																							
Lee Co.	SD	x															SNCR	x			NH3	CI	x		
Mayport																									
McKay Bay																									
Miami Airport																									
West Palm Beach	SD	x																							
Pasco Co.	SD	x																							
Monroe Co.																									
Wheelabrator Pinellas RRF																									
Savannah	SD(y)		1996																						
Honolulu	SD	x																							
Waipahu																									
Burley																									
Beardstown	SD	X															SNCR	X							
Havana	SD	x															SNCR	x							
Northwest																									
Cook Co.	SD	x															SNCR	x							

Reference Name	Unit Name	County	Location	State	Project Status	Const. Start	Unit Start	Non/Attain for Ozone	Total Plant Capacity (TPD)	Number of Units	Combustor Type
Summit	West Suburban Recycling and Energy Center	Cook	Summit	IL	P	1995	1997	NON	1800	2	RDF/WW
Indianapolis	Indianapolis RRF	Marion	Indianapolis	IN	OP	1986	1988	NON	2362	3	MB/WW
Monroe	Bloomington	Monroe	Bloomington	IN	On Hold		1997		300		MB
Corbin	Kentucky Energy Assoc.	Whitley & Knox	Corbin	KY	P		1995		500		MB
Louisville	Louisville Energy Generating Fac.	Jefferson	Louisville	KY	On Hold			NON	250		RDF/FB
Louisville	Louisville Incinerator	Jefferson	Louisville	KY	IA		1957	NON	100	4	Unknown
Fall River	Fall River Incinerator	Bristol	Fall River	MA	OP		1972	NON	600	2	MB/REF
Framingham	Framingham	Middlesex	Framingham	MA	IA		1970	NON	500	2	MB/REF
Lawrence	Haverhill Lawrence RDF	Essex	Lawrence	MA	OP	1981	1984	NON	710	1	RDF
Haverhill	Haverhill RRF	Essex	Haverhill	MA	OP	1986	1989	NON	1650	2	MB/WW
Montachusets	Montachusets RRF	Middlesex	Shirley	MA	UC	1993	1995	NON	243		MB/WW
North Andover	North Andover RESCO	Essex	North Andover	MA	OP	1982	1985	NON	1500	2	MB/WW
Pittsfield	Pittsfield RRF	Berkshire	Pittsfield	MA	OP	1978	1981	NON	240	2	MOD/EA
Saugus	Saugus RESCO	Essex	Saugus	MA	OP	1972	1975	NON	1500	2	MB/WW
SEMASS	SEMASS RRF Unit 1 & 2	Plymouth	Rochester	MA	OP	1985	1988	NON	1800	2	RDF
	SEMASS RRF Unit 3						1993		900	1	
Agawan	Springfield RRF	Hampden	Agawan	MA	OP	1985	1988	NON	360	3	MOD
Millbury	Wheelabrator Millbury	Worcester	Millbury	MA	OP	1985	1987	NON	1500	2	MB/WW
Harford Co.	Harford Co. WTE Fac.	Harford	Aberdeen Proving Grounds	MD	OP		1987	NON	360	4	MOD/SA
Montgomery	Montgomery Co. RRF	Montgomery	Dickerson	MD	UC		1996	NON	1800		MB/WW
Pulaski	Pulaski	Independent City	Baltimore	MD	OP		1982	NON	1500	5	MB/REF
Southwest RRF	Southwest RRF (RESCO)	Independent City	Baltimore	MD	OP	1982	1985	NON	2250	3	MB/WW
Frenchville	Frenchville	Aroostook	Frenchville	ME	IA		1984		50	1	Unknown
Portland	Greater Portland Region RRF	Cumberland	Portland	ME	OP	1985	1988	NON	500	2	MB/WW
Biddeford - Saco	Maine Energy Recovery	York	Biddeford - Saco	ME	OP		1987	NON	600	2	RDF
Auburn	Mid Maine Waste Action Corp.	Androscoggin	Auburn	ME	OP		1992	NON	200	2	MB
Penobscot	Penobscot Energy Recovery Comp.	Penobscot	Orrington	ME	OP	1986	1988		700	2	RDF
Wayne Co.	Central Wayne Co. Sanitation Auth	Wayne	Dearborn Heights	MI	OP		1964	NON	500	2	RDF
Clinton	Clinton Township	Macomb	Clinton Township	MI	OP		1972	NON	600	2	MB/REF
Greater Detroit	Greater Detroit RRF Unit #1	Wayne	Detroit	MI	OP	1986	1988	NON	1100	1	RDF
	Greater Detroit RRF Unit #2						1988		1100	1	RDF
	Greater Detroit RRF Unit #3						1988		1100	1	RDF
Jackson	Jackson Co. RRF	Jackson	Jackson	MI	OP		1987		200	2	MB/WW
Kent	Kent Co. WTE Fac.	Kent	Grand Rapids	MI	OP	1987	1990	NON	625	2	MB/WW
Oakland	Oakland Co. WTE Fac.	Oakland	Auburn Hills	MI	On Hold		1996	NON	2000		MB
Elk River	Elk River FFR	Anoka	Anoka	MN	OP		1989		1500	3	RDF
Fergus Falls	Fergus Falls	Otter Tail	Fergus Falls	MN	OP		1989		94	2	MOD/SA
Hennepin Co.	Hennepin Energy Recovery Facility	Hennepin	Minneapolis	MN	OP	1987	1989		1200	2	MB/WW
Olmstead Co.	Olmstead WTE Facility	Olmstead	Rochester	MN	OP		1987		200	2	MB/WW
Perham	Perham Renewable RF	Otter Tail	Perham	MN	OP		1986		114	2	MOD/SA
Polk Co.	Polk Co. Solid Waste Resource Recovery	Polk	Fosston	MN	OP		1988		80	2	MOD/SA
Pope-Douglas	Pope-Douglas Solid Waste	Douglas	Alexandria	MN	OP		1987		72	2	MOD/EA
Ramsey-Washington	Ramsey-Washington	Goodhue	Red Wing	MN	OP	1986	1988		720	2	RDF
Red Wing	Red Wing Solid Waste Boiler Facility	Goodhue	Red Wing	MN	OP		1982		72	2	MOD/EA
Savage Co.	Richards Asphalt Co. Facility	Savage	Scott	MN	OP		1982		70	1	MOD
Western Lake Superior	Western Lake Superior Sanitary District	St. Louis	Duluth	MN	OP		1985		280	2	RDF
Mankato	Wilmarth Plant	Blue Earth & Nicollet	Mankato	MN	OP	1986	1987		720	2	RDF
Ft Leonard Wood	Ft Leonard Wood RRF	Pulaski	Ft Leonard Wood	MO	IA		1982		78	3	MOD/SA
St Louis	St Louis WTE	Independent City	St Louis	MO	P			NON	1200		
Moss Point	Pascagoula Energy Recovery Facility	Jackson	Moss Point	MS	OP		1985		150	2	MOD/EA

Reference Name	Air Pollution Control Devices	Owner	Operator	Energy	References
Summit	FF SD SNCR	West Suburban Recycling and Energy Center	Energy Answer, Inc.	Ele	I,SW,Tele
Indianapolis	FF SD	Ogden Martin	Ogden Martin	Stm	I,SW
Monroe	FF SD SNCR	Westinghouse	Westinghouse	Cog	I
Corbin		Kentucky Energy Assoc.	Kentucky Energy Assoc.	Ele	I
Louisville	Cyc FF SNCR	Vedco Energy Corp.	Vedco Energy Corp.	Stm	SW,Tele
Louisville	WS	City of Louisville	City of Louisville	None	Fax,Art
Fall River	WS	City of Fall River	City of Fall River	None	I,SW
Framingham	FF SD	Public	Public	none	
Lawrence	ESP FSI(r)	Ogden Martin	Ogden Martin	COG	I,SW,Fax,Tele
Haverhill	ESP SD	Ogden Martin	Ogden Martin	Ele	I,SW
Montachusets	FF SD SNCR CI	TIRU	TIRU	Ele	I,SW,Tele,Art
North Andover	ESP FSI(r)	Wheelabrator	Wheelabrator	Ele	I,SW,Fax,Tele
Pittsfield	ESP WS	Vicon Recovery System	Vicon Recovery System	STM	I,SW,Fax,Tele
Saugus	FF(r) SD(r)	Wheelabrator	Wheelabrator	Ele	I,SW,Tele
SEMASS	ESP SD	SEMASS Partnership	Bechtel	Ele	I,SW
	FF SD SNCR				
Agawan	FF DSI	Springfield RRF	Springfield RRF	COG	I,SW,Tele,Fax,Art
Millbury	ESP SD	Wheelabrator	Wheelabrator	Ele	I,SW,Report
Harford Co.	ESP	ENSCO	ENSCO	COG	I,SW,Tele
Montgomery	FF SD SNCR CI	NE Maryland Solid Waste Auth	Ogden Martin	Ele	I,SW,Art,Report
Pulaski	ESP	Pulaski	Pulaski	None	I, SW, Fax
Southwest RRF	ESP	Ford Motor Co.	Wheelabrator	COG	I, SW
Frenchville	none	Aroostook Co.	Aroostook Co.	none	SW, Fax
Portland	ESP SD	Regional Waste System	Regional Waste System	Ele	I,SW
Biddeford - Saco	FF SD	Maine Energy Recovery Comp.	KTI Energy	Ele	I,SW
Auburn	FF SD	Mid Maine Waste Corp.	American Energy Corp.	Ele	
Penobscot	FF SD	KTI Energy	ENSOCO	Ele	I,SW,Tele
Wayne Co.	ESP	Central Wayne Co. Sanitation Auth	Central Wayne Co. Sanitation Auth	none	I,Fax
Clinton	ESP	Gross Point - Clinton Refuse Disposal Auth	Gross Point - Clinton Refuse Disposal Auth	none	Fax
Greater Detroit	FF(r) SD(r)	Philip Morris Capital Corp	Ogden Martin/Michigan Waste Energy Inc.	COG	I,SW,Tele,Fax,Art
	FF(r) SD(r)				
	FF(r) SD(r)				
Jackson	FF SD	Jackson Co.	Metcalf & Eddy Services	COG	I,SW,Fax
Kent	FF SD	Kent Co.	Ogden Martin	COG	I,SW,Fax
Oakland	FF SD CI	Oakland Co.	Not Selected	Ele	
Elk River	FF DSI	Northern States Power & United Anoka County Power	Northern States Power & United Anoka County Power	Elec	I,SW
Fergus Falls	WS	City of Fergus Falls	City of Fergus Falls	Stm	I,SW,Fax,Tele
Hennepin Co.	FF SD SNCR CI(r)	Hennepin Energy Recovery Corp	Ogden Martin	Elec	I,SW,Report
Olmstead Co.	ESP	Olmstead County	Olmstead County	COG	I,SW,Art
Perham	ESP	Quadrant Co/Ottertail Power	Quadrant Co/Ottertail Power	Stm	I,SW
Polk Co.	ESP	Polk Co	Polk Co.	Stm	I,SW,Tele
Pope-Douglas	ESP	Pope-Douglas Joint Solid Waste Board	Public	Stm	I,SW
Ramsey-Washington	ESP	Northern States Power	Northern States Power	Elec	I
Red Wing	ESP	City of Red Wing	City of Red Wing	Stm	I,SW,Tele
Savage Co.	ESP	Richards Asphalt	Richards Asphalt	Stm	I,SW,Tele
Western Lake Superior	VS	Public (WLSSD)	Public (WLSSD)	Stm	I,SW,Fax
Mankato	FF(r) SD(r)	Northern States Power	Northern States Power	Elec	I,SW,Tele
Ft Leonard Wood	none	US. Army	Harbert International	Stm	SW,Memo
St Louis	FF SD SNCR	City	Thermal Energy	COG	I,SW
Moss Point	ESP	City of Pascagoula	City of Pascagoula	Stm	I,SW,Tele,Fax

Reference Name	Cyclone				ESP				Fabric Filter				Duct Sorbent Injection				Furnace Sorbent Injection			
	Cyclone Info	Original (x=orig)	Retrofit (year)	Inactive (year)	ESP Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FF Info	Original (x=orig)	Retrofit (year)	Inactive (year)	DSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Summit									FF	x										
Indianapolis									FF	x										
Monroe									FF	x										
Corbin																				
Louisville	Cyc	x							FF	x										
Louisville																				
Fall River																				
Framingham									FF	x										
Lawrence					ESP	x											FSI(t)		1993	
Haverhill					ESP	x														
Montachusett									FF	x										
North Andover					ESP	x											FSI(t)		1992	
Pittsfield					ESP	x														
Saugus									FF(t)	x	1991									
SEMASS					ESP	x														
Agawan									FF	x										
Millbury					ESP	x							DSI	x						
Harford Co.					ESP	x														
Montgomery									FF	x										
Pulaski					ESP	x														
Southwest RRF					ESP	x														
Frenchville																				
Portland					ESP	x														
Biddeford - Saco									FF	x										
Auburn									FF	x										
Penobscot									FF	x										
Wayne Co.					ESP	x														
Clinton					ESP	x														
Greater Detroit						x		1993	FF(t)		1993									
						x		1994	FF(t)		1994									
						x		1995	FF(t)		1995									
Jackson									FF	x										
Kent									FF	x										
Oakland									FF	x										
Elk River									FF	X			DSI	X						
Fergus Falls																				
Hennepin Co.									FF	X										
Olmstead Co.					ESP	X														
Perham					ESP	X														
Polk Co.					ESP	X														
Pope-Douglas					ESP	x														
Ramsey-Washington					ESP	x														
Red Wing					ESP	X														
Savage Co.					ESP	X														
Western Lake Superior																				
Mankato						x		1990	FF(t)		1990									
Ft Leonard Wood																				
St Louis									FF	x										
Moss Point					ESP	X														

Reference Name	Spray Dryer				Wet Scrubber				Venturi Scrubber				Electrified Gravel Bed				SNCR				Reagent Type	Carbon Injection			
	SD Info	Original (x=orig)	Retrofit (year)	Inactive (year)	WS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	VS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	EGB Info	Original (x=orig)	Retrofit (year)	Inactive (year)	SNCR Inf	Original (x=orig)	Retrofit (year)	Inactive (year)		CI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Summit	SD	x															SNCR	x							
Indianapolis	SD	x																							
Monroe	SD	x															SNCR	x							
Corbin																									
Louisville																	SNCR	x							
Louisville					WS	x																			
Fall River					WS	x																			
Framingham	SD	x																							
Lawrence																									
Haverhill	SD	x																							
Montachusett	SD	x															SNCR	x				CI	x		
North Andover																									
Pittsfield					WS	x																			
Saugus	SD(r)	x	1991																						
SEMASS	SD	x																							
	SD	x															SNCR	x			Urea				
Agawan																									
Millbury	SD	x																							
Harford Co.																									
Montgomery	SD	x															SNCR	x			NH3	CI	x		
Pulaski																									
Southwest RRF																									
Frenchville																									
Portland	SD	x																							
Biddeford - Saco	SD	x																							
Auburn	SD	x																							
Penobscot	SD	x																							
Wayne Co.																									
Clinton																									
Greater Detroit	SD(r)		1993																						
	SD(r)		1994																						
	SD(r)		1995																						
Jackson	SD	x																							
Kent	SD	x																							
Oakland	SD	x																				CI	x		
Elk River																									
Fergus Falls					WS	x																			
Hennepin Co.	SD	x															SNCR	x			NH3	CI(r)		1994	
Olmstead Co.																									
Perham																									
Polk Co.																									
Pope-Douglas																									
Ramsey-Washington																									
Red Wing																									
Savage Co.																									
Western Lake Superior									VS	x															
Mankato	SD(r)		1990																						
Ft Leonard Wood																									
St Louis	SD	x															SNCR	x							
Moss Point																									

Reference Name	Unit Name	County	Location	State	Project Status	Const. Start	Unit Start	Non/Attain for Ozone	Total Plant Capacity (TPD)	Number of Units	Combustor Type
Park Co.	Livingston/Park County MWC	Park	Park County	MT	OP		1982		72	2	MOD/SA
Kinston	Carolina Energy Corp	Lenoir	Kinston	NC	P	1994	1997		600	1	RDF
Fayetteville	Fayetteville RRF	Cumberland	Fayetteville	NC	UC	1993	1995		600	2	RDF/FB
New Hanover Co.	New Hanover Co. WTE Unit 1 & 2	New Hanover	Wilmington	NC	OP		1984		200	2	MB/WW
	New Hanover Co. WTE Unit 3				OP		1991		249	1	MB/WW
NIEHS	NIEHS	Durham	RTP	NC	OP		1985	NON	40	2	MOD/SA
Charlotte	University City RRF	Mecklenburg Co.	Charlotte	NC	OP		1989	NON	235	2	MB/WW
Wrightsville	Wrightsville Beach Incinerator	New Hanover	Wrightsville Beach	NC	IA		1977		50	2	MOD/SA
Strafford Co.	Lamprey Regional SW Coop.	Strafford	Durham	NH	OP		1980	NON	132	3	MOD/EA
Pittsfield	Pittsfield Incinerator	Merrimack	Pittsfield	NH	IA		1977	NON	48	2	MOD/SA
Claremont	SES Claremont RRF	Sullivan	Claremont	NH	OP	1985	1987		200	2	MB/WW
Concord	Wheelabrator Concord	Merrimack	Concord	NH	OP	1987	1989	NON	500	2	MB/WW
Camden RRF	Camden RRF	Camden County	Camden	NJ	OP	1988	1991	NON	1050	3	MB/WW
Essex Co.	Essex Co. RRF	Essex Co.	Newark	NJ	OP	1988	1990	NON	2277	3	MB/WW
Fort Dix	Fort Dix RRF	Burlington	Wrightstown	NJ	OP		1986	NON	80	4	MOD/SA
Gloucester Co.	Gloucester County	Gloucester	Westville	NJ	OP	1988	1990	NON	575	2	MB/WW
Mercer Co.	Mercer County RRF	Mercer	Hamilton Township	NJ	P	1994		NON	1450	2	MB/WW
Union Co.	Union Co. RRF	Union	Rahway	NJ	OP	1992	1994	NON	1440	3	MB/WW
Oxford Township	Warren Energy RF	Warren	Oxford Township	NJ	OP	1986	1988	NON	400	2	MB/WW
Adirondack	Adirondack RRF	Washington	Hudson Falls	NY	OP		1992		432	2	MB/WW
Albany	Albany Steam Plant	Albany	Albany	NY	IA	1979	1981	NON	600	2	RDF
Babylon RRF	Babylon RRF	Suffolk	Babylon	NY	OP		1989	NON	750	2	MB/WW
Betts Ave.	Betts Ave. Incinerator	Queens	Queens	NY	IA		1984	NON	1000	4	MB/REF
Brooklyn Navy Yard	Brooklyn Navy Yard RRF	Kings	Brooklyn	NY	P	1996	1999	NON	3000		MB/WW
Cattaraugus Co.	Cattaraugus Co. WTE Plant	Cattaraugus	Cuba	NY	IA		1983		112	3	MOD/SA
Dutchess Co.	Dutchess Co. RRF	Dutchess Co.	Poughkeepsie	NY	OP	1983	1988	NON	400	2	MB/RC
Glen Cove	Glen Cove	Nassau	Glen Cove	NY	IA	1979	1983	NON	250	2	MB/WW
Green Island	Green Island WTE Plant	Albany	Green Island	NY	P	1994	1997	NON	1500		MB
Green Point	Green Point Incinerator	Kings	Green Point	NY	IA		1959	NON	100		Unknown
Hempstead	Hempstead	Nassau	Westbury	NY	OP	1986	1989	NON	2505	3	MB/WW
Brooklyn	Henry St. Incinerator	Kings	Brooklyn	NY	IA		1959	NON			Unknown
Huntington	Huntington RRF	Suffolk	Huntington	NY	OP	1989	1991	NON	750	3	MB
Rochester	Kodak RRF	Monroe	Rochester	NY	OP		1970		150		RDF
Long Beach	Long Beach RRF	Nassau	Long Beach	NY	OP	1985	1988	NON	200	1	MB/WW
Islip	MacArthur WTE	Suffolk	Islip/Ronkonkoma	NY	OP	1986	1990	NON	518	2	MB/RC
MER	MER Expansion	Suffolk	Islip/Ronkonkoma	NY	On Hold			NON	350		MB
Monroe Co.	Monroe Co. RRF	Monroe	Rochester	NY	IA		1983		2000		RDF
Niagara Falls	Niagara Falls RDF WTE	Niagara	Niagara Falls	NY	OP	1978	1981	NON	2200	2	RDF
Oceanside	Oceanside RRF	Nassau	Oceanside	NY	IA		1974	NON	750		MB/WW
Oneida Co.	Oneida Co. ERF	Oneida	Rome	NY	OP	1982	1985		200	4	MOD/SA
Onondaga Co.	Onondaga Co. RRF	Onondaga	Jamesville	NY	UC		1995		990	3	MB/WW
Oswego Co.	Oswego Co. WTE	Oswego	Fulton	NY	OP	1983	1986		200	4	MOD/SA
Port of Albany	Port of Albany WTE Fac.	Albany	Port of Albany	NY	P		1996	NON	1300		MB
Brooklyn Bay	South West Brooklyn Incinerator	Kings	Brooklyn Bay 41st St.	NY	IA	1958	1959	NON	980	4	MB/REF
Westchester RESCO	Westchester RESCO	Westchester	Peekskill	NY	OP	1982	1985	NON	2250	3	MB/WW
Akron	Akron Recycle Energy System	Summit	Akron	OH	IA	1976	1979	NON	1000	3	RDF
Columbus	City of Columbus SW Reduction Fac.	Franklin & Fairfield	Columbus	OH	IA	1979	1982	NON	2000	6	RDF
Euclid	Euclid	Cuyahoga	Euclid	OH	IA		1957	NON	200	2	MB/REF
Mad River	Mad River RRF	Clark	Springfield	OH	IP	1994	1996	NON	1750		MB/WW

Reference Name	Air Pollution Control Devices	Owner	Operator	Energy	References
Park Co.	none	Park County	Park County	None	I,Fax
Kinston	FF DSI SNCR CI	Carolina	Qubor Power	Strm	Tele
Fayetteville	DSI SNCR CI	BCH Energy Limited Partnership	Qubor Power	COG	I,SW,Tele,Art
New Hanover Co.	ESP SD(r) FF SD SNCR	New Hanover Co.	New Hanover Co.	COG	Tele,Memo,Report
NIEHS	none	NIEHS	Private	Heat	Tel,Letter
Charlotte	ESP	Mecklenburg Co.	M.K. Ferguson	COG	I,SW,Tele,Fax
Wrightsville	none	Town of Wrightsville Beach	Town of Wrightsville Beach	None	SW,Tele,Letter
Strafford Co.	Cyc	Lamprey Regional SW Coop	Public	Strm	I,SW,Fax
Pittsfield	none	Town of Pittsfield	Town of Pittsfield	None	SW,Tele,Fax
Claremont	FF DSI	Wheelabrator	Wheelabrator	Ele	I,SW,Tele
Concord	FF DSI	Wheelabrator	Wheelabrator	Ele	I, SW, Tele
Camden RRF	ESP SD	Camden Co. Energy Recovery Assc.	Camden Co. Energy Recovery Assc.	Ele	I,SW,Art
Essex Co.	ESP SD	RR Port Auth of NY and NJ	American Ref-Fuel	Ele	I,SW,Tele
Fort Dix	FF WS	U.S. Army	North America RR Corp.	Strm	I,SW,Tele
Gloucester Co.	FF SD	Wheelabrator	Wheelabrator	COG	I,SW
Mercer Co.	FF SD SNCR CI	Mercer Co.	Ogden Martin	Ele	I,SW,Tele,Art
Union Co.	FF SD SNCR CI	Union Co. Utilities Authority	Ogden Martin	Ele	I,SW,Report,Art
Oxford Township	FF SD	Warren Co. Resource Sorp	Ogden Martin	Ele	I,SW
Adirondack	ESP SD	Wheelabrator	Wheelabrator	Ele	I,SW,Report
Albany	ESP	State of New York	State of New York	Strm	I,SW,Fax
Babylon RRF	FF SD	Ogden Martin	Ogden Martin	Ele	I,SW
Betts Ave.	ESP	City of NY	City of NY	Strm	I,SW,Fax,Art
Brooklyn Navy Yard	FF SD SNCR CI	Wheelabrator	Wheelabrator	Strm	I,SW,Art
Cattaraugus Co.	none	Cattaraugus Co.	Kinetic Tech. International	Strm	I,SW
Dutchess Co.	FF DSI	Dutchess Co.	Westinghouse Subsidiary	COG	I,SW
Glen Cove	FF(r) DSI	City of Glen Cove	PSC Environmental Services	Ele	I,Fax
Green Island	FF SD SNCR	American Ref-Fuel	Not Selected	Ele	I,SW
Green Point	ESP	NYC Dept. of Sanitation	NYC Dept. of Sanitation	None	SW,Art
Hempstead	FF SD	American Ref-Fuel	American Ref-Fuel	Ele	I,SW
Brooklyn	ESP	NYC Dept. of Sanitation	NYC Dept. of Sanitation	None	I
Huntington	FF SD SNCR	Huntington & Ogden Martin	Ogden Martin	Ele	I,SW,Tele,Report
Rochester	ESP	Kodak	Kodak	COG	SW
Long Beach	ESP	ERD Mgmt. Corp.	ERD Mgmt. Corp.	COG	I,SW,Tele,Fax,Art
Islip	FF DSI	Islip RR	Montenay Islip	Ele	I,SW
MER	FF	Islip RR Agency	Montenay	Ele	I
Monroe Co.	none	Monroe Co.		Ele	SW
Niagara Falls	ESP	American Ref-Fuel	American Ref-Fuel	COG	I,SW,Tele,Fax,Art
Oceanside	ESP	Township of Hempstead	Township of Hempstead	COG	SW
Oneida Co.	ESP	Oneida-Herkimer Solid Waste Mgt.	Oneida-Herkimer Solid Waste Mgt.	COG	I,SW,Tele
Onondaga Co.	FF SD SNCR CI	Ogden Martin	Ogden Martin	Ele	I,SW,Report,Art
Oswego Co.	ESP	Oswego Co.	Oswego Co.	COG	I,SW,Art
Port of Albany	FF SD SNCR CI	Ogden Martin	Ogden Martin	COG	I,SW
Brooklyn Bay	FF(r) DSI(r) SD(r) SNCR(r) CI(r)	NYC Dept. Sanitation	NYC Dept. Sanitation	Adding in 1998	I,SW,Fax,Tele
Westchester RESCO	ESP	Wheelabrator	Wheelabrator	Ele	I,SW
Akron	ESP	City of Akron	WTE Corp	Strm/Heat	I,SW,Tele
Columbus	ESP FF(r) SD(r)	City of Columbus	City of Columbus	Ele	I,SW
Euclid	ESP	City of Euclid	City of Euclid	None	SW
Mad River	FF SD SNCR CI	Ohio Edison Co.	Ogden Martin Systems of Clark	Ele	I,SW,BACT,Art

Reference Name	Cyclone				ESP				Fabric Filter				Duct Sorbent Injection				Furnace Sorbent Injection			
	Cyclone Info	Original (x=orig)	Retrofit (year)	Inactive (year)	ESP Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FF Info	Original (x=orig)	Retrofit (year)	Inactive (year)	DSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Park Co.																				
Kinston									FF	x			DSI	x						
Fayetteville													DSI	x						
New Hanover Co.					ESP	x														
NIEHS									FF	x										
Charlotte					ESP	x														
Wrightsville																				
Strafford Co.	Cyc	X																		
Pittsfield																				
Claremont									FF	X			DSI	X						
Concord									FF	x			DSI	x						
Camden RRF					ESP	X														
Essex Co.					ESP	X														
Fort Dix									FF	x										
Gloucester Co.									FF	x										
Mercer Co.									FF	x										
Union Co.									FF	x										
Oxford Township									FF	x										
Adirondack					ESP	x														
Albany					ESP	x														
Babylon RRF									FF	x										
Betts Ave.					ESP	x														
Brooklyn Navy Yard									FF	x										
Cattaraugus Co.																				
Dutchess Co.									FF	x			DSI	x						
Glen Cove								1994	FF(t)		1994		DSI	x						
Green Island									FF	x										
Green Point					ESP	x														
Hempstead									FF	x										
Brooklyn					ESP	x														
Huntington									FF	x										
Rochester					ESP	x														
Long Beach					ESP	x														
Islip									FF	x			DSI	x						
MER									FF	x										
Monroe Co.																				
Niagara Falls					ESP	x														
Oceanside					ESP	x														
Oneida Co.					ESP	x														
Onondaga Co.									FF	x										
Oswego Co.					ESP	x														
Port of Albany									FF	x										
Brooklyn Bay						x		1991	FF(t)		1995		DSI(t)		1995					
Westchester RESCO					ESP	x														
Akron					ESP	x														
Columbus					ESP	x			FF(t)		1998									
Euclid					ESP	x														
Mad River									FF	x										

Reference Name	Spray Dryer				Wet Scrubber				Venturi Scrubber				Electrified Gravel Bed				SNCR				Reagent Type	Carbon Injection			
	SD Info	Original (x=orig)	Retrofit (year)	Inactive (year)	WS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	VS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	EGB Info	Original (x=orig)	Retrofit (year)	Inactive (year)	SNCR Info	Original (x=orig)	Retrofit (year)	Inactive (year)		CI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Park Co.																									
Kinston																	SNCR	x			NH3	CI	x		
Fayetteville																	SNCR	x			NH3	CI	x		
New Hanover Co.	SD(t)		1991																						
	SD	x															SNCR	x			Urea				
NIEHS																									
Charlotte																									
Wrightsville																									
Strafford Co.																									
Pittsfield																									
Claremont																									
Concord																									
Camden RRF	SD	x																							
Essex Co.	SD	X																							
Fort Dix					WS	x																			
Gloucester Co.	SD	x																							
Mercer Co.	SD	x															SNCR	x				CI	x		
Union Co.	SD	x															SNCR	x			NH3	CI	x		
Oxford Township	SD	x																							
Adirondack	SD	x																							
Albany																									
Babylon RRF	SD	x																							
Betts Ave.																									
Brooklyn Navy Yard	SD	x															SNCR	x				CI	x		
Cattaraugus Co.																									
Dutchess Co.																									
Glen Cove																									
Green Island	SD	x															SNCR	x							
Green Point																									
Hempstead	SD	x																							
Brooklyn																									
Huntington	SD	x															SNCR	x			NH3				
Rochester																									
Long Beach																									
Islip																									
MER																									
Monroe Co.																									
Niagara Falls																									
Oceanside																									
Oneida Co.																									
Onondaga Co.	SD	x															SNCR	x			NH3	CI	x		
Oswego Co.																									
Port of Albany	SD	x															SNCR	x				CI	x		
Brooklyn Bay	SD(t)		1995														SNCR(t)		1995			CI(t)		1995	
Westchester RESCO																									
Akron																									
Columbus	SD(t)		1996																						
Euclid																									
Mad River	SD	x															SNCR	x (enhanced)				CI	x (assumed)		

Reference Name	Unit Name	County	Location	State	Project Status	Const. Start	Unit Start	Non/Attain for Ozone	Total Plant Capacity (TPD)	Number of Units	Combustor Type
Montgomery Co. North	Montgomery Co. North RRF Unit #1	Montgomery Co.	Dayton	OH	OP	1987	1970	NON	300	1	MB/RC/REF
	Montgomery Co. North RRF Unit #2				OP	1987	1970		300	1	MB/RC/REF
	Montgomery Co. North RRF Unit #3				OP		1988		300	1	MB/RC/REF
Montgomery Co. South	Montgomery Co. South RRF Unit #1	Montgomery Co.	Dayton	OH	OP	1987	1970	NON	300	1	MB/RC/REF
	Montgomery Co. South RRF Unit #2				OP	1987	1970		300	1	MB/RC/REF
	Montgomery Co. South RRF Unit #3				OP		1988		300	1	MB/RC/REF
Miami	Miami RRF	Ottawa	Miami	OK	OP		1982		105	3	MOD/SA
Tulsa	Walter B. Hall RRF	Tulsa & Osage	Tulsa	OK	OP	1984	1988		1125	3	MB/WW
Coos Bay	Coos Bay Incinerator	Coquille	Coquille	OR	OP		1980		125	3	MOD/SA
Marion Co.	Marion Co. WTE	Marion	Brooks	OR	OP	1984	1988		550	2	MB/WW
Delaware Co.	Delaware Co. RRF	Delaware	Chester	PA	OP	1988	1992	NON	2888	6	MB/RC/WW
Glendon	Glendon RR Project	Northampton	Glendon	PA	P		1995	NON	500		MB/WW
Harrisburg	Harrisburg WTE	Dauphin	Harrisburg	PA	OP		1972	NON	720	2	MB/WW
Lancaster Co.	Lancaster Co. RRF	Lancaster Co.	Bainbridge	PA	OP	1989	1991	NON	1200	3	MB/WW
Montgomery Co.	Montgomery Co. RRF	Montgomery Co.	Conshohocken	PA	OP	1987	1992	NON	1200	2	MB/WW
Potter Co.	Potter Co. RR	Potter Co.		PA	P			NON	48		MOD
Westmoreland	Westmoreland WTE Fac.	Westmoreland	Greensburg	PA	OP		1987	NON	50	2	MOD/SA
Falls Township	Wheelabrator Falls RRF	Bucks	Falls Township	PA	OP		1994	NON	1500	2	MB/WW
York Co.	York Co. RR Center	York Co.	Manchester Township	PA	OP	1987	1989	NON	1344	3	MB/RC/WW
Philadelphia EC	Philadelphia EC	Philadelphia	Philadelphia EC	PA	IA		1985	NON	750	2	MB/WW
Philadelphia NW	Philadelphia NW	Philadelphia	Philadelphia NW	PA	IA		1985	NON	750	2	MW/WW
San Juan	San Juan		San Juan	PR	P	1994	1997	NA	1200	3	MB/WW
Central Falls	Central Falls RRF	Providence	Central Falls	RI	P			NON	750		MB
Johnston	Johnston RRF	Providence	Johnston	RI	P			NON	750		MB/WW
North Kingston	North Kingston Solid Waste Fac.	Washington	North Kingston	RI	P			NON	750		MB
Quonset Point	Quonset Point RRF		Quonset Point	RI	P			NON	710		MB/WW
Hampton Co.	Chamber Medical Tech. of SC	Hampton	Hampton	SC	OP	1985	1988		270	3	MOD/SA
Charleston	Foster Wheeler Charleston RR	Charleston	Charleston	SC	OP	1987	1989		600	2	MB/WW
Dyersburg RRF	Dyersburg RRF	Dyes	Dyersburg	TN	IA		1980		100	2	MOD/SA
Lewisburg	Lewisburg RRF	Marshall	Lewisburg	TN	IA		1980		60	1	MOD
Nashville	Nashville Thermal Transfer Corp	Davidson	Nashville	TN	OP		1974	NON	1050	3	MB/WW
Gallatin	Resource Authority in Sumner Co.	Sumner	Gallatin	TN	OP	1980	1981	NON	200	2	MB/RC
Shelby Co.	Center RRF	Shelby	Center	TX	OP		1988		40	1	MOD/SA
Cleburne	City of Cleburne	Johnson	Cleburne	TX	OP		1988		115	3	MOD/SA
Panola Co.	Panola Co. WTE	Panola	Carthage	TX	OP		1988		40	1	MOD/SA
Waxahachie	Waxahachie Solid Waste RR	Ellis	Waxahachie	TX	IA		1982		50	2	MOD/SA
Davis Co.	Davis Co. WTE	Davis	Layton	UT	OP	1983	1988	NON	400	2	MB/REF
Alexandria	Alexandria/Arlington RRF	Alexandria	Alexandria	VA	OP	1985	1988	NON	975	3	MB/WW
Galax City SW Steam Recovery Unit	Galax City SW Steam Recovery Unit	Grayson	Galax	VA	IA		1986		56	1	MB/RC/WW
Harrisonburg	Harrisonburg RRF	Rockingham	Harrisonburg	VA	OP		1982		100	2	MB/WW
Henrico	Henrico Co. RRF	Henrico	Richmond	VA	IA		1983	NON	250		RDF/FB
Fairfax	I-95 Energy RRF	Fairfax	Lorton	VA	OP	1988	1990	NON	3000	4	MB/WW
Hampton	NASA Refuse-fired Steam Generator	Independent City	Hampton	VA	OP		1980	NON	200	2	MB/WW
Norfolk Navy Yard	Norfolk Navy Yard	Independent City	Norfolk	VA	OP	1984	1988	NON	2000	4	RDF
Manassass	Prince William and London Counties	Independent City	Manassass	VA	P			NON	1700		MB/WW
Salem	Salem Waste Disposal Energy Recovery	Roanoke	Salem	VA	IA		1978		100	4	MOD/SA
Norfolk Naval Station	Norfolk Naval Station	Independent City	Norfolk Naval Station	VA	IA		1987	NON	360	2	MB/WW
Pentagon	Arlington - Pentagon	Arlington	Arlington - Pentagon	VA	OP		1955	NON	50	1	MOD/SA
Rutland	Rutland RR Center	Rutland	Rutland	VT	IA		1987		240	2	MB/MOD
Fort Lewis	Fort Lewis RRF	Pierce	Fort Lewis	WA	UC		1986	NON	120	3	MB/WW

Reference Name	Air Pollution Control Devices	Owner	Operator	Energy	References
Montgomery Co. North	ESP FSI	Montgomery Co.	Montgomery Co.	Ele (unit 3 only)	I,SW
	ESP FSI				
	ESP FSI				
Montgomery Co. South	ESP FSI	Montgomery Co.	Montgomery Co.	None	I,SW
	ESP FSI				
	ESP FSI				
Miami	none	City of Miami	Consumat	Stm	I,SW,Fax
Tulsa	ESP	CTI Group	Ogden Martin	COG	I,SW,Fax,Tele
Coos Bay	none	Coos Co.	Coos Co.	None	I,SW,Tele,Fax
Marion Co.	FF SD	Ogden Martin	Ogden Martin	Ele	I,SW
Delaware Co.	FF SD	Chester SWA	Westinghouse Subsidiary	Ele	I,SW
Glendon	FF SD SNCR CI	Glendon Energy	Not Selected	Ele	I,SW
Harrisburg	ESP	City of Harrisburg	City of Harrisburg	COG	I,SW,Art
Lancaster Co.	FF SD	Lancaster Co. SW Mgt. Authority	Ogden Martin	Ele	I,SW,Report
Montgomery Co.	FF SD	Montenay	Montenay	Ele	I,SW
Potter Co.	FF SD	Potter Co.	Not yet selected		SW
Westmoreland	ESP	Westmoreland Co.	Schneider Engineering	COG	I,SW,Tele
Falls Township	FF SD SNCR CI	Wheelabrator	Wheelabrator	Ele.	I,SW,Tele,Art
York Co.	FF SD	York Co.	Westinghouse	Ele	I,SW
Philadelphia EC	ESP	Public	Public	None	Tele,Fax
Philadelphia NW	ESP	Public	Public	None	Fax
San Juan	FF SD SNCR CI	Northwestern RR Corp.	Montenay Power Corp	COG	I,Art
Central Falls	none			Ele	SW
Johnston	FF SD SNCR CI	RI Solid Waste Mgt Corp	Ogden Martin	Ele.	SW
North Kingston	none			Ele	SW
Quonset Point	FF SD SNCR CI			COG	SW
Hampton Co.	ESP DSI SD	Chambers Development	CMT of SC	Stm	I,SW,Tele,Memo
Charleston	ESP SD	AT&T Charleston Co.	Foster Wheeler	COG	I,SW
Dyersburg RRF	none	City of Dyersburg	City of Dyersburg	Stm	SW,Memo
Lewisburg	WS	City of Lewisburg	City of Lewisburg	Stm	I,SW
Nashville	ESP	Nashville and Davidson Co.	Nashville Thermal Transfer	COG	I,SW,Tele,Memo,Art
Gallatin	ESP	Resource Authority in Sumner Co.	Resource Authority in Sumner Co.	COG	I,SW,Fax,Memo
Shelby Co.	WS	City of Center	City of Center	Stm	I,SW,Fax
Cleburne	ESP	City of Cleburne	City of Cleburne	Ele	I,SW,Fax
Panola Co.	WS	City of Carthage	City of Carthage	Stm	I,SW,Fax
Waxahachie	none	City of Waxahachie	City of Waxahachie	Stm	
Davis Co.	ESP DSI	Davis Co. SW Mgt.	Davis Co. SW Mgt.	Stm	I,SW,Memo
Alexandria	ESP DSI CI(r)	Ogden Martin	Ogden Martin	Ele	I,SW,Fax
Galax City SW Steam Recovery Unit	FF	City of Galax	City of Galax	Stm	I,SW,Fax
Harrisonburg	ESP	City of Harrisonburg	City of Harrisonburg	COG	I,SW,Fax
Henrico	none	CAG Partnership	CAG Partnership		SW
Fairfax	FF SD	Ogden Martin	Ogden Martin	Ele	I,SW
Hampton	ESP	NASA/City of Hampton	City of Hampton	Stm	I,SW
Norfolk Navy Yard	ESP FF(r) SD(r)	US Navy	US Navy	Ele	Letters from Dept. APC of VA
Manassass	FF SD SNCR CI	Prince William/London Counties	Not Selected	COG	I,SW
Salem	none	City of Salem	City of Salem	Stm	I,SW,Fax
Norfolk Naval Station	ESP SD(r)	US Navy	US Navy	Stm	Fax
Pentagon	none	Pentagon	Pentagon	None	I
Rutland	ESP WS	Vermont Integrated Waste Solutions	Vermont Integrated Waste Solutions	Ele	I,SW,Tele,Fax
Fort Lewis	FF SD SNCR	US Army	US Army	Stm	I,SW,Tele,Fax

Reference Name	Cyclone				ESP				Fabric Filter				Duct Sorbent Injection				Furnace Sorbent Injection			
	Cyclone Info	Original (x=orig)	Retrofit (year)	Inactive (year)	ESP Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FF Info	Original (x=orig)	Retrofit (year)	Inactive (year)	DSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Montgomery Co. North					ESP	x											FSI	x		
					ESP	x											FSI	x		
					ESP	x											FSI	x		
Montgomery Co. South					ESP	x											FSI	x		
					ESP	x											FSI	x		
					ESP	x											FSI	x		
Miami																				
Tulsa					ESP	x														
Coos Bay																				
Marion Co.									FF	x										
Delaware Co.									FF	x										
Glendon									FF	x										
Harrisburg					ESP	x														
Lancaster Co.									FF	x										
Montgomery Co.									FF	x										
Potter Co.									FF	x										
Westmoreland					ESP	x														
Falls Township									FF	x										
York Co.									FF	x										
Philadelphia EC					ESP	x														
Philadelphia NW					ESP	x														
San Juan									FF	x										
Central Falls																				
Johnston									FF	x										
North Kingston																				
Quonset Point									FF	x										
Hampton Co.					ESP	x							DSI	x						
Charleston					ESP	x														
Dyersburg RRF																				
Lewisburg																				
Nashville					ESP	x														
Gallatin					ESP	x														
Shelby Co.																				
Cleburne					ESP	x														
Panola Co.																				
Waxahachie																				
Davis Co.					ESP	x							DSI	x						
Alexandria					ESP	x							DSI	x						
Galax City SW Steam Recovery Unit									FF	x										
Harrisonburg					ESP	x														
Henrico																				
Fairfax									FF	x										
Hampton					ESP	x														
Norfolk Navy Yard					ESP	x			FF(y)		1995									
Manassass									FF	x										
Salem																				
Norfolk Naval Station					ESP	x														
Pentagon																				
Rutland					ESP	x														
Fort Lewis									FF	x										

Reference Name	Spray Dryer				Wet Scrubber				Venturi Scrubber				Electrified Gravel Bed				SNCR				Reagent Type	Carbon Injection			
	SD Info	Original (x=orig)	Retrofit (year)	Inactive (year)	WS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	VS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	EGB Info	Original (x=orig)	Retrofit (year)	Inactive (year)	SNCR Info	Original (x=orig)	Retrofit (year)	Inactive (year)		CI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Montgomery Co. North																									
Montgomery Co. South																									
Miami																									
Tulsa																									
Coos Bay																									
Marion Co.	SD	x																							
Delaware Co.	SD	x																							
Glendon	SD	x															SNCR	x (assumed)				CI	x (assumed)		
Harrisburg																									
Lancaster Co.	SD	x																							
Montgomery Co.	SD	x																							
Potter Co.	SD	x																							
Westmoreland																									
Falls Township	SD	x															SNCR	x			Urea	CI	x		
York Co.	SD	x																							
Philadelphia EC																									
Philadelphia NW																									
San Juan	SD	x															SNCR	x				CI	x		
Central Falls																									
Johnston	SD	x															SNCR	x				CI	x		
North Kingston																									
Quonset Point	SD	x															SNCR	x				CI	x		
Hampton Co.	SD	x																							
Charleston	SD	x																							
Dyersburg RRF																									
Lewisburg					WS	x																			
Nashville																									
Gallatin																									
Shelby Co.					WS	x																			
Cleburne																									
Panola Co.					WS	x																			
Waxahachie																									
Davis Co.																									
Alexandria																						CI(r)		1993	
Galax City SW Steam Recovery Unit																									
Harrisonburg																									
Henrico																									
Fairfax	SD	x																							
Hampton																									
Norfolk Navy Yard	SD(r)		1995																						
Manassas	SD	x															SNCR	x				CI	x		
Salem																									
Norfolk Naval Station	SD(r)		1996																						
Pentagon																									
Rutland					WS	x																			
Fort Lewis	SD	x															SNCR	x			NH3				

Reference Name	Unit Name	County	Location	State	Project Status	Const. Start	Unit Start	Non/Attain for Ozone	Total Plant Capacity (TPD)	Number of Units	Combustor Type
Bellingham	Recomp Bellingham RRF	Whatcom	Bellingham	WA	OP		1986		100	2	MOD/SA
Skagit Co.	Skagit Co. RRF	Skagit Co.	Mt. Vernon	WA	OP		1988		178	2	MB/WW
Spokane	Spokane Regional Disposal Fac.	Spokane	Spokane	WA	OP	1989	1991		800	2	MB/WW
Tacoma	Tacoma	Pierce	Tacoma	WA	OP	1986	1991	NON	300	2	Cofired RDF/FB
Barron Co.	Barron Co. WTE Fac.	Barron	Almena	WI	OP		1986		100	2	MOD/SA
LaCrosse Co.	LaCrosse Co.	LaCrosse Co.	French Island	WI	OP	1980	1988		400	2	RDF/FB
Madison	Madison Power Plant	Dane	Madison	WI	IA		1979		120	2	Cofired RDF
Muscoda	Muscoda RRF	Grant	Muscoda	WI	IA		1989		120	2	MOD/SA
St. Croix Co.	St. Croix Co. WTE Fac.	St. Croix	New Richmond	WI	OP		1988		115	3	MOD/SA
Waukesha	Waukesha RRF	Waukesha	Waukesha	WI	IA		1971	NON	175	2	MB/REF
Winnebago	Winnebago	Winnebago	Winnebago	WI	P				500-1000		
Sheboygan	Sheboygan	Sheboygan	Sheboygan	WI	OP		1965	NON	216		MB/REF

Reference Name	Air Pollution Control Devices	Owner	Operator	Energy	References
Bellingham	FF WS	Recomp of Washington	Recomp of Washington	Ele	I,SW,Fax, Art
Skagit Co.	FF SD	Skagit Co.	Skagit Co.	Ele	I,SW,Tele
Spokane	FF SD SNCR	City of Spokane	Wheelabrator	Ele	I,SW,Report
Tacoma	FF DSI	Tacoma City lights	Tacoma City lights	Ele	I,Tele
Barron Co.	ESP	Barron Co.	Consumat Systems Inc	COG	I,SW,Fax
LaCrosse Co.	DSI EGB	Northern States Power	Northern States Power	Ele	I,SW,Fax
Madison	ESP	Madison Gas & Electric	Madison Gas & Electric	Ele	I,SW,Tele,Fax
Muscoda	FF DSI	Muscoda Solid Waste Commission	Muscoda Solid Waste Commission	COG	I,SW,Tele
St. Croix Co.	FF DSI	American Resource Recovery	American Resource Recovery	COG	I,SW,Fax
Waukesha	ESP	City of Waukesha	City of Waukesha	Stm	I,SW,Fax
Winnebago	none				
Sheboygan	WS	Public	Public	None	

Reference Name	Cyclone				ESP				Fabric Filter				Duct Sorbent Injection				Furnace Sorbent Injection			
	Cyclone Info	Original (x=orig)	Retrofit (year)	Inactive (year)	ESP Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FF Info	Original (x=orig)	Retrofit (year)	Inactive (year)	DSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)	FSI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Bellingham									FF	x										
Skagit Co.									FF	x										
Spokane									FF	x										
Tacoma									FF	x			DSI	x						
Barron Co.					ESP	x														
LaCrosse Co.													DSI	x						
Madison					ESP	x														
Muscoda									FF	x			DSI	x						
St. Croix Co.									FF	x			DSI	x						
Waukesha					ESP	x														
Winnebago																				
Sheboygan																				

Reference Name	Spray Dryer				Wet Scrubber				Venturi Scrubber				Electrified Gravel Bed				SNCR				Carbon Injection				
	SD Info	Original (x=orig)	Retrofit (year)	Inactive (year)	WS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	VS Info	Original (x=orig)	Retrofit (year)	Inactive (year)	EGB Info	Original (x=orig)	Retrofit (year)	Inactive (year)	SNCR Info	Original (x=orig)	Retrofit (year)	Inactive (year)	Reagent Type	CI Info	Original (x=orig)	Retrofit (year)	Inactive (year)
Bellingham					WS	x																			
Skagit Co.	SD	x																							
Spokane	SD	x															SNCR	x			NH3				
Tacoma																									
Barron Co.																									
LaCrosse Co.													EGB	x											
Madison																									
Muscoda																									
St. Croix Co.																									
Waukesha																									
Winnebago																									
Sheboygan					WS	x																			

ATTACHMENT 2
MUNICIPAL WASTE COMBUSTOR DATABASE
GUIDE TO COLUMN HEADINGS AND ABBREVIATIONS

Attachment 2
Municipal Waste Combustor Database
Guide to Column Headings and Abbreviations

The following is a key to the information found in each column of the database. The information in this guide is arranged in the same order as the columns of the database when the columns of the database are read from left to right.

Reference name: A shortened name for the MWC facility, developed by Radian from the unit name or the location of the MWC facility.

Unit name: The name of the MWC facility specified by the owner/operator or as it appears on permits.

County: The county in which the MWC facility is located. This was identified from the Rand McNally Commercial Atlas, if the location of the MWC facility was known, or from the unit name if the county is part of the unit name, e.g., Kent County Waste to Energy Facility.

Location: The city or town in which the MWC facility is located. The county was entered as the city if the city could not be identified.

State: The State in which the MWC facility is located.

Project Status: The project status (e.g., operating or planning) of the MWC facility or unit, as follows:

- OP:** Operating. The MWC facility (or unit, if the multiple units at the facility are listed separately in the database) is operating.
- IA:** Inactive. The MWC facility is inactive and is no longer operating. The facility may or may not have been demolished.
- IR:** The entire facility is in the process of being retrofit.
- P:** In planning. Plans for a new MWC facility or unit may be at various stages of development, including preliminary discussions with a municipality regarding a new MWC facility or submission of permit applications to begin construction.
- OH:** On hold. Plans for a new MWC facility or unit

are suspended indefinitely or permanently. When it could be determined that plans have been permanently suspended (i.e., a project has been canceled) the MWC facility or unit was not entered into the database.

UC: Under construction. The MWC facility or unit was physically under construction at the time the data were collected.

Const. Start: The date that construction started for the MWC facility or unit. This could not be determined for all MWC facilities.

Unit Start: The year in which the MWC facility began operating commercially. If separate lines are provided in the database for individual units with different starting dates, then the starting date is indicated for each unit.

Non/Attain. for Ozone: Designation of whether the MWC facility is located in an ozone non-attainment area. Attainment status was determined according to the county in which the MWC is located, using the attached list of ozone non-attainment areas. MWC facilities located in non-attainment areas are designated as "NON"; all others are assumed to be in attainment areas.

Total plant capacity (TPD): Capacity of the MWC facility in tons per day. If separate lines are provided in the database for individual units, then the capacity of each unit is indicated.

Number of Units: The number of units at the MWC facility. This information was not available for all MWC facilities.

Combustor Type: The types of combustors utilized at the facility as follows:

Incinerator: MWC's with no energy recovery.

MB: Mass burn. Typically with a single combustion chamber, constructed on-site and with energy recovery.

MB/RC: Mass burn/rotary combustor.

MB/RTY: Mass burn/rotary combustor.

MB/RC/WW: MB/RC water wall combustion with energy recovery.

MB/RC/REF: MB/RC refractory combustor without energy recovery.

MB/REF: Mass burn/refractory; those designated as "Incinerator" are most likely MB/REF.

MB/WW: Mass burn/water-wall; similar to MB but known to have a water-wall combustion chamber.

MOD: Modular combustors typically with two stage combustion, fabricated in a shop and erected in the field. May also be MOD/SA (modular starved air) or MOD/EA (modular excess air). Those units known to be built by Consumat were assumed to be MOD/SA. Modular combustors may have energy recovery.

MOD/SA: See MOD.

MOD/EA: See MOD.

RDF: Refuse-derived fuel. Facility with extensive front-end waste processing and a dedicated boiler for combusting prepared fuel on-site. Does not include those facilities that combust less than 10 percent waste with other fuels (e.g., coal).

RDF/FB: Refuse derived fuel/fluidized bed combustor.

Co-fired RDF: A facility that combusts a mixture of at least 10 percent RDF with other fuels, such as coal.

NA: The combustor type is not available.

Air Pollution Control Devices: These are designated by the abbreviations listed below. An "(r)" following an abbreviation indicates that it is a retrofitted control. If the startup date of the retrofitted control is expected to be post-1994, then both the original and the retrofit controls may be displayed, e.g., ESP FF(r).

For each type of control device listed below, the primary pollutant or set of pollutants that the control device acts upon (i.e., reduces) is mentioned for the sake of comparison.

CI: Activated carbon injection for mercury control.

Cyc: Cyclone particle separator for particulate matter (PM) control.

DSI: Dry sorbent injection for acid gas control.

EGB: Electrified gravel bed for PM control.

ESP: Electrostatic precipitator for PM control.

FF: Fabric filter baghouse for PM control.

FSI: Furnace sorbent injection for acid gas control.

SD: Spray dryer (lime slurry injection into a dedicated reaction chamber) for acid gas control.

SNCR: Selective non-catalytic reduction for nitrogen oxide control.

WS: Wet scrubber for acid gas control.

None: No air pollution controls in place or planned.

Owner: The owner of the MWC facility. When the owner of the MWC facility is not known, an "NA" is specified; however, if it is known whether the owner is a private interest or a public municipality or agency, "private" or "public" is specified.

Operator: The operator of the MWC facility. When the operator of the MWC facility is now known, an "NA" is specified; however if it is known whether the operator is a private interest or a public municipality or agency, "private" or "public" is specified.

Energy: The type of energy produced, if the MWC facility has energy recovery, is as follows:

None: The MWC facility has no energy recovery.

COG: The MWC facility produces both electricity and steam.

ELE: The MWC facility produced electricity.

STM: The MWC facility produced steam, other than for generating electricity.

Hot Water: The MWC facility produces hot water, generally for in-house use.

NA/ND: The type of energy produced is not available or there are no data, respectively.

References: The sources from which the information in the database was obtained. Copies of all references are included in the notebooks containing the raw data sheets. References specific to each plant (i.e., Fax, Tele, Art, and Memo) are kept in a separate notebook section for each plant. If the only reference for an MWC facility is the

1992 database, then this is listed as the reference.

I: The Integrated Waste Services Association
Municipal Waste Combustion Directory: 1993
Update of U.S. Plants.

SW: The Solid Waste & Power 1993 Energy-from-Waste
Activity Report.

Fax: Information sent by facsimile transmission from
an EPA regional office, the plant itself, or a
State or local agency.

Tele: A telephone conversation with an EPA regional
office, the plant itself, or a State or local
agency.

Art: An article or news item from a magazine or
journal.

Report: NO_x Control Technologies Applicable to
Municipal Waste Combustion. Prepared by Radian
Corporation for the Air and Energy Engineering
Research Laboratory (EPA) and National
Renewable Energy Laboratory (DOE). August
1994.

Memo: EPA technical memoranda.

The columns in the database following the "References" column provide additional information about the air pollution control device(s) (APCD) specified in the "Air Pollution Control Devices" column for each MWC facility. For each APCD listed under the "Air Pollution Control Devices" column for a given facility, the columns following the "References" column specify whether the APCD was installed before the facility started operation (i.e., was the "original" control device) or was installed after the facility started operation, in some cases replacing another type of APCD that had the purpose of controlling the same set of pollutants (i.e., was "retrofitted" on an existing facility).

The columns following the "References" column consist of 11 groups of columns, each group representing an APCD. All APCDs specified in the "Air Pollution Control Devices" column are represented in these 11 groups. Each of the 11 groups of columns representing an APCD consists of four columns that specify the following information:

[APCD]* Info: Indicates whether the given type of APCD is
currently being utilized or is planned to be
utilized at the facility. The APCD specified

in this column may be either the original APCD (see "Original" below) or a retrofit APCD (see "Retrofit" below), in which case an "(r)" is placed next to the control device to specify its retrofit status.

*[Note: In the spreadsheet, "APCD" is replaced with the abbreviation for the actual name of the control device.

Original: An "x" indicates that the control device is the original control device on the facility.

Retrofit: Indicates the year of the retrofit, if the control device was retrofitted or is planned to be retrofitted (post-1994). As described above under the explanation of the column "Air Pollution Control Devices," if the year specified for the retrofit is post-1994, then both the original control device and the planned retrofit control device are indicated in that column of the spreadsheet. However, if the retrofit has already been performed (i.e., the date specified is pre-1995), then the retrofit control device is indicated in the columns "Air Pollution Control Devices" and "[APCD] Info" (as mentioned below under "Inactive.")

Inactive: Indicates the year that a control device was inactivated, due to its replacement with another type of control device (retrofit). If a control device has been inactivated, the control device is not indicated in the "Air Pollution Control Devices" or "[APCD] Info" columns, and is mentioned only in terms of the date it was inactivated.

Additionally, an extra column is added to the group of columns dedicated to describing the status of SNCR for NO_x control at an MWC facility. The column is labeled as "Reagent" and specifies which SNCR reagent (i.e., ammonia [NH₃] or urea) is utilized at the facility.

Appendix F2

1996 IWSA Inventory of MWC Plants

The 1996 IWSA Municipal Waste Combustion Directory Of United States Facilities*

Graphic

By Alysha Taylor
& Maria Zannes



34 States with MWC plants in operation

The 1996 Directory revises the IWSA survey completed in March, 1995. Written surveys were sent to operating and planned municipal waste combustor facilities in the United States and its territories. This was followed by telephone polling to every facility not initially responding to the survey as well interviewing appropriate state and local agencies. IWSA also reviewed the U.S. Environmental Protection Agency (EPA) municipal waste combustion inventory, as well as local and national media reports.

TABLE 1

Operating MWC Plants by Technology

TECHNOLOGY	# OF OPERATING PLANTS	DAILY DESIGN CAPACITY (tons)	Annual Capacity (million tons) ¹
Incinerator	21	2,881	0.9
Modular	21	2,529	0.8
Mass Burn	70	72,813	22.6
RDF Process & Combustion	15	22,584	7.0
RDF-Processing Only	11	4,528	1.4
RDF-Combustion Only	8	2,995	0.9
Total US Plants ²	146	108,330	33.6
MWC Facilities ³	135	103,802	32.2
WTE Facilities ⁴	114	100,921	31.3

1. Annual capacity equals daily design capacity multiplied by 365 (days/year) multiplied by 85%. Eighty-five percent of design capacity is a typical system guarantee of annual facility throughput.

2. Includes incinerator, modular, mass burn and all types of RDF plants.

3. Does not include RDF-Processing plants.

4. Does not include RDF-Processing plants or incinerators.

Source: Alysha Taylor & Maria Zannes, Integrated Waste Services Association, 5/96.

1996 Municipal Waste Combustion Facility Status

There are 146 Municipal Waste Combustion (MWC) facilities operating in the U.S. (See Table 1). MWC facilities include the following technologies:

- **Mass Burn (MB)** waste-to-energy plants that generate electricity or steam from garbage by feeding mixed municipal waste into large furnaces dedicated solely to burning trash.
- **Refuse-derived fuel Processing (RDF-P)** waste-to-energy plants that remove recyclable or unburnable materials and shred or process the rest of the trash into a uniform fuel.

(* This update reflects the status of MWC facilities in the U.S. as of May, 1996 and is based on the best available information at that date.)

- **Refused-derived fuel**

Combustion (RDF-C) waste-to-energy plants that combust RDF to generate electricity or steam.

- **Modular (MOD)** waste-to-energy plants that are similar to mass burn plants, but these smaller plants are prefabricated and can be quickly assembled where they are needed.
- **Incinerators (INCIN)** that combust trash but do not recover energy from waste.

Of these MWC facilities, 135 plants are combusting garbage (including mass burn, RDF-combustion, modular, and incinerators) and an additional 11 facilities process trash into an RDF fuel in furnaces dedicated to burn the RDF or in furnaces that also burn coal or other waste-fuels. A total of 114 waste-to-energy facilities are operating, excluding RDF-processing plants and incinerators.

Nearly 32 million tons of trash, or 15% of America's waste, is being used as fuel to generate energy equivalent to meet the power needs of 1.2 million homes and businesses across the country. Waste-to-energy plants generate more than 2,650 megawatts of electricity and nearly 1.4 million pounds of steam per hour. America's trash is used as fuel to replace approximately 30 million barrels of crude oil annually.

More than 41 million people in 34 states safely dispose of their trash at municipal waste combustor facilities. More than 1,600 communities are served by waste-to-energy facilities, as well as 57 communities that rely on an incinerator to dispose of their municipal solid waste.

Communities with waste-to-energy plants recycle an average of 26% of their trash, up a percentage point from last year and four percentage points higher than the national average of 22%, according to the U.S. EPA. More than 850,000 tons of waste is recycled on-site at waste-to-energy plants, including glass,

metals, paper, plastic, batteries, yard waste and white goods. Waste-to-energy facilities nationwide recycle nearly 740,000 tons of ferrous metal annually as part of the combustion process.

Although the number of municipal waste combustion facilities decreased, from 148 to 135, since publication of the 1995 MWC Directory, the annual disposal capacity of combustion facilities increased from 31.4 million tons of waste per year to 32.2 million tons per year.

Annual design capacity reported in this Directory assumes 85 percent availability of design capacity. Eighty five percent availability is a typical system guarantee. Responses to surveys indicate that the amount of waste processed at waste-to-energy facilities nationwide averages slightly more than 85 percent of rated design capacity.

The amount of trash being turned into energy also increased from last year, with more than 31 million tons of trash each year generating power as compared to slightly more than 30 million tons per year in 1995. More than 101,000 tons of refuse each day is now being converted into energy as compared to slightly less than 97,000 tons per day in 1995.

The increase in the 1996 municipal waste combustion

capacity reflects start-up of larger, more modern waste-to-energy plants and increasing capacity at existing plants despite the closing of smaller, older facilities or conversion of existing facilities to the use of other fuels. Several existing facilities increased their capacity for processing and combusting waste, as well as increasing existing facility design efficiency and throughput.

Three facilities started-up since publication of the 1995 Directory, with total design capacity of 3,500 tons per day. Increased design capacity at existing facilities accounted for an additional 2,000 tons per day. Responses to surveys revealed an additional 1,000 tons of existing daily capacity which had not been previously reported. In total, 6,500 tons-per-day of design capacity, or about 2 million tons of annual capacity has been added since publication of the 1995 Directory.

Approximately 1.3 million tons of annual combustion capacity has been taken off-line, including 1.2 million tons related to permanent closure or conversion of existing facilities and 88,500 tons of annual capacity reported as temporarily closed. Waste-to-energy facility closures or conversions accounted for 800,000 tons of the capacity shut-down, most of which was related to facilities shifting fuel use

RECYCLING & WASTE-TO-ENERGY

WTE Community Recycling Rates	26%*
Annual WTE On-site Facility Recycling**	117,000 tons
Annual WTE Ferrous Metal Recycling***	<u>739,000 tons</u>
Total Annual WTE Recycling	856,000 tons

* As compared to national average of 22 percent.

** On-site recycling includes glass, plastics, oil, white goods, tires, batteries, corrugated paper, non-ferrous metals, yard waste and paper.

*** Ferrous Metals Recovery is unique to the waste-to-energy process, providing high-grade metal recycling as part of the combustion process.

to other waste fuels such as paper sludge and wood waste.

The number of waste-to-energy facilities decreased from 121 to 114. Three facilities started up commercial operation. IWSA identified four facilities which converted from burning trash as fuel to another fuel such as waste paper sludge or coal. Five smaller mass burn or modular waste-to-energy facilities closed, as well as one RDF-combustion facility.

The total number of municipal waste facilities, including combustion and RDF processing plants decreased as six incinerators and two RDF-processing facilities also closed.

Five waste-to-energy plants are under construction with a daily design capacity of 2,645 tons per day. Seven facilities, with a total capacity of 10,523 tons per day, are in the advanced planning stages.

New Clean Air Act Rules

The U.S. EPA promulgated new clean air act standards in December, 1995, for municipal waste combustors that are among the most stringent environmental standards in the world. Many modern existing facilities will be able to meet the new emission standards with relatively minor equipment additions. Other facilities will make more significant retrofits of newer technology to their existing air pollution control equipment.

While minor changes to plant operations may be accomplished soon, some of the more extensive retrofits -- such as adding new scrubbers and particulate equipment -- will be completed within three years after states adopt the federal rules or no later than the year 2000. EPA estimates a household might pay less than a nickel to as much as three dollars a month more for disposal at facilities that must add new pollution control equipment.

The aggressive environmental standards limit emissions of cadmium, lead, particulate, sulphur dioxide, hydrogen chloride, nitrogen oxides, carbon monoxide,

dioxin and furans, fugitive emissions and opacity. The standards govern environmental control at existing and future plants. The industry, taken as a whole, will represent less than 3% of all anthropogenic, or man-made, mercury sources and less than one-half of one percent of all known dioxin sources.

Ash Management

The U.S. EPA also issued important directives in 1995 regarding the safe management of municipal waste combustor ash. EPA Administrator Carol Browner announced in January support for the existing safe management practice of combining ash streams prior to testing the residue for final reuse or disposal. EPA later issued a series of documents detailing safe

ash management and testing procedures. Facilities have been testing ash under federal rules for more than two years. Studies conducted over the past decade show that leachate from ash landfills is similar to salty ocean

water, with metals content at about the same level as the standards set for safe drinking water. Municipal waste combustion ash tested under federal guidelines has consistently show to be non-hazardous.

Ash reuse is increasing due to settlement of the ash testing and management issue. Fifteen facilities currently are using ash as landfill cover, road building material and artificial reefs. Ash reuse is underway in projects from Florida to Maryland, Minnesota, Pennsylvania, Massachusetts, Tennessee and New York.

TABLE 2

Contribution of IWSA Members in Managing U.S. Trash Through Waste-to-Energy

Operating IWSA WTE Plants	64
Combined Daily Plant Design Capacity	82,825 tons
Annual Net Processing Capacity ¹	25.7 million tons
IWSA Percentage of Waste-to-Energy Plants	56.14%
IWSA Percentage of U.S. Waste-to-Energy Capacity	82.07%
States with IWSA Plants	22
People Served by IWSA Plants	35.4 million
Homes Supplied with Power from IWSA Plants	1 million

1. Annual net processing capacity assumes that plants operate at 85% of design capacity.

Source: Alysha Taylor & Maria Zannes, Integrated Waste Services Association, 5/96

TABLE 3

Key Facts Pertaining to Operating MWC Facilities

	WTE	INCINERATOR	TOTAL MWC
Percentage of U.S. Waste Managed by MWC's	15.0%	0.4%	15.4%
Annual Disposal Capacity of MWC Facilities ¹	31.3 million tons	0.9 million tons	32.2 million tons
Number of Facilities	114	21	135
Population Served ²	40.5 Million	700,000	41.2 Million
Communities Served ³	1,631	57	1,688
# States with Plants	32	13	34
Ferrous Metals Recovered ⁴	739,000 tpy	15,000 tpy	754,000 tpy
On-site Recycling ⁵	856,000 tpy	30,600 tpy	887,000 tpy
# Homes Supplied With Electricity	1.2 million	—	1.2 million

1. Annual disposal capacity equals daily design capacity multiplied by 365 (days/year) multiplied by 85%.

2. Based on the response from representatives of 100 WTE projects and 17 Incinerator projects.

3. Based on the response from representatives of 106 WTE projects and 17 Incinerator projects.

4. Based on the response from representatives of 74 WTE projects and 7 Incinerator projects.

5. Based on the response from representatives of 93 WTE projects and 11 Incinerator projects.

Source: Alysha Taylor & Maria Zannes, Integrated Waste Services Association, 5/96.

Key Terms

State/Plant Name/Location -- States and localities are listed in alphabetical order. Within each state category, operating waste-to-energy projects are listed first followed by operating incinerators, facilities under construction, and projects currently in the planning stage.

Design Capacity -- Expressed in tons-per-day. The design capacity is the rated capacity for the facility assuming all units are operating. Annual capacity as expressed in Table 1 and elsewhere equals the daily design capacity multiplied by 365 days per year multiplied by 85%. Eighty five percent is a typical system guarantee of annual throughput.

Technology Type -- The following technologies are listed in this column. Please refer to the text of this Directory for an explanation of technologies. Abbreviations are listed below:

INCIN: Incinerator Facility without energy recovery

RDF: RDF Processing and Combustion Facility; RDF is prepared and combusted on-site

RDF-P: RDF Processing Only Facility; RDF is combusted off-site

RDF-C: RDF Combustion Only Facility; RDF is supplied to this combustion unit

MB: Mass Burn Facility generating either electricity or steam for power

MOD: Modular Facility generating either electricity or steam for power

Project Status/Startup Year -- The actual or projected year of commercial startup is listed. Abbreviations are explained below:

OP: Operational on a commercial basis.

UC: Under Construction; covers the

period from ground breaking until commercial operation.

AP: Advanced Planning stage of project development. Permit application process underway; covers the procurement period up to ground breaking for construction.

OH: On Hold; Project in Advanced Planning stage that is on hold pending resolution of a particular issue.

APC System: The column reflects the Air Pollution Control System in use at operating facility or planned at future facilities. Abbreviations are listed below:

Carbon: Activated Carbon Injection
CEM: Continuous Emissions Monitoring equipment

Cyclone: Cyclone Separator

ESP: Electrostatic Precipitator

FF: Fabric Filter

Hg: Facility equipped with pollution control for mercury emissions

LIME: Lime Injection

LINK: Computer link to regulatory agency allowing 24-hour monitoring of air emissions

NOx: Nitrogen Oxide control

DSCRUB: Dry Scrubber

WSCRUB: Wet Scrubber

SCRUB: Scrubber

SDA: Spray Dryer Absorber

N/A: Respondent to survey regarding operating facility did not provide information regarding pollution control equipment; respondent to survey regarding planned facility either did not provide information or has not determined pollution control equipment

Energy Output: Expressed in megawatts (MW) for electric generating facilities or pounds of steam per hour (lbs/hr.) for steam generating facilities. Typically, a

facility will use 10% of its energy output for in-plant operations and sell 90% of its power generation. Abbreviations are listed below:

STM: Steam generating facility

ELE: Electricity generating facility

COG: Steam and electricity are generated at the facility

RDF: Refuse Derived Fuel is generated for combustion off-site. Off-site user of the RDF is listed when information is available.

None: No energy is recovered as part of the combustion process

Owner/Operator: In cases where the owner and operator of the facility is the same entity, only one name is listed in this column.

On-site Ferrous Metals Recovered (TPY): The tons per year of ferrous metals recovered as part of plant operations is listed. N/A reflects either no response to the survey question or an inability to determine the amount of ferrous metals recovered by the facility.

On-site Recycling Quantity (TPY): The amount of recyclable material recovered as part of plant operations (prior to combustion of waste). N/A reflects either no response to the survey question or an inability to determine the amount of recyclable material recovered at the facility.

Community Recycling Rate: The actual rate of recycling achieved by a community disposing of waste at the listed municipal waste combustor. N/A reflects either no response to the survey question or an inability to determine the recycling rate at a given community.

The 1996 IWSA MWC Directory of United States Facilities

This Directory provides data on all MWC projects operating, under construction, or in advanced planning in the U.S. as of May, 1996. The information is arranged alphabetically by state and by operating status within each state. WTE plants are listed separately from incinerator operations. Key terms used in the directory are provided below.

Plant Name/Location	Design Capacity (TPD)	Technology Type	Project Status/ Startup Year	APC System	Energy Output	Owner/Operator	On-site Ferrous Metals Recovered (TPY)	On-Site Recycling Quantity (TPY)	Community Recycling Rate
Alabama									
Huntsville WTE Facility/Huntsville	690	MB	OP/1990	LIME;SDA;FF; NOx;CEM;LINK	STM/ 180,000 lbs/hr.	SWDA, City of Huntsville/OMS of Huntsville, Inc.	None	None	11%
Alaska									
Fairbanks/Fairbanks	40	RDF-P	OP/1988	FF	RDF Fuel (For area markets)	Interior Services	None	4,000	0%
Sitka/Sheldon Jackson College	30	MOD	OP/1985	SDA;ESP;CEM; Cyclone	STM/ 5500 lbs/hr.	Sitka/Sheldon Jackson College	50	100	30%
Juneau/Juneau	70	INCIN	OP/1986	ESP	None	Channel Corporation	2,900	2,900	1%
Arkansas									
Osceola/Osceola	40	MOD	OP/1980	FF;LIME;CEM	STM/ 12000 lbs/hr.	City of Osceola	None	None	10%
Blytheville/Blytheville	70	INCIN	OP/1975	None	None	City of Blytheville	N/A	N/A	N/A
California									
Commerce/Los Angeles County	380	MB	OP/1986	LIME;SDA;FF; NOx;CEM	ELE/11.5 MW	Commerce Refuse to Energy Authority/L.A. Sanitation District	1,600	1,600	28%
Long Beach (SERRF)/ Long Beach	1,380	MB	OP/1988	SDA;FF;DSCRUB;NO x;CEM	ELE/38 MW	Joint Powers Authority (LA Sanitation District & City of Long Beach)/ Montanay Pacific Power Corporation	13,000	13,000	27%
Stanislaus County Resource Recovery Facility/Modesto	800	MB	OP/1989	SDA;FF;NOx; CEM;LINK	ELE/22 MW	OMS of Stanislaus, Inc.	4,960	4,960	26%
Colorado									
Yuma County/Eckley (County landfill)	25	MOD	UC/1996	FF;CEM	STM	Yuma County	N/A	N/A	N/A

Connecticut

Bridgeport RESCO/ Bridgeport	2,250	MB	OP/1988	SDA;FF;CEM	ELE/66.97 MW	Connecticut Resources Recovery Authority/ Wheelabrator	4,000	4,000	24%
Bristol Resource Recovery Facility/ Bristol	650	MB	OP/1988	SDA;FF;CEM;LINK	ELE/16 MW	OMS of Bristol, Inc.	5,500	5,700	25%
Lisbon Resource Recovery Facility/ Lisbon	500	MB	OP/1995	SDA;FF;NOx;CEM	ELE/14 MW	Eastern Connecticut Resources Recovery Authority/Riley Energy Systems of Lisbon Corp. (Wheelabrator Subsidiary)	0	0	27%
MID-Connecticut RRF/Hartford	2,000	RDF	OP/1987	LIME;DSCRUB; FF;CEM;LINK	ELE/68 MW	Connecticut Resources Recovery Authority (PBF); CT Light & Power (EGF)/ Resource Recovery Systems of Connecticut, Inc. (a subsidiary of OMS)	24,500	24,500	13%
Southeastern/ Preston	689	MB	OP/1992	SDA;FF;CEM	ELE/17 MW	American Ref-Fuel	5,000	5,000	23%
Wallingford Resource Recovery Facility/ Wallingford	420	MB	OP/1989	LIME;SDA;FF; CEM	STM/ 107233 lbs/hr.	Ogden Projects of Wallingford	105	105	12%

Florida

Bay County/ Panama City	510	MB	OP/1987	ESP	ELE/12 MW	Ford Motor Credit/ Westinghouse Subsidiary	None	None	13%
Dade County Resource Recovery Facility/Greater Miami Metro Area	3,000	RDF	OP/1982	DSCRUB,FF, CARBON,CEM	ELE/ 75 MW	Dade County/ Montenay Power Corp.	30,000	30,600	31%
Hillsborough County Solid Waste Energy Facility/Tampa	1,200	MB	OP/1987	ESP;CEM	ELE/29 MW	Hillsborough County/ OMS of Hillsborough, Inc.	5,700	5,700	30%
Lake County Resource Recovery Facility/Okahumpka	528	MB	OP/1991	SDA;FF;CEM; CARBON	ELE/16 MW	OMS of Lake County, Inc.	3,100	3,100	27%
Lakeland/Lakeland	300	RDF	OP/1983	WSCRUB;ESP	RDF Fuel (For Orlando Utility Commission)	City of Lakeland/ Orlando Utility Commission/City of Lakeland	N/A	N/A	0%
Lee County Solid Waste Resource Recovery Facility/ Fort Myers	1,200	MB	OP/1994	SDA;FF;CARBON;NO x;CEM	ELE/40 MW	Lee County/OMS of Lee County, Inc.	9,658	9,658	42%
McKay Bay Refuse to Energy Facility/ Tampa	1,000	MB	OP/1985	ESP;CEM	ELE/20 MW	City of Tampa/ Wheelabrator McKay Bay	8,500	8,500	18%
Palm Beach County/ West Palm Beach	2,000	RDF	OP/1989	SDA;ESP;CEM	ELE/56 MW	Solid Waste Authority of Palm Beach County/ Babcock and Wilcox	31,000	31,000	45%
Pasco County/ Tampa	1,050	MB	OP/1991	SDA;FF;CEM	ELE/31 MW	Pasco County/ Wheelabrator	6,000	6,000	20%

Pinellas County/ St. Petersburg	3,000	MB	OP/1983	ESP;CEM	ELE/75 MW	Pinellas County/ Wheelabrator	39,082	40,074	35%
Southern Most WTE Facility/Key West (Monroe County)	150	MB	OP/1986	ESP;CEM	ELE/4 MW	City of Key West	None	None	35%
Wheelabrator North Broward/Pompano Beach	2,250	MB	OP/1991	SDA;FF;CEM	ELE/66 MW	Wheelabrator	18,000	18,000	31%
Wheelabrator South Broward/ Ft. Lauderdale	2,250	MB	OP/1991	SDA;FF;CEM	ELE/66 MW	Wheelabrator	18,000	18,000	31%
Dade County (Expansion) - Biomass Fuel Export/ Dade County	865	RDF-P	UC/1997	N/A		Dade County/ Montenay Power Corp.	8,000	220,000	31%
Miami International Airport/Miami	60	INCIN	OP/1984	Secondary Burners	None	Dade County	None	None	33%
Georgia									
Savannah/Savannah	500	MB	OP/1987	ESP;CEM	COG/8 MW	Katy-Seghers	N/A	N/A	0%
Hawaii									
Honolulu Resource Recovery Venture/ Honolulu	2,160	RDF	OP/1990	SDA;ESP;CEM	ELE/57 MW	Ford Motor Credit Corporation/Honolulu Resource Recovery Venture (OMS)	12,000	12,000	20%
Illinois									
Chicago NW/Chicago	1,600	MB	OP/1970	ESP	STM/ 90,000 lbs/hr.	City of Chicago	N/A	N/A	25%
Robbins/Robbins	1,600	RDF	UC/1997	SDA;FF;CARBON;NO x;CEM;LINK	ELE/50 MW	Foster Wheeler Power Systems	20,000	20,000	12%
Beardstown/ Cass County	1,800	RDF	OH/	SDA;FF;NOx; CEM;LINK	ELE/52 MW	Energy Answers, Inc.; Kirby-Coffman, Inc./ N/D	31,000	31,000	0%
Havana WTE Facility/Havana	1,800	RDF	OH/	SDA;FF;NOx; CEM;LINK	ELE/52 MW	Energy Answers, Inc.; Kirby-Coffman, Inc./ N/D	31,000	31,000	0%
West Suburban Recycling and Energy Center/ Villages of Summit & McCook	1,800	RDF	AP/1997	SDA;FF;NOx; CEM;LINK	ELE/52 MW	Kirby-Coffman, Inc. & Energy Answers Corporation	31,000	33,520	8%
Indiana									
Indianapolis Resource Recovery Facility/Indianapolis	2,362	MB	OP/1988	SDA;FF;CEM	STM/ 558,000 lbs/hr.	OMS of Indianapolis, Inc.	15,580	15,580	15%

Iowa									
AG Processing (Iowa Falls RDF Market)/ Eagle Grove	40	RDF-C	OP/1988	FF	ELE/11 MW	AG Processing	N/A	N/A	0%
Ames Municipal Electric Utility (RDF Market)/Ames	150	RDF-C	OP/1975	ESP;NO _x ;CEM	ELE/103 MW	Ames Municipal Electric Utility/Ames Municipal Electric Utility	1,800	1,800	40%
Ames/Ames	150	RDF-P	OP/1975	FF	RDF Fuel (For MEU)	City of Ames/Ames Public Works	1,700	1,700	18%
Maine									
Greater Portland Waste-to-Energy Facility/Portland	500	MB	OP/1988	SDA;ESP;CEM; LINK	ELE/12 MW	Regional Waste Systems, Inc.	5	8,000	36%
Maine Energy Recovery Co./ Biddeford	950	RDF	OP/1987	SDA;FF;CEM	ELE/22 MW	Maine Energy Recovery Company/ KTI Operations	8,000	8,024	29%
Mid-ME Waste/ Auburn	200	MB	OP/1992	SDA;FF;CEM; WSCRUB; DSCRUB	ELE/3.3 MW	Mid-Maine Waste Action Corporation/ American Energy	N/A	N/A	29%
Penobscot Energy Recovery Company/ Orrington	750	RDF	OP/1988	SDA;FF;CEM	ELE/25 MW	KTI and Energy National/Esoco-Orrington Inc.	8,000	8,000	0%
Strawberry Creek Recycling/South Harpswell	14	INCIN	OP/1975	DSCRUB	None	Town of Harpswell/ Roland Berry	0	100	44%
Maryland									
Baltimore RESCO Company, L.P./ Baltimore	2,250	MB	OP/1985	ESP;CEM	ELE/60 MW	State Bank & Trust Company/Baltimore RESCO Company, L.P.	23,000	23,000	10%
Harford County Waste-To-Energy Facility/Aberdeen Proving Grounds (Army)	360	MOD	OP/1988	ESP;CEM;LINK; SoC ₂	STW/1.2 MW	Waste Energy Partners Limited Partnership/Maryland Waste Converters (Ensco)	None	None	25%
Montgomery County Resource Recovery Project/Dickerson	1,800	MB	OP/1995	LIME;SDA;FF; CARBON;NO _x ; CEM;LINK	ELE/86 MW	N.E. Maryland Waste Disposal Authority/ OMS of Montgomery, Inc.	12,000	12,000	20%
Harford County (Expansion)/ Aberdeen Proving Grounds (Army)	125	MOD	AP/OH	N/D	STM	Waste Energy Partners/Maryland Waste Converters (Ensco)	None	None	22%
Massachusetts									
Haverhill Resource Recovery Facility/ Haverhill	1,650	MB	OP/1989	SDA;ESP;CEM	ELE/46 MW	OMS of Haverhill, Inc.	17,700	17,700	15%
Haverhill/Lawrence RRF/ Haverhill/Lawrence	710	RDF	OP/1984	ESP;LIME	COG/18 MW	SBR Associates & OMS of Haverhill, Inc./ OMS of Haverhill, Inc.	13,000	13,000	15%

Massachusetts Refuse Tech Inc./ North Andover	1,500	MB	OP/1985	LIME;ESP;CEM	ELE/40.25 MW	Wheelabrator	9,500	9,500	18%
Pittsfield Resource Recovery Facility/ Pittsfield	240	MB	OP/1981	WSCRUB;ESP; CEM	STM/ 50,000 lbs/hr.	Energy Answers Corporation/EAC Operations/Pittsfield, Inc.	3,000	4,850	26%
Saugus RESCO/ Saugus	1,500	MB	OP/1975	SDA;FF;CEM	ELE/54 MW	Wheelabrator Saugus Inc./Wheelabrator North Shore Inc./ Wheelabrator E.S.P.	17,000	17,000	15%
SEMASS Waste-To- Energy Facility/ Rochester	2,800	RDF	OP/1988	SDA;ESP;NOx; CEM	ELE/78 MW	SEMASS Partnership/ Bechtel Corporation	30,000	30,000	18%
Springfield RRF/ Agawam	408	MOD	OP/1988	DSCRUB;FF;LIME	COG/9.4 MW	Springfield Resource Recovery/Springfield Resource Recovery	None	None	32%
Wheelabrator Millbury/Millbury	1,500	MB	OP/1987	SDA;ESP;CEM	ELE/45 MW	Ford Motor Credit Corporation/ Wheelabrator	5,000	2,800	37%
Montachusetts Regional Recycling Facility/Shirley	243	MB	OH/1998	SCRUB;FF; CARBON;NOx; CEM	ELE/7 MW	Tiru/Tiru	N/A	N/A	15%
Fall River/Fall River	250	INCIN	OP/1972	WSCRUB	None	Town of Fall River	N/A	N/A	0%
Michigan									
Greater Detroit Resource Recovery Facility/Detroit	2,194	RDF	OP/1989	SDA;FF;CEM;LINK	COG/65 MW	Phillip Morris Leasing Corp. & G.E. Credit Corp./Michigan Waste Energy, Inc.	37,000	37,000	5%
Jackson County Resource Recovery Facility/Jackson	200	MB	OP/1987	SDA;FF;CEM	COG/4 MW	Jackson County/ Metcalf & Eddy Services, Inc. P.S.G.	None	None	0%
Kent County/ Grand Rapids	625	MB	OP/1990	SDA;FF;CEM;LINK	COG/18 MW	Kent County/OMS of Kent, Inc.	5,617	5,617	28%
Central Wayne County/ Dearborn Heights	500	INCIN	OP/1965	ESP	None	Central Wayne Co. Sanitation Authority (CWCSA)/CWCSA	3,700	21,700	19%
Grosse Pointes - Clinton Refuse Disposal Authority/ Macomb County	600	INCIN	OP/1972	ESP	None	Grosse Point - Clinton Refuse Disposal Authority/Grosse Point - Clinton Refuse Disposal Authority	5,000	5,000	20%
Minnesota									
Eden Prairie/ Hennepin County	560	RDF-P	OP/1987	FF	RDF Fuel (For Wilmarth plant)	Browning Ferris Industries	1,560	3,640	43%
Elk River Resource Recovery Facility/ Anoka County	1,500	RDF-P	OP/1989			Nothern States Power/ United Power Association/Northern States Power			42%
Fergus Falls RRF/ Fergus Falls	94	MOD	OP/1988	WSCRUB;CEM	STM/ 22,000 lbs/hr.	City of Fergus Falls	80	80	40%

Hennepin County RRF/Minneapolis	1,200	MB	OP/1989	SDA;FF;CARBON;NOx;CEM	ELE/38 MW	General Electric Capital Corporation & Ogden Energy Resource Corp./Hennepin Energy Resource Co.	10,800	10,800	48%
Olmsted Waste-To-Energy Facility/Rochester	200	MB	OP/1987	ESP	COG/4 MW	Olmsted County	200	254	43%
Perham Renewable Resource Facility/Perham	100	MOD	OP/1986	ESP	STM/ 25,000 lbs/hr.	Quadrant Corporation	None	None	29%
Polk County Solid Waste Recovery Facility/Fosston	80	MOD	OP/1988	ESP;CEM	STM/ 22,000 lbs/hr.	Polk County	None	None	15%
Pope-Douglas Solid Waste/Alexandria	72	MOD	OP/1987	ESP	STM/ 14,000 lbs/hr.	Pope-Douglas Joint Solid Waste Board	N/A	N/A	34%
Ramsey-Washington/Newport	1,200	RDF-P	OP/1987	None	RDF Fuel	NRG Energy, Inc. (subsidiary of Northern States Power)	12,000	12,000	45%
Ramsey-Washington (Newport RDF Market)/Red Wing	720	RDF-C	OP/1988	ESP	ELE/20 MW	Northern States Power	N/A	N/A	40%
Red Wing Solid Waste Boiler Facility/Red Wing	72	MOD	OP/1982	ESP	STM/ 15,000 lbs/hr.	City of Red Wing	N/A	N/A	0%
Thief River Falls/Thief River Falls	40	RDF-P	OP/1985	Cyclone	RDF Fuel (For TRF)	Pennington County/Future Fuel	800	800	20%
Thief River Falls (TRF RDF Market)/Northwest Medical Center	40	RDF-C	OP/1985	None	STM	Northwest Medical Center	None	None	0%
United Power Elk River Station/Elk River	1,000	RDF-C	OP/1989	DSCRUB;FF	ELE/23 MW	United Power	None	None	N/A
Western Lake Superior Sanitary District (WLSSD)/Duluth	120	RDF	OP/1985	WSCRUB;Hg;CEM	STM/ 47,000 lbs/hr.	WLSSD/WLSSD	N/A	N/A	30%
Wilmarth Plant (Elk River and Newport RDF Market)/Mankato	720	RDF-C	OP/1987	DSCRUB;FF	ELE/22 MW	Northern States Power	None	None	0%
Mississippi									
Pascagoula ERF/Moss Point	150	MOD	OP/1985	ESP;CEM	STM/ 30,000 lbs/hr.	City of Pascagoula	None	None	0%
Montana									
Livingston/Park County	72	INCIN	OP/1982	Cyclone	None	Park County	50	55	0%

New Hampshire

Concord Regional Solid Waste Recovery Facility/Concord	500	MB	OP/1989	LIME;FF;CEM	ELE/14 MW	Wheelabrator Concord Company	None	None	10%
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Wheelabrator Claremont/Claremont	200	MB	OP/1987	LIME;FF;CEM	ELE/4 MW	Wheelabrator Claremont Company	None	None	12%
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Auburn/Auburn	6	INCIN	OP/1979	None	None	Town of Auburn	N/A	N/A	0%
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Candia/Candia	15	INCIN	OP/	None	None	Town of Candia	3,320	3,320	0%
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Lincoln/Lincoln	24	INCIN	OP/1980	None	None	Lincoln- Woodstock Solid Waste District	None	None	5%
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Litchfield/Litchfield	22	INCIN	OP/	None	None	Town of Litchfield	None	None	40%
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Nottingham/ Nottingham	8	INCIN	OP/1972	None	None	Town of Nottingham	None	None	25%
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Pelham/Pelham	24	INCIN	OP/1978	None	None	Town of Pelham	None	None	0%
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Plymouth/Plymouth	16	INCIN	OP/1976	None	None	Town of Plymouth	None	400	38%
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Wilton/Wilton	30	INCIN	OP/1979	None	None	Town of Wilton	None	429	35%
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New Jersey

Camden Resource Recovery Facility/ Camden	1,050	MB	OP/1991	SDA;ESP;CEM; LINK;CARBON	ELE/34 MW	Camden County Energy Recovery Associates L.P./ Camden County Energy Recovery Corporation	2,000	5,000	41%
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Essex County Resource Recovery Facility/Newark	2,505	MB	OP/1990	LIME;SDA;ESP;NOx;L INK;CEM; CARBON	ELE/68 MW	American Ref-Fuel Company of Essex County	24,000	24,000	42%
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Fort Dix/Wrightstown	80	MOD	OP/1986	WSCRUB;FF	STM/ 14,000 lbs/hr.	U.S. Army/United Co-Generators	None	None	20%
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Union County Resource Recovery Facility/Rahway	1,440	MB	OP/1994	SDA;FF;CARBON;NO x;CEM;LINK	ELE/44 MW	Union County Utilities Authority/OMS Union, Inc.	12,000	12,000	53%
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Warren Energy Resource Company/ Oxford Township, Warren County	448	MB	OP/1988	SDA;FF;CEM;LINK	ELE/13 MW	Warren Energy Resource Company, L.P.	6,700	6,700	25%
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Wheelabrator Gloucester Company, L.P./ Gloucester County	575	MB	OP/1990	LIME;SDA;FF; CEM;LINK; CARBON	ELE/14 MW	Wheelabrator	4,660	4,660	43%
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Mercer County Regional Resource Recovery Facility/ Hamilton Township	1,450	MB	AP/1998	SDA;FF;CARBON;NO x;CEM;LINK	ELE/52 MW	Mercer County Improvement Authority/OMS of Mercer, Inc.	N/A	N/A	64%
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New York

Adirondack Resource Recovery Facility/ Hudson Falls	500	MB	OP/1991	LIME;DSCRUB; ESP;CEM	ELE/14 MW	Foster Wheeler	6,000	6,000	40%
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ANSWERS Waste Processing Facility/ Albany	450	RDF-P	OP/1981	N/A	RDF Fuel (No market)	City of Albany/EAC Operations/Albany Inc.	1,950	1,950	0%
Babylon Resource Recovery Facility/ Babylon	750	MB	OP/1989	SDA;FF;CEM	ELE/17 MW	OMS of Babylon, Inc.	3,142	3,142	30%
Dutchess County/ Poughkeepsie	506	MB	OP/1988	LIME;DSCRUB; FF;CEM	COG/12 MW	Dutchess County R. R. Agency/Westinghouse Subsidiary	6,200	6,200	25%
Environmental Waste Incineration/Long Beach	200	MB	OP/1988	ESP	Ele/4 MW	ERD Waste Corp./ Environmental Waste Incineration, Inc.	2,400	2,400	25%
Hempstead/ Westbury	2,505	MB	OP/1989	SDA;FF;CEM	ELE/72 MW	American Ref-Fuel	28,000	28,000	35%
Huntington RRF/ East Northport	750	MB	OP/1991	SDA;FF;NOx;CEM	ELE/25 MW	OMS of Huntington, LP	7,658	7,658	25%
Islip (MacArthur Energy Recovery)/ Ronkonkoma	518	MB	OP/1990	LIME;DSCRUB; FF;CEM	ELE/12 MW	Islip Resource Recovery Agency/ Montenay Islip	6,000	6,000	38%
Niagara Falls/ Niagara Falls	2,000	RDF	OP/1981	ESP	COG/50 MW	American Ref-Fuel	36,000	10,000	17%
Onondaga County Resource Recovery Facility/Onondaga County	990	MB	OP/1995	SDA;FF;CARBON;NO x;CEM	ELE/40 MW	Onondaga County Resource Recovery Agency/OMS of Onondaga, L.P.	7,683	7,683	50%
Oswego County Energy Recovery Facility/Fulton	200	MOD	OP/1986	ESP;CEM	COG/4 MW	Oswego County	None	None	45%
Westchester RESCO/Peekskill	2,250	MB	OP/1984	ESP;CEM;LIME	ELE/60 MW	Wheelabrator RESCO Company, L.P.	23,000	23,000	26%
Brooklyn Navy Yard/New York City	3,000	MB	AP/1999	LIME;DSCRUB; FF;CARBON;NOx;CE M;LINK	STM	Wheelabrator	N/A	N/A	15%
Capital District/ Green Island	1,800	MB	AP/1999	SDA;FF;NOx;CEM	ELE/45 MW	American Ref-Fuel	N/A	N/A	18%
Saltire/Fire Island	12	INCIN	OP/1975	WSCRUB	None	Village of Saltire	None	None	0%
North Carolina									
BCH Energy Limited Partnership/ Fayetteville	1,200	RDF	OP/1995	LIME;DSCRUB; FF;CARBON;NOx;CE M	COG/18 MW	BCH Energy Limited Partnership/Quiox Power Services	N/A	N/A	N/A
New Hanover County/Wilmington	450	MB	OP/1984	LIME;ESP;FF; NOx;CEM	COG/10 MW	New Hanover County	200	200	5%
NIEHS/Research Triangle Park,	40	MOD	OP/1985	NONE	STM	National Institute of Environmental Health Science/Private	None	None	N/A
Carolina Energy Limited Partnership/ Lenoir County	600	RDF	UC/1997	LIME;DSCRUB; FF;CARBON;NOx;CE M	STM	Carolina Energy Limited Partnership/ Quiox Power Services	N/A	N/A	50%

Carolina Energy Limited Partnership/ Wilson County	300	RDF	UC/1997	LIME;DSCRUB;FF;CARBON;NOx;CEM	STM/8 MW	Carolina Energy Limited Partnership/ Quibx Power Services	N/A	N/A	50%
Ohio									
Montgomery County North/Dayton	300	MB	OP/1970	ESP;CEM;LIME	None	Montgomery County	N/A	N/A	0%
Montgomery County South/Dayton	900	INCIN	OP/1970	ESP;CEM;LIME		Montgomery County	N/A	N/A	0%
Oklahoma									
Miami/Miami	108	MOD	OP/1982	None	None	City of Miami - Special Utility Authority/City of Miami - Solid Waste Department	12	12	0%
W.B. Hall Resource Recovery Facility/ Tulsa	1,125	MB	OP/1986	ESP;CEM	COG/18 MW	CIT Group/ OMS of Tulsa, Inc.	7,300	7,300	10%
Poteau/Poteau	25	INCIN	OP/1974	None	None	Town of Poteau	N/A	N/A	0%
Oregon									
Marion County Solid Waste-to-Energy Facility/Brooks	550	MB	OP/1986	SDA;FF;CEM	ELE/13 MW	Ogden Martin Systems of Marion, Inc.	3,200	3,200	28%
Beaver Hill Disposal Site/Coos County	150	INCIN	OP/1980	DSCRUB	None	Coos County/Coos County Solid Waste Department	N/A	N/A	21%
Pennsylvania									
Delaware County/Chester	2,688	MB	OP/1992	LIME;SDA;FF;CEM;LINK	ELE/80 MW	Fleet National Bank of Connecticut/ Westinghouse Subsidiary	17,000	17,000	26%
Harrisburg/Harrisburg	720	MB	OP/1972	ESP	COG/8 MW	City of Harrisburg/ Harrisburg Resource Recovery	4,700	4,700	16%
Lancaster County RRF/Bainbridge	1,200	MB	OP/1991	LIME;SDA;FF;CEM;LINK	ELE/36 MW	Lancaster County Solid Waste Management Authority/OMS of Lancaster, Inc.	6,100	6,100	25%
Montgomery County Resource Recovery Facility/ Conshohocken	1,200	MB	OP/1991	SDA;FF;CEM;LINK	ELE/32 MW	Montenay Montgomery Limited Partnership/ Montenay Energy Resources of Montgomery County	5,400	5,400	26%
Wheelabrator Falls Inc./Falls Township	1,500	MB	OP/1994	SDA;FF;NOx;CEM;CARBON-INJ	ELE/53 MW	Wheelabrator	6,000	48,000	24%
York County/ Manchester Township	1,344	MB	OP/1989	SDA;FF;CEM;LINK	ELE/36 MW	York County Solid Waste Authority/ Westinghouse Subsidiary	6,900	6,900	28%
Glendon/Glendon	490	RDF	AP/1988	SDA;FF;CARBON;No x;CEM;LINK;LIME;WSCRUB;ESP;DSCRUB	ELE/15 MW	Glendon Energy Co./N/D	12,400	12,400	15%

Puerto Rico

NORECORP/ Guaynabo	1,983	MB	AP/2000	SDA;FF;CARBON;NO x;CEM	ELE/35 MW	Northeastern Resource Recovery Corporation/Montenay Power Corporation	N/A	127,365	0%
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South Carolina

Chambers Medical Technologies of SC, Inc./Hampton	270	MOD	OP/1985	DSCRUB;ESP; CEM	STM/ 20,000 lbs/hr.	USA Waste Services Inc./Chambers Medical Technologies of SC, Inc.	N/A	N/A	0%
Charleston/ Charleston County	600	MB	OP/1989	SDA;ESP;CEM	COG/13 MW	AT&T/Foster Wheeler	600	600	25%

Tennessee

Nashville Thermal/ Nashville	1,050	MB	OP/1974	ESP	COG;Chilled H2O/7.24 MW	Metropolitan - Nashville/Davidson County/Nashville Thermal Transfer Corp.	None	None	16%
Robertson County Recycling Facility/ Springfield	25	RDF-P	OP/1990	FF;CEM	RDF Fuel (For area markets)	Robertson County	N/A	N/A	0%
Sumner County Resource Authority/ Gallatin	200	MB	OP/1981	ESP	COG	Sumner County & Cities of Gallatin & Hendersonville/ Sumner County Resource Authority	1,095	7,970	35%

Texas

Carthage City/ Carthage City	40	MOD	OP/1986	WSCRUB;CEM	STM/ 8,500 lbs/hr.	City of Carthage & Panola County/City of Carthage	36	36	0%
Cass County/Linden	50	RDF-P	OP/1993	FF	RDF Fuel (For Int. Paper/ Georgia Pacific)	Cass County	N/A	N/A	0%
Cass County (Linden RDF Market)/ International Paper; Georgia Pacific	25	RDF-C	OP/1993	N/A	N/A	International Paper;Georgia Pacific/International Paper;Georgia Pacific	N/A	N/A	0%
Center/Center	40	MOD	OP/1986	WSCRUB	STM/ 5,000 lbs/hr.	City of Center	N/A	N/A	0%
Cleburne/Cleburne	115	MOD	OP/1986	ESP;CEM; DSCRUB	ELE/1 MW	City of Cleburne	85	85	0%

Utah

Davis County/Layton	400	MB	OP/1988	DSCRUB;LIME; ESP	STM/ 100,000 lbs/hr.	Davis County SWM & Energy District	N/A	N/A	0%
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Vermont

Readsboro/ Readsboro	13	INCIN	OP/	None	None	Town of Readsboro	N/A	N/A	0%
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Virginia

Alexandria/Arlington Resource Recovery Facility/Alexandria	975	MB	OP/1988	LIME;ESP;CEM; CARBON	ELE/22 MW	OMS of Alexandria/ Arlington, Inc.	None	423	20%
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Arlington/Pentagon	50	MOD	OP/1955	FF	NONE	Pentagon	N/A	None	20%
Hampton/NASA Refuse-fired Steam Generator/Hampton	200	MB	OP/1980	ESP;CEM	STM/ 66,000 lbs/hr.	NASA & City of Hampton/City of Hampton	None	None	45%
Harrisonburg Resource Recovery Facility/Harrisonburg	100	MB	OP/1982	ESP	COG	City of Harrisonburg	4,700	4,700	15%
I-95 Energy/ Resource Recovery Facility/Lorton	3,000	MB	OP/1990	SDA;FF;CEM;LINK	ELE/80 MW	OMS of Fairfax, Inc.	16,000	21,535	31%
Southeastern Public Service Authority of Virginia/Portsmouth	2,000	RDF	OP/1988	CEM;WSCRUB	COG/40 MW	SPSA (RDF); U.S. Navy (Power Plant)/ SPSA (RDF); SPSA (Power Plant)	15,500	15,500	12%
Washington									
Bellingham/Ferndale	100	MOD	OP/1985	DSCRUB;FF;CEM;LIME	ELE/2 MW	Recomp of Washington	900	18,000	30%
Spokane Regional Solid Waste Disposal Facility/Spokane	800	MB	OP/1991	SDA;FF;NOx;CEM	ELE/26 MW	City of Spokane/Wheelabrator Spokane	10,725	10,725	39%
Tacoma (City Landfill)/Tacoma	500	RDF-P	OP/1979	N/A	RDF Fuel	City of Tacoma	N/A	N/A	0%
Tacoma (RDF Market)/Tacoma	300	RDF-C	OP/1991	LIME;FF	ELE/50 MW	Tacoma City Light	N/A	N/A	0%
Fort Lewis/Fort Lewis	120	MB	UC/1996	LIME;DSCRUB;FF;NOx;CARBON;CEM;LINK	STM	U.S. Army	2,200	12,200	18%
Wisconsin									
Barron County Waste-to-Energy & Recycling Facility/ Almena	80	MOD	OP/1986	ESP;CEM	COG/.26 MW	Barron County/ZAC, Inc.	150	64,000	4%
La Crosse County/ French Island	400	RDF	OP/1988	Gravel Bed;LIME	ELE/30 MW	Northern States Power	None	None	17%
Marathon County RDF Plant/Ringle	13	RDF-P	OP/1991	N/A	RDF Fuel (For Weyerhaeuser)	Marathon County	24	24	0%

The Integrated Waste Services Association is a national trade group located in Washington, D.C. For more information about waste-to-energy and integrated waste management, call IWSA at (202) 467-6240.

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Appendix G

MWC Emission Inventory

- G1 AP-42 Emission Factors for Municipal Waste Combustors**
- G2 Example Calculation for Estimating MWC Emissions**

Appendix G1

AP-42 Emission Factors for Municipal Waste Combustors

APPENDIX G--MWC EMISSION INVENTORY

APPENDIX G1--AP-42 EMISSION FACTORS FOR MUNICIPAL WASTE COMBUSTORS

The pollutants emitted from municipal waste combustors (MWC) include the following:

- metals (cadmium, lead, and mercury),
- particulate matter (PM),
- acid gases (hydrogen chloride, HCl, and sulfur dioxide, SO₂),
- organic compounds (dioxins and furans),
- carbon monoxide (CO), and
- nitrogen oxides (NO_x).

Emission factors for each of these pollutants are included in the following tables, from the U.S. Environmental Protection Agency's compilation of emission factors, AP-42.¹ AP-42 records different emission factors for different kinds of combustors. The following tables from Section 2.1 of AP-42, Refuse Combustion, include emission factors for each of the pollutants and each of the combustor types, in both English and metric units.

The emission factors are for distinct combustor types (that is, mass burn waterwall, mass burn rotary waterwall, mass burn refractory wall, and refuse derived fuel combustors). Emission factors are listed for uncontrolled emissions (before any pollution control device) and for controlled emissions based on various control device types. See AP-42 for more information on the data on which emission factors are based. The tables contain emission factors for the following pollutants and control types:

- Table G-1 and G-2, PM, metals, and acid gases for mass burn and modular excess air combustors;

¹U.S. EPA. *Compilation of Air Pollutant Emission Factors*, 5th ed. (AP-42), Vol. I: Stationary Point and Area Sources, Section 2.1: "Refuse Combustion," Research Triangle Park, North Carolina: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, January 1995. This document is on the EPA: Technology Transfer Network (TTN) bulletin board.

- Table G-3 and G-4, Organic compounds, NO_x and CO for mass burn waterwall combustors;
- Table G-5, Organic compounds, NO_x and CO for mass burn rotary waterwall combustors;
- Table G-6, Organic compounds, NO_x and CO for mass burn refractory wall combustors;
- Table G-7, Organic compounds, NO_x and CO for modular excess air combustors;
- Table G-8, All pollutants for refuse-derived fuel-fired combustors;
- Table G-9, All pollutants for modular starved-air combustors;
- Table G-10 and G-11 Conversion factors for unit conversions; and
- Table G-12 All pollutants for refuse combustors other than municipal waste combustors.

The emission factors in the AP-42 tables are rated for quality. The emission factor rating is an overall assessment of how good a factor is, based on both the quality of the test(s) or information that is the source of the factor and on how well the factor represents the emission source. The factor is assigned a rating from A to E, with A being the highest. Higher ratings are for factors based on many unbiased observations, or on widely accepted test procedures. For example, ten or more source tests on different randomly selected plants would likely be assigned an "A" rating if all tests are conducted using a single valid reference measurement method. Likewise, a single observation based on questionable methods of testing would be assigned an "E," and a factor extrapolated from higher-rated factors for similar processes would be assigned a "D" or "E." For definitions of the factor quality ratings, see AP-42.

A large amount of data is available for MWC emissions and, as a result, many of the emission factors have high quality ratings. However, some emission factors are based on only limited data, and their ratings are low. In these cases, refer to the EPA Background Information Documents (BIDs) developed for the NSPS and emission guidelines for MWCs, which more thoroughly analyze the MWC data than does AP-42, and which discuss the performance capabilities of the control technologies and expected emission levels. When using the MWC emission factors, keep in mind that they are average values, and emissions from MWCs are greatly affected by the composition of the waste and may vary for different facilities due to seasonal and regional differences.

For more information about the AP-42 emission factors and documentation of the assumptions and calculations, see Chapter 2 in AP-42. AP-42 is being updated, and the emission factors listed here may change.

Table G-1. PARTICULATE MATTER, METALS, AND ACID GAS EMISSION FACTORS FOR MASS BURN AND MODULAR EXCESS AIR COMBUSTORS^{a,b}

Pollutant	Uncontrolled		ESP ^c		DSI/ESP ^d		SD/ESP ^e		DSI/FF ^f		SD/FF ^g	
	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING
PM ^h	1.26 E+01	A	1.05 E-01	A	2.95 E-02	E	3.52 E-02	A	8.95 E-02	A	3.11 E-02	A
As ⁱ	2.14 E-03	A	1.09 E-05	A	ND ^j	E	6.85 E-06	A	5.15 E-06	C	2.12 E-05	A
Cd ⁱ	5.45 E-03	A	3.23 E-04	B	4.44 E-05	E	3.76 E-06	A	1.17 E-05	C	1.36 E-05	A
Cr ⁱ	4.49 E-03	A	5.65 E-05	B	1.55 E-05	E	1.30 E-04	A	1.00 E-04	C	1.50 E-05	A
Hg ⁱ	2.8 E-03	A	2.8 E-03	A	1.98 E-03	E	1.63 E-03	A	1.10 E-03	C	1.10 E-03	A
Ni ⁱ	3.93 E-03	A	5.60 E-05	B	1.61 E-03	E	1.35 E-04	A	7.15 E-05	C	2.58 E-05	A
Pb ⁱ	1.07 E-01	A	1.50 E-03	A	1.45 E-03	E	4.58 E-04	A	1.49 E-04	C	1.31 E-04	A
SO ₂	1.73 E+00	A	ND	NA	4.76 E-01	C	3.27 E-01 ^k	A	7.15 E-01	C	2.77 E-01 ^k	A
HCl ⁱ	3.20 E+00	A	ND	NA	1.39 E-01	C	7.90 E-02 ^k	A	3.19 E-01	C	1.06 E-01 ^k	A

^a All factors in kg/Mg refuse combusted. Emission factors were calculated from concentrations using an F-factor of 0.26 dscm/joule (J) and a heating value of 10,466 J/g. Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 10,466 J/g. Source Classification Codes 5-01-001-04, 5-01-001-05, 5-01-001-06, 5-01-001-07, 5-03-001-11, 5-03-001-12, 5-03-001-13, 5-03-001-15. ND = no data. NA = not applicable.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., SO₂).

^c ESP = Electrostatic Precipitator

^d DSI/ESP = Duct Sorbent Injection/Electrostatic Precipitator

^e SD/ESP = Spray Dryer/Electrostatic Precipitator

^f DSI/FF = Duct Sorbent Injection/Fabric Filter

^g SD/FF = Spray Dryer/Fabric Filter

^h PM = total particulate matter, as measured with EPA Reference Method 5.

ⁱ Hazardous air pollutants listed in the *Clean Air Act*.

^j No data available at levels greater than detection limits.

^k Acid gas emissions from SD/ESP- and SD/FF-equipped MWCs are essentially the same. Any differences are due to scatter in the data.

Table G-2. PARTICULATE MATTER, METALS, AND ACID GAS EMISSION FACTORS
FOR MASS BURN AND MODULAR EXCESS AIR COMBUSTORS^{a,b}

Pollutant	Uncontrolled		ESP ^c		DSI/ESP ^d		SD/ESP ^e		DSI/FF ^f		SD/FF ^g	
	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING
PM ^h	2.51 E+01	A	2.10 E-01	A	5.90 E-02	E	7.03 E-02	A	1.79 E-01	A	6.20 E-02	A
As ⁱ	4.37 E-03	A	2.17 E-05	A	ND ^j	E	1.37 E-05	A	1.03 E-05	C	4.23 E-06	A
Cd ⁱ	1.09 E-02	A	6.46 E-04	B	8.87 E-05	E	7.51 E-05	A	2.34 E-05	C	2.71 E-05	A
Cr ⁱ	8.97 E-03	A	1.13 E-04	B	3.09 E-05	E	2.59 E-04	A	2.00 E-04	C	3.00 E-05	A
Hg ⁱ	5.6 E-03	A	5.6 E-03	A	3.96 E-03	E	3.26 E-03	A	2.20 E-03	C	2.20 E-03	A
Ni ⁱ	7.85 E-03	A	1.12 E-04	B	3.22 E-05	E	2.70 E-04	A	1.43 E-04	C	5.16 E-05	A
Pb ⁱ	2.13 E-01	A	3.00 E-03	A	2.90 E-03	E	9.15 E-04	A	2.97 E-04	C	2.61 E-04	A
SO ₂	3.46 E+00	A	ND	NA	9.51 E-01	C	6.53 E-01 ^k	A	1.43 E-00	C	5.54 E-01 ^k	A
HCl ⁱ	6.40 E+00	A	ND	NA	2.78 E-01	C	4.58 E-01 ^k	A	6.36 E-01	C	2.11 E-01 ^k	A

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^a All factors in lb/ton refuse combusted. Emission factors were calculated from concentrations using an F-factor of 9,570 dscf/MBtu and a heating value of 4,500 Btu/lb. Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 4,500 Btu/lb. Source Classification Codes 5-01-001-04, 5-01-001-05, 5-01-001-06, 5-01-001-07, 5-03-001-11, 5-03-001-12, 5-03-001-13, 5-03-001-15. ND = no data. NA = not applicable.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., SO₂).

^c ESP = Electrostatic Precipitator

^d DSI/ESP = Duct Sorbent Injection/Electrostatic Precipitator

^e SD/ESP = Spray Dryer/Electrostatic Precipitator

^f DSI/FF = Duct Sorbent Injection/Fabric Filter

^g SD/FF = Spray Dryer/Fabric Filter

^h PM = total particulate matter, as measured with EPA Reference Method 5.

ⁱ Hazardous air pollutants listed in the *Clean Air Act*.

^j No data available at levels greater than detection limits.

^k Acid gas emissions from SD/ESP- and SD/FF-equipped MWCs are essentially the same. Any differences are due to scatter in the data.

**Table G-3. ORGANIC, NITROGEN OXIDES, AND CARBON MONOXIDE EMISSION FACTORS FOR
MASS BURN WATERWALL COMBUSTORS^{a,b}**

Pollutant	Uncontrolled		ESP ^c		SD/ESP ^d		DSI/FF ^d		SD/FF ^e	
	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING	kg/Mg	EMISSION FACTOR RATING
CDD/CDF ^f	8.35 E-07	A	5.85 E-07	A	3.11 E-07	A	8.0 E-08	C	3.31 E-08	A
NO _x ^h	1.83 E+00	A	*		*		*		*	
CO ^h	2.32 E-01	A	*		*		*		*	

^a All factors in kg/Mg refuse combusted. Emission factors were calculated from concentrations using an F-factor of 0.26 dscm/J and a heating value of 10,466 J/g. Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 10,466 J/g. Source Classification Codes 5-01-001-05, 5-03-001-12. * = Same as "uncontrolled" for these pollutants.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., CO, NO_x).

^c ESP = Electrostatic Precipitator

^d SD/ESP = Spray Dryer/Electrostatic Precipitator

^e DSI/FF = Duct Sorbent Injection/Fabric Filter

^f SD/FF = Spray Dryer/Fabric Filter

^g CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans are hazardous air pollutants listed in 1990 *Clean Air Act*.

^h Control of NO_x and CO is not tied to traditional acid gas/PM control devices.

Table G-4. ORGANIC, NITROGEN OXIDES, AND CARBON MONOXIDE EMISSION FACTORS FOR MASS BURN WATERWALL COMBUSTORS^{a,b}

Pollutant	Uncontrolled		ESP ^c		SD/ESP ^d		DSI/FF ^e		SD/FF ^f	
	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING	lb/ton	EMISSION FACTOR RATING
CDD/CDF ^g	1.67 E-06	A	1.17 E-06	A	6.21 E-07	A	1.60 E-07	C	6.61 E-08	A
NO _x ^h	3.56 E+00	A	*		*		*		*	
CO ^h	4.63 E-01	A	*		*		*		*	

^a All factors in lb/ton refuse combusted. Emission factors were calculated from concentrations using an F-factor of 9,570 dscf/MBtu and a heating value of 4,500 Btu/lb. Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 4,500 Btu/lb. Source Classification Codes 5-01-001-05, 5-03-001-12. * = Same as "uncontrolled" for these pollutants.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., CO, NO_x).

^c ESP = Electrostatic Precipitator

^d SD/ESP = Spray Dryer/Electrostatic Precipitator

^e DSI/FF = Duct Sorbent Injection/Fabric Filter

^f SD/FF = Spray Dryer/Fabric Filter

^g CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans are hazardous air pollutants listed in the 1990 *Clean Air Act*.

^h Control of NO_x and CO is not tied to traditional acid gas/PM control devices.

Table G-5. ORGANIC, NITROGEN OXIDES, AND CARBON MONOXIDE EMISSION FACTORS
FOR MASS BURN ROTARY WATERWALL COMBUSTORS^{a,b}

Pollutant	Uncontrolled			ESP ^c			DSI/FF ^d			SD/FF ^e		
	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING
CDD/CDF ^f	ND	ND	NA	ND	ND	NA	4.58 E-08	9.16 E-08	D	2.66 E-08	5.31E-08	B
NO _x ^g	1.13 E+00	2.25 E+00	E	*	*		*	*		*	*	
CO ^g	3.83 E-01	7.66 E-01	C	*	*		*	*		*	*	

^a Emission factors were calculated from concentrations using an F-factor of 0.26 dscm/J (9,570 dscf/MBtu) and a heating value of 10,466 J/g (4,500 Btu/lb). Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 10,466 J/g (4,500 Btu/lb). Source Classification Codes 5-01-001-06, 5-03-001-13. ND = no data. NA = not applicable.

* = Same as "uncontrolled" for these pollutants.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., CO, NO_x).

^c ESP = Electrostatic Precipitator

^d DSI/FF = Duct Sorbent Injection/Fabric Filter

^e SD/FF = Spray Dryer/Fabric Filter

^f CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans are hazardous air pollutants listed in the *Clean Air Act*.

^g Control of NO_x and CO is not tied to traditional acid gas/PM control devices.

**Table G-6. ORGANIC, NITROGEN OXIDES, AND CARBON MONOXIDE EMISSION
FACTORS FOR MASS BURN REFRACTORY WALL COMBUSTORS^{a,b}**

Pollutant	Uncontrolled			ESP ^c			DSI/ESP ^d		
	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING
CDD/CDF ^e	7.50 E-06	1.50 E-05	D	3.63 E-05	7.25 E-05	D	2.31 E-07	4.61 E-07	E
NO _x ^f	1.23 E+00	2.46 E+00	A	*	*		*	*	
CO ^f	6.85 E-01	1.37 E+00	C	*	*		*	*	

^a Emission factors were calculated from concentrations using an F-factor of 0.26 dscm/J (9,570 dscf/MBtu) and a heating value of 10,466 J/g (4,500 Btu/lb). Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 10,466 J/g (4,500 Btu/lb). Source Classification Codes 5-01-001-04, 5-03-001-11. * = Same as "uncontrolled" for these pollutants.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., CO, NO_x).

^c ESP = Electrostatic Precipitator

^d DSI/ESP = Duct Sorbent Injection/Electrostatic Precipitator

^e CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans are hazardous air pollutants listed in the *Clean Air Act*.

^f Control of NO_x and CO is not tied to traditional acid gas/PM control devices.

Table G-7. ORGANIC, NITROGEN OXIDES, AND CARBON MONOXIDE EMISSION FACTORS
FOR MODULAR EXCESS AIR COMBUSTORS^{a,b}

Pollutant	Uncontrolled			ESP ^c			DSI/FF ^d		
	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING
CDD/CDF ^e	ND	ND	NA	1.11 E-06	2.22 E-06	C	3.12 E-08	6.23 E-08	E
NO _x ^f	1.24 E+00	2.47 E+00	A	*	*		*	*	
CO ^f	ND	ND	NA	*	*		*	*	

^a Emission factors were calculated from concentrations using an F-factor of 0.26 dscm/J (9,570 dscf/MBtu) and a heating value of 10,466 J/g (4,500 Btu/lb). Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 10,466 J/g (4,500 Btu/lb). Source Classification Codes 5-01-001-07, 5-03-001-15. ND = no data. NA = not applicable.
* = Same as "uncontrolled" for these pollutants.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., CO, NO_x).

^c ESP = Electrostatic Precipitator

^d DSI/FF = Duct Sorbent Injection/Fabric Filter

^e CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans are hazardous air pollutants listed in the *Clean Air Act*.

^f Control of NO_x and CO is not tied to traditional acid gas/PM control devices.

Table G-8. EMISSION FACTORS FOR REFUSE-DERIVED FUEL-FIRED COMBUSTORS^{a,b}

Pollutant	Uncontrolled			ESP ^c			SD/ESP ^d			SD/FF ^e		
	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING
PM ^f	3.48 E+01	6.96 E+01	A	5.17 E-01	1.04 E+00	A	4.82 E-02	9.65 E-02	B	6.64 E-02	1.33 E-01	B
As ^g	2.97 E-03	5.94 E-03	B	6.70 E-05	1.34 E-04	D	5.41 E-06	1.08 E-05	D	2.59 E-06 ^h	5.17 E-06 ^h	A
Cd ^g	4.37 E-03	8.75 E-03	C	1.10 E-04	2.20 E-04	C	4.18 E-05	8.37 E-05	D	1.66 E-05 ^h	3.32 E-05 ^h	A
Cr ^g	6.99 E-03	1.40 E-02	B	2.34 E-04	4.68 E-04	D	5.44 E-05	1.09 E-04	D	2.04 E-05	4.07 E-05	D
Hg ^g	2.8 E-03	5.5 E-03	D	2.8 E-03	5.5 E-03	D	2.10 E-04	4.20 E-04	B	1.46 E-04	2.92 E-04	D
Ni ^g	2.18 E-03	4.36 E-03	C	9.05 E-03	1.81 E-02	D	9.64 E-05	1.93 E-04	D	3.15 E-05 ⁱ	6.30 E-05 ⁱ	A
Pb ^g	1.00 E-01	2.01 E-01	C	1.84 E-03 ^h	3.66 E-03 ^h	A	5.77 E-04	1.16 E-03	B	5.19 E-04	1.04 E-03	D
SO ₂	1.95 E+00	3.90 E+00	C	ND	ND	NA	7.99 E-01	1.60E+00	D	2.21 E-01	4.41 E-01	D
HCl ^g	3.49 E+00	6.97 E+00	E	*	*		ND	ND	NA	2.64 E-02	5.28 E-02	C
NO _x ^j	2.51 E+00	5.02 E+00	A	*	*		*	*		*	*	
CO ^j	9.60 E-01	1.92 E+00	A	*	*		*	*		*	*	
CDD/CDF ^k	4.73 E-06	9.47 E-06	D	8.46 E-06	1.69 E-05	B	5.31 E-08	1.06 E-07	D	1.22 E-08	2.44 E-08	E

^a Emission factors were calculated from concentrations using an F-factor of 0.26 dscm/J (9,570 dscf/MBtu) and a heating value of 12,792 J/g (5,500 Btu/lb). Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 12,792 J/g (5,500 Btu/lb). Source Classification Code 5-01-001-03. ND = no data. NA = not applicable. * = Same as uncontrolled for these pollutants.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (SO₂, NO_x, CO).

^c ESP = Electrostatic Precipitator

^d SD/ESP = Spray Dryer/Electrostatic Precipitator

^e SD/FF = Spray Dryer/Fabric Filter

^f PM = total particulate matter, as measured with EPA Reference Method 5.

^g Hazardous air pollutants listed in the *Clean Air Act*.

^h Levels were measured at non-detect levels, where the detection limit was higher than levels measured at other similarly equipped MWCs. Emission factors shown are based on emission levels from similarly equipped mass burn and MOD/EA combustors.

ⁱ No data available. Values shown are based on emission levels from SD/FF-equipped mass burn combustors.

^j Control of NO_x and CO is not tied to traditional acid gas/PM control devices.

^k CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans are hazardous air pollutants listed in the *Clean Air Act*.

Table G-9. EMISSION FACTORS FOR MODULAR STARVED-AIR COMBUSTORS^{a,b}

Pollutant	Uncontrolled			ESP ^c		
	kg/Mg	lb/ton	EMISSION FACTOR RATING	kg/Mg	lb/ton	EMISSION FACTOR RATING
PM ^d	1.72 E+00	3.43 E+00	B	1.74 E-01	3.48 E-01	B
As ^e	3.34 E-04	6.69 E-04	C	5.25 E-05	1.05 E-04	D
Cd ^e	1.20 E-03	2.41 E-03	D	2.30 E-04	4.59 E-04	D
Cr ^e	1.65 E-03	3.31 E-03	C	3.08 E-04	6.16 E-04	D
Hg ^{e,f}	2.8 E-03	5.6 E-03	A	2.8 E-03	5.6 E-03	A
Ni ^e	2.76 E-03	5.52 E-03	D	5.04 E-04	1.01 E-03	E
Pb ^e	ND	ND	NA	1.41 E-03	2.82 E-03	C
SO ₂	1.61 E+00	3.23 E+00	E	*	*	
HCl ^e	1.08 E+00	2.15 E+00	D	*	*	
NO _x ^g	1.58 E+00	3.16 E+00	B	*	*	
CO ^g	1.50 E-01	2.99 E-01	B	*	*	
CDD/CDF ^h	1.47 E-06	2.94 E-06	D	1.88 E-06	3.76 E-06	C

^a Emission factors were calculated from concentrations using an F-factor of 0.26 dscm/J (9,570 dscf/MBtu) and a heating value of 10,466 J/g (4,500 Btu/lb). Other heating values can be substituted by multiplying the emission factor by the new heating value and dividing by 10,466 J/g (4,500 Btu/lb). Source Classification Codes 5-01-001-01, 5-03-001-14. ND = no data. NA = not applicable. * = Same as "uncontrolled" for these pollutants.

^b Emission factors should be used for estimating long-term, not short-term, emission levels. This particularly applies to pollutants measured with a continuous emission monitoring system (e. g., CO, NO_x).

^c ESP = Electrostatic Precipitator

^d PM = total particulate matter, as measured with EPA Reference Method 5.

^e Hazardous air pollutants listed in the *Clean Air Act*.

^f Mercury levels based on emission levels measured at mass burn, MOD/EA, and MOD/SA combustors.

^g Control of NO_x and CO is not tied to traditional acid gas/PM control devices.

^h CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans are hazardous air pollutants listed in the *Clean Air Act*.

Table G-10. CONVERSION FACTORS FOR ALL COMBUSTOR TYPES EXCEPT RDF

Divide	By	To Obtain*
For As, Cd, Cr, Hg, Ni, Pb, and CDD/CDF: kg/Mg refuse lb/ton refuse	4.03×10^{-6} 8.06×10^{-6}	$\mu\text{g/dscm}$
For PM: kg/Mg refuse lb/ton refuse	4.03×10^{-3} 8.06×10^{-3}	mg/dscm
For HCl: kg/Mg refuse lb/ton refuse	6.15×10^{-3} 1.23×10^{-2}	ppmv
For SO ₂ : kg/Mg refuse lb/ton refuse	1.07×10^{-2} 2.15×10^{-2}	ppmv
For NO _x : kg/Mg refuse lb/ton refuse	7.70×10^{-3} 1.54×10^{-2}	ppmv
For CO: kg/Mg refuse lb/ton refuse	4.69×10^{-3} 9.4×10^{-3}	ppmv

* At 7% O₂.

Table G-11. CONVERSION FACTORS FOR REFUSE-DERIVED FUEL COMBUSTORS

Divide	By	To Obtain ^a
For As, Cd, Cr, Hg, Ni, Pb, and CDD/CDF: kg/Mg refuse lb/ton refuse	4.92×10^{-6} 9.85×10^{-6}	$\mu\text{g/dscm}$
For PM: kg/Mg refuse lb/ton refuse	4.92×10^{-3} 9.85×10^{-3}	mg/dscm
For HCl: kg/Mg refuse lb/ton refuse	7.5×10^{-3} 1.5×10^{-2}	ppmv
For SO ₂ : kg/Mg refuse lb/ton refuse	1.31×10^{-2} 2.62×10^{-2}	ppmv
For NO _x : kg/Mg refuse lb/ton refuse	9.45×10^{-3} 1.89×10^{-2}	ppmv
For CO: kg/Mg refuse lb/ton refuse	5.75×10^{-3} 1.15×10^{-2}	ppmv

^a At 7% O₂.

Table G-12. UNCONTROLLED EMISSION FACTORS FOR REFUSE COMBUSTORS OTHER THAN MUNICIPAL WASTE^a

EMISSION FACTOR RATING: D

Combustor Type	PM		SO ₂		CO		Total Organic Compounds ^b		NO _x	
	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton
Industrial/commercial										
Multiple chamber	3.50 E+00	7.00 E+00	1.25 E+00	2.50 E+00	5.00 E+00	1.00 E+01	1.50 E+00	3.00 E+00	1.50 E+00	3.00 E+00
Single chamber	7.50 E+00	1.50 E+01	1.25 E+00	2.50 E+00	1.00 E+01	2.00 E+01	7.50 E+01	1.50 E+01	1.00 E+00	2.00 E+00
Trench										
Wood (SCC 5-01-005-10, 5-03-001-06)	6.50 E+00	1.30 E+01	5.00 E-02	1.00 E-01	ND	ND	ND	ND	2.00 E+00	4.00 E+00
Rubber tires (SCC 5-01-005-11, 5-03-001-07)	6.90 E+01	1.38 E+02	ND	ND	ND	ND	ND	ND	ND	ND
Municipal refuse (SCC 5-01-005-12, 5-03-001-09)	1.85 E+01	3.70 E+01	1.25 E+00	2.50 E+00	ND	ND	ND	ND	ND	ND
Flue-fed single chamber	1.50 E+01	3.00 E+01	2.50 E-01	5.00 E-01	1.00 E+01	2.00 E+01	7.50 E+00	1.50 E+01	1.50 E+00	3.00 E+00
Flue-fed (modified)	3.00 E+00	6.00 E+00	2.50 E-01	5.00 E-01	5.00 E+00	1.00 E+01	1.50 E+00	3.00 E+00	5.00 E+00	1.00 E+01
Domestic single chamber (no SCC)										
Without primary burner	1.75 E+01	3.50 E+01	2.50 E-01	5.00 E-01	1.50 E+02	3.00 E+02	5.00 E+01	1.00 E+02	5.00 E-01	1.00 E+00
With primary burner	3.50 E+00	7.00 E+00	2.50 E-01	5.00 E-01	Neg	Neg	1.00 E+00	2.00 E+00	1.00 E+00	2.00 E+00

^a References 116-123. ND = no data. SCC = Source Classification Code. Neg = negligible.

^b Expressed as methane.

Appendix G2

Example Calculation for Estimating MWC Emissions

APPENDIX G2--EXAMPLE CALCULATION FOR ESTIMATING MWC EMISSIONS

The first step in calculating annual emissions from MWC plants is to calculate the emissions from individual MWC units at the plant. This task is accomplished with plant-specific information such as flue gas pollutant concentration, rated unit capacity, unit capacity factor, fuel heating value, and the F_d factor (from EPA Method 19).

The following equation can be used to convert stack concentrations to megagrams per year (Mg/yr) emitted:

$$E = \frac{C \times V \times T}{10^9}$$

where:

- E = Annual Pollutant Emissions (Mg/yr)
- C = Flue Gas Pollutant Concentration (mg/dscm @ 7% O₂)
- V = Volumetric Flow Factor (dscm @7% O₂/Mg waste fired)
- T = MSW Combusted (Mg waste burned/year)

The volumetric flow factor (V) is calculated as follows:

$$V = \frac{F_d \times HV}{10^{-3} \times 10^{-3}} \times \frac{20.9}{20.9-7}$$

where:

Fd = Dry F factor from EPA Method 19 (40 CFR 60, Appendix A)

HV = Heating Value $\left[10,500 \frac{\text{kJ}}{\text{kg}} \text{ for MSW} \right]$

$$V = \frac{\left[2.57 \times 10^{-7} \frac{\text{dscm @ 0\% O}_2}{\text{J}}\right] \left[10,500 \frac{\text{kJ}}{\text{kg}}\right]}{\left[\frac{10^{-3} \text{ Mg}}{\text{kg}}\right] \left[\frac{10^{-3} \text{ kJ}}{\text{J}}\right]} \times \left[\frac{20.9}{20.9 - 7}\right]$$

$$V = 4,060 \frac{\text{dscm @ 7\%O}_2}{\text{Mg MSW}}$$

If stack concentration data are in units of parts per million (ppm) rather than milligrams per dry standard cubic meter (mg/dscm), the data can be converted to mg/dscm as follows:

$$C = \frac{P \times \text{MW} \times 453,592 \times 35.31}{10^6 \times 385.5}$$

where:

C = Flue gas pollutant concentration (mg/dscm @ 7% O₂)

P = Flue gas pollutant concentration (ppm @ 7% O₂)

MW = Molecular weight of pollutant (lb/lb-mol)

Example Calculation for PM

For a mass burn/waterwall unit which burns 85,000 Mg of MSW per year with an outlet PM concentration of 35 mg/dscm @ 7 percent O₂, annual PM emissions can be calculated to be:

$$E = \frac{\left[\frac{35 \text{ mg}}{\text{dscm}} @ 7\% \text{ O}_2 \right] \left[4,060 \frac{\text{dscm @ 7\% O}_2}{\text{Mg}} \right] (85,000 \text{ Mg/yr})}{10^9 \frac{\text{mg}}{\text{Mg}}}$$

$$E = 12.1 \text{ Mg PM/yr}$$

Example Calculation for SO₂

For the same unit described above, with an outlet SO₂ concentration of 31 ppm @ 7 percent O₂, annual SO₂ emissions can be calculated as follows:

$$C = \frac{(31 \text{ ppm @ 7 \% O}_2) \left[64 \frac{\text{lb}}{\text{lb-mol}} \right] \left[\frac{453,592 \text{ mg}}{\text{lb}} \right] \left[\frac{35.31 \text{ dscf}}{\text{dscm}} \right]}{(10^6) \left[385.5 \frac{\text{dscf}}{\text{lb-mol}} \right]}$$

$$C = 82.4 \text{ mg SO}_2/\text{dscm @ 7 \% O}_2$$

and:

$$E = \frac{\left[\frac{82.4 \text{ mg}}{\text{dscm}} @ 7 \% \text{O}_2 \right] \left[4,060 \frac{\text{dscm @ 7 \%O}_2}{\text{Mg}} \right] (85,000 \text{Mg/yr})}{10^9 \frac{\text{mg}}{\text{Mg}}}$$

$$E = 28.4 \text{ Mg SO}_2/\text{yr}$$

Appendix H

Pollutant Data

H1 Dioxin Data

H2 References on Health Effects

Appendix H1

Dioxin Data

APPENDIX H--POLLUTANT DATA

APPENDIX H1--DIOXIN DATA

The Emission Guidelines for MWC units contain emission limits for 9 pollutants. The emission limits in the guidelines are implemented through State Plans following procedures and requirements under Sections 111(d) and Section 129 of the CAA. State Plans must include compliance schedules for complying with the Emission Guidelines. State air pollution control agencies establish compliance schedules based on local considerations.

State agencies may vary compliance schedules from plant to plant within a state and from unit to unit within a plant, but no retrofit or cease operation agreement may extend beyond three years from State Plan approval or December 19, 2000, whichever is earlier. Additionally, any State Plan that includes a compliance schedule (retrofit or cease operation agreement) for an MWC unit located at a large plant that extends more than one year beyond approval of the State Plan must include a dioxin test conducted during or after 1990 for each MWC unit with a compliance schedule that extends beyond one year. See the questions and answers in Appendix A, Section 4 for a discussion of reduced dioxin testing. Dioxin tests are not required for MWC units at small plants (plant capacity <225 Mg/day).

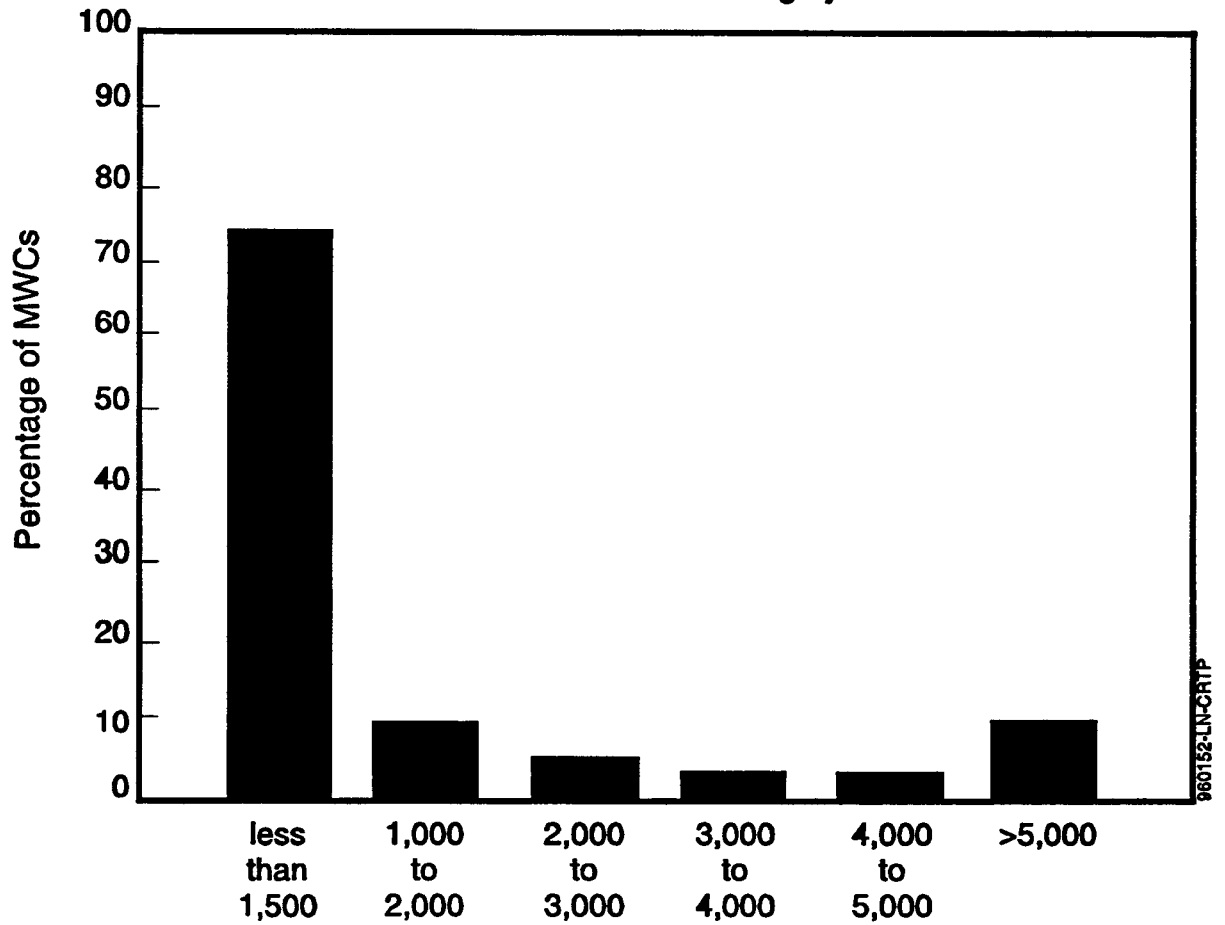
The owner of the MWC plant would provide the dioxin test data to the state agency for consideration during development of the retrofit schedule. The dioxin test data would also be made available to the public for consideration at public hearings.

To assist state agencies and the public in use of the dioxin test data relative to judging what are typical dioxin levels for an MWC that had not yet retrofitted a scrubbing system, the attached EPA report, "Compilation of MWC Dioxin Data," is provided. The report lists all dioxin data from MWC units available to EPA at the time the report was prepared (July 1995).

The attached bar chart graphically summarizes the dioxin data in the report for those MWC units that are not equipped with a scrubbing system (the MWC units have only an ESP control systems). The data for ESP-equipped MWC units are from 63 MWC units and the distribution of data is expected to be representative of other MWC units that have not yet conducted baseline dioxin tests. You will note that the test results for over 70 percent of the units fall in one data grouping and only a limited number of units have higher dioxin levels. Following retrofit of a spray dryer/fabric filter scrubbing system with activated carbon injection, which is expected to be retrofitted to many MWC units, dioxin levels will be less than 20 ng/dscm.

MWC DIOXIN DISTRIBUTION

MWCs without scrubbing systems



Note: Based on survey of 63 MWC units without scrubbers

COMPILATION OF MWC DIOXIN DATA

OFFICE OF AIR QUALITY PLANNING AND STANDARDS

Attached is EPA's compilation of dioxin¹ data from municipal waste combustors (MWCs). This compilation is a summary of the data available as of January 31, 1995, within EPA's Office of Air Quality Planning and Standards (OAQPS), Research Triangle Park, North Carolina. The data are compiled in terms of nanograms of total dioxin per dry standard cubic meter (ng/dscm) at 7 percent oxygen. This attachment summarizes the data available regarding the concentration of dioxin in the stack gases released to the atmosphere by various MWCs. Please note, this is the concentration of dioxin in the stack gases; not the amount of dioxins emitted to the atmosphere.

The attachments present baseline dioxin data for MWCs. New Source Performance Standards (NSPS) and Emission Guidelines were proposed on September 20, 1994, which would limit emissions of dioxins from MWCs. The proposed dioxin emission levels on a total mass basis are 13 ng/dscm for new MWC plants, 30 ng/dscm for existing MWC plants larger than approximately 250 tons per day (tpd) capacity, and 60 ng/dscm for existing MWC plants in the approximately 40 tpd to 250 tpd capacity range. The final standards and guidelines are scheduled to be promulgated on September 1, 1995. States would be required to submit to EPA a plan implementing the emission guidelines at existing plants within 1 year after promulgation, and plants must be in compliance within 3 years following approval of the State plan.

Attachment 1 compiles the most recent data available from each MWC unit. The data are compiled from emission source tests performed between 1985 and 1994. Where the emission test date is shown as 1985 through 1989, the data were gathered by OAQPS to develop the NSPS and Emission Guidelines proposed in December 1989 for MWCs. Where the emission test date is shown as 1990 through 1994, the data were gathered by OAQPS, or submitted to OAQPS, as part of one of the following efforts:

¹ "Dioxin" means tetra through octa polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofurans.

1. Data gathered by OAQPS to develop the revised NSPS and Emission Guidelines for MWCs which were proposed on September 20, 1994;
2. Data submitted to OAQPS in response to the 1994 MWC dioxin survey; or
3. Data submitted to the docket (A-90-45) as public comments on the revised NSPS and Emission Guidelines proposed on September 20, 1994.

Data gathered by OAQPS have been reviewed to ensure EPA test methods and analytical procedures were employed and quality control and quality assurance procedures were incorporated into the testing and analysis. These data may be found in the rulemaking dockets A-89-08 and A-90-45.

Data submitted to OAQPS in response to the 1994 MWC dioxin survey are not available in the rulemaking dockets and there is no further documentation of these data within OAQPS. These data were generally submitted to OAQPS in telephone conversations. As a result, these data have not been reviewed to ensure EPA test methods and analytical procedures were employed, nor have they been reviewed to ensure quality control and quality assurance procedures were incorporated into the testing and analysis. The use of EPA test methods and analytical procedures, as well as some form of quality control and quality assurance, however, is the "norm" with regard to dioxin testing at MWCs in the U.S. The data were not considered suspect by the EPA regional offices and State agencies who submitted the data.

Data submitted to the docket as public comments on the revised NSPS and Emission Guidelines proposed on September 20, 1994, are available in the rulemaking docket (A-90-45). Emission source test reports for these data are generally not included with the public comments and, as a result, these data have not been reviewed to ensure EPA test methods and analytical procedures were employed, nor have they been reviewed to ensure quality control and quality assurance procedures were incorporated into the testing and analysis. However, the use of EPA test methods and analytical procedures, as well as some form of quality control and quality assurance is commonplace with regard to dioxin testing at MWCs.

Finally, it is possible that for some of the MWC units listed in Attachment 1, earlier dioxin emission data may be available within OAQPS. However, only the most recent data are presented. To the extent that earlier data are available, they may be found in the rulemaking dockets A-89-08 and A-90-45. The principal docket items in these rulemaking dockets which might contain such data are included as Attachment 3.

Attachment 2 reviews the 1994 survey of dioxin emissions from MWCs. It outlines the steps followed in this survey and briefly discusses the outcome and interim follow-up actions taken to reduce dioxin emissions (in response to the survey). It also includes a table with average dioxin emission levels from several types of MWCs with various air pollution control systems installed.

ATTACHMENT 1
to
COMPILATION OF MWC DIOXIN DATA
June 6, 1995

ATTACHMENT 1. COMPILATION OF MOST RECENT DIOXIN DATA AVAILABLE WITHIN QAQPS AS OF 01/31/95.

Note: This table presents information about the concentration of dioxin in stack gases and does not present information about dioxin emissions.

Region I									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 7% O2)	Year Tested
Bristol RRF	CT	650	2	MB/WW	FF SD	1	325	75	1990
						2	325	8	1990
Mid-Connecticut Project (Hartford)	CT	2000	3	RDF	FF SD	1	667	1	1988
Wallingford RRF	CT	420	3	MOD/EA	FF SD	1	140	178	1991
						2	140	50	1991
						3	140	47	1991
Haverhill Lawrence RDF	MA	710	1	RDF	ESP FSI	1	710	136	1992
North Andover RESCO	MA	1500	2	MB/WW	ESP FSI	1	750	53	1989
SEMASS RRF (Rochester)	MA	1800	3	RDF	ESP SD	1	900	9	1989
						2	900	12	1989
Wheelabrator Millbury	MA	1500	2	MB/WW	ESP SD	2	750	59	1988
Greater Portland Region RRF	ME	500	2	MB/WW	ESP SD	North	250	173	1987
Maine Energy Recovery (Biddeford - Saco)	ME	600	2	RDF	FF SD	1	300	4	1987
						2	300	4	1987
Penobscot Energy Recovery Comp.	ME	700	2	RDF	FF SD	1	350	2	1988
SES Claremont RRF	NH	200	2	MB/WW	FF DSI	1	100	38	1987
						2	100	32	1987

Region II									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 7% O2)	Year Tested
Camden RRF	NJ	1050	3	MB/WW	ESP SD	1	350	75	1992
Warren Energy RRF	NJ	400	2	MB/WW	FF SD	1	200	8	1988
Adirondack RRF	NY	432	2	MB/WW	ESP SD	1	216	28	1992
						2	216	40	1992
Babylon RRF	NY	750	2	MB/WW	FF SD	1	375	1	1991
						2	375	1	1993
Dutchess Co. RRF	NY	400	2	MB/RC	FF DSI	1	200	5	1989
						2	200	18	1989
Hempstead	NY	2505	3	MB/WW	FF SD	2	835	1	1993
Huntington RRF	NY	750	3	MB	FF SD SNCR	1	250	12	1993
						2	250	7	1993
						3	250	7	1993
Long Beach RRF	NY	200	1	MB/WW	ESP	1	200	709	1992
MacArthur WTE (Islip)	NY	518	2	MB/RC	FF DSI	1	259	4	1993
						2	259	1	1993
Niagara Falls RDF WTE (a)	NY	2200	2	RDF	ESP	1	1100	1217	1989
Oneida Co. ERF	NY	200	4	MOD/SA	ESP	1	50	462	1985
Oswego Co. WTE	NY	200	4	MOD/SA	ESP	1	50	386	1986
Westchester RESCO	NY	2250	3	MB/WW	ESP	1	750	183	1993

ATTACHMENT 1. COMPILATION OF MOST RECENT DIOXIN DATA AVAILABLE WITHIN QAQPS AS OF 01/31/95. (continued)

Region III									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 7% O2)	Year Tested
Harford Co. WTE Fac.	MD	360	4	MOD/SA	none	1	90	300	1993
						2	90	300	1993
						3	90	300	1993
						4	90	300	1993
Pulaski (*)	MD	1500	5	MB/REF	ESP	1	300	771	1994
						2	300	771	1994
						3	300	1490	1994
						4	300	1490	1994
						5	300	37	1994
Southwest RRF (RESCO)	MD	2250	3	MB/WW	ESP	1	750	142	1993
						2	750	102	1993
						3	750	199	1993
Delware Co. RRF	PA	2688	6	MB/RC/WW	FF SD	1	448	2	1992
						2	448	4	1992
						3	448	10	1991
						4	448	11	1992
						5	448	4	1991
						6	448	10	1991
Harrisburg WTE	PA	720	2	MB/WW	ESP	2	360	1156	1994
Lancaster Co. RRF	PA	1200	3	MB/WW	FF SD	1	400	114	1993
						2	400	61	1993
						3	400	49	1993
York Co. RR Center	PA	1344	3	MB/RC/WW	FF SD	1	448	5	1993
						2	448	8	1993
						3	448	8	1993
Alexandria/Arlington RRF	VA	975	3	MB/WW	ESP DSI CI	1	325	55	1987
						3	325	72	1993
Harrisonburg (*)	VA	100	2	MB/WW	ESP	1	50	8459	1994
Fairfax (I-95 Energy) RRF	VA	3000	4	MB/WW	FF SD	1	750	9	1993
						2	750	6	1993
						3	750	8	1993
						4	750	7	1993
Hampton (NASA)	VA	200	2	MB/WW	ESP	1	100	102	1992
Norfolk Navy Yard (*)	VA	2000	4	RDF	ESP	1	500	1640	1994
						2	500	4210	1994
						3	500	2115	1994
						4	500	26360	1993

ATTACHMENT 1. COMPILATION OF MOST RECENT DIOXIN DATA AVAILABLE WITHIN QAQPS AS OF 01/31/95. (continued)

Region IV									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 7% O ₂)	Year Tested
Huntsville Refuse-Fired Steam Fac.	AL	690	2	MB/WW	FF SD	2	345	3	1990
Dade Co. RRF	FL	3000	4	RDF	ESP	1	750	449	1990
Hillsborough Co. RRF (Tampa)	FL	1200	3	MB/WW	ESP	1	400	178	1994
McKay Bay RRF (*)	FL	1000	4	MB/WW	ESP	1	250	8533	1994
						3	250	893	1994
						4	250	2160	1994
Pasco Co. Solid Waste RRF	FL	1050	3	MB/WW	FF SD	1	350	11	1994
Wheelabrator Pinellas RRF (*)	FL	3000	3	MB/WW	ESP	3	1000	4400	1994
University City RRF	NC	235	2	MB/WW	ESP	2	118	579	1994
Foster Wheeler Charleston RRF	SC	600	2	MB/WW	ESP SD	2	300	44	1990
Nashville Thermal Transfer Corp	TN	1050	3	MB/WW	ESP	3	350	143	1994

Region V									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 7% O ₂)	Year Tested
Northwest WTE (Chicago)	IL	1600	4	MB/WW	ESP	2	400	65	1993
Indianapolis RRF	IN	2362	3	MB/WW	FF SD	2	787	12	1989
						3	787	1	1989
Central Wayne Co. (Dearborn Heights)	MI	500	2	RDF	ESP	1	250	383	1994
Clinton Township (*)	MI	600	2	MB/REF	ESP	1	300	3254	1994
Greater Detroit RRF (*)	MI	3300	3	RDF	ESP	11	1100	2851	1993
					FF SD	12	1100	10	1993
Kent Co. WTE Fac.	MI	625	2	MB/WW	FF SD	1	313	5	1992
						2	131	12	1992
Hennepin Energy Recovery Facility	MN	1200	2	MB/WW	FF SD SNCR CI	1	600	1	1992
						2	600	2	1992
Olmstead WTE Facility	MN	200	2	MB/WW	ESP	1	100	219	1994
Perham Renewable RRF	MN	114	2	MOD/SA	ESP	1	57	35	1994
Polk Co. Solid Waste Resource Recovery	MN	80	2	MOD/SA	ESP	1	40	269	1988
Pope-Douglas Solid Waste	MN	72	2	MOD/EA	ESP	2	36	446	1989
Ramsey-Washington	MN	720	2	RDF	ESP	2	360	31	1988
Red Wing Solid Waste Boiler Facility	MN	72	2	MOD/EA	ESP	1	36	489	1990
Western Lake Superior (Duluth)	MN	260	2	RDF	VS	2	130	16	1992
Wilmarth Plant (Mankato)	MN	720	2	RDF	FF SD	1	360	27	1988
City of Columbus SW Reduction Fac. (*)	OH	2000	6	RDF	ESP	6	400	3500	1994
Montgomery Co. North RRF (Dayton) (*)	OH	900	3	MB/RC/REF	ESP FSI	2	300	85	1994
						3	300	8100	1994
LaCrosse Co.	WI	400	2	RDF/FBC	DSI EGB	1	200	63	1993
St. Croix Co. WTE Fac.	WI	115	3	MOD/SA	FF DSI	1	38	8	1988
						2	38	8	1988
						3	38	8	1988

ATTACHMENT 1. COMPILATION OF MOST RECENT DIOXIN DATA AVAILABLE WITHIN QAQPS AS OF 01/31/95. (concluded)

Region VI									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 12% O ₂)	Year Tested
Walter B. Hall RRF (Tulsa)	OK	1125	3	MB/WW	ESP	1	375	34	1986
						2	375	49	1987

Region IX									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 7% O ₂)	Year Tested
Commerce Refuse-to-Energy Fac.	CA	380	1	MB/WW	FF SD SNCR	1	380	10	1988
Long Beach (SERRF)	CA	1380	3	MOD/WW	FF SD SNCR	1	460	4	1988
Stanislaus (Modesto)	CA	800	2	MB/WW	FF SD SNCR	1	400	32	1993
						2	400	9	1993

Region X									
Unit Name	State	Plant Capacity (tons/day)	Number of Units	Combustor Type	APCD	Unit #	Unit Capacity (tons/day)	Dioxin/Furan Data (ng/dscm @ 7% O ₂)	Year Tested
Honolulu Resource Recovery Venture	HI	2160	2	RDF	ESP SD	1	1080	10	1990
						2	1080	3	1990
Waipahu Incinerator (*)	HI	600	2	MB/REF	ESP	1	300	5690	1994
Marion Co. WTE	OR	550	3	MB/WW	FF SD	1	275	1	1991
						2	275	4	1991

(*) - See MWC Survey (Attachment 2) for more details

(a) The two Niagara Falls RDF/ESP units will be replaced by the end of 1996 with MB/WW combustor technology, and will be equipped with SD/FF/SNCR controls.

OAQPS = EPA's Office of Air Quality Planning and Standards.

Dioxin = Tetra through octa polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans

APCD = Air Pollution Control Device

CI = Carbon Injection

DSI = Duct Sorbent Injection

EA = Excess Air

EGB = Electrified Gravel Bed

ERF = Energy Recovery Facility

ESP = Electrostatic Precipitator

FF = Fabric Filter

FSI = Flue Sorbent Injection

MB = Mass Burn

MOD = Modular

RC = Rotary Combustor

RDF = Refuse Derived Fuel

REF = Refractory Wall

RRF = Refuse Recovery Facility

SA = Starved Air

SD = Spray Dryer

SNCR = Selective Non-catalytic Reduction

VS = Venturi Scrubber

WTE = Waste-to-energy

WW = Water Wall

ATTACHMENT 2
to
COMPILATION OF MWC DIOXIN DATA
June 6, 1995

MWC SURVEY

Introduction

In February, 1994, EPA's Office of Air Quality Planning and Standards (OAQPS) initiated a survey of municipal waste combustors (MWCs) to identify those MWCs which might be operating with elevated dioxin¹ emission levels. This survey was designed to make maximum use of readily available information to "screen" MWCs and quickly identify those which might be operating with elevated dioxin emission levels.

Dioxin emissions from MWCs are the result of primary and/or secondary formation of dioxin. Primary formation refers to the formation of dioxin in the combustion process. Secondary formation refers to the formation of dioxin following the combustor. Primary formation depends on the presence or absence of "good combustion" and is influenced by combustor design and operation. Some MWC designs, such as modular combustors which provide long residence times for complete combustion, are conducive to low levels of primary dioxin formation.

Secondary formation depends on the presence of precursors to dioxin formation and the length of time the combustion gases exiting the combustor remain above 440 degrees Fahrenheit (°F). Above this temperature, secondary formation of dioxin occurs much more rapidly than below this temperature. Some ESPs are designed to be operated at such temperatures. Other types of air pollution control systems, such as scrubbing systems, quickly lower the temperature of the combustion gases exiting the combustor to well below 440 °F, and are conducive to low levels of secondary dioxin formation.

Based on this information and using MWC dioxin emission data available within OAQPS, the population of MWCs was screened to identify those MWCs which might be operating at elevated dioxin emission levels. The steps outlined below and shown in Figure 1 illustrate this screening process. Compiled in Table 1 are

¹ "Dioxin" means tetra through octa polychlorinated dibenzo-p-dioxins and dibenzofurans.

Figure 1. Steps Followed in the MWC Survey

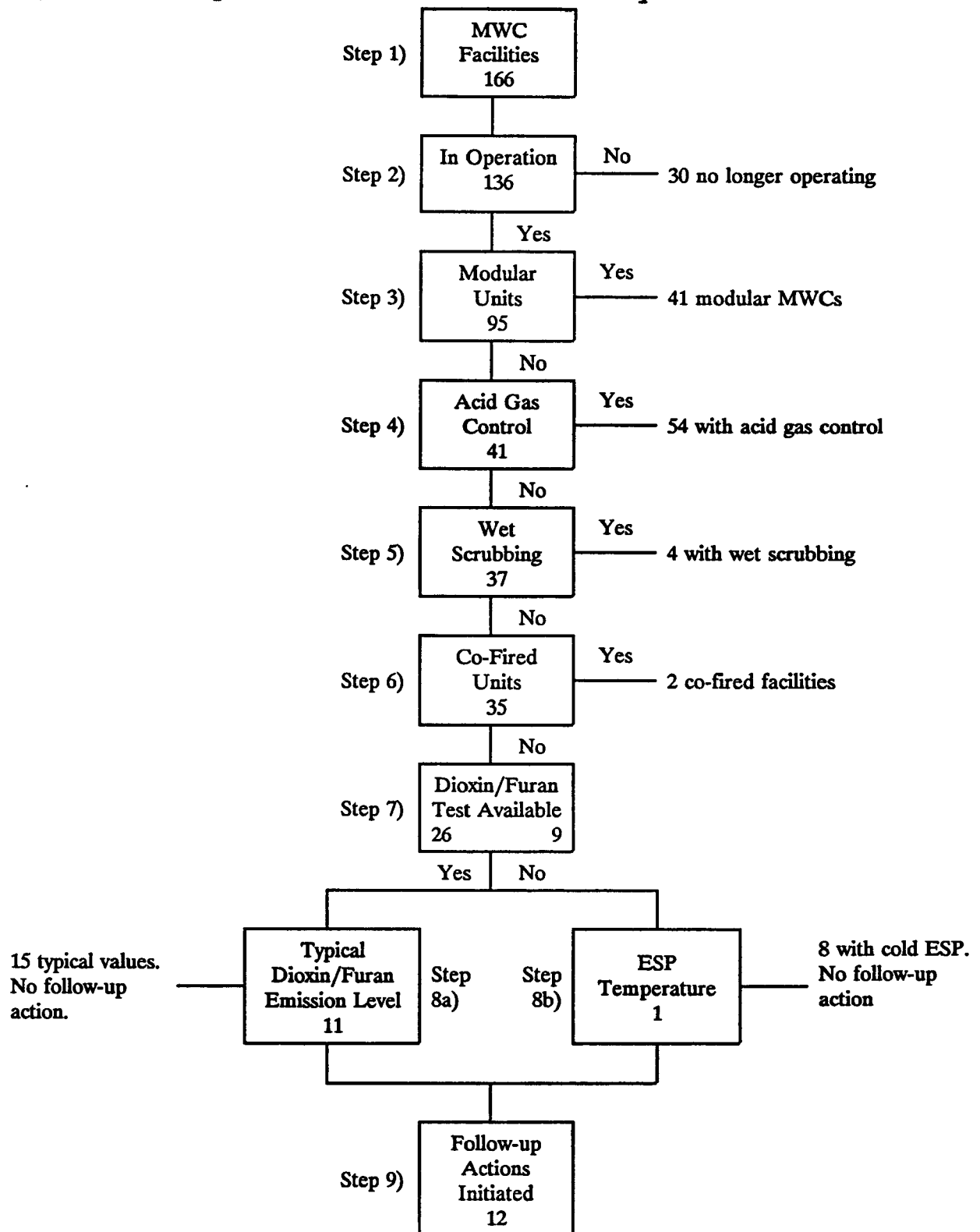


TABLE 1

AVERAGE DIOXIN/FURAN EMISSION LEVELS FROM

MWC CONFIGURATIONS^a

Combustor Type	APCD Type	Typical Dioxin Value (ng/dscm @ 7% O ₂ , total mass)
MB/WW	ESP*	222
	DSI/ESP	60
	DSI/FF	35
	SD/ESP	70
	SD/FF	16
RDF (all except FB)	ESP*	240
	DSI/FF	17
	SD/ESP	9
	SD/FF	8
RDF/FB	DSI/EGB	63
MB/RC/WW	ESP*	400
	DSI/ESP	100
	DSI/FF	7
	SD/ESP	40
	SD/FF	5
MB/REF	ESP*	500
	DSI/ESP	57
	DSI/FF	17
	SD/ESP	40
	SD/FF	5
MOD/SA	Uncontrolled	300
	ESP*	288
	DSI/ESP	98
	DSI/FF	8
	SD/ESP	40
	SD/FF	5
MOD/EA	Uncontrolled	200
	ESP*	468
	DSI/ESP	50
	DSI/FF	8

^aValues presented in this table are averages of available data for various combustor type/APCD type combinations. Values were estimated based on a compilation of the MWC survey data, background information for the 1991 and 1994 MWC rulemakings, public comments received on the 1994 MWC rulemaking, and AP-42 (4th edition).

* ESP operated at less than 440 °F.

APCD = air pollution control device
DSI = duct sorbent injection
EA = excess air
EGB = electrified gravel bed
ESP = electrostatic precipitator
FB = fluidized bed
FF = fabric filter
MB = mass burn

MOD = modular
RC = rotary combustor
RDF = refuse derived fuel
REF = refractory wall
SA = starved air
SD = spray dryer
WW = water wall

average dioxin emission levels from several types of MWCs with various air pollution control systems installed.

Screening Process (see Figure 1)

- Step 1: The starting point was a 1992 inventory identifying 166 MWCs operating in the U.S.
- Step 2: Thirty MWCs were found to be no longer operating. These MWCs were dismissed from further consideration.
- Step 3: Forty-one MWCs were found to be of modular design. Modular design incorporates two combustion chambers, providing long residence times to complete combustion, and results in low dioxin emission concentrations. Available emission data indicate dioxin emission concentrations from modular MWCs are less than 500 ng/dscm. These MWCs were dismissed from further consideration.
- Step 4: Fifty-four MWCs were found to operate with acid gas control systems. Acid gas control systems reduce dioxin emissions and the proposed new source performance standards and emission guidelines for MWCs are based on the use of these systems. Depending on the type of acid gas control system employed, emission data indicate dioxin emission concentrations are less than 150 ng/dscm. These MWCs were dismissed from further consideration.
- Step 5: Four MWCs were found to be operating with wet scrubbing particulate matter control systems. Wet scrubbing quickly reduces the temperature of the MWC combustion gases to 200 - 300 °F. Such low temperatures minimize secondary dioxin formation, and data indicate that dioxin emission concentrations are less than 300 ng/dscm from MWCs where the combustion gases are quickly cooled to less than 440 °F. These MWCs were dismissed from further consideration.

Step 6: Two facilities were found to be burning a mixture of coal and municipal waste, with the municipal waste contributing less than 30 percent of the fuel heat content. Emission data indicate that dioxin emissions are non-detectable from facilities burning mixtures of coal and municipal waste where coal contributes most of the fuel heat content. These units were dismissed from further consideration.

Step 7: The results of recent dioxin testing (i.e., within the past five years) were solicited from the remaining thirty-five MWCs.

Step 8a: Dioxin test results were reported by twenty-six MWCs. Fifteen MWCs were found to be operating with typical dioxin emission levels and were dismissed from further consideration. Eleven were found to have elevated dioxin emission concentrations and corrective actions (discussed below) were initiated at these MWCs to reduce emissions.

Step 8b: Dioxin emission test results were not available from nine MWCs. These MWCs were found to operate electrostatic precipitators (ESPs) and ESP operating temperature was solicited. Operation above 440 °F may lead to significant secondary formation of dioxin and result in elevated dioxin emission levels. Operation below 440 °F leads to dioxin emission concentrations less than 300 ng/dscm.

Eight MWCs were found to be operating ESPs below 440 °F and were dismissed from further consideration. One MWC was found to be operating ESPs above 440 °F and corrective action (discussed below) was initiated at this MWC.

Step 9: Corrective actions have been taken or are being negotiated to reduce dioxin emissions at the eleven MWCs described in Step 8a and on MWC described in Step 8b. The following section provides more detail about each of these MWCs.

Corrective Actions

EPA Region III (Northeast)

Pulaski, MD (1,500 tons/day - 5 units)

Tests conducted in 1993 at this facility reported dioxin levels of 3,313 ng/dscm from units 1 and 2, and 5,984 ng/dscm from units 3 and 4. Unit 5 was tested for dioxins in 1993 and reported a level of 9,045 ng/dscm. All units used water sprays to lower ESP temperatures.

After discussions between Region III, Maryland, and the facility, in May 1994, Maryland amended a Pulaski consent order directing the facility to implement various interim measures (e.g., increased water spray rates and good combustion practices) to reduce dioxin levels from those determined during earlier stack tests. Current Maryland MWC regulations require the facility to reduce dioxin emissions for all five units to 60 ng/dscm or less by February 1996.

After adjustment of water sprays on all five units and combustion conditions on unit 5, tests on all units were conducted with reported dioxin levels as shown in Attachment 1. However, Pulaski operating data have shown, when Units 1 through 4 exceed combustor temperatures of 1600°F (i.e., minimum for good combustion practice), corresponding ESP flue gas inlet temperatures are higher than most recent stack test results. Higher ESP temperatures correlate to higher dioxin emissions. Thus, actual dioxin emissions may be higher than indicated in Attachment 1. Unit 5 does not appear to be susceptible to this problem.

Harrisonburg, VA (100 tons/day - 2 units)

A June 1994 test at this facility reported a dioxin level of 8,459 ng/dscm from unit 1 (unit 2 is assumed to be operating at the same level).

Following discussions between Region III, Virginia, and the MWC facility, Virginia issued a consent order directing the MWC facility to develop a plan by November 1994 to achieve a 95 percent reduction in dioxin emissions by July 1995 on unit 1 and January 1996 on unit 2. Additionally, the order directed

the MWC facility to develop a plan by December 1995 for complying with the proposed standard of 60 ng/dscm. The MWC facility has committed to installing economizers for both units by the end of 1995. The economizers will be designed to reduce ESP temperatures from 528 °F to 350 °F. Data indicate that ESP temperatures lower than 440 °F generally correlate to low dioxin emissions.

Norfolk, VA (2,000 tons/day - 4 units)

Tests at this facility, before water sprays were installed, reported dioxin levels of 21,129 ng/dscm from unit 1 (1993), 32,237 ng/dscm from unit 2 (1993), 37,468 ng/dscm from unit 3 (1992), 42,995 ng/dscm from unit 3 (1994), and 26,360 ng/dscm from unit 4 (1993).

Following discussions between Region III, Virginia, and the MWC facility, Region III issued a 7003 Order under the Resource Conservation and Recovery Act (RCRA) directing the MWC facility to reduce temperatures (thereby reducing dioxin emissions) by 95 percent by December 31, 1995. Water sprays were installed on unit 3 by June 1994 and on all other units by the end of 1994 to reduce temperature (thereby reducing dioxin emissions) until SD/FF retrofits could be completed. After the water sprays were installed, tests on units 1, 2, and 3 reported dioxin levels of 1,640 ng/dscm, 4,210 ng/dscm, and 2,115 ng/dscm, respectively. Unit 4 was shut down in September 1994 and became operational again in March 1995 with a SD/FF retrofit. Unit 2 is scheduled for a SD/FF retrofit beginning August 1995. All remaining units are expected to have SD/FF retrofits by February 1996.

EPA Region IV (Southeast)

McKay Bay (Tampa), FL (1,000 tons/day - 4 units)

Dioxin tests on three units (units 1, 3, and 4) were performed during 1994 with each unit operating at a different ESP temperature. The reported dioxin levels and corresponding ESP outlet temperatures were 893 ng/dscm at 468 °F, 2,160 ng/dscm at 540 °F, and 8,533 ng/dscm at 656 °F.

Discussions are underway to investigate the installation of water sprays and other flue gas cooling methods on all four units

to reduce the ESP temperatures in order to reduce dioxin emissions.

Pinellas Co., FL (3,000 tons/day - 3 units)

Three consecutive dioxin tests conducted on unit 3 at this facility in 1994 reported dioxin levels of 1,964 ng/dscm, 3,840 ng/dscm, and 4,400 ng/dscm. Because of similar ESP temperatures, units 1 and 2 are estimated to be operating at the same level as unit 3.

The facility has performed dioxin tests using temporary water spray cooling to reduce ESP temperature. Results from testing with a temporary water spray system became available February 1995. Dioxin levels were reported to be 1,500 ng/dscm at an ESP temperature of 543 °F (the previous test of 4,400 ng/dscm without water spray cooling was at an ESP temperature of 621 °F). Negotiations are currently underway regarding permanent retrofit of water sprays and other flue gas cooling methods to reduce ESP temperatures in order to reduce dioxin emissions.

EPA Region V (Midwest)

Clinton Township, MI (600 tons/day - 2 units)

Tests conducted at this facility in 1994 reported dioxin levels of 3,254 ng/dscm from unit 1. Because of similar ESP temperatures, unit 2 is estimated to be operating at the same level.

Discussions are underway between EPA and this facility regarding actions for reduction of ESP temperatures in order to reduce dioxin emissions.

Detroit, MI (3,300 tons/day - 3 units)

Initially, all three units at this facility were equipped with ESPs. In 1987, a SD/FF retrofit program was initiated. By the end of 1993, one unit (unit 12) had completed retrofit and tests on the retrofitted unit showed a dioxin level of 10 ng/dscm. By the end of 1994, a second unit (unit 13) had completed retrofit. Test data on the two retrofitted units in 1994 became available in May 1995 and showed dioxin levels of 2 ng/dscm (unit 12) and 6 ng/dscm (unit 13).

One unit (unit 11) remains to be retrofitted. In 1993, tests of this unit reported dioxin levels of 2,851 ng/dscm. This unit was shut down in November 1994 for retrofit with SD/FF and is expected to be back on-line in 1996. After the SD/FF retrofit, EPA estimates that this unit will have dioxin emissions similar to units 12 and 13.

Akron, OH (1,000 tons/day - 2 units)

This facility was investigated due to its reportedly high ESP temperatures.

The facility has not tested for dioxin emissions, but was scheduled to be closed in April 1995.

Columbus, OH (2,000 tons/day - 6 units)

A stack test conducted on unit 6 at this facility in 1992 reported a dioxin level of 12,998 ng/dscm.

Following discussions with Region V, the facility initiated good combustion practices and performed a general "tune up" of unit 6. This resulted in a reduction of dioxin levels to 3,500 ng/dscm. These "tune ups" were subsequently performed on the five other units. Following further discussions, Region V issued a section 7003 Imminent Endangerment Order under RCRA directing the MWC facility to retrofit with water sprays on all six units by March 31, 1995, and to retrofit air pollution control equipment (SD/FF) by the end of 1996. A decision was made by the facility to close all six units at the end of December 1994 instead of proceeding with the retrofits.

Montgomery Co. (North), OH (900 tons/day - 3 units)

A stack test on unit 3 in 1994, at an ESP temperature of 550 °F, showed a dioxin emission level of 8,100 ng/dscm. A stack test on unit 2 in 1994, at an ESP temperature of 395 °F, showed a dioxin emission level of 85 ng/dscm.

The MWC facility undertook action to reduce dioxin emissions by installing water sprays on unit 3. Units 1 and 2 already had water sprays. The EPA expects that units 1 and 3 are now operating at the same level as unit 2.

Montgomery Co. (South), OH (900 tons/day - 3 units)

In 1989, the EPA conducted a series of tests at this facility over a range of operating conditions. Seventeen tests for dioxins were performed at ESP inlet temperatures ranging from 300 °F to 600 °F, with results ranging from less than 14 ng/dscm to over 22,000 ng/dscm. Based on these data and past ESP temperatures for the facility provided by Region V, the EPA estimated that dioxin emission levels from all three units at the time of this survey may have been higher than the typical values described in Table 1.

The MWC facility undertook corrective action to reduce dioxin emissions by increasing the water sprays on all three units. After the corrective actions, the three units are operating at approximately 400 °F and emissions are expected to be comparable to Montgomery County North unit 2 (85 ng/dscm). The facility is planning to close. Projected closure for unit 3 is March 1996 and units 1 and 2 will close in November 1997.

EPA Region IX (West)

Honolulu (Waipahu), HI (600 tons/day - 2 units)

Tests at this facility reported dioxin levels of 5,690 ng/dscm from one of the units.

The facility permanently closed in October 1994.

ATTACHMENT 3
to
COMPILATION OF MWC DIOXIN DATA
June 6, 1995

Attachment 3

The information found in the documents listed below was used to evaluate control technologies, MACT floors, and achievable emission limits during the MWC rulemaking. These documents are publicly available at the EPA Docket in Washington, D.C.

U.S. Environmental Protection Agency
Air and Radiation Docket and Info Center (MC-6102)
401 M Street SW
Washington, DC 20460
(202) 260-7548

1. A-89-08 MUNICIPAL WASTE COMBUSTION STUDY
 II-A-035 FLUE GAS CLEANING TECHNOLOGY
2. A-90-45 MWC DATABASE
 II-B-8
3. A-90-45 LARGE AND SMALL PLANT PERFORMANCE
 II-B-34
4. A-89-08 MUNICIPAL WASTE COMBUSTORS-BACKGROUND
 II-F-001n INFORMATION FOR PROPOSED GUIDELINES FOR
 EXISTING FACILITIES
5. A-89-08 MUNICIPAL WASTE COMBUSTORS-BACKGROUND
 II-A-044 INFORMATION FOR PROPOSED STANDARDS: POST-
 COMBUSTION TECHNOLOGY PERFORMANCE

ADDENDUM TO THE MWC SURVEY

The EPA MWC survey presented the status of a selected number of MWCs as of June 1995. Presented below is an update on the status of these MWCs as of May 1996:

Pulaski, MD

Since the last report the MWC has closed. Closure occurred Fall 1995, and the owner of the MWC is considering a number of options including dismantlement of the MWC. Also under consideration is the construction of a new MWC plant on the same site. A new MWC plant would be subject to 40 CFR 60 Subpart Eb (NSPS).

Harrisonburg, VA

The economizer has been installed on Unit 1. The economizer reduced the temperature of the flue gas entering the ESP and thereby reduced dioxin emissions. Installation of the economizer reduced dioxin levels from 8,459 ng/dscm to 1,490 ng/dscm. The economizer for Unit 2 has been delivered and is being installed.

Norfolk, VA

The retrofit of the SD/FF scrubbing systems has been completed on all four MWC units at the plant. The dioxin test results before retrofit were 1,640, 4,210, 2,115 ng/dscm (one unit was not tested at that time). Following retrofit of the SD/FF Units 1, 2, and 3 have been tested for dioxin. All tested at less than 20 ng/dscm. Unit 4 just completed SD/FF retrofit and will be tested soon.

McKay Bay, FL

This facility has increased the frequency of boiler tube washing to increase heat transfer efficiency and thereby reduce the temperature of the flue gas entering the ESP. The MWC owner has secured the service of an engineering firm to design an SD/FF scrubbing system for retrofit. The owner of the MWC is evaluating closing the MWC, retrofitting SD/FF control, or replacing the MWC.

Pinellas Co., FL

This facility has increased the frequency of boiler tube washing to increase heat transfer efficiency and thereby reduce the temperature of the flue gas entering the ESP. The MWC owner has secured the service of an engineering firm to design a SD/FF scrubbing system for retrofit. Also, alterations have been made to the combustion system to reduce primary dioxin formation.

Clinton Township, MI

The water spray cooling system has been adjusted to reduce the temperature of the flue gas entering the ESP. Discussions are underway with the owner of the MWC to decide whether to close the MWC or retrofit controls.

Detroit, MI

The retrofit of the SD/FF scrubbing system has been completed at all three units at the plant. The dioxin level has been reduced from 2,800 to less than 20 ng/dscm.

Montgomery Co (North and South), OH

Both the Montgomery County North plant and Montgomery County South plant have announced that they will close in early 1997.

Appendix H2

Health Effects

APPENDIX H2--REFERENCES ON HEALTH EFFECTS

Note: A Health Risk Assessment is not a required element of a valid State Plan submittal nor is it required for EPA approval of a State Plan. Because of general interest, the following is provided as background information only.

References

1. Air Risk Information Support Center (Air RISC), (Hotline at 919 541-0888.) Health Effects Notebook for Hazardous Air Pollutants, December 1994, Review Draft.
2. M. Sittig. Handbook of Toxic and Hazardous Chemicals and Carcinogens. 2nd ed. Noyes Publications, Park Ridge, NJ. 1985.
5. E.J. Calabrese and E.M. Kenyon. Air Toxics and Risk Assessment. Lewis Publishers, Chelsea, MI. 1991.
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Appendix I

Operator Certification and Training Requirements

APPENDIX I--OPERATOR CERTIFICATION AND TRAINING REQUIREMENTS

MWC OPERATOR CERTIFICATION REQUIREMENTS

Certification requirements are applicable to chief MWC facility operators and shift supervisors. Facility operators and shift supervisors must be certified as MWC operators through ASME or an equivalent State program. The States can choose to develop or approve alternatives to the ASME training described below. Copies of ASME's Standard for the Qualification and Certification of Resource Recovery Facility Operators (ASME QRO-1-1994) may be obtained from the air docket A-90-45 (item number IV-J-18) or from ASME at 800-843-2763.

The ASME certification process has two steps:

Step 1: Provisional certification

To obtain the ASME provisional certification, the affected persons must meet certain requirements for education and experience and must pass the written examination on the basics of municipal waste generation, collection, and combustion.

Each affected person must have provisional certification at small plants within 18 months after State plan approval, or 6 months after startup, whichever is later, and at large plants within 12 months after State plan approval, or 6 months after startup, whichever is later.

ASME currently requires that provisional certifications be renewed every five years.

Step 2: Full operator certification

To obtain the full ASME operator certification, the affected person must have a current provisional certificate, must have 6 months of documented satisfactory employment at the level of chief facility operator or shift supervisor at that particular facility, and must demonstrate adequate knowledge of that facility's operation in a site-specific oral examination.

Each affected person must have full operator certification or at least have scheduled with ASME to be certified for small plants within 18 months after State plan approval, or 6 months after startup, whichever is later, and for large plants within 12 months after State plan approval, or 6 months after startup, whichever is later.

ASME currently requires that full operator certifications be renewed every five years. Because the full certifications are site-specific, they are not valid at another facility except under certain conditions at a facility of similar technology.

MWC OPERATOR TRAINING REQUIREMENTS

The regulation requires two separate kinds of training for MWC operators:

Requirement 1: The EPA municipal waste combustor operator training program or equivalent State training course.

Chief facility operators, shift supervisors, and control room operators are required to take the EPA training course or the equivalent State course.

Copies of the training program manuals are available through National Technical Information Services (NTIS) 703-487-4660 or the Air Pollution Training Institute (APTI) at 919-541-xxxx and are in the air docket A-90-45. There is a course manual (EPA-453/B-93-020, docket item IV-A-2) and an instructor's guide (EPA-453/B-93-021, docket item IV-A-3).

States must determine how to administer this training, either by arranging training classes themselves and/or by approving third party training courses. It is up to each State to determine whether any alternative training program is "equivalent" to the EPA training program.

Each affected person must be trained within 12 months after State plan approval or 6 months after startup, whichever is later.

Requirement 2: On-site training established by each facility to review the site-specific operating manual.

Chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, crane/load handlers, and other personnel if warranted are required to take the site-specific MWC operator training.

Each facility must develop a site-specific operating manual which addresses, at a minimum, the eleven items listed under 40 CFR 60.54b(e).

Each facility must keep records documenting that appropriate personnel have been trained.

Each affected person must be trained within 12 months after State plan approval, by the day before the day when the person assumes responsibilities affecting the MWC unit operation, or by 6 months after startup, whichever is later. Training must be repeated annually thereafter.

Appendix J

Title V Permit Requirements for MWCs

- J1 Title V Requirements**
- J2 April 12 Letter -- Requirements for MWCs to Obtain a Title V Permit**
- J3 White Paper II**

Appendix J1

Title V Requirements

APPENDIX J--PERMIT REQUIREMENTS FOR MWCs

APPENDIX J1--TITLE V REQUIREMENTS

Note: A Title V operating permit is not a required element of a valid State Plan submittal nor is it required for EPA approval of a State Plan. Because of general interest, the following is provided as background information only.

Title V of the Clean Air Act provides for a nationwide operating permit program applying to all major sources and to certain other sources. These permits provide for implementing all Clean Air Act requirements applying to the source. Title V permit applications clarify which requirements apply to each source, describe how compliance with those requirements is to be maintained and demonstrated, and provide an administrative mechanism for reconciling conflicting or duplicated requirements. The permitting program is funded by fees paid by the permitted facilities. The State Plan for MWC units is a requirement under the Clean Air Act and the MWC regulation in the State Plan, as well as all other regulations applicable to each MWC unit, will ultimately be incorporated into the Title V permit for the MWC plant.

State air quality agencies implement the operating permit program pursuant to criteria in 40 CFR Part 70. The EPA will implement the Title V program in those jurisdictions that do not have an approved program of their own. EPA's regulations will be promulgated in 40 CFR Part 71. Promulgation of the Part 71 regulations is expected in July 1996.

Section 129 of the CAA expressly defines certain responsibilities for the Title V program in implementing the MWC program. In particular, Section 129(e) provides that all MWC plants subject to program requirements are also required to obtain Title V permits and sets forth a schedule by which these permits must be obtained. These MWC plants must have a Title V permit within three years after the promulgation of the Section 129 requirements, (i.e., December 19, 1998) or one year after the state's Title V program is approved, whichever is later. The specific schedule and requirements for permit applications for the individual MWC plants will be spelled out in the relevant state Title V program. The date for submission of applications will, in most states, be twelve months or less after the effective date of the state's Title V program. Title V permits for MWC plants may be issued for up to 12 years, to be reviewed every 5 years.

All provisions of a Title V permit are federally enforceable after the permit is approved by EPA (except those provisions in a permit specifically identified as based solely on state requirements that are not federally approved). Even if a state has the authority under its state law to incorporate Subpart Cb (Emission Guidelines) directly into its Title V permit application, this would satisfy only the enforceable mechanism

requirement of a State Plan. It would not be a substitute for the requirement to prepare and submit a State Plan, unless the Title V permit contained all the elements of a State Plan listed in Section 3.0 of this document and the Title V permit had been approved by EPA on or before December 19, 1996.

Whether a state can use Title V as its enforceable mechanism is a question of state law. However, few states, if any, are expected to have the authority under their state law to incorporate the Emission Guidelines directly into their Title V permit applications as their enforceable mechanism because, unlike federal standards such as the NSPS, the Emission Guidelines are only guidelines and are not federal regulations.

Appendix J2

April 12 Letter: Requirements for MWCs to Obtain a Title V Permit

Reply To
Attn Of: OAQ-107

Annie Naismith
Northwest Air Pollution Authority
302 Pine Street, #207
Mt. Vernon, WA 98273-3852

Dear Ms. Naismith:

This is a followup to our telephone conversation on April 3, 1996, regarding the municipal waste combustor (MWC) guidelines promulgated on December 19, 1995, pursuant to Section 129 and Section 111(d) of the Clean Air Act. Specifically, you asked about EPA requirements with respect to the schedule for submittal of Title V permit applications and issuance of permits for the existing MWCs in your jurisdiction. The sources in question are those MWCs with a potential to emit that is below Title V major source thresholds and were not previously subject to the Title V permit program requirements.

As we discussed, the requirement that these sources are subject to the Title V permit is clear. Section 129(e) requires that all such sources be issued a Title V permit within 36 months of promulgation of a performance standard¹ (i.e., December 19, 1998) OR the effective date of the state's Title V program, whichever is later. Since Washington's program was approved November 8, 1994 with an effective date 30 days later on December 8, 1994, the 36 months after promulgation of the guideline determines this schedule. Thus, Title V permits must be issued to the MWCs in your jurisdiction by December 19, 1998.

The Part 70 rules (70.5(a)(1)) and Chapter 173-401-500(3)(b) WAC require an existing source, newly subject to the requirement to obtain a Title V permit, to submit a permit application within 12 months from the time the source becomes subject. Thus, the determination of the scheduling of permit applications turns on when the existing MWCs in your jurisdiction become subject to the Title V program. For example, in the case of a new NESHAP, the source becomes subject to Title V upon promulgation of that standard and must submit a permit application within twelve months of the date the NESHAP is published.

¹ The term "performance standard" applies to both the new source performance standards (NSPS) established through Section 111(b) of the Act and the existing source guidelines established through Section 111(d) of the Act.

However, the section 111(d) performance standards provide criteria for determining the emissions limitations for these sources but do not specify what this will be for the individual sources. The MWC guidelines establish requirements for state/local air agency action and do not directly create requirements for the MWCs. For this reason, the date of promulgation of the guideline should not be considered as mandating the starting of the twelve month clock for submittal of a permit application. Further, it's not reasonable to require sources to submit permit applications before the state has established and EPA has approved the emissions limits that will be required in the Title V permit.

The EPA approval of the state plan, therefore, initiates the twelve month clock for submittal of the permit application. This appears to be reasonable from a program management standpoint, as well as the most most reasonable reading of the statute. However, this schedule does mean that these permits must be issued more expeditiously than the standard 18 months for Title V permit issuance:

Assuming State Plan Submitted -

Emission Guidelines promulgated	12/95
State plan submitted to EPA w/in 1 yr	by 12/96
EPA approval of plan w/in 6 mo	by 06/97
MWCs submit permit applications	by 06/98
Section 129 requires MWC to have T5 permit	by 12/98
State issues T5 permit	by 12/99
MWCs in compliance with section 129	
w/in 3 yrs of plan approval	by 06/00
but no later than 5 yrs after promulgation	by 12/00

Assuming Federal Plan Required -

Federal plan, if no state plan submitted	by 12/97
MWCs submit permit applications to EPA	by 12/98
Section 129 requires MWC to have T5 permit	by 12/98
EPA issues T5 permit	by 06/00
MWCs in compliance with requirements of section 129	
no later than 5 yrs after promulgation	by 12/00

This tighter timeframe is not unprecedented, though, since the Act also requires that a full one third of the initial Title V permits be issued within one year of Title V program approval. Also, much of the work for preparing these permits can be done prior to plan approval, thus reducing any timing concerns. Further, 70.7(b) and Chapter 173-401-705(2) grant an "application shield" that is relevant to this situation. MWCs which submit

timely and complete² permit applications are in compliance with the requirement to have a Title V permit by December 19, 1998 until the state acts on the permit.

I suggest that you work with Ecology, as appropriate, to promulgate a regulation or issue regulatory orders creating the enforceable emission limits required by the section 111(d) guideline and proceed with the development of your section 129 plan. These steps will place your program in a good position for timely and effective implementation of this program. Because these program development activities do not, on their own, create requirements that would be federally recognizable as applicable requirements of the Clean Air Act, you may proceed without accelerating the schedule for implementing permitting requirements.

I hope that this answers your questions. Thank you for raising this issue. If you have any additional questions or comments, please call me at (206) 553-4303.

Sincerely,

Elizabeth Waddell
Environmental Scientist
Office of Air Quality

cc: Tom Todd, Ecology
Judy Geier, Ecology

² Timely and complete, in this context, means within 12 months of plan approval or by December 19, 1998, whichever is sooner.

Appendix J3
White Paper II

March 5, 1996

MEMORANDUM

SUBJECT: White Paper Number 2 for Improved Implementation of The Part 70 Operating Permits Program

FROM: Lydia N. Wegman, Deputy Director /s/
Office of Air Quality Planning and Standards (MD-10)

TO: Director, Office of Ecosystem Protection, Region I
Director, Environmental Planning and Protection
Division, Region II
Director, Air, Radiation and Toxics Division,
Region III
Director, Air, Pesticides and Toxics Management
Division, Region IV
Director, Air and Radiation Division, Region V
Director, Multimedia Planning and Permitting Division,
Region VI
Director, Air, RCRA and TSCA Division, Region VII
Assistant Regional Administrator, Office of Pollution
Prevention, State and Tribal Assistance, Region VIII
Director, Air and Toxics Division, Region IX
Director, Office of Air, Region X

Please find attached White Paper Number 2 for improved implementation of part 70 operating permits programs. This guidance is intended to enable State and local agencies to take further steps to reduce the complexity and preparation costs of part 70 permit applications and of the part 70 permits themselves. It is intended to supplement, not obviate, the guidance provided in EPA's "White Paper for Streamlined Development of part 70 Permit Applications" (July 10, 1995). This guidance is consistent with and furthers the goals of the Presidential initiatives to streamline and reinvent government.

The attached guidance is divided into five sections as follows:

II. A. Streamlining Multiple Applicable Requirements On The Same Emissions Unit(s).

II. B. Development Of Applications And Permits For Outdated SIP Requirements.

II. C. Treatment Of Insignificant Emissions Units.

II. D. Use Of Major Source And Applicable Requirement Stipulation.

II. E. Referencing Of Existing Information In Part 70 Permit Applications And Permits.

Streamlining will lead to substantial reductions in permitting burdens and improved part 70 implementation by allowing for the first time multiple applicable emissions limits and work practices expressed in different forms and averaging times to be reduced to a single set of requirements (which can be an alternative to all those requirements being subsumed). It will also allow various monitoring, recordkeeping, and reporting requirements that are not critical to assuring compliance with the streamlined (most stringent) limit to be subsumed in the permit. Any such streamlining must provide that compliance with the streamlined limit would assure compliance with all applicable requirements. In addition, substantial reductions in burden are expected to result from the reduced confusion and cost where locally adopted rules differ from the EPA-approved State implementation plan, the streamlined treatment of insignificant emissions units, the use of stipulations by sources as to which regulations apply, and the cross referencing rather than repetition of certain existing information.

There is an immediate need for the implementation of this guidance. A large number of sources have filed complete part 70 applications, and increasing numbers of these submittals are being processed for permit issuance. I strongly encourage you to work with your States to effect near-term use of this guidance.

Substantial contributions to this White Paper have come from the California Title V Implementation Working Group. I want to thank you and your staff for your support and Region IX in particular for their leadership and considerable efforts in developing and completing this paper. I invite your suggestions on what additional guidance is needed to improve further the initial implementation of title V. If you should have any questions regarding the attached guidance, please contact Michael Trutna at (919) 541-5345, Ginger Vagenas of Region IX at (415) 744-1252, or Roger Powell at (919) 541-5331.

Attachment

cc: M. Trutna (MD-12)
G. Vagenas (Region IX)
R. Powell (MD-12)
A. Schwartz (2344)

**WHITE PAPER NUMBER 2 FOR IMPROVED IMPLEMENTATION
OF THE PART 70 OPERATING PERMITS PROGRAM**

**U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR QUALITY PLANNING AND STANDARDS**

March 5, 1996

**Contacts: Michael A. Trutna (919) 541-5345
Ginger Vagenas (415) 744-1252
Roger Powell (919) 541-5331**

**WHITE PAPER NUMBER 2 FOR IMPROVED IMPLEMENTATION
OF THE PART 70 OPERATING PERMITS PROGRAM**

March 5, 1996

I. OVERVIEW.

This guidance is intended to enable State and local agencies to take further steps to reduce the complexity and preparation costs of part 70 permit applications and of the part 70 permits themselves and to remove unintended barriers and administrative costs. It is also intended to build on and expand the guidance provided in the Environmental Protection Agency's (EPA) "White Paper for Streamlined Development of Part 70 Permit Applications" (July 10, 1995). White Paper Number 2 supplements, not obviates, the first White Paper. Both papers should be consulted for guidance in improving the implementation of title V of the Clean Air Act (Act) (i.e., part 70 operating permits programs). In particular, White Paper Number 2 is designed to simplify the treatment of overlapping regulatory requirements and insignificant emissions units and to clarify the use of citations and incorporation by reference in the part 70 permitting process. This effort is consistent with and furthers the goals of the Presidential initiatives to streamline and reinvent government.

Substantial contributions to this White Paper have come from the California Title V Implementation Working Group (Working Group). The California Air Resources Board and several California air districts and industries which (together with EPA) make up the Working Group have decades of experience with operating permits. These operating permits programs are generally just one component of air programs that, in many districts, also include local emissions standards (often with associated recordkeeping and reporting requirements), monitoring requirements, inspections, source testing, and new source review (NSR). The EPA has found the insights and recommendations of the Working Group extremely useful in integrating these various requirements using the part 70 permitting process. While much of the guidance contained herein addresses situations arising in California, it is available for use nationwide.

This guidance is divided into five sections and two attachments which are generally summarized as follows (the reader is, however, referred to the applicable main sections of the guidance for more detailed information):

Section II. A. Streamlining Multiple Applicable Requirements On The Same Emissions Unit(s).

The EPA and States have developed different and often overlapping applicable requirements governing the same

emissions units to serve the purposes of different air programs. As a result, emissions units at a stationary source may be subject to several parallel sets of requirements. This can result in some of the requirements being redundant and unnecessary as a practical matter, even though the requirements still legally apply to the source. In cases where compliance with a single set of requirements effectively assures compliance with all requirements, compliance with all elements of each of the overlapping requirements may be unnecessary and could needlessly consume resources. For example, a source could be subject to overlapping standards that result in two or more different emissions limits for the same pollutant and two or more source monitoring requirements for instrumentation, recordkeeping, and reporting.

Today's guidance describes how a source may propose streamlining to distill or "streamline" multiple overlapping requirements into one set that will assure compliance with all requirements. According to the guidance, multiple emissions limits may be streamlined into one limit if that limit is at least as stringent as the most stringent limit. (Limitations that apply to the streamlining of acid rain requirements are described in the main section of this guidance.) If no one requirement is unambiguously more stringent than the others, the applicant may synthesize the conditions of all the applicable requirements into a single new permit term that will assure compliance with all requirements. The streamlined monitoring, recordkeeping, and reporting requirements would generally be those associated with the most stringent emissions limit, providing they would assure compliance to the same extent as any subsumed monitoring. Thus, monitoring, recordkeeping, or reporting to determine compliance with subsumed limits would not be required where the source implements the streamlined approach.

It is important to emphasize that while streamlining may be initiated by either the applicant or the permitting authority, it can only be implemented where the permit applicant consents to its use.

Section II. B. Development Of Applications And Permits For Outdated SIP Requirements.

Historically, long periods of time have been required to review and approve (or disapprove) SIP revisions. The EPA has undertaken a number of reforms to its SIP approval process and is continuing to make significant progress in reducing the amount of time required for taking action on SIP revisions. Despite the progress we have made to date, there are many local rules now pending EPA review and approval for inclusion in the SIP. The gap between the

approved SIP and the State rules is of concern because States and local agencies enforce their current rules (which are usually more stringent than the approved SIP rules) and often, as a practical matter, no longer enforce the superseded and outdated rules in the SIP. On the other hand, EPA only recognizes and can only enforce the SIP-approved rules. This situation can cause confusion and uncertainty because some sources are effectively subject to two different versions of the same rules. Part 70's application, certification, and permit content requirements highlight this longstanding concern.

The most problematic situation arising from the gap between the approved SIP and the State rules is where a technology-forcing rule that has been approved into the SIP is found by the State to be impossible to meet. Under these circumstances, the State would generally adopt a relaxation of this rule and submit it to EPA as a SIP revision. Until EPA is able to take action on the submitted relaxation, sources remain subject to a rule that is impossible to meet.

This section of the guidance largely addresses the problem by authorizing permitting authorities and their sources to base permit applications on State and local rules that have been submitted for SIP approval, rather than on the potentially obsolete approved SIP provisions that they would replace. Such reliance on pending State and local rules is proper when the permitting authority has concluded that the pending rule will probably be approved, or when the source believes it can show that the pending rule is more stringent than the rule it would replace. However, if the pending rule is not more stringent than the rule it would replace, the permit cannot be issued until the pending rule is approved.

Section II. C. Treatment Of Insignificant Emissions Units.

This section provides for the streamlined treatment of generally applicable requirements that apply to "insignificant" emissions units (IEU's). It is intended to address current concerns that resources will be unnecessarily consumed by matters of trivial environmental importance.

The guidance clarifies that the permitting authority has broad discretion to tailor the permit application and permit for small equipment and activities as long as compliance with Federal requirements is assured. For both the permit application and the permit, information on IEU's may be generically grouped and listed without emissions estimates, unless emissions estimates are needed for another purpose such as determining the amount of permit fees that are calculated using total source emissions. This approach

would utilize standard permit conditions with minimal or no reference to any specific emissions unit or activity, provided that the scope of the requirement and its enforcement are clear.

The EPA also believes that for IEU's, a responsible official's initial compliance certification may be based on available information and the latest cycle of required information.

The guidance further provides that the permitting authority can use broad discretion in determining the nature of any required periodic monitoring. The EPA's policy on IEU's is based on the belief that these emissions points are typically associated with inconsequential environmental impacts.

Section II. D. Use Of Major Source And Applicable Requirement Stipulation.

There have been concerns expressed that extensive new emissions data would be needed to verify major source status or the applicability of Federal requirements. White Paper Number 2 clarifies that for applicability purposes, a source familiar to the permitting authority may simply stipulate in its application that it is major or that Federal requirements apply as specified in the application. The paper clarifies that there is no need to prepare and submit extensive information about the source that "proves" it is subject to any requirements that it stipulates are applicable. This does not affect the requirement to provide information that is otherwise required by part 70.

Section II. E. Referencing Of Existing Information In Part 70 Permit Applications And Permits.

Concerns have been raised that a source must re-prepare and resubmit information that is readily available, or that the permitting authority already has, to complete part 70 permit applications. In addition, similar concerns have been voiced regarding the large and potentially unnecessary burden of developing permits which repeat rather than reference certain types of regulatory requirements that apply to the source (e.g., monitoring and testing protocols). The guidance clarifies that, in general, the permitting authority may allow information to be cited or cross-referenced in both permits and applications if the information is current and readily available to the permitting agency and to the public. The citations and references must be clear and unambiguous and be enforceable from a practical standpoint. After permits specify which emissions limits apply to identified emissions units, cross-

referencing can be authorized for other requirements (e.g., monitoring, recordkeeping, and reporting).

Attachment A provides guidance on using the part 70 permit process to establish alternative test methods, while Attachment B provides example SIP language that could be used by both part 70 and non-part 70 sources to establish alternative requirements without the need for a prior source-specific SIP revision. This guidance should be particularly useful to those seeking greater certainty or to establish alternative test methods to those now approved by EPA. [Note that Sections III. and beyond in Attachment B are currently in draft form.]

Streamlining will lead to substantial reductions in permitting burdens by allowing for the first time multiple applicable emissions limits and work practices expressed in different forms and averaging times to be reduced to a single set of requirements. It will also lower current burden levels by allowing various monitoring, recordkeeping, and reporting requirements that are not critical to assuring compliance with the streamlined (most stringent) limit to be subsumed in the permit. In addition, substantial reductions in burden are expected to result from the reduced confusion and cost where locally adopted rules differ from the EPA-approved SIP, the streamlined treatment of insignificant emissions units, and the use of stipulations and the cross-referencing rather than repetition of certain existing information in part 70 applications and permits.

The EPA believes that the guidance contained herein may be implemented by permitting authorities and sources without revisions to part 70 programs, unless a provision is specifically prohibited by State regulations. In some situations, EPA will be proceeding in parallel to issue clarifying rules. The EPA strongly encourages States to allow sources to take advantage of the streamlining opportunities provided in this guidance. The Agency also suggests the permitting authority develop information about permits issued with successful streamlining and make it available to other similar sources to help avoid repetitive costs.

Sources are advised to consult with their permitting authority to understand how the policies of this White Paper will be implemented. In several situations (particularly those where sources have already filed complete applications), permitting authorities may choose to propose streamlining options and, if mutually agreeable, work with the source to support a draft permit containing a streamlined limit. Where EPA is the permitting authority pursuant to part 71 regulations, the Agency will implement both White Papers to the extent possible and promote similar implementation where EPA delegates responsibility for the part 71 program to a State.

The policies set out in this paper are intended solely as guidance, do not represent final Agency action, and cannot be relied upon to create any rights enforceable by any party.

II. ADDITIONAL GUIDANCE ON STREAMLINED DEVELOPMENT OF PART 70 PERMITS AND APPLICATIONS.

A. Streamlining Multiple Applicable Requirements³ On The Same Emissions Unit(s).⁴

1. Issue.

Can multiple redundant or conflicting requirements (emissions limits, monitoring, recordkeeping, reporting requirements) on the same emissions unit(s) be streamlined into a single set of understandable and enforceable permit conditions? May an applicant propose to minimize or consolidate applicable requirements? May a permitting authority develop such a proposal? How would a permit application with a streamlining proposal satisfy compliance certification requirements?

2. Guidance.

A source, at its option, may propose in its application to streamline multiple applicable requirements into a single set of permit terms and conditions⁵. The overall objective would be to

³Title IV applicable requirements are an exception to this general rule. As set out in § 72.70(b), to the extent that any requirements of part 72 and part 78 are inconsistent with the requirements of part 70, part 72 and part 78 will take precedence and will govern the issuance, denial, revision, reopening, renewal, and appeal of the acid rain portion of an operating permit. The subsequent descriptions of streamlining therefore apply to requirements under parts 72 and 78 only to the extent that such requirements are, at the option of the applicant, used as streamlining requirements because they are the most stringent applicable requirements.

⁴Emissions unit(s) means any part or activity of a stationary source that emits or has the potential to emit any regulated air pollutant (as defined in section 70.2) or any pollutant listed under section 112(b) of the Act. It is used in this paper to include specifically a grouping of emissions units at a stationary source that shares the same applicable requirement and compliance demonstration method for a given pollutant.

⁵The EPA recognizes that the described streamlining process may not be allowed by all State regulations or be warranted or desired for all applicable requirements. Similarly, partial streamlining (i.e., the streamlining of some, but not all,

determine the set of permit terms and conditions that will assure compliance with all applicable requirements for an emissions point or group of emissions points so as to eliminate redundant or conflicting requirements. Otherwise applicable requirements that are subsumed in the streamlined requirements could then be identified in a permit shield. The process would be carried out in conjunction with the submittal and review of a part 70 permit application, as an addendum to an application, or as an application for a significant revision to the part 70 permit (unless EPA in its revisions to part 70 authorizes permitting authorities to use a less extensive permit revision process). The EPA plans to revise part 70 to provide that the compliance certification required with initial application submittals may be based on the proposed streamlined applicable requirement where there is sufficient source compliance information on which to base such a certification.

The permitting authority, at its option, may evaluate multiple applicable requirements for a source category and predetermine an acceptable streamlining approach. Such evaluations should be made readily available to applicants. It is up to the applicant, however, to request in its application that such streamlined requirements be contained in the part 70 permit. Where streamlining would be of mutual interest, the permitting authority and the source could work together during the permit development stage to establish a basis for a streamlined limit prior to the issuance of a draft permit. This cooperative activity must result in a record consistent with this guidance which supports the draft permit containing the streamlined requirement. The approach might be particularly useful where a source has already submitted a complete part 70 permit application and the permitting authority does not want to require the source to submit a formal amendment to its application. Any streamlining demonstration must be promptly submitted to EPA upon its availability and in advance of draft permit issuance unless EPA has previously agreed with the permitting authority not to require it (e.g., the proposed streamlining is of a simple and/or familiar type with no new concerns).

In addition, general permits could be useful to allow the transfer of streamlined requirements from the first source to be covered by them to other similar sources or emissions units. The information development and review conducted as part of streamlining for an individual source can be used by the permitting authority to generate a general permit for similar

applicable requirements that apply to the same emissions units) may be most cost effective where difficult comparisons or correlations are needed for streamlining the other remaining applicable requirements. In addition, there is no barrier to more extensive streamlining occurring in the future.

sources or portions of sources. If a general permit were used, EPA and public review beyond that needed to issue the general permit would not be necessary when sources subsequently applied for the streamlined permit conditions established under the general permit. Even where a general permit is not issued, the availability of information obtained from the streamlining of one source may be useful as a model for future streamlining actions involving other similar sources.

Streamlined permit terms should be covered by a permit shield. The permit shield will result in an essential degree of certainty by providing that when the source complies with the streamlined requirement, the source will be considered to be in compliance with all of the applicable requirements subsumed under the streamlined requirement. Where the program does not now provide for a permit shield, the permit containing streamlined requirements should clarify this understanding (See section II.A.3. discussion). Permitting authorities without provisions for permit shields are encouraged to add a permit shield provision at the first opportunity, if they wish to realize fully the benefits of streamlining.

Sources that opt for the streamlining of applicable requirements must demonstrate the adequacy of their proposed streamlined requirements. The following principles should govern their streamlining demonstrations:

a. The most stringent of multiple applicable emissions limitations for a specific regulated air pollutant on a particular emissions unit must be determined taking into account^{6,7}:

o Emissions limitation formats (emissions limits in different forms must be converted to a common format and/or units of measure or a correlation established among different formats prior to comparisons);

⁶Applicable requirements mean those requirements recognized by EPA, as defined in § 70.2. State and local permitting authorities may modify, eliminate, or streamline "State-only" requirements based on existing State or local law and procedures.

⁷Sources may, in the interest of greater uniformity, opt to expand the scope of an applicable requirement to more emissions units so that the same requirements would apply over a larger section of the plant or its entirety, provided compliance with all applicable requirements is assured. Though a permit may through streamlining expand the scope of applicable requirements to include new emissions units, it may not change the basis on which compliance is determined (e.g., emissions unit by emissions unit, if that is the intent of the applicable requirement).

- o Effective dates of compliance (to the extent different);
- o Transfer or collection efficiencies (to the extent relevant);
- o Averaging times⁸; and
- o Test methods prescribed in the applicable requirements⁹.

Limitations for specific pollutants can be subsumed by limitations on classes of pollutants providing the applicant can show that the streamlined limit will regulate the same set of pollutants to the same extent as the underlying applicable requirements. For example, a volatile organic compound (VOC) limitation could effectively subsume an organic hazardous air pollutant (HAP) limitation for a constituent such as hexane, provided the VOC limit is at least as stringent as the hexane limitation. Where a single VOC limit subsumes multiple HAP limits, the permit must be written to assure that each of the subsumed limits will not be exceeded. However, a limit for a single or limited number of compounds cannot be used to subsume a limit for a broader class (e.g., a hexane limit for a VOC limit) because this would effectively deregulate any of the class that are not covered by the more limited group.

b. Work practice requirements must be treated as follows:

⁸While the streamlining of requirements with varying averaging times is viable under this policy, in no event can requirements which are specifically designed to address a particular health concern (including those with short term averaging times) be subsumed into a requirement which is any less protective.

⁹The predominant case is expected to involve test methods which have been EPA approved either as part of the SIP or as part of a Federal section 111 or 112 standard. If a permitting authority is seeking to base a streamlined limit on an alternative or new test method relative to the ones already approved by EPA for the SIP or a section 111, or section 112 standard, some additional steps are needed to complete the proposed streamlining. As described in more detail in Attachment A, permitting authorities may only implement streamlining which involves alternative or new test methods within the flexibility granted by the SIP and any delegation of authority from EPA (where section 111/112 standards are involved). With respect to SIP requirements, the ability for a permitting authority to authorize use of a different test method depends on the governing language contained in the SIP. Attachment B contains example SIP language which provides a mechanism that can establish an alternative applicable requirement in such cases without the need for source specific SIP revisions.

o Supporting An Emissions Limit. A work practice requirement directly supporting an emissions limit (i.e., applying to the same emissions point(s) covered by the emissions limit) is considered inseparable from the emissions limit for the purposes of streamlining emissions limits. The proposed streamlined emissions limit must include its directly supporting work practices, but need not include any work practice standards that are associated with and directly support the subsumed limit(s);

o Not Supporting An Emissions Limit. Similar work practice requirements which apply to the same emissions or emissions point but which do not directly support an emissions limit may be streamlined (e.g., different leak detection and repair (LDAR¹⁰) programs). The streamlined work practice requirement may be composed of provisions/elements (e.g., frequency of inspection, recordkeeping) from one or more of the similar work practice requirements, provided that the resulting composite work practice requirement has the same base elements/provisions as the subsumed work practice requirements (e.g. has a frequency of inspection or has recordkeeping if the subsumed work practice requirements have these elements/provisions).

Multiple work practice requirements which apply to different emissions or emissions points cannot be streamlined.

c. Monitoring, reporting, and recordkeeping requirements should not be used to determine the relative stringency of the applicable requirements to which they are applicable.

¹⁰For LDAR programs, stringency comparisons likely will be based on the aggregate requirements of each LDAR program (screening levels, frequency of inspection, repair periods, etc.) and the resultant overall actual emissions reduction expected from the affected equipment. In cases where a convincing demonstration cannot be made based on existing information or the regulations themselves have not clearly defined the expected emissions reduction, verifying test data may be required. Alternatively, the applicant, the permitting authority, and EPA can work together to devise a method consistent with the principles of EPA's "Protocol For Equipment Leak Emissions Estimation" (EPA-453/R-95-017, November 1995) for determining relative stringency. Where a demonstration of the relative stringency of LDAR programs as applied to the affected equipment is not feasible, sources may modify elements of a particular LDAR program to produce a program that clearly (i.e., without further analysis) assures compliance with the other applicable LDAR programs.

d. Where the preceding guidance does not allow sufficient streamlining or where it is difficult to determine a single most stringent applicable emissions limit by comparing all the applicable emissions limits with each other, sources may perform any or all the following activities to justify additional or different streamlining:

- o Construct an alternative or hybrid emissions limit¹¹ that is at least as stringent as any applicable requirement;
- o Use a previously "State-only" requirement as the streamlined requirement when it is at least as stringent as any applicable Federal requirement it would subsume (this requirement would then become a federally-enforceable condition in the part 70 permit);
- o Use a more accurate and precise test method than the one applicable (see footnote number 7) to eliminate doubt in the stringency determination; or
- o Conduct detailed correlations to prove the relative stringency of each applicable requirement.

e. The monitoring, recordkeeping, and reporting requirements associated with the most stringent emissions requirement are presumed appropriate for use with the streamlined emissions limit, unless reliance on that monitoring would diminish the ability to assure compliance with the streamlined requirements.¹² To evaluate this presumption, compare whether the monitoring proposed would assure compliance with the streamlined limit to the same extent as would the monitoring applicable to each subsumed limit. If not, and if the monitoring associated with the subsumed limit is also relevant to and technically feasible for the streamlined limit, then monitoring associated with a

¹¹Title V allows for the establishment of a streamlined requirement, provided that it assures compliance with all applicable requirements it subsumes. However, EPA recognizes that construction of such hybrid or alternative limits can be more complicated than the situation where the streamlined limit is one of the applicable emissions limits. Accordingly, sources and States may need more time to agree on acceptable demonstrations and may wish to defer such streamlining until after issuance of the initial part 70 permit.

¹²Quality assurance requirements pertaining to continuous monitoring systems should be evaluated using the same approach.

subsumed limit (or other qualifying monitoring¹³) would be included in the permit.¹⁴ The recordkeeping and reporting associated with the selected monitoring approach may be presumed to be appropriate for use with the streamlined limit^{15,16,17}.

f. Permitting authorities must include citations to any subsumed requirements in the permit's specification of the origin and authority of permit conditions. In addition, the part 70 permit must include any additional terms and conditions as necessary to assure compliance with the streamlined requirement. In all instances, the proposed

¹³The applicant may propose alternative monitoring of equal rigor. Permitting authorities may only implement streamlining which involves alternative or new monitoring methods within the flexibility granted by the SIP and any delegation of authority from EPA (where section 111/112 standards are involved).

¹⁴Permitting authorities and sources should presume that existing monitoring equipment [such as continuous emissions monitors (CEMs)] required and/or currently employed at the source should be retained. A permitting authority or applicant would have the opportunity to demonstrate that retention of such monitoring equipment is inappropriate, such as when the monitoring equipment is no longer relevant or is technically infeasible (e.g., the source has switched to a closed loop process without emissions or the streamlined limit corresponds to levels too low for a monitor to measure, such as SO₂ emissions from a boiler firing pipeline quality natural gas.)

¹⁵Where recordkeeping is the means of determining compliance (e.g., in the miscellaneous metal parts and products coating rules, the typical role of monitoring is fulfilled by recordkeeping), the appropriate recordkeeping would be determined in the same manner described for monitoring.

¹⁶Where a standard includes recordkeeping associated with a limit in addition to recordkeeping linked to a monitoring device (e.g., a coating facility that has recordkeeping requirements pertaining to coating usage, as well as recordkeeping for monitoring associated with an add-on control), both types of recordkeeping must be incorporated into the permit.

¹⁷The result offers considerable potential to reduce the different reporting burdens associated with different applicable requirements well beyond what was previously available (e.g., synchronizing the required reporting cycles from different applicable requirements to coincide with the most stringent one beginning at the earliest required date). (See also Final General Provisions, § 63.10(a)(5), March 16, 1994.)

permit terms and conditions must be enforceable as a practical matter.

3. Process.

Streamlining may be accomplished through an applicant proposing to streamline multiple requirements applicable to a source, the permitting authority developing streamlining options for sources or source categories that would be subsequently accepted at the election of permittees, or the applicant working in agreement with the permitting authority after filing an initial complete application. The first six of the following actions would be taken by the source or, as appropriate, by the permitting authority. The level of effort to complete these actions will depend on the relative complexity of the streamlining situation. The permitting authority would then perform steps seven and eight.

Step One - Provide a side-by-side comparison of all requirements included in the streamlining proposal that are currently applicable and effective for the specific emissions units of a source¹⁸. Distinguish between requirements which are emissions and/or work practice standards, and monitoring and compliance demonstration provisions.

Step Two - Determine the most stringent emissions and/or performance standard (or any hybrid or alternative limits as appropriate) consistent with the above streamlining principles and provide the documentation relied upon to make this determination. This process should be repeated for each emissions unit pollutant combination for which the applicant is proposing a streamlined requirement.

Step Three - Propose one set of permit terms and conditions (i.e., the streamlined requirements) to include the most

¹⁸A future applicable requirement (e.g., MACT standard newly promulgated under section 112 with a compliance date 3 years in the future) may be determined to be the most stringent applicable requirement if compliance with it would assure compliance with less stringent but currently applicable requirements. In such a case, the source may propose either a streamlined requirement based on immediate compliance with the future applicable requirement or it may opt for a phased approach where the permit would contain two separate time-sensitive requirements. Under the latter approach, one streamlined requirement addressing all currently applicable requirements would be defined to be effective until the future applicable requirement became effective. The permit would also contain a second streamlined requirement which also addressed the future applicable requirement and would become the new streamlined requirement after expiration of the first streamlined requirement.

stringent emissions limitations and/or standards, appropriate monitoring and its associated recordkeeping and reporting (see section II.A.2.e.), and such other conditions as are necessary to assure compliance with all applicable requirements.

Step Four - Certify compliance (applicant only) with applicable requirements. The EPA is planning to revise its part 70 regulations to provide that a source may certify compliance with only the proposed streamlined limit. Until this is accomplished, EPA recommends that a source certifying compliance only with the streamlined limit indicate this in an attachment to the certification, so that it is clear that the certification is being made with respect to a set of terms and conditions that the source believes "assure compliance" with all applicable requirements. In any event, a source may only certify compliance with a streamlined limit if there is source compliance data on which to base such a certification. (Such data should be available where the streamlined requirement is itself an applicable requirement and may be available if the streamlined limit is an alternative limit, e.g., a previously State-only emissions limitation). If there is not, then certifications must instead be made relative to each of the applicable requirements judged to be less stringent and must be based on data otherwise required under them to make this point clear.

Step Five - Develop a compliance schedule to implement any new monitoring/compliance approach relevant to the streamlined limit if the source is unable to comply with it upon permit issuance. The recordkeeping, monitoring, and reporting requirements of the applicable requirements being subsumed would continue to apply in the permit (as would the requirement for the source to operate in compliance with each of its emissions limits) until the new streamlined compliance approach becomes operative.

Step Six - Indicate in the application submittal that streamlining of the listed applicable requirements under a permit shield (where available) is being proposed and propose the establishment of a permit shield which would state that compliance with the streamlined limit assures compliance with the listed applicable requirements. All emission and/or performance standards not subsumed by the streamlined requirements must be separately addressed in the part 70 permit application.

Step Seven - Evaluate the adequacy of the proposal and its supporting documentation. The EPA recommends that the permitting authority communicate its findings to the applicant and provide reasonable opportunity for the applicant to accept the findings or propose a resolution of

the differences before issuance of a draft permit for public review. Where the permitting authority determines that the streamlining proposal is inadequate, the source, to retain its application shield, must expeditiously resolve any problems identified by the permitting authority or update its prior application based on the individual applicable requirements previously proposed for streamlining.

Step Eight - Note the use of this process in any required transmittal of a part 70 application, application summary, or revised application to EPA and include the streamlining demonstration and supporting documentation in the public record. When the source is required to provide a copy of the application (or summary) directly to EPA, it must note the proposed use of streamlining. A copy of the streamlining demonstration must be submitted promptly to EPA along with the required copy of the application or application summary (where a summary may be submitted to EPA in lieu of the entire part 70 permit application) unless EPA has previously agreed with the permitting authority not to require it (e.g., the proposed streamlining is of a simple and/or familiar type with no new concerns).

4. Enforcement.

All terms and conditions of a part 70 permit are enforceable by EPA and citizens, unless certain terms are designated as being only State (or locally) enforceable. In addition, a source violating a streamlined emissions limitation in the part 70 permit may be subject to enforcement action for violation of one (or more) of the subsumed applicable emissions limits to the extent that a violation of the subsumed emissions limit(s) is documented.

Upon receiving a part 70 permit, a source implementing the streamlined approach would not be subject to an EPA enforcement action for any failure to meet monitoring, recordkeeping, and reporting requirements that are subsumed within the streamlined requirement and specified under the permit shield. These requirements would no longer be independently enforceable once the permit has been issued, provided that the source attempts in good faith to implement the monitoring, recordkeeping, and reporting requirements specified in the permit.

If subsequently the permitting authority or EPA determines that the permit does not assure compliance with applicable requirements, the permit will be reopened and revised.

5. Discussion.

As sources subject to title V identify all applicable requirements for inclusion in part 70 permit applications, they may find that multiple applicable requirements affect the same

pollutant or performance parameter for a particular emissions unit. Likewise, the requirements of federally-enforceable terms and conditions in preconstruction or operating permits may overlap with the requirements of other federally-enforceable rules and regulations.

In these instances, a source may be in compliance with the overall emissions limit of each of the applicable requirements, but be required to comply with a multitude of redundant or conflicting monitoring, reporting, or recordkeeping requirements. For example, a source owner faced with two emissions limits for the same pollutant at a specific emissions point may be required to install separate monitoring instrumentation and submit separate monitoring reports for each, even though one monitor can effectively assure compliance with both emissions limits. Furthermore, the recordkeeping and reporting associated with the unnecessary instrumentation may create an administrative burden for both the facility and the implementing agency without an associated gain in compliance assurance. Prior to title V there has been no federally-enforceable means to resolve this situation.

The EPA encourages permitting authorities to allow use by the permit applicant of the part 70 permit issuance process to streamline multiple applicable requirements to the extent the conditions of this policy can be met. In this way, the part 70 process with its procedural safeguards can be used to focus all concerned parties on providing for compliance with a single set of permit terms that assure compliance with multiple applicable requirements instead of maintaining the costs of multiple sets of controls, monitoring, recordkeeping, and reporting approaches.

The legal basis for streamlining multiple applicable requirements relies on section 504(a), which requires that title V permits contain emissions limits/standards and other terms as needed to assure compliance with applicable requirements. This section notably does not require repetition of all terms and conditions of an applicable requirement when another applicable requirement or part 70 permit condition (i.e., streamlined requirement) could be fashioned to otherwise assure compliance with that applicable requirement.

Section 504(f) lends additional certainty to permit streamlining. It specifically provides that the permitting authority may authorize that compliance with the permit may be deemed to be compliance with the Act provided that the permit includes all applicable requirements. Thus, this section allows the permitting authority to issue a permit containing a shield which protects a source against a claim that it is violating any applicable requirements listed in the permit shield as being subsumed under the streamlined requirement, provided that the source meets the permit terms and conditions that implement the streamlined requirement.

Part 70 is also receptive to the issuance of streamlined permits. It contains parallel language to the statute for emissions limits and for permit shields in §§ 70.6(a)(1) and (f). Although language in § 70.6(a)(3) may appear to restrict streamlining by requiring that all "applicable" monitoring, recordkeeping, and reporting requirements be placed in the permit, EPA did not intend for these provisions to preclude streamlining. Instead, the Agency believes that the provisions should be consistent with the flexibility for streamlining provided in section 504(a) of the Act and in § 70.6(a)(1). To require otherwise would be anomalous and could frustrate legitimate streamlining efforts. The EPA intends to revise part 70 to reflect this understanding in a future rulemaking.

Streamlining may be limited in cases where an applicable requirement defines specific monitoring requirements as the exclusive means of compliance with an applicable emissions limit. Some interpret these cases to require that only one set of monitoring requirements may be used to determine compliance and that only these requirements may appear in the part 70 permit. The EPA believes instead that section 504(a) supersedes any need for such exclusive monitoring, but nonetheless recommends that States address any potential concerns by adopting certain SIP language in the future. States that choose to revise their existing SIP's to contain authorizing language to overcome any SIP exclusivity problems may use the example language in Attachment B. The EPA believes that similar flexibility should be provided to non-part 70 sources as well. To that end, Attachment B also provides a SIP process (currently in draft form) which would allow similar flexibility for non-part 70 sources.

With respect to NSR, States can process, in parallel with the part 70 permit issuance process, a revision to an existing NSR permit as necessary to resolve any exclusivity concerns within existing NSR permits (See first White Paper).

Currently the implementing regulations for section 112(l) at 40 CFR part 63, subpart E represent an additional constraint on the streamlining of applicable requirements in part 70 permits but only where a State or local agency has accepted a delegation of authority for a particular maximum achievable control technology (MACT) standard by virtue of its commitment to replace the Federal section 112 emissions standard with the State's own standard or program during the part 70 permit issuance process and using the procedures established in the Subpart E rule at § 63.94.. In § 63.94, EPA has specified the criteria for approving such alternative limits and controls to meet an otherwise applicable section 112 requirement. These criteria must be satisfied to ensure that, after a State accepts delegation under § 63.94, any change to the Federal rule results in permit requirements that, among other things:

- o Reflect applicability criteria no less stringent than those in the otherwise applicable Federal standards or requirements;
- o Require levels of emissions control for each affected source and emissions point no less stringent than those contained in the Federal standards or requirements;
- o Require compliance and enforcement measures for each affected source and emissions point no less stringent than those in the Federal standards or requirements;
- o Express levels of control and compliance and enforcement measures in the same form and units of measure as the Federal standard or requirement for § 63.94 program substitutions;
- o Assure compliance by each affected source no later than would be required by the Federal standard or requirement.

Thus, when a State or local agency, after receiving § 63.94 delegation, seeks to replace a Federal section 112 emissions standard with requirements arising from its own air toxics standard or program (such as a toxics NSR program) during the part 70 permit issuance process, streamlining must take place by meeting both the criteria of § 63.94 and, except where contradictory, the criteria of this guidance. However, because most States are planning to take straight delegation of Federal emissions standards through subpart E procedures that do not rely on the part 70 permit issuance process, the EPA believes that the subpart E criteria for streamlining applicable requirements will be necessary only in a minority of instances. In the majority of cases, where a State takes delegation of a Federal standard (e.g., through straight delegation), the applicable section 112 requirements could be streamlined by following only the criteria outlined in section A.2., above. Where there are a large number of sources in the same category subject to a MACT standard for which the State has a regulation with equivalent requirements, EPA recommends that the State explore delegation options under § 63.93 to best utilize available resources.

It should be noted that the current subpart E rule may be subject to change as a result of pending litigation. Currently, EPA intends to revise the rule within the parameters of the Court's decision to allow greater flexibility for approving State air toxics standards and programs and to minimize or remove (as appropriate) any constraint that subpart E might impose on the streamlining of applicable requirements in part 70 permits.

Finally, States are strongly encouraged to adopt regulatory provisions allowing permitting authorities to grant the permit shield where they cannot now do so. The permit shield is an effective means to clarify that for applicable requirements

listed as subsumed under the streamlined requirements, compliance with the streamlined requirements is deemed to also be compliance with the subsumed requirements. Such an understanding is essential to support and defend the issuance of any permit which provides for the streamlined treatment of multiple applicable requirements.

If a permit shield is not available, a permittee can still be afforded significant enforcement protection by an explicit agency finding that in its judgment the streamlined permit term indeed provides for full compliance with all the permit limits that is subsumes. In such a case, it is imperative that the permit contain language that lists the applicable requirements being subsumed into the streamlined requirement and states that compliance with the streamlined requirement will be deemed compliance with the listed requirements.

B. Development Of Applications And Permits For Outdated SIP Requirements.

1. Issue.

Can sources file part 70 permit applications on the basis of locally adopted rules pending EPA SIP approval rather than the current SIP requirements? Can sources certify their compliance status on the same basis? Under what circumstances can permitting authorities issue and/or later revise part 70 permits based on such locally adopted rules?

2. Guidance.

a. General. In the first White Paper (section II.B.6.), EPA described a mechanism for simplifying permits where a source is subject to both a State adopted rule that is pending SIP approval and the approved SIP version of that rule. Under that approach, the pending SIP requirements would be incorporated into the State-only portion of the permit and would become federally enforceable upon EPA approval of the SIP. The EPA believes that in most instances, the approach described in the first White Paper adequately addresses the described problem. In some areas (most notably California), however, a sizable backlog of pending SIP revisions exists, and a more far-reaching solution is needed. In today's guidance, therefore, another approach that may be used by EPA and permitting authorities to address this situation is described.

Under this new alternative, the permitting authority may allow that application completeness initially be based on locally adopted rules including those which would relax current (i.e., federally-approved) SIP requirements, provided that (1) the local rule has been submitted to EPA as a SIP revision, and (2) the permitting authority reasonably believes that the local rule (not the current SIP rule) will be the basis for the part 70 permit.

Where the permitting authority or the source has demonstrated to EPA's satisfaction¹⁹ that the local rule is more stringent and therefore assures compliance with the current SIP for all subject sources, a permit application relying on the local rule may be deemed to be complete and a permit containing the requirements of the local rule rather than the current SIP could be issued for part 70 purposes. That is, consistent with section 504(a) of the Act, the part 70 permit need only contain emissions limits and other terms and conditions (i.e., the more stringent local rule) as needed to assure compliance with the applicable requirement (i.e., the current SIP regulation).

An EPA finding that a submitted rule assures compliance with the approved SIP rule would be a preliminary indication of EPA's belief that a part 70 permit incorporating the terms of the submitted rule would also assure compliance with the approved SIP. Such a finding would not equate to rulemaking, and so would not constitute a revision of the SIP. Therefore, a preliminary finding would not necessarily ensure that the proposed revision would ultimately be approved by EPA, nor would it protect a source from enforcement of the approved SIP.²⁰ Further, such a finding would not predetermine the outcome of the part 70 permit proceeding. Reviewers would have the ability to evaluate any proposed permit terms or conditions based on pending SIP revisions to determine whether the permit assures compliance with applicable requirements, i.e., the approved SIP. However, EPA believes that a finding of this nature should provide the source and the permitting authority sufficient assurance to proceed with the issuance of a permit that reflects the terms of the submitted local rule rather than the approved SIP. Note that a part 70 permit can be based on a local rule even if the local rule is subsequently disapproved by EPA for SIP purposes (e.g., measure is more stringent than the current SIP but fails to meet SIP requirements for reasonably available control technology and/or to make reasonable further progress), provided: (1) a permit based on the local rule would assure compliance with all applicable requirements (including the approved SIP); and (2) the permit meets all part 70 requirements.

¹⁹Where resources allow and the situation calls for it, EPA will go on record with a letter to the permitting authority with a list of rules that it has preliminarily determined will assure compliance with the corresponding SIP approved rule.

²⁰If a part 70 permit is issued based upon a pending SIP revision and a permit shield is incorporated in the permit, compliance with the permit would be deemed to be compliance with all applicable requirements. If EPA or the permitting authority later discovers that the permit terms do not assure compliance with all applicable requirements, including the applicable SIP, the permit would have to be reopened and revised.

Where the local rule submitted to EPA as a SIP revision represents a relaxation of the current SIP requirement (e.g., the local rule would replace an existing technology forcing rule that has been determined to be unachievable in practice), a part 70 source may propose in its permit application to base its permit on the local rule in anticipation of EPA approval. However, a permit based on the local rule could not be issued prior to EPA approval of the rule. This is because a permit based on the relaxed requirements of the local rule could not assure compliance with the more stringent applicable requirement (the approved SIP), as required by section 504 of the Act. Similarly, a part 70 source may be subject to pending SIP revisions that may tighten certain current SIP obligations and relax others for sources in that source category. Here again the permitting authority could allow initial application completeness to be determined relying on the locally adopted rule, but the permit could not be issued without the current SIP requirements unless a source opted to demonstrate that the submitted rule represents, for that specific source, a more stringent requirement than the current SIP. In such a case, the part 70 permit could subsequently be issued for that source on the basis of the local rule, since the permit terms would assure compliance with the approved SIP.

b. Initial actions by EPA and permitting authorities. The EPA is committed to working with States within available resources to assure that the timetable for overall permit issuance is not adversely affected by pending SIP revisions that are not straightforward tightenings. The extent of the problem, however, will vary greatly and, in some cases, may require a specific plan of action between EPA and certain States to expedite SIP processing where the problem is substantial.

In California, where this problem is believed to be most extensive, EPA, the districts, and the California Air Resources Board are in the process of identifying rules in the SIP backlog that are not straightforward tightenings or are relaxations of the currently approved SIP, and will target them for expeditious processing. These rules will be identified within a specified timeframe, generally within 1 year of the effective date of a district's part 70 program. The EPA's Region IX will enter into formal agreements with affected districts and will commit to take action on this "targeted" portion of the SIP backlog before comprehensive permit issuance for sources affected by the backlog would be required, provided this is consistent with the transition plan²¹ (as it may be revised). Other EPA Regional Offices will determine the need and resources available for this type of exercise on a case-by-case basis. Region IX will also commit to process expeditiously any similar rules submitted or

²¹Transition plan refers to the 3-year transition strategy for initial part 70 permit issuance described in § 70.4(b)(11).

identified after the period of the formal agreement, although such processing would not necessarily occur before permits must be issued to sources affected by these rules.

Under Region IX's formal agreements, permitting authorities in the districts need not issue the portion of the part 70 permit covering emissions units affected by the targeted backlog until the rule adoption or change identified in the formal agreement has been acted on by EPA, consistent with the flexibility allowed in the permit issuance transition plan in the permitting authority's program. This should in most cases allow permitting authorities to delay issuing permits to sources to the extent they are affected by the targeted SIP backlog until EPA completes its review action on the pending SIP revisions. Where a transition plan contains a permit issuance schedule that would not allow postponing permit issuance until EPA has acted on the proposed SIP revisions, appropriate changes to the plan can still be made to defer permit issuance until EPA action on the targeted SIP backlog. Such changes would be made following the same approach described for changing application forms in EPA's first White Paper. Within these constraints, a permitting authority may allow for issuance of part 70 permits to the facility in phases such that permits covering those emissions units of the facility affected by the targeted SIP revision are issued later. This result is also consistent with the flexibility contained in § 70.2 (see definition of "Part 70 permit") for the permitting authority to issue multiple permits to one part 70 source if it makes sense to do so. Alternatively, the permitting authority could issue the permit in its entirety based on the current SIP.

The EPA agrees that delays in permit issuance described above will not be cause for an EPA finding of failure by the permitting authority to adequately administer or enforce its part 70 program. Any initial permit issued under a phased approach (i.e., the first phase involves all emissions units unaffected by the SIP backlog targeted by EPA), however, does not shield the source from the enforceability of the requirements excluded in the first phase permit and the obligation to obtain permit conditions covering the excluded emissions units after EPA has acted on the relevant SIP rule backlog.

c. Ongoing actions. The preceding guidance should address the most significant problems associated with the development of part 70 permit applications and the subsequent issuance of part 70 permits that result from the existence of a SIP backlog. The EPA recognizes, however, that areas experiencing the most significant start-up problems with respect to pending SIP rules may well require an ongoing program to manage the potential SIP backlog so as to prevent significant problems of this nature from occurring in the future. In some situations it may be appropriate on a continuing basis for EPA to determine preliminarily whether a submitted rule can be listed as one which would assure compliance with the SIP rule it seeks to replace.

This would enable the permitting authority to adjust its priorities for requiring application updates and for accomplishing permit issuance and revision.

For post application submittal, a source that has filed a complete application may opt to, or be required to, update its current application as a result of changes or pending changes to the SIP. The likelihood of these changes occurring will vary from area to area, and are most likely to affect sources scheduled later in the transition period for initial permit issuance. For example:

- o A local rule previously relied upon may be amended by the State or district.
- o Where a local rule that was previously listed in the formal agreement for expeditious SIP processing (because the rule is not a straightforward strengthening) is disapproved by EPA and the source has relied on that rule in preparing its application, the applicant must file an application update that either demonstrates that compliance with the local rule would assure compliance with the current SIP or demonstrates direct compliance with the current SIP.
- o The adoption and submission to EPA of a more stringent local rule after an applicant has filed its application may present a new and desired opportunity for streamlining. If so, the applicant could opt to file an application update to shift the compliance focus of its current application to the newly adopted local rule, which is pending SIP approval, provided it meets the streamlining criteria described in section II.A. above.

For post permit issuance, sources may also encounter changes to rule situations after initial permit issuance that could lead them to request a permit revision. For example, sources may propose a revision to an issued part 70 permit where a newly adopted local rule would present a desirable streamlining opportunity. The significant permit revision process would be required under the current part 70 to accomplish this change. Note that EPA in its revisions to part 70 may authorize permitting authorities to use a less extensive permit revision process.

To initiate the permit revision, the source must file an application to revise the permit to contain the requirements of local rule instead of the current SIP. This application must meet the previously defined and applicable streamlining criteria.

In response, the permitting authority may subsequently revise the permit based on the local rule in lieu of the current SIP where (1) the rule is listed by the EPA as one where compliance with it would assure compliance with the relevant

portions of the current SIP, or (2) the applicant has provided a source specific demonstration consistent with the streamlining criteria in section II.A.2. that assures this result. A permit shield or similar permit condition should be issued for purposes of certainty. In the absence of a shield or similar permit condition, all aspects of the approved SIP remain enforceable, regardless of the source's compliance status with respect to the permit. The EPA encourages permitting authorities currently without provisions for incorporating permit shields to add them at their first opportunity.

3. Process.

a. Initial Applications. An applicant proposing to submit its part 70 permit application based on a local rule that has been submitted for EPA approval rather than the current SIP would take one of two courses of actions depending on the status of the local rule with EPA and/or the permitting authority:

The first course of action would be appropriate for local rules that (1) have been previously demonstrated to EPA's satisfaction to be at least as stringent as the approved SIP rule so as to assure compliance with it for all subject sources, (2) are otherwise authorized by the permitting authority based on its judgement that such rules will likely be the basis for the part 70 permit (e.g. EPA approval of the rule is imminent), or (3) have been specifically identified in a formal agreement between the permitting authority and EPA for expeditious SIP processing, i.e., the "targeted backlog." Rules listed in a formal agreement will typically involve local rules pending SIP approval which do or could represent full or partial relaxations of the current SIP. Where they choose to use this approach, the permitting authority and EPA will maintain an up-to-date list of local rules which meet any of these criteria.

In preparing initial part 70 permit applications with respect to such local rules the applicant:

Step One - Will indicate in its application that it has opted for this approach, list or cross-reference all requirements from applicable local rules that are eligible for this approach, and refer to the list maintained for this purpose by the permitting authority.

Step Two - Will identify in the permit application the current SIP requirements that the pending SIP revision would replace.

Step Three - May choose to certify compliance with the requirement(s) of the pending local rule in lieu of the current SIP if there is sufficient source compliance data on which to base such a certification. (The EPA is proposing

to revise its part 70 regulations to provide that such a certification would meet the requirements of § 70.5(c)(10).)

Step Four - May propose that a permit shield would be in effect upon permit issuance. For those listed local rules which are recognized by EPA as being able to assure compliance with the current SIP rule, the applicant would indicate in the application that a permit shield (or alternatively, other similar language where authority for a permit shield is not available) is being proposed to be incorporated into the permit to confirm this understanding.

The second course of action would be appropriate where the criteria specified above have not been met for a particular rule and an applicant still wants to base its initial part 70 application on such local rules pending SIP approval. In this instance, the process would be essentially the same but the source would have to demonstrate that compliance with the local rule would assure compliance with the current SIP (i.e., make an adequate demonstration consistent with the streamlining criteria described in section II.A.2. above.) and submit it with the permit application in step one. Again, if a part 70 permit application has already been submitted without streamlining but the source agrees to subsequently pursue this option, the permitting authority may work with the source to support streamlining requirements during the permit development process.

b. Initial Permit Issuance Process. After receiving a complete application, the permitting authority must note where the applicant has proposed use of the approaches described above in section II.B.3.a. The note would be placed in the application summary, the application, or the revised application. Copies of the application summary, the application, or the revised application containing such proposals must be submitted promptly to EPA (unless EPA has agreed that the demonstration is of a type not required for advance submittal to EPA).

Where the rule is listed by EPA as one where compliance with it would assure compliance with the relevant portions of the current SIP, or the applicant has provided a source specific demonstration consistent with the streamlining outlined in section II.A.2., the permitting authority may proceed to issue the permit based on the local rule in lieu of the current SIP. A permit shield or similar permit condition which confirms this understanding should be issued for purposes of certainty.

If an applicant chooses to demonstrate that a local rule assures compliance with the applicable SIP for all affected emissions units, the permitting authority will evaluate this proposal and any supporting documentation. Upon completion of this evaluation and prior to releasing a draft permit public notice, the permitting authority is advised to communicate any concerns to the applicant and provide reasonable opportunity for

the applicant to accept the findings or propose a resolution of the differences. This may cause some revisions to the application as originally filed.

If the permitting authority or EPA are not satisfied that the local rule (as it applies to the applicant's facility) assures compliance with the applicable SIP rule, the applicant must revise its application to rely on the SIP rule. All required application updates must be submitted on or before the reasonable deadline required by the permitting authority for the source to maintain its application shield.

Consistent with the flexibility allowed in the permit issuance transition plan (as it may be revised), the permitting authority may delay issuance of those portions of a source's permit that are covered by a rule identified in a Region IX type formal agreement, which targets certain SIP rules for expeditious processing, until EPA has acted on the relevant rule(s). Alternatively, comprehensive permits may be issued to such a source prior to the time that EPA has acted on the rule provided that they are based on the current SIP (unless the source has provided an adequate streamlining demonstration).

4. Enforcement.

All terms and conditions of the part 70 permit are enforceable by EPA and by citizens. In addition, a source violating the emissions limitation in the part 70 permit is also subject to enforcement action for violation of the current SIP emissions limits if a violation of this limit can be documented.

Upon issuance of a part 70 permit based on the local rule, the permit terms and conditions implementing the local rule would become federally enforceable. A source would not be subject to an EPA enforcement action for any failure to meet monitoring, recordkeeping, and reporting requirements that are required under the currently approved SIP, if such an understanding has been specified in the permit. These requirements would no longer be independently enforceable, provided the source attempts in good faith to implement the monitoring, recordkeeping, and reporting approach required under the local rule.

If subsequently the permitting authority or EPA determines that the permit does not assure compliance with applicable requirements, the permit must be reopened and revised.

5. Discussion.

Sources in California districts currently are subject to several locally adopted rules which are pending before EPA as proposed SIP revisions. The majority of these local rules have been determined by the districts to be more stringent than the SIP rules that they seek to replace, although some of these rules

would relax the current SIP requirements for certain affected sources. In some cases, technology-forcing SIP rules have been found to be infeasible to achieve and, instead of seeking to enforce them, districts have adopted achievable local rules. Until the local rules are approved into the SIP, sources are subject to both the local rule and the federally-approved version of the rule.

The resulting "outdated SIP" presents special problems to sources which must file a part 70 permit application. In particular, questions arise as to whether sources must complete their applications and certify compliance based on SIP rules which have been superseded by more stringent local rules or by rules that have been relaxed where, for example, the permitting authority has found the current SIP rules to be unachievable. Those problems, while most apparent in their effect on the start-up of a part 70 program, are also ongoing in nature and may create a need to update initially complete permit applications and to revise issued permits. The EPA believes that these problems with outdated SIP rules are most extensive in California but are not unique to that State.

The EPA strongly believes that implementation of title V to the extent possible should complement, not complicate, the implementation of other titles, including title I, the purpose of which is to assure adoption of programs that will attain and maintain the national ambient air quality standards (NAAQS).²² Accordingly, the Agency is providing this guidance which will allow sources and permitting authorities to rely on more stringent local rules for permit issuance. The overall strategy for sensitizing the SIP revision process to part 70 concerns presented in this guidance will allow sources to focus more on current air quality requirements in all aspects of part 70 permit application development and update, permit issuance, and permit revision.

The legal basis for recognizing a local rule pending SIP approval in lieu of the current, but less stringent, SIP requirement or for streamlining multiple applicable requirements is identical to the basis for adopting a streamlined emissions limit to replace multiple applicable requirements (see discussion in section II.A.5.). The opportunities for shifting to the more stringent local rule are correspondingly affected by the limitations previously described for the streamlining of applicable requirements.

²²This guidance is designed primarily to alleviate situations where the SIP backlog is both large and longstanding. It is not to be used as a means of anticipating the outcome of pending attainment status redesignations.

C. Treatment Of Insignificant Emissions Units.

1. Issue.

How must sources address insignificant emissions units (IEU's) subject to at least one applicable requirement?²³ (Insignificant emissions units are in most cases not directly regulated, and therefore could be left off the permit entirely, were it not for the presence of certain generic or facility-wide requirements that apply to all emissions units.) Must the application and the subsequent permit address each IEU individually and require periodic monitoring where it is not otherwise provided by a generically applicable requirement? On what basis can the initial and future compliance certifications be made for IEU's with generally applicable requirements?

2. Guidance.

The EPA interprets part 70 to allow considerable discretion to the permitting authority in tailoring the amount and quality of information required in permit applications and permits as they relate to IEU's. In general, permit applications must contain sufficient information to support the drafting of the part 70 permit (including certain information for IEU's subject to only generally applicable requirements) and to determine compliance status with all applicable requirements. The EPA, however, interprets part 70 to allow permitting authorities considerable discretion as to the format and content of permits, provided that compliance with all applicable requirements, including those for IEU's, is assured. The Agency believes that the clarifications contained herein afford permitting authorities sufficient flexibility to treat IEU's in a manner commensurate with the environmental benefits that may be gained from their inclusion in the permit.

a. Permit Applications - Information. With regard to part 70 requirements to describe and list IEU's in applications and permits, the permitting authority can use the generic grouping approach for emissions units and activities as discussed in the first White Paper. In addition, the requirement to identify all applicable requirements, as it related to IEU's subject to generally applicable requirements, can normally be addressed by standard or generic permit conditions with minimal

²³An emissions unit can be an IEU for one applicable requirement and not for another. However, such a unit may be eligible for treatment as an IEU only with respect to those pollutants not emitted in significant amounts. The term "significant" as used in this policy statement does not have the meaning as used in § 52.21 (e.g., 15 tpy PM-10, 40 tpy VOC) but rather means that the emissions unit does not qualify for treatment in the application as an insignificant emissions unit.

or no reference to any specific emissions unit or activity. The EPA has reviewed and acquiesced in the issuance of permits wherein generally applicable requirements are incorporated through the use of tables describing a tiered compliance regime for these requirements as they affect different sizes of emissions units, including a distinct and more streamlined compliance regime for IEU's. Different generic permit tables may be necessary to cover the situation for a particular type of IEU which is governed by different applicable requirements. Similarly, the first White Paper provides that no emissions estimates need be provided for even regulated emissions streams where it would serve no useful purpose to do so. This should be the case for IEU's where the amount of emissions from a unit is not relevant to determining applicability of, or compliance with, the requirement. Except where the contributions of IEU's would need to be more precisely known to resolve issues of applicability or major source status would the permitting authority need to request emissions estimates for part 70 purposes.

b. Permit Applications - Initial Compliance Certifications. Section 70.5(c)(9) requires complete part 70 applications to contain a certification of compliance with all applicable requirements by a responsible official and a statement of the methods used for determining compliance. This certification must be based on a "reasonable inquiry" by the responsible official. The EPA believes that, for the generally applicable or facility-wide requirements applying to an IEU, reasonable inquiry for initial certifications need only be based on available information, which would include any information required to be generated by the applicable requirement. Regarding the latter, and as is true for any applicable requirement, the initial certification can be based on only the latest cycle of required information (e.g., a source could generally rely on a demonstration of compliance resulting from the most recent required monitoring, notwithstanding the existence of prior monitoring indicating non-compliance at a previous point in time). Where an applicable requirement (generally applicable or otherwise) does not require monitoring, the § 70.5(c)(9) requirement to certify compliance does not itself require that monitoring be done to support a certification. Similarly, there is no need to perform an emissions test to support this compliance certification if none is required by the applicable requirement itself. The EPA interprets § 70.5(c)(9) to allow for a certification of compliance where there is no required monitoring and, despite a "reasonable inquiry" to uncover other existing information, the responsible official has no information to the contrary.

c. Permit Content - Applicable Requirements. With regard to part 70 obligations to include all applicable requirements in the permit, the permitting authority can also use the generic grouping approach for emissions units and activities as discussed

in the first White Paper. That is, generally applicable requirements can normally be adequately addressed in the part 70 permit by standard permit conditions with minimal or no reference to any specific emissions unit or activity, provided that the scope of the requirement and the manner of its enforcement are clear. As noted above, different generic permit provisions may be necessary to cover the situation for which different types of IEU's are governed by different applicable requirements.

d. Permit Content - Monitoring, Recordkeeping, and Reporting. Section 70.6(a)(3)(i) requires all applicable requirements for monitoring and analysis procedures or test methods to be contained in part 70 permits. In addition, where the applicable requirement does not require periodic testing or monitoring (which may consist of recordkeeping designed to serve as monitoring), the permitting authority must prescribe periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit. Many of the generically applicable requirements for IEU's have a related test method, but relatively few have a specific regimen of required periodic testing or monitoring.

The EPA believes that the permitting authority in general has broad discretion in determining the nature of any required periodic monitoring. The need for this discretion is particularly evident in the case of generally applicable requirements, which tend to cover IEU's as well as significant emissions units. The requirement to include in a permit testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance does not require the permit to impose the same level of rigor with respect to all emissions units and applicable requirement situations. It does not require extensive testing or monitoring to assure compliance with the applicable requirements for emissions units that do not have significant potential to violate emissions limitations or other requirements under normal operating conditions. In particular, where the establishment of a regular program of monitoring would not significantly enhance the ability of the permit to assure compliance with the applicable requirement, the permitting authority can provide that the status quo (i.e., no monitoring) will meet § 70.6(a)(3)(i). For IEU's subject to a generally applicable requirement for which the permitting authority believes monitoring is needed, a streamlined approach to periodic monitoring, such as an inspection program to assure the proper operation and maintenance of emissions activities (e.g., valves and flanges), should presumptively be appropriate.

The EPA's policy on IEU monitoring needs is based on its belief that IEU's typically are associated with inconsequential environmental impacts and present little potential for violations of generically applicable requirements, and so may be good candidates for a very streamlined approach to periodic monitoring. As EPA noted in the first White Paper, generally

applicable requirements typically reside in the SIP. Permitting authorities therefore not only have the best sense of which requirements qualify as generally applicable, but also where it is appropriate to conclude that periodic monitoring is not necessary for IEU's subject to these requirements. Where the source ascertains that the permitting authority will not require periodic monitoring for IEU's, it can of course omit a periodic monitoring proposal from the application.

e. Permit Content - Compliance Certifications. Section 70.6(c)(5) requires in part that each permitted source submit no less frequently than annually a certification of its compliance status with all the terms and conditions of the permit. This certification will be based on available information, including monitoring and/or other compliance terms required in the permit. Where a particular emissions unit presents little or no potential for violation of a certain applicable requirement, the "reasonable inquiry" required by title V can be abbreviated. Since it can be determined in the abstract that violation of the requirement by these emissions units is highly improbable, it is reasonable in that instance to limit the search for information to what is readily available. As noted above, EPA believes that an IEU subject to a generally applicable requirement typically presents little or no potential for violation of those requirements. It follows that where, for instance, a permit does not require monitoring for IEU's subject to a generally applicable requirement, and there were no observed, documented, or known instances of non-compliance, an annual certification of compliance is presumptively appropriate. Similarly, where monitoring is required, an annual certification of compliance is also appropriate when no violations are monitored and there were no observed, documented, or known instances of non-compliance.

3. Discussion.

Many of the concerns expressed to EPA regarding the treatment of IEU's in the application and permit arise because IEU's are in most cases not directly regulated, and therefore could be left off the permit entirely, were it not for the presence of certain generic requirements that apply to all emissions units. Though the focus of concern is the applicability of the generic requirements to IEU's, response to these concerns derive primarily from the flexibility that exists in part 70 for dealing with generically applicable requirements. In implementing this flexibility, it may be appropriate for the permitting authority to further distinguish between units that have been designated as insignificant and those that have not. This is so because the relative size of a unit can be an important factor in deciding how to fashion permit terms even for a generically applicable requirement, and State-established IEU's normally define the smallest emissions points. However, EPA notes that, as a matter of part 70 interpretation, whether a unit

has been designated as insignificant is not necessarily critical to its treatment in the part 70 permit.

Concerns have been expressed that addressing in part 70 permits the relatively trivial portion of emissions attributable to IEU's will consume a disproportionate share of the total resources available to issue part 70 permits. That is, according to their understanding of part 70, applicants and permitting authorities will expend greater resources than warranted to determine the specific applicability of requirements to IEU's, how compliance with them will be assured, and the basis on which the certification of compliance status of the source with respect to these IEU's would be made.

The EPA believes that the policy described for addressing generically applicable requirements in applications and permits as they apply to IEU's allows permitting authorities sufficient flexibility to streamline the required administrative effort commensurate to the environmental significance of the varying types of IEU situations. This should prevent the potentially high but unintended level of costs identified by certain sources and permitting authorities from occurring in the future with respect to IEU's.

D. Use Of Major Source And Applicable Requirement Stipulation.

1. Issue.

When an applicant stipulates that it is a major source and subject to specific applicable requirements, how much, if any, additional information related to applicability is necessary in the part 70 permit application?

2. Guidance.

If an applicant stipulates that it is a major source²⁴ and subject to specific applicable requirements, it need not provide additional information in its application to demonstrate applicability with respect to those requirements, provided that (1) the permitting authority has had previous review experience with a particular source (e.g., issued it a permit), or (2) otherwise has an adequate level of familiarity with the source's operation (e.g., current emissions inventory information). This does not affect the requirement to provide information for other purposes under part 70, such as to support a compliance certification or a request for a permit shield or to describe the emissions activities of its site (see first White Paper).

²⁴If an applicant stipulates it is a major source, it must list all pollutants for which it is major.

Accordingly, permitting authorities may allow the applicant to stipulate that:

- o Its facility is a major source and subject to part 70 permitting, without providing any additional information for the applicability determination;
- o It is subject to specific applicable requirements, to be included in its part 70 permit, without providing additional information to establish applicability for stipulated requirements; or
- o It is subject to only portions of an applicable requirement and state that it is not subject to other portions. Such a stipulation must explicitly state which portion of the rule applies and which does not and an explanation must be provided for this conclusion.

Stipulation by a source to major source status or specific applicable requirements in a part 70 application does not preclude the permitting authority from requesting additional information from the applicant for establishing the applicability of non-stipulated requirements or for verifying a stipulation that certain requirements are not applicable.

3. Discussion.

In general, part 70 requires that applications contain information to the extent needed to determine major source status, to verify the applicability of part 70 or applicable requirements, and to compute a permit fee (as necessary). Section 70.5(c) requires the application to describe emissions of all regulated air pollutants for each emissions unit.

In the first White Paper, EPA indicated a substantial degree of discretion for permitting authorities in this area. It indicates that States may adopt different approaches to meet the minimum program requirements established by the part 70 regulations depending on local needs. In many instances, a qualitative description of emissions will satisfy this standard. However, the applicant may need to provide more detailed information for purposes other than determining applicability and to foster efficiency in the permitting program.

For the purpose of determining the applicability of part 70 or other specific requirements, the information required in an application should be streamlined for the mutual benefit of the applicant and the permitting authority. An applicant that stipulates it is a major source subject to part 70 and to other applicable requirements should not be required to provide any additional information to verify those facts in its part 70 application. However, the applicant must provide sufficient information to allow the permitting authority to impose the

applicable requirement. In addition, the resulting application streamlining would not relieve the applicant from submitting, or the permitting authority from reviewing, emissions or other data for part 70 purposes other than determining applicability.

In the case where there is no dispute that a stationary source is subject to part 70, and the applicant stipulates that the source is a part 70 source in the application, no further information would be required for applicability determination. An example would be a source which is currently operating under a prevention of significant deterioration permit because it is major for PM-10. Both the source and the permitting authority agree that the source is subject to the State's part 70 program.

A source may also streamline the part 70 permit process by stipulating that specific applicable requirements apply. This does not relieve the source of its obligation to identify all applicable requirements or preclude the permitting authority from requesting additional information, including information pertaining to the applicability of requirements not covered in the stipulation. For example, a stationary source may stipulate it is subject to a SIP rule. However, the permitting authority may suspect that the source is also subject to a New Source Performance Standard (NSPS), but may need more information for confirmation. In this case, the permitting authority would request additional information related to the applicability of the NSPS.

Similarly, an applicant may stipulate that it is subject to only portions of an applicable requirement and state that it is not subject to other portions. In such case, the permitting authority may request the applicant to provide additional information to demonstrate that it is not subject to requirements in question. However, if a source requests a permit shield, additional information to demonstrate the non-applicability of these requirements must be submitted.

E. Referencing Of Existing Information In Part 70 Permit Applications And Permits.

1. Issue.

Can an applicant in its permit application, and can the permit itself, reference existing information that is available at the permitting authority? Also, can the permit application and the permit reference applicable requirements through citation rather than by a complete reprinting of the requirements themselves in the part 70 permit application or permit?

2. Guidance.

a. General. Information that would be cited or cross referenced in the permit application and incorporated by

reference into the issued permit must first be currently applicable and available to the permitting authority and public²⁵. The information need not be restated in the part 70 application. Standardized citation formats should be established by the permitting authority to facilitate appropriate use of this mechanism.

Referenced documents must also be specifically identified. Descriptive information such as the title or number of the document and the date of the document must be included so that there is no ambiguity as to which version of which document is being referenced. Citations, cross references, and incorporations by reference must be detailed enough that the manner in which any referenced material applies to a facility is clear and is not reasonably subject to misinterpretation. Where only a portion of the referenced document applies, applications and permits must specify the relevant section of the document. Any information cited, cross referenced, or incorporated by reference must be accompanied by a description or identification of the current activities, requirements, or equipment for which the information is referenced.

b. Permit Applications. The applicant and the permitting authority should work together to determine the extent to which part 70 permit applications may cross reference agency-issued rules, regulations, permits, and published protocols, and existing information generated by the applicant. To facilitate referencing existing information, permitting authorities should identify the general types of information available for this purpose. To the extent that such information exists and is readily available to the public, the following types of information may be cited or cross referenced (as allowed by the permitting authority)²⁶:

- o Rules, regulations, and published protocols.
- o Criteria pollutant and HAP emission inventories and supporting calculations.
- o Emission monitoring reports, compliance reports, and source tests.

²⁵Referenced documents must be made available (1) as part of the public docket on the permit action or (2) as information available in publicly accessible files located at the permitting authority, unless they are published or are readily available (e.g., regulations printed in the Code of Federal Regulations or its State equivalent).

²⁶Use of cross-referencing does not shift any burden of reproducing or otherwise acquiring information to the permitting authority.

- o Annual emissions statements.
- o Process and abatement equipment lists and descriptions.
- o Current operating and preconstruction permit terms.
- o Permit application materials previously submitted.
- o Other materials with the approval of the permitting authority.

Applicants are obligated to correct and supplement inaccurate or incomplete permitting authority records relied upon for the purposes of part 70 permit applications. The responsible official must certify, consistent with § 70.5(d), to the truth, accuracy, and completeness of all information referenced.

c. Permits. Incorporation by reference in permits may be appropriate and useful under several circumstances. Appropriate use of incorporation by reference in permits includes referencing of test method procedures, inspection and maintenance plans, and calculation methods for determining compliance. One of the key objectives Congress hoped to achieve in creating title V, however, was the issuance of comprehensive permits that clarify how sources must comply with applicable requirements. Permitting authorities should therefore balance the streamlining benefits achieved through use of incorporation by reference with the need to issue comprehensive, unambiguous permits useful to all affected parties, including those engaged in field inspections.

Permitting authorities may, after listing all applicable emissions limits for all applicable emissions units in the part 70 permit, provide for referencing the details of those limits, rather than reprinting them in permits to the extent that (1) applicability issues and compliance obligations are clear, and (2) the permit includes any additional terms and conditions sufficient to assure compliance with all applicable requirements²⁷.

Where the cited applicable requirement provides for different and independent compliance options (e.g., boilers subject to an NSPS promulgated under section 111 may comply by use of low sulfur fuel or through add-on of a control device), the permitting authority generally should require that the part 70 permit contain (or incorporate by reference) the specific

²⁷In the case of a merged permit program, i.e., where a State has merged its NSR and operating permits programs, previous NSR permits expire. This leaves the part 70 permit as the sole repository of the relevant prior terms and conditions of the NSR permit. Under these circumstances, it is not possible to incorporate by reference the expired NSR permits.

option(s) selected by the source. Alternatively, the permit could incorporate by reference the entire applicable requirement provided that (1) such reference is unambiguous in its applicability and requirements, (2) the permit contains obligations to certify compliance and report compliance monitoring data reflecting the chosen control approach, and (3) the permitting authority determines that the relevant purposes of title V would be met through such referencing. The alternative approach would not be allowable if changing from one compliance option to another would trigger the need for a prior review by the permitting authority or EPA (e.g. NSR), unless prior approval is incorporated into the part 70 permit (i.e., advance NSR).

The EPA does not recommend that permitting authorities incorporate into part 70 permits certain other types of information such as the part 70 permit application (see first White Paper).

3. Discussion.

Title V and part 70 do not define when citation or cross-referencing in permit applications would be appropriate, although it obviously would not be allowed where such citations or cross-references would not support subsequent development of the part 70 permit. The EPA's first White Paper states that a permitting authority may streamline part 70 applications by allowing the applicant to cross-reference a variety of documents including permits and Federal, State, and local rules. This guidance further provides that where an emissions estimate is needed for part 70 purposes but is otherwise available (e.g., recent submittal of emissions inventory) the permitting authority can allow the source to cross-reference this information for part 70 purposes.

Permitting authorities' files and databases often include information submitted by the applicant which can also be required by part 70. Development and review of part 70 permit applications could be streamlined if information already held by the permitting authority and the public is referenced or cited in part 70 permit applications rather than restated in its entirety. Similarly, specific citations to regulations that are unambiguous in their applicability and requirements as they apply to a particular source will reduce the burden associated with application development.

Incorporation by reference can be similarly effective in streamlining the content of part 70 permits. The potential benefits of permit development based on an incorporation by reference approach include reduced cost and administrative complexity, and continued compliance flexibility as enforceably allowed by the underlying applicable requirements.

Expectations for referencing with respect to permit content are somewhat better defined than for permit applications. Section 504(a) states that each permit "shall include enforceable emissions limitations and standards" and "such other conditions as are necessary to assure compliance with the applicable requirements." In addition, section 504(c) requires each permit to "set forth inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the permit terms and conditions." Analogous provisions are contained in §§ 70.6(a)(1) and (3). The EPA interprets these provisions to place limits on the type of information that may be referenced in permits. Although this material may be incorporated into the permit by reference, that may only be done to the extent that its manner of application is clear.

Accordingly, after all applicable emissions limits are placed in the part 70 permit and attached to the emissions unit to which they apply, the permitting authority may allow referencing where it is specific enough to define how the applicable requirement applies and where using this approach assures compliance with all applicable requirements. This approach is a desirable option where the referenced material is unambiguous in how it applies to the permitted facility, and it provides for enforceability from a practical standpoint. On the other hand, it is generally not acceptable to use a combination of referencing certain provisions of an applicable requirement while paraphrasing other provisions of that same applicable requirement. Such a practice, particularly if coupled with a permit shield, could create dual requirements and potential confusion.

Even where the referenced requirement allows for compliance options, the permitting authority may issue the permit with incorporation of the applicable requirement provided that the compliance options of the source are enforceably defined under available control options, appropriate records are kept and reports made, and any required revisions to update the permit with respect to specific performance levels are made. This treatment would be analogous to the flexibility provided to sources through the use of alternative scenarios.

Attachment A

Approval of Alternative Test Methods

The part 63 general provisions, as well as other EPA air regulations implementing sections 111 and 112 of the Act, allow only EPA-approved test methods to implement emissions standards that are established by States to meet Federal requirements. Accordingly, streamlining cannot result in any requirement relying on a State-only test method unless and until EPA, or the permitting authority acting as EPA's delegated agency, approves it as an appropriate method for purposes of complying with that streamlined standard. Currently, all States may be delegated authority to make decisions regarding minor revisions to EPA approved test methods (i.e., minor changes are those that have isolated consequences, affect a single source, and do not affect the stringency of the emissions limitation or standard). The EPA is exploring options for defining where delegation to States is appropriate for reviewing major revisions or new test methods, and for expediting the approval process where the Agency retains final sign-off authority. The EPA recognizes that its approval must generally occur in a timeframe consistent with the time constraints of the part 70 permit issuance process. Until further guidance on this subject is issued, States must obtain EPA approval for all State-only test methods which represent major changes or alternatives to EPA-approved test methods prior to or within the 45-day EPA review period of the proposed permit seeking to streamline requirements.

With respect to SIP requirements, the ability for a permitting authority to authorize use of a different test method depends on the governing language contained in the SIP. For example, some SIP's expressly connect a test method with a particular emissions limit but allow for the use of an equally stringent method. Other SIP's contain a more exclusive linkage between an emissions limit and its required test method (i.e., limit A as measured by test method B). The SIP-approved test method can be changed only through a SIP revision unless the SIP contains provisions for establishing alternative test methods. Attachment B contains example SIP language which provides a mechanism that can establish an alternative applicable requirement in such cases without the need for a source-specific SIP revision.

Permitting authorities may implement streamlining which involves alternative or new test methods within the flexibility granted by the SIP and any delegation of authority granted by EPA (where section 111/112 standards are involved). Permit applications containing a request for a streamlined requirement based on an alternative or new test method must, to be complete, demonstrate that the alternative or new test method would determine compliance at the same or higher stringency as the otherwise applicable method. The EPA expects to receive

expeditiously (i.e., well in advance of any draft permit issuance) those portions of an application dealing with a proposal for streamlining, including any demonstration of test method adequacy. Any required EPA approval of an alternative or new test method need not be obtained as a precondition for filing a complete application, but it must be secured before the final part 70 permit can be issued. As mentioned previously, EPA intends to structure its approval process to comport reasonably with the timelines for part 70 permit issuance.

Attachment B

SIP Provisions For Establishing Alternative Requirements

I. Overview.

States may revise their SIP's to provide for establishing equally stringent alternatives to specific requirements set forth in the SIP without the need for additional source-specific SIP revisions. To allow alternatives to the otherwise-applicable SIP requirements (i.e., emissions limitations, test methods, monitoring, and recordkeeping) the State would include language in SIP's to provide substantive criteria governing the State's exercise of the alternative requirement authority.

II. Example Language For Part 70 Sources To Establish Alternative SIP Requirements.

The following is an example of enabling language that could be used to provide flexibility in the SIP for allowing alternative requirements to be established for part 70 sources.

In lieu of the requirements imposed pursuant to (reference specific applicable sections(s) or range of sections to be covered), a facility owner may comply with alternative requirements, provided the requirements are established pursuant to the part 70 permit issuance, renewal, or significant permit revision process and are consistent with the streamlining procedures and guidelines set forth in section II.A. of White Paper Number 2.

For sources subject to an approved part 70 program, an alternative requirement is approved for the source by EPA if it is incorporated in an issued part 70 permit to which EPA has not objected. Where the public comment period precedes the EPA review period, any public comments concerning the alternative shall be transmitted to EPA with the proposed permit. If the EPA and public comment periods run concurrently, public comments shall be transmitted to EPA no later than 5 working days after the end of the public comment period. The Director's [permitting authority's] determination of approval is not binding on EPA.

Noncompliance with any provision established by this rule constitutes a violation of this rule.

III. Example Language For Non-Part 70 Sources To Establish Alternative SIP Requirements.

[NOTE: This section is a draft that EPA expects to finalize after appropriate revisions in the near future.]

For sources not subject to an approved part 70 program, the following is an example of enabling language that States may use to revise/submit SIP rules which would provide flexibility in the SIP for allowing alternative requirements to be established.

A. Procedures.

1. General. In lieu of the requirements imposed pursuant to [reference applicable sections] of this plan, a source owner may comply with an alternative requirement, provided that the Director approves it consistent with the procedures of this paragraph and the criteria of paragraph B.
2. State Review Procedure. The Director may establish an alternative requirement in [a review process defined by the State], provided that the requirements of this paragraph are met for EPA and public review and for notification and access are met. The Director's determination of approval is not binding on EPA.
3. Public Review. The Director shall subject any proposed alternative to adequate public review but may vary the procedures for, and the timing of, public review in light of the environmental significance of the action. For the following types of changes [add list of de minimis actions subject to EPA review], no public review shall be necessary for the approval of the alternative.
4. EPA Review. The Director shall submit any proposed alternative to the Administrator through the appropriate Regional Office, except for the following types of changes [add list of de minimis actions subject to EPA review] no EPA review shall be necessary for the approval of the alternative. Until the specific alternative SIP requirement has completed EPA review, the otherwise applicable SIP provisions will continue to apply.
5. Periodic Notification And Public Access. For all actions taken by the State to establish an alternative requirement, the Director shall provide in a general manner for periodic notification to the public on at least a quarterly basis and for public access to the records regarding established alternatives and relevant supporting documentation.
6. Enforcement. Noncompliance with any alternative established by this provision constitutes a violation of this rule. The EPA and the public may challenge such an alternative limit on the basis that it does not meet the criteria contained in the SIP for establishing such an alternative. In addition, EPA and the public can take enforcement action against a source that fails to comply with an applicable alternative requirement.

B. General Criteria for Evaluating Alternatives.

1. Applicability. The unit(s) to which the requirements apply must be specified in the underlying SIP and in the permit/alternative. If percentage reductions are required from the source, the baseline must be clearly set. The SIP must require the submission of all the information necessary to establish the baseline, and the alternative requirement must achieve the reduction called for in the SIP.
2. Time. The alternative must specify the effective date of the alternative requirement. The underlying requirement of the SIP shall remain in effect until the effective date of the alternative. The alternative must clearly specify any future-effective dates or any compliance schedules that apply to the source under regulations in effect at the time of issuance. For instance, a source may be due to comply with requirements promulgated before the permit/alternative was issued, but which are effective prior to the expiration of the permit/alternative.
3. Effect of changed conditions. If alternative emissions limitations or other requirements are allowed in the underlying SIP, the associated documentation with the changed conditions must clearly demonstrate the alternative requirement is no less stringent than the original SIP requirement.
4. Standard of conduct. The alternative proposal must clearly state what requirements the source must meet. For example, the SIP must specify the emissions limit and what alternatives are acceptable. The alternative proposal must contain limits, averaging times, test methods, etc., that are no less stringent and must address how they are no less stringent than the underlying SIP requirements. The alternative proposal must also show whether it applies on a per-source or per-line basis or is facility-wide.
5. Transfer Efficiency. Any SIP allowing alternative emissions limits and using transfer efficiency in determining compliance must explicitly state the circumstances under which a source may use improved transfer efficiency as a substitute for meeting the SIP limit. The improvement should be demonstrated through testing and an appropriate baseline and test method should be specified.¹ See draft "Guidelines for determining capture efficiencies" for criteria for evaluating alternative capture efficiency requirements.

¹Implied improvements noted by the NSPS auto coating transfer efficiency table cannot be accepted at face value.

6. Averaging Time. Both the SIP and the alternative proposal must explicitly contain the averaging time associated with each emissions limit (e.g., instantaneous, three hour average, daily, monthly, or longer). The time must be sufficient to protect the applicable NAAQS. The alternative proposal must demonstrate that the averaging time and the emissions limit in the alternative are as stringent as those in the original SIP requirements.

7. Monitoring and Recordkeeping. The alternative proposal must state how the source will monitor compliance with the emissions requirement, and detail how the proposed method compares in accuracy, precision, and timeliness to the SIP-approved method. Records and monitoring data must be retained for at least the same period of time as required by the SIP. The method must enable compliance determinations consistent with the averaging time of the emissions standard.

8. Test Methods. The alternative proposal must detail how the proposed test method in association with its particular emissions requirement (or rule) is at least as stringent as the approved method in association with its emissions limit (or rule) considering the accuracy, reliability, reproducibility, and timeliness of each test method taken in combination with its emissions limit. The application or proposal must also address how the change affects measurement sensitivity and representativeness, describe the need for the change, and indicate if the change is needed for unique conditions related only to the source in question. The method must enable a compliance determination consistent with the averaging time of the emissions standard associated with it.

9. Act Requirements. The alternative must meet the all applicable Act requirements (e.g., for reasonably available control technology, 15% VOC reduction, etc.) and must not interfere with any requirements of the Act, including any regarding the SIP's attainment demonstration and requirements for reasonable further progress.

10. Production Level. The emissions are no greater than the SIP allowable emissions at the same production level. Pre-1990 production/operation scenarios cannot be used as part of any demonstration that the alternative requirements are as stringent as those in the SIP. Also, the demonstration must be performed using an EPA-approved test methods.

Appendix K

NSR Permit Requirements for MWCs

K1 NSR Requirements

**K2 Memo: Pollution Control Projects and New Source Review
Applicability**

Appendix K1
NSR Requirements

APPENDIX K--NSR PERMIT REQUIREMENTS FOR MWCS

APPENDIX K1--NEW SOURCE REVIEW (NSR) PERMITS

Note: A New Source Review (NSR) permit is not a required element of a valid State Plan submittal nor is it required for EPA approval of a State Plan. Because of general interest, the following is provided as background information only.

NSR - General Background

Owners of existing major emission sources that are altered in certain ways are subject to preconstruction permitting and other requirements of Parts C and D of Title I of the CAA. These permitting and review requirements are collectively called major New Source Review (NSR). Major NSR review includes both air quality impact analysis and emission control analysis.¹

In 1994, EPA issued a policy memorandum which allowed, on a case-by-case basis, exclusion of pollution control projects at existing major sources from major NSR permit requirements. Under this policy the state performs a review and determines whether major NSR applies. Projects excluded from major NSR by states may still be subject to state minor NSR requirements and other state regulations.

NSR and Retrofits at MWC Units

Under the Subpart Cb Emission Guidelines many existing MWC units will have to retrofit air pollution control systems to reduce emissions of various pollutants. In most cases the MWC units undergoing retrofit are expected to install the types of air pollution control described in the MWC Background Information Documents, December 19, 1995 Federal Register, and in the NSR policy memorandum for air pollution control projects.^{2,4} For major NSR applicability, the EPA has concluded that MWC units that retrofit the types of control projects mentioned above and that maintain similar annual utilization rates (tons municipal solid waste fired per year), meet the criteria for a pollution control project and meet the criteria for environmental safeguards as described in the NSR policy memo for air pollution control projects. EPA has concluded that retrofit of these types of emissions control projects at MWC units can, therefore, be exempt from major NSR by states. EPA will rely on the state programs to ensure that the procedural and other safeguards in the NSR policy memo are satisfied.²

Nothing in this guidance precludes a state from conducting a major NSR of a MWC retrofit. EPA encourages states to make NSR applicability determinations as early as possible so they can be incorporated into the Section 111(d)/129 State Plan submittal (plans are due December 19, 1996).

Notes:

1. See EPA's *New Source Review Workshop Manual, Prevention of Significant Deterioration and Non Attainment Area Permitting* October 1990 DRAFT for definition of key NSR terms.
2. See memorandum "Pollution Control Project and New Source Review (NSR) Applicability" July 1, 1994, from John Seitz, Director of Air Quality Planning and Standards.
3. Background Information Documents for proposed and promulgated MWC NSPS and Emission Guidelines:

"Municipal Waste Combustors - Background Information for Proposed Standards: 111(b) Model Plant Description and Cost Report," EPA-450/3-89-27b, August 1989;

"Municipal Waste Combustors - Background Information for Proposed Standards: Post-Combustion Technology Performance," EPA-450/3-89-27c, August 1989;

"Municipal Waste Combustion Assessment: Combustion Control at Existing Facilities," EPA-600/8-89-057, August 1989;

"Municipal Waste Combustion Assessment, Technical Basis for Good Combustion Practices," EPA-600/8-89-063, August 1989;

"Municipal Waste Combustors - Background Information for Proposed Standards: Control of NO_x Emissions," EPA-450/3-89-27d, August 1989;

"Municipal Waste Combustors - Background Information for Proposed Standards: Cost Procedures," EPA-450/3-89-27a, August 1989;

"Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Waste Combustors," EPA-450/3-91-029, March 1994;

"Municipal Waste Combustors - Background Information for Proposed Guidelines for Existing Facilities," EPA-450/3-89-27e, August 1989; and

"Municipal Waste Combustion: Background Information for Promulgated Standards and Guidelines - Summary of Public Comments and Responses," EPA-453/R-95-0136, 1995.
4. Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources, FR 65387-65436, December 19, 1995.

Appendix K2

Memo: Pollution Control Projects and New Source Review Applicability

July 1, 1994

MEMORANDUM

SUBJECT: Pollution Control Projects and New Source Review (NSR) Applicability

FROM: John S. Seitz, Director
Office of Air Quality Planning and Standards (MD-10)

TO: Director, Air, Pesticides and Toxics
Management Division, Regions I and IV
Director, Air and Waste Management Division,
Region II
Director, Air, Radiation and Toxics Division,
Region III
Director, Air and Radiation Division,
Region V
Director, Air, Pesticides and Toxics Division,
Region VI
Director, Air and Toxics Division,
Regions VII, VIII, IX and X

This memorandum and attachment address issues involving the Environmental Protection Agency's (EPA's) NSR rules and guidance concerning the exclusion from major NSR of pollution control projects at existing sources. The attachment provides a full discussion of the issues and this policy, including illustrative examples.

For several years, EPA has had a policy of excluding certain pollution control projects from the NSR requirements of parts C and D of title I of the Clean Air Act (Act) on a case-by-case basis. In 1992, EPA adopted an explicit pollution control project exclusion for electric utility generating units [see 57 FR 32314 (the "WEPCO rule" or the "WEPCO rulemaking")]. At the time, EPA indicated that it would, in a subsequent rulemaking, consider adopting a formal pollution control project exclusion for other source categories [see 57 FR 32332]. In the interim, EPA stated that individual pollution control projects

involving source categories other than utilities could continue to be excluded from NSR by permitting authorities on a case-by-case basis [see 57 FR at 32320]. At this time, EPA expects to complete a rulemaking on a pollution control project exclusion for other source categories in early 1996. This memorandum and attachment provide interim guidance for permitting authorities on the approvability of these projects pending EPA's final action on a formal regulatory exclusion.

The attachment to this memorandum outlines in greater detail the type of projects that may qualify for a conditional exclusion from NSR as a pollution control project, the safeguards that are to be met, and the procedural steps that permitting authorities should follow in issuing an exclusion. Projects that do not meet these safeguards and procedural steps do not qualify for an exclusion from NSR under this policy. Pollution control projects potentially eligible for an exclusion (provided all applicable safeguards are met) include the installation of conventional or innovative emissions control equipment and projects undertaken to accommodate switching to an inherently less-polluting fuel, such as natural gas. Under this guidance, States may also exclude as pollution control projects some material and process changes (e.g., the switch to a less polluting coating, solvent, or refrigerant) and some other types of pollution prevention projects undertaken to reduce emissions of air pollutants subject to regulation under the Act.

The replacement of an existing emissions unit with a newer or different one (albeit more efficient and less polluting) or the reconstruction of an existing emissions unit does not qualify as a pollution control project. Furthermore, this guidance only applies to physical or operational changes whose primary function is the reduction of air pollutants subject to regulation under the Act at existing major sources. This policy does not apply to air pollution controls and emissions associated with a proposed new source. Similarly, the fabrication, manufacture or production of pollution control/prevention equipment and inherently less-polluting fuels or raw materials are not pollution control projects under this policy (e.g., a physical or operational change for the purpose of producing reformulated gasoline at a refinery is not a pollution control project).

It is EPA's experience that many bona fide pollution control projects are not subject to major NSR requirements for the simple reason that they result in a reduction in annual emissions at the source. In this way, these pollution control projects are outside major NSR coverage in accordance with the general rules for determining applicability of NSR to modifications at existing sources. However, some pollution control projects could result in significant potential or actual increases of some pollutants.

These latter projects comprise the subcategory of pollution control projects that can benefit from this guidance.

A pollution control project must be, on balance, "environmentally beneficial" to be eligible for an exclusion. Further, an environmentally-beneficial pollution control project may be excluded from otherwise applicable major NSR requirements only under conditions that ensure that the project will not cause or contribute to a violation of a national ambient air quality standard (NAAQS), prevention of significant deterioration (PSD) increment, or adversely affect visibility or other air quality related value (AQRV). In order to assure that air quality concerns with these projects are adequately addressed, there are two substantive and two procedural safeguards which are to be followed by permitting authorities reviewing projects proposed for exclusion.

First, the permitting authority must determine that the proposed pollution control project, after consideration of the reduction in the targeted pollutant and any collateral effects, will be environmentally beneficial. Second, nothing in this guidance authorizes any pollution control project which would cause or contribute to a violation of a NAAQS, or PSD increment, or adversely impact an AQRV in a class I area. Consequently, in addition to this "environmentally-beneficial" standard, the permitting authority must ensure that adverse collateral environmental impacts from the project are identified, minimized, and, where appropriate, mitigated. For example, the source or the State must secure offsetting reductions in the case of a project which will result in a significant increase in a nonattainment pollutant. Where a significant collateral increase in actual emissions is expected to result from a pollution control project, the permitting authority must also assess whether the increase could adversely affect any national ambient air quality standard, PSD increment, or class I AQRV.

In addition to these substantive safeguards, EPA is specifying two procedural safeguards which are to be followed. First, since the exclusion under this interim guidance is only available on a case-by-case basis, sources seeking exclusion from major NSR requirements prior to the forthcoming EPA rulemaking on a pollution control project exclusion must, before beginning construction, obtain a determination by the permitting authority that a proposed project qualifies for an exclusion from major NSR requirements as a pollution control project. Second, in considering this request, the permitting authority must afford the public an opportunity to review and comment on the source's application for this exclusion. It is also important to note that any project excluded from major new source review as a pollution control project must still comply with all otherwise

applicable requirements under the Act and the State implementation plan (SIP), including minor source permitting.

This guidance document does not supersede existing Federal or State regulations or approved SIP's. The policies set out in this memorandum and attachment are intended as guidance to be applied only prospectively (including those projects currently under evaluation for an exclusion) during the interim period until EPA takes action to revise its NSR rules, and do not represent final Agency action. This policy statement is not ripe for judicial review. Moreover, it is not intended, nor can it be relied upon, to create any rights enforceable by any party in litigation with the United States. Agency officials may decide to follow the guidance provided in this memorandum, or to act at variance with the guidance, based on an analysis of specific circumstances. The EPA also may change this guidance at any time without public notice. The EPA presently intends to address the matters discussed in this document in a forthcoming NSR rulemaking regarding proposed changes to the program resulting from the NSR Reform process and will take comment on these matters as part of that rulemaking.

As noted above, a detailed discussion of the types of projects potentially eligible for an exclusion from major NSR as a pollution control project, as well as the safeguards such projects must meet to qualify for the exclusion, is contained in the attachment to this memorandum. The Regional Offices should send this memorandum with the attachment to States within their jurisdiction. Questions concerning specific issues and cases should be directed to the appropriate EPA Regional Office. Regional Office staff may contact David Solomon, Chief, New Source Review Section, at (919) 541-5375, if they have any questions.

Attachment

cc: Air Branch Chief, Regions I-X
NSR Reform Subcommittee Members

Attachment

GUIDANCE ON EXCLUDING POLLUTION CONTROL PROJECTS FROM MAJOR NEW SOURCE REVIEW (NSR)

I. Purpose

The Environmental Protection Agency (EPA) presently expects to complete a rulemaking on an exclusion from major NSR for pollution control projects by early 1996. In the interim, certain types of projects (involving source categories other than utilities) may qualify on a case-by-case basis for an exclusion from major NSR as pollution control projects. Prior to EPA's final action on a regulatory exclusion, this attachment provides interim guidance for permitting authorities on the types of projects that may qualify on a case-by-case basis from major NSR as pollution control projects, including the substantive and procedural safeguards which apply.

II. Background

The NSR provisions of part C [prevention of significant deterioration (PSD)] and part D (nonattainment requirements) of title I of the Clean Air Act (Act) apply to both the construction of major new sources and the modification of existing major sources.¹ The modification provisions of the NSR programs in parts C and D are based on the broad definition of modification in section 111(a)(4) of the Act. That section contemplates a two-step test for determining whether activities at an existing major facility constitute a modification subject to new source requirements. In the first step, the reviewing authority determines whether a physical or operational change will occur. In the second step, the question is whether the physical or operational change will result in any increase in emissions of any regulated pollutant.

The definition of physical or operational change in section 111(a)(4) could, standing alone, encompass the most mundane activities at an industrial facility (even the repair or replacement of a single leaky pipe, or a insignificant change in the way that pipe is utilized). However, EPA has recognized that Congress did not intend to make every activity at a source subject to new source requirements under parts C and D. As a result, EPA has by regulation limited the reach of the modification provisions of parts C and D to only major modifications. Under NSR, a "major modification" is generally a physical change or change in the method of operation of a major stationary source which would result in a significant net

¹The EPA's NSR regulations for nonattainment areas are set forth at 40 CFR 51.165, 52.24 and part 51, Appendix S. The PSD program is set forth in 40 CFR 52.21 and 51.166.

emissions increase in the emissions of any regulated pollutant [see, e.g., 40 CFR 52.21(b)(2)(i)]. A "net emissions increase" is defined as the increase in "actual emissions" from the particular physical or operational change together with any other contemporaneous increases or decreases in actual emissions [see, e.g., 40 CFR 52.21(b)(3)(i)]. In order to trigger major new source review, the net emissions increase must exceed specified "significance" levels [see, e.g., 40 CFR 52.21(b)(2)(i) and 40 CFR 52.21(b)(23)]. The EPA has also adopted common-sense exclusions from the "physical or operational change" component of the definition of "major modification." For example, EPA's regulations contain exclusions for routine maintenance, repair, and replacement; for certain increases in the hours of operation or in the production rate; and for certain types of fuel switches [see, e.g., 40 CFR 52.21(b)(2)(iii)].

In the 1992 "WEPCO" rulemaking [57 FR 32314], EPA amended its PSD and nonattainment NSR regulations as they pertain to utilities by adding certain pollution control projects to the list of activities excluded from the definition of physical or operational changes. In taking that action, EPA stated it was largely formalizing an existing policy under which it had been excluding individual pollution control projects where it was found that the project "would be environmentally beneficial, taking into account ambient air quality" [57 FR at 32320; see also *id.*, n. 15].

The EPA has provided exclusions for pollution control projects in the form of "no action assurances" prior to November 15, 1990 and nonapplicability determinations based on Act changes as of November 15, 1990 (1990 Amendments). Generally, these exclusions addressed clean coal technology projects and fuel switches at electric utilities.

Because the WEPCO rulemaking was directed at the utility industry which faced "massive industry-wide undertakings of pollution control projects" to comply with the acid rain provisions of the Act [57 FR 32314], EPA limited the types of projects eligible for the exclusion to add-on controls and fuel switches at utilities. Thus, pollution control projects under the WEPCO rule are defined as:

any activity or project undertaken at an
existing electric utility steam generating
unit for purposes of reducing emissions from

²This guidance pertains only to source categories other than electric utilities, and EPA does not intend for this guidance to affect the WEPCO rulemaking in any way.

such unit. Such activities or projects are limited to:

(A) The installation of conventional or innovative pollution control technology, including but not limited to advanced flue gas desulfurization, sorbent injection for sulfur dioxide (SO₂) and nitrogen oxides (NO_x) controls and electrostatic precipitators;

(B) An activity or project to accommodate switching to a fuel which is less polluting than the fuel in use prior to the activity or project . . .

[40 CFR 51.165(a)(1)(xxv) (emphasis added)].

The definition also includes certain clean coal technology demonstration projects. Id.

The EPA built two safeguards into the exclusion in the rulemaking. First, a project that meets the definition of pollution control project will not qualify for the exclusion where the "reviewing authority determines that (the proposed project) renders the unit less environmentally beneficial . . ." [see, e.g., 51.165(a)(1)(v)(C)(8)]. In the WEPCO rule, EPA did not provide any specific definition of the environmentally-beneficial standard, although it did indicate that the pollution control project provision "provides for a case-by-case assessment of the pollution control project's net emissions and overall impact on the environment" [57 FR 32321]. This provision is buttressed by a second safeguard that directs permitting authorities to evaluate the air quality impacts of pollution control projects that could--through collateral emissions increases or changes in utilization patterns--adversely impact local air quality [see 57 FR 32322]. This provision generally authorizes, as appropriate, a permitting authority to require modelling of emissions increases associated with a pollution control project. Id. More fundamentally, it explicitly states that no pollution control project under any circumstances may cause or contribute to violation of a national ambient air quality standard (NAAQS), PSD increment, or air quality related value (AQRV) in a class I area. Id.³

³The WEPCO rule refers specifically to "visibility limitation" rather than "air quality related values." However, EPA clearly stated in the preamble to the final rule that permitting agencies have the authority to "solicit the views of others in taking any other appropriate remedial steps deemed necessary to protect class I areas. . . . The EPA emphasizes that

As noted, the WEPCO rulemaking was expressly limited to existing electric utility steam generating units [see, e.g., 40 CFR 51.165(a)(1)(v)(C)(8) and 51.165(a)(1)(xx)]. The EPA limited the rulemaking to utilities because of the impending acid rain requirements under title IV of the Act, EPA's extensive experience with new source applicability issues for electric utilities, the general similarity of equipment, and the public availability of utility operating projections. The EPA indicated it would consider adopting a formal NSR pollution control project exclusion for other source categories as part of a separate NSR rulemaking. The rulemaking in question is now expected to be finalized by early 1996. On the other hand, the WEPCO rulemaking also noted that EPA's existing policy was, and would continue to be, to allow permitting authorities to exclude pollution control projects in other source categories on a case-by-case basis.

III. Case-By-Case Pollution Control Project Determinations

The following sections describe the type of projects that may be considered by permitting authorities for exclusion from major NSR as pollution control projects and two safeguards that permitting authorities are to use in evaluating such projects--the environmentally-beneficial test and an air quality impact assessment. To a large extent, these requirements are drawn from the WEPCO rulemaking. However, because the WEPCO rule was designed for a single source category, electric utilities, it cannot and does not serve as a complete template for this guidance. Therefore, the following descriptions expand upon the WEPCO rule in the scope of qualifying projects and in the specific elements inherent in the safeguards. These changes reflect the far more complicated task of evaluating pollution control projects at a wide variety of sources facing a myriad of Federal, State, and local clean air requirements.

Since the safeguards are an integral component of the exclusion, States must have the authority to impose the safeguards in approving an exclusion from major NSR under this policy. Thus, State or local permitting authorities in order to

all environmental impacts, including those on class I areas, can be considered. . . ." [57 FR 32322]. Further, the statutory protections in section 165(d) plainly are intended to protect against any "adverse impact on the AQRV of such [class I] lands (including visibility)." Based on this statutory provision, EPA believes that the proper focus of any air quality assessment for a pollution control project should be on visibility and any other relevant AQRV's for any class I areas that may be affected by the proposed project. Permitting authorities should notify Federal Land Managers where appropriate concerning pollution control projects which may adversely affect AQRV's in class I areas.

use this policy should provide statements to EPA describing and affirming the basis for its authority to impose these safeguards absent major NSR. Sources that obtain exclusions from permitting authorities that have not provided this affirmation of authority are at risk in seeking to rely on the exclusion issued by the permitting agency, because EPA may subsequently determine that the project does not qualify as a pollution control project under this policy.

A. Types of Projects Covered

1. Add-On Controls and Fuel Switches

In the WEPCO rulemaking, EPA found that both add-on emissions control projects and fuel switches to less-polluting fuels could be considered to be pollution control projects. For the purposes of today's guidance, EPA affirms that these types of projects are appropriate candidates for a case-by-case exclusion as well. These types of projects include:

- the installation of conventional and advanced flue gas desulfurization and sorbent injection for SO₂;
- electrostatic precipitators, baghouses, high efficiency multiclones, and scrubbers for particulate or other pollutants;
- flue gas recirculation, low-NO_x burners, selective non-catalytic reduction and selective catalytic reduction for NO_x; and
- regenerative thermal oxidizers (RTO), catalytic oxidizers, condensers, thermal incinerators, flares and carbon adsorbers for volatile organic compounds (VOC) and toxic air pollutants.

Projects undertaken to accommodate switching to an inherently less-polluting fuel such as natural gas can also qualify for the exclusion. Any activity that is necessary to accommodate switching to a inherently less-polluting fuel is considered to be part of the pollution control project. In some instances, where the emissions unit's capability would otherwise be impaired as a result of the fuel switch, this may involve certain necessary changes to the pollution generating equipment (e.g., boiler) in order to maintain the normal operating capability of the unit at the time of the project.

2. Pollution Prevention Projects

It is EPA's policy to promote pollution prevention approaches and to remove regulatory barriers to sources seeking

to develop and implement pollution prevention solutions to the extent allowed under the Act. For this reason, permitting authorities may also apply this exclusion to switches to inherently less-polluting raw materials and processes and certain other types of "pollution prevention" projects.⁴ For instance, many VOC users will be making switches to water-based or powder-paint application systems as a strategy for meeting reasonably available control technology (RACT) or switching to a non-toxic VOC to comply with maximum achievable control technology (MACT) requirements.

Accordingly, under today's guidance, permitting authorities may consider excluding raw material substitutions, process changes and other pollution prevention strategies where the pollution control aspects of the project are clearly evident and will result in substantial emissions reductions per unit of output for one or more pollutants. In judging whether a pollution prevention project can be considered for exclusion as a pollution control project, permitting authorities may also consider as a relevant factor whether a project is being undertaken to bring a source into compliance with a MACT, RACT, or other Act requirement.

Although EPA is supportive of pollution control and prevention projects and strategies, special care must be taken in classifying a project as a pollution control project and in evaluating a project under a pollution control project exclusion. Virtually every modernization or upgrade project at an existing industrial facility which reduces inputs and lowers unit costs has the concurrent effect of lowering an emissions rate per unit of fuel, raw material or output. Nevertheless, it is clear that these major capital investments in industrial equipment are the very types of projects that Congress intended to address in the new source modification provisions [see Wisconsin Electric Power Co. v. Reilly, 893 F.2d 901, 907-10 (7th Cir. 1990) (rejecting contention that utility life extension project was not a physical or operational change); Puerto Rican Cement Co., Inc. v. EPA, 889 F.2d 292, 296-98 (1st Cir. 1989) (NSR applies to modernization

⁴For purposes of this guidance, pollution prevention means any activity that through process changes, product reformulation or redesign, or substitution of less polluting raw materials, eliminates or reduces the release of air pollutants and other pollutants to the environment (including fugitive emissions) prior to recycling, treatment, or disposal; it does not mean recycling (other than certain "in-process recycling" practices), energy recovery, treatment, or disposal [see Pollution Prevention Act of 1990 section 6602(b) and section 6603(5)(A) and (B); see also "EPA Definition of 'Pollution Prevention,'" memorandum from F. Henry Habicht II, May 28, 1992].

project that decreases emissions per unit of output, but increases economic efficiency such that utilization may increase and result in net increase in actual emissions)]. Likewise, the replacement of an existing emissions unit with a newer or different one (albeit more efficient and less polluting) or the reconstruction of an existing emissions unit would not qualify as a pollution control project. Adopting a policy that automatically excludes from NSR any project that, while lowering operating costs or improving performance, coincidentally lowers a unit's emissions rate, would improperly exclude almost all modifications to existing emissions units, including those that are likely to increase utilization and therefore result in overall higher levels of emissions.

In order to limit this exclusion to the subset of pollution prevention projects that will in fact lower annual emissions at a source, permitting authorities should not exclude as pollution control projects any pollution prevention project that can be reasonably expected to result in an increase in the utilization of the affected emissions unit(s). For example, projects which significantly increase capacity, decrease production costs, or improve product marketability can be expected to affect utilization patterns. With these changes, the environment may or may not see a reduction in overall source emissions; it depends on the source's operations after the change, which cannot be predicted with any certainty.⁵ This is not to say that these types of projects are necessarily subject to major NSR requirements, only that they should not be excluded as pollution control projects under this guidance. The EPA may consider different approaches to excluding pollution prevention projects from major NSR requirements in the upcoming NSR rulemaking. Under this guidance, however, permitting authorities should carefully review proposed pollution prevention projects to evaluate whether utilization of the source will increase as a result of the project.

Furthermore, permitting authorities should have the authority to monitor utilization of an affected emissions unit or source for a reasonable period of time subsequent to the project to verify what effect, if any, the project has on utilization. In cases where the project has clearly caused an increase in utilization, the permitting authority may need to reevaluate the

⁵This is in marked contrast to the addition of pollution control equipment which typically does not, in EPA's experience, result in any increase in the source's utilization of the emission unit in question. In the few instances where this presumption is not true, the safeguards discussed in the next section should provide adequate environmental protections for these additions of pollution control equipment.

basis for the original exclusion to verify that an exclusion is still appropriate and to ensure that all applicable safeguards are being met.

B. Safeguards

The following safeguards are necessary to assure that projects being considered for an exclusion qualify as environmentally beneficial pollution control projects and do not have air quality impacts which would preclude the exclusion. Consequently, a project that does not meet these safeguards does not qualify for an exclusion under this policy.

1. Environmentally-Beneficial Test

Projects that meet the definition of a pollution control project outlined above may nonetheless cause collateral emissions increases or have other adverse impacts. For instance, a large VOC incinerator, while substantially eliminating VOC emissions, may generate sizeable NO_x emissions well in excess of significance levels. To protect against these sorts of problems, EPA in the WEPCO rule provided for an assessment of the overall environmental impact of a project and the specific impact, if any, on air quality. The EPA believes that this safeguard is appropriate in this policy as well.

Unless information regarding a specific case indicates otherwise, the types of pollution control projects listed in III. A. 1. above can be presumed, by their nature, to be environmentally beneficial. This presumption arises from EPA's experience that historically these are the very types of pollution controls applied to new and modified emissions units. The presumption does not apply, however, where there is reason to believe that 1) the controls will not be designed, operated or maintained in a manner consistent with standard and reasonable practices; or 2) collateral emissions increases have not been adequately addressed as discussed below.

In making a determination as to whether a project is environmentally beneficial, the permitting authority must consider the types and quantity of air pollutants emitted before and after the project, as well as other relevant environmental factors. While because of the case-by-case nature of projects it is not possible to list all factors which should be considered in any particular case, several concerns can be noted.

First, pollution control projects which result in an increase in non-targeted pollutants should be reviewed to determine that the collateral increase has been minimized and will not result in environmental harm. Minimization here does

not mean that the permitting agency should conduct a BACT-type review or necessarily prescribe add-on control equipment to treat the collateral increase. Rather, minimization means that, within the physical configuration and operational standards usually associated with such a control device or strategy, the source has taken reasonable measures to keep any collateral increase to a minimum. For instance, the permitting authority could require that a low-NO_x burner project be subject to temperature and other appropriate combustion standards so that carbon monoxide (CO) emissions are kept to a minimum, but would not review the project for a CO catalyst or other add-on type options. In addition, a State's RACT or MACT rule may have explicitly considered measures for minimizing a collateral increase for a class or category of pollution control projects and requires a standard of best practices to minimize such collateral increases. In such cases, the need to minimize collateral increase from the covered class or category of pollution control projects can be presumed to have been adequately addressed in the rule.

In addition, a project which would result in an unacceptable increased risk due to the release of air toxics should not be considered environmentally beneficial. It is EPA's experience, however, that most projects undertaken to reduce emissions, especially add-on controls and fuel switches, result in concurrent reductions in air toxics. The EPA expects that many pollution control projects seeking an exclusion under this guidance will be for the purpose of complying with MACT requirements for reductions in air toxics. Consequently, unless there is reason to believe otherwise, permitting agencies may presume that such projects by their nature will result in reduced risks from air toxics.

2. Additional Air Quality Impacts Assessments

(a) General

Nothing in the Act or EPA's implementing regulations would allow a permitting authority to approve a pollution control project resulting in an emissions increase that would cause or contribute to a violation of a NAAQS or PSD increment, or adversely impact visibility or other AQRV in a class I area [see, e.g., Act sections 110(a)(2)(C), 165, 169A(b), 173]. Accordingly, this guidance is not intended to allow any project to violate any of these air quality standards.

As discussed above, it is possible that a pollution control project--either through an increase in an emissions rate of a collateral pollutant or through a change in utilization--will cause an increase in actual emissions, which in turn could cause or contribute to a violation of a NAAQS or increment or

adversely impact AQRV's. For this reason, in the WEPCO rule the EPA required sources to address whenever 1) the proposed change would result in a significant net increase in actual emissions of any criteria pollutant over levels used for that source in the most recent air quality impact analysis; and 2) the permitting authority has reason to believe that such an increase would cause or contribute to a violation of a NAAQS, increment or visibility limitation. If an air quality impact analysis indicates that the increase in emissions will cause or contribute to a violation of any ambient standard, PSD increment, or AQRV, the pollution control exclusion does not apply.

The EPA believes that this safeguard needs to be applied here as well. Thus, where a pollution control project will result in a significant increase in emissions and that increased level has not been previously analyzed for its air quality impact and raises the possibility of a NAAQS, increment, or AQRV violation, the permitting authority is to require the source to provide an air quality analysis sufficient to demonstrate the impact of the project. The EPA will not necessarily require that the increase be modeled, but the source must provide sufficient data to satisfy the permitting authority that the new levels of emissions will not cause a NAAQS or increment violation and will not adversely impact the AQRV's of nearby potentially affected class I areas.

In the case of nonattainment areas, the State or the source must provide offsetting emissions reductions for any significant increase in a nonattainment pollutant from the pollution control project. In other words, if a significant collateral increase of a nonattainment pollutant resulting from a pollution control project is not offset on at least a one-to-one ratio then the pollution control project would not qualify as environmentally beneficial.⁶ However, rather than having to apply offsets on a case-by-case basis, States may consider adopting (as part of their attainment plans) specific control measures or strategies for the purpose of generating offsets to mitigate the projected collateral emissions increases from a class or category of pollution control projects.

(b) Determination of Increase in Emissions

The question of whether a proposed project will result in an emissions increase over pre-modification levels of actual

⁶Regardless of the severity of the classification of the nonattainment area, a one-to-one offset ratio will be considered sufficient under this policy to mitigate a collateral increase from a pollution control project. States may, however, require offset ratios that are greater than one-to-one.

emissions is both complicated and contentious. It is a question that has been debated by the New Source Review Reform Subcommittee of the Clean Air Act Advisory Committee and is expected to be revisited by EPA in the same upcoming rulemaking that will consider adopting a pollution control project exclusion. In the interim, EPA is adopting a simplified approach to determining whether a pollution control project will result in increased emissions.

The approach in this policy is premised on the fact that EPA does not expect the vast majority of these pollution control projects to change established utilization patterns at the source. As discussed in the previous section, it is EPA's experience that add-on controls do not impact utilization, and pollution prevention projects that could increase utilization may not be excluded under this guidance. Therefore, in most cases it will be very easy to calculate the emissions after the change: the product of the new emissions rate times the existing utilization rate. In the case of a pollution control project that collaterally increases a non-targeted pollutant, the actual increase (calculated using the new emissions rate and current utilization pattern) would need to be analyzed to determine its air quality impact.

The permitting authority may presume that projects meeting the definition outlined in section III(A)(1) will not change utilization patterns. However, the permitting authority is to reject this presumption where there is reason to believe that the project will result in debottlenecking, loadshifting to take advantage of the control equipment, or other meaningful increase in the use of the unit above current levels. Where the project will increase utilization and emissions, the associated emissions increases are calculated based on the post-modification potential to emit of the unit considering the application of the proposed controls. In such cases the permitting agency should consider the projected increase in emissions as collateral to the project and determine whether, notwithstanding the emissions increases, the project is still environmentally beneficial and meets all applicable safeguards.

In certain limited circumstances, a permitting agency may take action to impose federally-enforceable limits on the magnitude of a projected collateral emissions increase to ensure that all safeguards are met. For example, where the data used to assess a projected collateral emissions increase is questionable and there is reason to believe that emissions in excess of the projected increase would violate an applicable air quality standard or significantly exceed the quantity of offsets provided, restrictions on the magnitude of the collateral increase may be necessary to ensure compliance with the applicable safeguards.

IV. Procedural Safeguards

Because EPA has not yet promulgated regulations governing a generally applicable pollution control project exclusion from major NSR (other than for electric utilities), permitting authorities must consider and approve requests for an exclusion on a case-by-case basis, and the exclusion is not self-executing. Instead, sources must receive case-by-case approval from the permitting authority pursuant to a minor NSR permitting process, State nonapplicability determination or similar process. [Nothing in this guidance voids or creates an exclusion from any applicable minor source preconstruction review requirement in any SIP that has been approved pursuant to section 110(a)(2)(C) and 40 CFR 51.160-164.] This process should also provide that the application for the exclusion and the permitting agency's proposed decision thereon be subject to public notice and the opportunity for public and EPA written comment. In those limited cases where the applicable SIP already exempts a class or category of pollution controls project from the minor source permitting public notice and comment requirements, and where no collateral increases are expected (e.g., the installation of a baghouse) and all otherwise applicable environmental safeguards are complied with, public notice and comment need not be provided for such projects. However, even in such circumstances, the permitting agency should provide advance notice to EPA when it applies this policy to provide an exclusion. For standard-wide applications to groups of sources (e.g., RACT or MACT), the notice may be provided to EPA at the time the permitting authority intends to issue a pollution control exclusion for the class or category of sources and thereafter notice need not be given to EPA on an individual basis for sources within the noticed group.

V. Emission Reduction Credits

In general, certain pollution control projects which have been approved for an exclusion from major NSR may result in emission reductions which can serve as NSR offsets or netting credits. All or part of the emission reductions equal to the difference between the pre-modification actual and post-modification potential emissions for the decreased pollutant may serve as credits provided that 1) the project will not result in a significant collateral increase in actual emissions of any criteria pollutant, 2) the project is still considered environmentally beneficial, and 3) all otherwise applicable criteria for the crediting of such reductions are met (e.g., quantifiable, surplus, permanent, and enforceable). Where an excluded pollution control project results in a significant collateral increase of a criteria pollutant, emissions reduction credits from the pollution control project for the controlled pollutant may still be granted provided, in addition to 2) and 3)

above, the actual collateral increase is reduced below the applicable significance level, either through contemporaneous reductions at the source or external offsets. However, neither the exclusion from major NSR nor any credit (full or partial) for emission reductions should be granted by the permitting authority where the type or amount of the emissions increase which would result from the use of such credits would lessen the environmental benefit associated with the pollution control project to the point where the project would not have initially qualified for an exclusion.

IV. Illustrative Examples

The following examples illustrate some of the guiding principles and safeguards discussed above in reviewing proposed pollution control projects for an exclusion from major NSR.

Example 1

PROJECT DESCRIPTION: A chemical manufacturing facility in an attainment area for all pollutants is proposing to install a RTO to reduce VOC emissions (including emissions of some hazardous pollutants) at the plant by about 3000 tons per year (tpy). The emissions reductions from the RTO are currently voluntary, but may be necessary in the future for title III MACT compliance. Although the RTO has been designed to minimize NO_x emissions, it will produce 200 tpy of new NO_x emissions due to the unique composition of the emissions stream. There is no information about the project to rebut a presumption that the project will not change utilization of the source. Aside from the NO_x increase there are no other environmental impacts known to be associated with the project.

EVALUATION: As a qualifying add-on control device, the project may be considered a pollution control project and may be considered for an exclusion. The permitting agency should: 1) verify that the NO_x increase has been minimized to the extent practicable, 2) confirm (through modeling or other appropriate means) that the actual significant increase in NO_x emissions does not violate the applicable NAAQS,⁷ PSD increment, or adversely impact any Class I area AQRV, and 3) apply all otherwise applicable SIP and minor source permitting requirements, including opportunity for public notice and comment.

⁷If the source were located in an area in which nonattainment NSR applied to NO_x emissions increases, 200 tons of NO_x offset credits would be required for the project to be eligible for an exclusion.

Example 2

PROJECT DESCRIPTION: A source proposes to replace an existing coal-fired boiler with a gas-fired turbine as part of a cogeneration project. The new turbine is an exact replacement for the energy needs supplied by the existing boiler and will emit less of each pollutant on an hourly basis than the boiler did.

EVALUATION: The replacement of an existing emissions unit with a new unit (albeit more efficient and less polluting) does not qualify for an exclusion as a pollution control project. The company can, however, use any otherwise applicable netting credits from the removal of the existing boiler to seek to net the new unit out of major NSR.

Example 3

PROJECT DESCRIPTION: A source plans to physically renovate and upgrade an existing process line by making certain changes to the existing process, including extensive modifications to emissions units. Following the changes, the source will expand production and manufacture and market a new product line. The project will cause an increase in the economic efficiency of the line. The renovated line will also be less polluting on a per-product basis than the original configuration.

EVALUATION: The change is not eligible for an exclusion as a pollution control project. On balance, the project does not have clearly evident pollution control aspects, and the resultant decrease in the per-product emissions rate (or factor) is incidental to the project. The project is a physical change or change in the method of operation that will increase efficiency and productivity.

Example 4

PROJECT DESCRIPTION: In response to the phaseout of chlorofluorocarbons (CFC) under title VI of the Act, a major source is proposing to substitute a less ozone-depleting substance (e.g., HCFC-141b) for one it currently uses that has a greater ozone depleting potential (e.g., CFC-11). A larger amount of the less-ozone depleting substance will have to be used. No other changes are proposed.

EVALUATION: The project may be considered a pollution control project and may be considered for an exclusion. The permitting agency should verify that 1) actual annual emissions of HCFC-141b after the proposed switch will cause less stratospheric ozone depletion than current annual emissions of CFC-11; 2) the proposed switch will not change utilization

patterns or increase emissions of any other pollutant which would impact a NAAQS, PSD increment, or AQRV and will not cause any cross-media harm, including any unacceptable increased risk associated with toxic air pollutants; and 3) apply all otherwise applicable SIP and minor source permitting requirements, including opportunity for public notice and comment.

Example 5

PROJECT DESCRIPTION: An existing landfill proposes to install either flares or energy recovery equipment [i.e., turbines or internal combustion (IC) engines]. The reductions from the project are estimated at over 1000 tpy of VOC and are currently not necessary to meet Act requirements, but may be necessary some time in the future. In case A the project is the replacement of an existing flare or energy system and no increase in NO_x emissions will occur. In case B, the equipment is a first time installation and will result in a 100 tpy increase in NO_x. In case C, the equipment is an addition to existing equipment which will accommodate additional landfill gas (resulting from increased gas generation and/or capture consistent with the current permitted limits for growth at the landfill) and will result in a 50 tpy increase in NO_x.

EVALUATION: Projects A, B, and C may be considered pollution control projects and may be considered for an exclusion; however, in cases B and C, if the landfill is located in an area required to satisfy nonattainment NSR for NO_x emissions, the source would be required to obtain NO_x offsets at a ratio of at least 1:1 for the project to be considered for an exclusion. [NOTE: VOC-NO_x netting and trading for NSR purposes may be discussed in the upcoming NSR rulemaking, but it is beyond the scope of this guidance.] Although neither turbines or IC engines are listed in section III.A.1 as add-on control devices and would normally not be considered pollution control projects, in this specific application they serve the same function as a flare, namely to reduce VOC emissions at the landfill with the added incidental benefit of producing useful energy in the process.

⁸The production of energy here is incidental to the project and is not a factor in qualifying the project for an exclusion as a pollution control project. In addition, any supplemental or co-firing of non-landfill gas fuels (e.g., natural gas, oil) would disqualify the project from being considered a pollution control project. The fuels would be used to maximize any economic benefit from the project and not for the purpose of pollution control at the landfill. However, the use of an alternative fuel solely as a backup fuel to be used only during

The permitting agency should: 1) verify that the NO_x increase has been minimized to the extent practicable; 2) confirm (through modeling or other appropriate means) that the actual significant increase in NO_x emissions will not violate the applicable NAAQS, PSD increment, or adversely impact any AQRV; and 3) apply all otherwise applicable SIP and minor source and, as noted above, in cases B and C ensures that NO_x offsets are provided in an area in which nonattainment review applies to NO_x emissions increases. permitting requirements, including opportunity for public notice and comment.

brief and infrequent start-up or emergency situations would not necessarily disqualify an energy recovery project from being considered a pollution control project.

Appendix L

1987 NSR Guidance for MWCs

APPENDIX L--1987 NSR GUIDANCE FOR MWCs

On June 26, 1987, EPA issued guidance for making best available control technology (BACT) determinations for new source review/prevention of significant deterioration permitting for MWC units. The guidance required new and modified MWC units to have acid gas scrubbing (i.e., a spray dryer) and PM control. Therefore, MWC units constructed since June 26, 1987 already have most of the control technology required to meet the emission limits in the Subpart Cb Emission Guidelines and should not require major retrofits. Additional controls (e.g., carbon injection) may be required to meet the mercury and dioxin/furan limits in Subpart Cb, but the controls can be installed in less than one year if the acid gas scrubbing system is already in place. This is why the Subpart Cb Emission Guidelines require MWC units at large MWC plants that commenced construction after June 26, 1987 to comply with the mercury and dioxin/furan emission limits within one year.

This is a typed copy of a Memorandum signed by the Director of OAQPS on June 26, 1987.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

MEMORANDUM

SUBJECT: Operational Guidance on Control for New and Modified
Municipal Waste Combustors (MWCs)

FROM: Gerald A. Emission, Director
Office of Air Quality Planning and Standards (MD-10)

TO: Air Management Division Directors
Regions I, III, V and IX

Air and Waste Management Division Director
Region II

Air, Pesticides, and Toxics Management Division Directors
Regions IV and VI

Air and Toxics Division Directors
Regions VII, VIII and X

As you know, numerous questions regarding the selection of appropriate pollution control requirements for MWCs has arisen during recent years in major source permitting proceedings under the prevention of significant deterioration (PSD) provisions of Part C of the Clean Air Act and the nonattainment new source review (NSR) provisions of Part D of the Act. Accordingly, the attached operational guidance is being issued to promote consistency in making best available control technology (BACT) determinations under PSD and lowest achievable emission rate (LEAR) determinations under nonattainment NSR, and to reduce delay and confusion in the permitting process. This guidance requires reviewing authorities, in considering the range of potential control options during the BACT determination process for MWCs, to consider a dry scrubber and a fabric filter or electrostatic precipitator as BACT for sulfur dioxide (SO₂) and particulate matter (PM), and combustion controls for BACT for carbon monoxide (CO).

The Administrator remanded to Region IX on June 22, 1987, their previous concurrence on a PSD permit for the H-Power MWC to be constructed in Honolulu, Hawaii. Petitioners had argued that, (a) BACT for this facility did not adequately justify the failure to require the use of an acid gas scrubber, and (b) the permitting authority did not evaluate the effectiveness of acid gas scrubbers in reducing emissions of unregulated pollutants, as required by the June 1986 North County Resource Recovery Associates PSD Appeal

decision (or North County remand). In remanding the H-Power permit application to Region IX for further proceedings, the Administrator made it clear that the Agency considers acid gas scrubbers to be an available technology for excess air MWCs that fire refuse-derived fuel (RDF) such as the H-power facility. The attached operational guidance states that this type of post-combustion control is one component of available technology for modular, starved air MWCs and massburn, excess air MWCs, in addition to RDF-fired, excess air MWCs.

As stated above, the operational guidance includes a second component of available technology, which is combustion control for the criteria pollutant CO. Since the effectiveness of the two components of available technology in controlling unregulated pollutants is an important consideration in individual BACT determinations (per the North County remand), the attached guidance states that (a) acid gas scrubbers followed by fabric filters or electrostatic precipitators are effective in controlling potentially toxic organic and metal pollutants, as well as acid gases other than sulfur dioxide, and (b) combustion controls are effective in controlling potentially toxic organic pollutants.

The technical basis for the operational guidance is documented in five reports which is a part of the Agency's comprehensive study of MWC. These volumes are listed in the References section of the guidance. You will note that the guidance indicates "specified values" should be selected on a site specific basis for several design and operating parameters of the facility and for emissions of criteria pollutants. A thorough discussion of the factors to be considered in choosing the "selected values" is included in the five reports from the comprehensive MWC study.

As noted under Section V, this guidance should be transmitted to all State and local agencies to which PSD permitting authority has been delegated under 40 CFR Section 52.21(u). The transmittal letter should specify that the delegation agreement is amended to include this guidance. States which have received SIP approval of a PSD program under 40 CFR Section 51.166 (formerly Section 51.24) should also be informed of this guidance and of EPA's expectation that it be followed.

Attachment

cc: James DeMocker (ANR-43)
Gregory Foote (LE-132A)
Steve Greene (WH-565)
Joseph E. Lees (ANR-443)
J. Craig Porter (ANR-443)
John C. Ulfelder (A-101)
Marcia Williams (WH-562)

OPERATIONAL GUIDANCE ON CONTROL
TECHNOLOGY FOR NEW AND MODIFIED
MUNICIPAL WASTE COMBUSTORS

I. The Need for Guidance

The combustion of municipal waste represents an increasingly important element of the solid waste disposal problem in the U.S. However, the operation of municipal waste combustors (MWCs) releases potentially harmful pollutants to the air. Human exposure can occur directly or indirectly, and there is also concern that the environment could be vulnerable to long-term accumulation of emitted pollutants. EPA is addressing these issues in a comprehensive, integrated Municipal Waste Combustion Study and with this operational guidance.

Numerous questions regarding the selection of appropriate pollution control requirements have arisen during recent years in major source permitting proceedings under the prevention of significant deterioration (PSD) provisions of Part C of the Act and the nonattainment new source review (NSR) provisions of Part D of the Act. Uncertainty over these questions has led to conflict over minimum legal requirements and consequent delay in the permitting and construction of MWCs. Hence, there is a need for guidance to resolve controversies which may arise as to facilities seeking permits. Accordingly, EPA is issuing this operational guidance for use in making best available control technology (BACT) determinations under PSD and lowest achievable emission rate (LAER) determinations under nonattainment NSR. EPA believes that this guidance will promote consistency in control requirements, and reduce delay and confusion in the permitting process. At the same time it will allow permitting authorities to give appropriate consideration to local factors in making case-by-case BACT determinations as required under law.

II. Administrative History

Section 169(3) of the Act provides that BACT determinations in PSD permits must be "based on the maximum degree of reduction

of each pollutant subject to regulation under this [Act] . . . which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable." EPA's regulations track this language. See 40 C.F.R. 52.21(b)(12), 40 C.F.R. 51.166(b)(12). In addition, in two administrative appeals involving resource recovery facilities, EPA has further refined the analysis which permitting authorities must conduct in making BACT determinations.

In North County Resource Recovery Associates, PSD Appeal No. 85-2 (June 3, 1986), the Administrator issued a Remand Order which held that, in making BACT determinations for a regulated air pollutant, the permitting authority must consider the effect of that decision on emissions of pollutants not regulated under the Clean Air Act. North County provided that the final BACT decision should address these environmental impacts, and that the permitting authority may ultimately choose more stringent emissions limitations for the regulated pollutant than it would otherwise have chosen if it would have the collateral benefit of restricting emissions of the unregulated pollutant. In the North County case, the permitting authority has required the use of a dry scrubber and fabric filter as BACT for sulfur dioxide, but had failed to consider the effect of that decision on emissions of certain unregulated pollutants -- dioxins and furans, heavy metals, and acid gases -- on the grounds that it lacked authority to do so. Various persons petitioned the Administrator under 40 C.F.R. Part 124. In response to the Administrator's subsequent remand order, the permitting authority analyzed the effect of various control options on these three classes of pollutants, and found that no other controls on regulated pollutants would be more effective in reducing emissions of the unregulated pollutants. The Administrator then ruled that the permitting authority had satisfied the requirements of the remand order, and denied the petitions. See North County Resource

Recovery Associates, PSD Appeal No. 85-2, Order Denying Review (September 4, 1986).

The Administrator ruled in Honolulu Resource Recovery Facility ("H-Power"), PSD Appeal No. 86-6, Remand Order (June 22, 1987), that a PSD permitting authority has the burden of demonstrating that adverse economic impacts justify the failure to require as BACT the most effective control technology which is available. He also found that acid gas scrubbers are an available control technology for sulfur dioxide (SO₂). The H-Power decision also provided that the economic impacts must be specific to the source in question and substantial. Thus, because the Administrator agreed with EPA Region IX that Hawaii had not adequately demonstrated the basis for its conclusion that economic factors justified the absence of flue gas treatment as BACT for SO₂, he remanded the matter for further proceedings.

EPA today also draws upon the technical data referenced below, and its experience in issuing, reviewing, and enforcing PSD permits for MWCs. Recent emission test data have demonstrated that particulate matter (PM), SO₂, and other air pollutants (including organics, heavy metals, and acid gases) can be controlled effectively by acid gas scrubbing devices (dry scrubbers) equipped with efficient particulate collectors. Over 20 MWC facilities in Europe are known to be operating with dry scrubbers and particulate collectors, and at least 37 such facilities are known to exist in Japan. In the United States, three facilities currently are in operation and at least 15 have been permitted to construct with dry scrubbing and particulate control devices as the specified technology. Thirteen of these facilities are expected to be operating by December 1988.

Based on this information, it is clear that a dry scrubber followed by either a fabric filter or electrostatic precipitator are "available" technologies for effective control of the SO₂ and PM emitted by MWCs, and that these technologies also are effective in controlling emissions of potentially toxic organic and heavy metal pollutants, and acid gases other than SO₂. In

addition, the data show that these technologies are reliable and reasonably affordable. Similarly, combustion controls are an available technology for the control of carbon monoxide (CO) emitted by MWCs, and are effective in controlling that criteria pollutant and potentially toxic organic pollutants. EPA's information indicates that this technology also is reliable and reasonably affordable.

III. BACT Guidance for SO₂, PM, and CO

Accordingly, in considering the range of potential control options during the BACT determination process for MWCs, the reviewing authority must consider a dry scrubber and a fabric filter or electrostatic precipitator as BACT for SO₂ and PM, and combustion controls as BACT for CO. In order to justify a BACT determination calling for a lesser degree of emissions control than can be achieved using these technologies, the permitting authority must demonstrate, based on information contained in the permit file, that significant technical defects, or substantial adverse economic, energy, or environmental impacts or other cost of these technologies, EPA expects that proper application of this guidance will result in few, if any, BACT determinations entailing application of pollution control technologies less effective than those called for herein.

Today's guidance is general; it is limited to describing types of post-combustion control equipment and to establishing general criteria for combustor design, combustor operating practices, emission monitoring, and operator training. It does not set specific emission limits. Detailed information regarding the maximum degree of emissions control achievable with those technologies is available in the referenced technical documents, the BACT/LAER Clearinghouse, or from EPA. Such information should be used by applicants and permitting authorities setting specific emissions limits for PSD permits. In addition, today's guidance only addresses control technologies currently in widespread use for MWCs, and establishes minimum criteria for BACT determinations. Permitting authorities are not relieved of

their responsibility to consider, on a case-by-case basis, whatever available technologies may be anticipated to provide a greater degree of control than those addressed today. Similarly, because control technologies and the other factors in forming BACT determinations are constantly evolving, the technology providing the greatest degree of emissions control taking economic, energy, and environmental impacts into account may likewise change over time. As one example, flue gas treatment technology for the criteria pollutant nitrogen oxides (NO_x) is in operation at one MWC in the U.S., and this technology should be considered by permitting authorities in making BACT determinations. In addition, emerging technologies in flue gas cleaning may develop which can attain the level of multipollutant control currently demonstrated by dry scrubbing/particulate matter controls, and technologies such as these should be considered in future BACT determinations. Permitting authorities and applicants must keep abreast of new developments. Of course, EPA will assist in this endeavor.

IV. LAER Guidance for Nonattainment Areas

The technologies discussed herein for control of SO₂, PM, CO, and NO_x have all been successfully implemented, and thus have been "achieved in practice" by MWCs within the meaning of section 171(3) of the Act. Hence, in nonattainment areas where NSR requirements apply and major new sources and modifications must apply LAER, no less effective pollution control technologies may be imposed as LAER.

V. Implementation

Today's guidance applies to all ongoing PSD and NSR proceedings, as well as to all new permit application. In consideration of the needs for program stability and equity to sources which have in good faith relied on pre-existing permitting guidelines, this guidance does not apply to PSD and NSR permit proceedings for which, as of June 26, 1987, final permits have already been issued and, with respect to PSD permits

issued by EPA, agency review procedures under 40 C.F.R. Part 124 have been exhausted.

This operational guidance applies to PSD permits issued by EPA directly through its Regional offices and indirectly through State and local agencies pursuant to delegation agreements made under 40 C.F.R. 52.21(u). Such agencies will be notified by letter of this guidance. It will constitute an amendment to the pre-existing delegation agreements. EPA Regional offices will review all draft permits for MWCs issued by delegate agencies during the public comment period to insure proper application. Further program evaluation will take place under the National Air Audit System (NAAS). If delegate agencies should fail to adhere to this guidance, EPA staff may initiate administrative appeal proceedings under 40 C.F.R. Part 124 in appropriate cases. Such action would be appropriate where, for example, failure to follow the guidance results in a finding of fact or conclusion of law which is clearly erroneous, or involves an exercise of discretion or an important policy consideration which the Administrator should review. See 40 C.F.R. 124.19(a). Action would also be appropriate where failure to follow the guidance resulting in an inability to determine, based on the record, whether a clear error occurred. If necessary, EPA may also revoke the delegation of PSD authority to the State or local agency.

With respect to State PSD permits issued pursuant to a State implementation plan (SIP) program approved by EPA under 40 C.F.R. 51.166 (formerly 51.24), and State NSR programs approved under Part D of the Act and 40 C.F.R. 51.165 (formerly 51.18(j)), EPA expects States to follow today's guidance in generally the same fashion as delegate agencies. EPA will use the guidance as a reference point in its oversight of State MWC permit actions. As with delegated permits EPA will participate in permit proceedings and conduct NAAS evaluations. If agencies processing NSR permits or PSD permits under approved State programs should fail to adhere to this guidance, EPA may initiate administrative and/or judicial action under sections 113 and/or 167 of the Act in

appropriate cases. Such action would be appropriate where, for example, failure to follow the guidance results in a finding of fact or conclusion of law which is clearly erroneous, or an inability to determine whether a clear error occurred. If necessary, EPA may also call for SIP revisions under section 110(a)(2)(H).

Insofar as today's guidance addresses minimum legal requirements for BACT determinations, it simply implements existing regulations and policy, including Agency actions already made by the Administrator in the North County and H-Power cases. To the extent the guidance addresses the technical issues of availability, effectiveness, and cost of control technologies for MWCs, it expresses EPA's view regarding the proper usage, in permit proceedings under existing EPA regulations and SIP programs, of the factual data contained in the five documents referenced below. Those documents present information on the alternative controls available for MWCs, the performance capabilities and costs of those controls, and the methods for monitoring and measuring emissions from MWCs. Factors to be considered in choosing the "specified values" to be included in permits, as noted in the guidance, such as maximum concentration of CO in emissions and minimum value of furnace temperature, are contained in these references. Thus, the guidance does not constitute rulemaking within the meaning of section 307(d) of the Act or under the Administrative Procedure Act. Accordingly, it is not necessary to implement this guidance, as to EPA permits issued by Regional offices or State and local agencies, through changes in the PSD regulations at 40 C.F.R. 52.21. Likewise, regarding approved State PSD programs, it is not necessary to revise 40 C.F.R. 51.166 and require corresponding SIP revisions.

VI. Technical Guidance

Today's operational guidance applies to three types of MWCs: massburn, excess air MWCs; excess air MWCs that fire refuse-derived fuel; and modular, starved air MWCs. It applies to those MWCs that operate with energy recovery and those that operate

without energy recovery. It applies to both major new and major modified facilities of these types. The guidance requires that values for emission limits and operating parameters be specified in MWC permitting decisions.

One component of control technology for MWCs is the application of the appropriate post-combustion control equipment. The EPA has identified this equipment as a dry scrubber with fabric filter or with electrostatic precipitator. The concentration of particulate emissions in the exhaust gases from the post-combustion control equipment shall not exceed a specified maximum value; and the SO₂ emissions in the exhaust gases shall not exceed a specified maximum concentration value or the percent reduction in SO₂ emissions across the post-combustion control equipment shall not be less than a specified value. Performance of the dry scrubber and fabric filter or electrostatic precipitator in controlling acid gases, potentially toxic metals, and potentially toxic organic pollutants is affected significantly by the reduction in flue gas temperature which occurs in the dry scrubber. The control system shall be designed and operated such that the flue gas temperature at the outlet from the dry scrubber does not exceed a specified value.

A second component of control technology for MWCs is proper design and operation of the combustion system, which controls CO and potentially toxic organic pollutants. Minimum concentrations of CO in emissions from MWCs are associated with the implementation of several good combustion practices. These practices are also related to the effective destruction of potential emissions of toxic organic pollutants, including dioxins and furans. Concentrations of CO in furnace exhaust gases shall not exceed a specified maximum value, and CO and O₂ concentrations in the exhaust gases shall be monitored continuously. In addition, furnace operating temperatures shall be no lower than a specified minimum value, and a procedure for continuous monitoring shall be established to ensure that the specified temperature is maintained.

The capabilities to control flow rates and distributions of underfire (primary) and overfire (secondary) air, to monitor continuously CO concentration and furnace temperature, to maintain thermal load within a specified range, and to control the process to maintain CO and temperature of the furnace at appropriate levels are all important to good combustion. Detailed information regarding the numerical values to be assigned to the emission levels and equipment design and operating parameters associated with good combustion are provided in the documents cited under References.

References

Municipal Waste Combustion Study: Emission Data Base for
Municipal Waste Combustors.
EPA/530-SW-87-021B

Municipal Waste Combustion Study: Combustion Control of Organic
Emissions.
EPA/530-SW-87-021C

Municipal Waste Combustion Study: Flue Gas Cleaning Technology.
EPA/530-SW-87-021D

Municipal Waste Combustion Study: Cost of Flue Gas Cleaning
Technologies.
EPA/530-SW-87-021E

Municipal Waste Combustion Study: Sampling and Analysis.
EPA/530-SW-87-021F

Appendix M

Clean Air Act Section 111(d)

APPENDIX M--CLEAN AIR ACT SECTION 111(d)

Note: The State Plans for MWCs must be developed to satisfy the requirements of both Section 111(d) and Section 129. Where conflicts arise, Section 129 takes precedent. Refer to Appendix N for the text of Section 129.

(d)(1) The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 110 under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 108(a) or 112(b)(1)(A) but (ii) to which a standard of performance under this section would apply if such existing source were a new source, and (B) provides for the implementation and enforcement of such standards of performance. Regulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.

(2) The Administrator shall have the same authority--

(A) to prescribe a plan for a State in cases where the State fails to submit a satisfactory plan as he would have under section 110(c) in the case of failure to submit an implementation plan, and

(B) to enforce the provisions of such plan in cases where the State fails to enforce them as he would have under sections 113 and 114 with respect to an implementation plan. In promulgating a standard of performance under a plan prescribed under this paragraph, the Administrator shall take into consideration, among other factors, remaining useful lives of the sources in the category of sources to which such standard applies.

Appendix N

Clean Air Act Section 129

APPENDIX N--SECTION 129 STATUTORY LANGUAGE

Note: The State Plans for MWCs must be developed to satisfy the requirements of both Section 111(d) and Section 129. Where conflicts arise, Section 129 takes precedent. Refer to Appendix M for the text of Section 111(d).

SEC. 129. SOLID WASTE COMBUSTION.

(a) NEW SOURCE PERFORMANCE STANDARDS.

(1) IN GENERAL. -- (A) The Administrator shall establish performance standards and other requirements pursuant to section 111 and this section for each category of solid waste incineration units. Such standards shall include emissions limitations and other requirements applicable to new units and guidelines (under section 111(d) and this section) and other requirements applicable to existing units.

(B) Standards under section 111 and this section applicable to solid waste incineration units with capacity greater than 250 tons per day combusting municipal waste shall be promulgated not later than 12 months after the date of enactment of the Clean Air Act Amendments of 1990. Nothing in this subparagraph shall alter any schedule for the promulgation of standards applicable to such units under section 111 pursuant to any settlement and consent decree entered by the Administrator before the date of enactment of the Clean Air Act Amendments of 1990, provided that, such standards are subsequently modified pursuant to the schedule established in this subparagraph to include each of the requirements of this section.

(C) Standards under section 111 and this section applicable to solid waste incineration units with capacity equal to or less than 250 tons per day combusting municipal waste and units combusting hospital waste, medical waste and infectious waste shall be promulgated not later than 24 months after the date of enactment of the Clean Air Act Amendments of 1990.

(D) Standards under section 111 and this section applicable to solid waste incineration units combusting commercial or industrial waste shall be proposed not later than 36 months after the date of enactment of the Clean Air Act Amendments of 1990 and promulgated not later than 48 months after such date of enactment.

(E) Not later than 18 months after the date of enactment of the Clean Air Act Amendments of 1990, the Administrator shall publish a schedule for the promulgation of standards under section 111 and this section applicable to other categories of solid waste incineration units.

(2) EMISSIONS STANDARD. -- Standards applicable to solid waste incineration units promulgated under section 111 and this section shall reflect the maximum degree of reduction in emissions of air pollutants listed under section (a)(4) that the Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable for new or existing units in each category. The Administrator may distinguish among classes, types (including mass-burn, refuse-derived fuel, modular and other types of units), and sizes of units within a category in establishing such standards. The degree

of reduction in emissions that is deemed achievable for new units in a category shall not be less stringent than the emissions control that is achieved in practice by the best controlled similar unit, as determined by the Administrator. Emissions standards for existing units in a category may be less stringent than standards for new units in the same category but shall not be less stringent than the average emissions limitation achieved by the best performing 12 percent of units in the category (excluding units which first met lowest achievable emissions rates 18 months before the date such standards are proposed or 30 months before the date such standards are promulgated, whichever is later).

(3) **CONTROL METHODS AND TECHNOLOGIES.** -- Standards under section 111 and this section applicable to solid waste incineration units shall be based on methods and technologies for removal or destruction of pollutants before, during, or after combustion, and shall incorporate for new units siting requirements that minimize, on a site specific basis, to the maximum extent practicable, potential risks to public health or the environment.

(4) **NUMERICAL EMISSIONS LIMITATIONS.** -- The performance standards promulgated under section 111 and this section and applicable to solid waste incineration units shall specify numerical emission limitations for the following substances or mixtures: particulate matter (total and fine), opacity (as appropriate), sulfur dioxide, hydrogen chloride, oxides of nitrogen, carbon monoxide, lead, cadmium, mercury, and dioxins and dibenzofurans. The Administrator may promulgate numerical emissions limitations or provide for the monitoring of postcombustion concentrations of surrogate substances, parameters or periods of residence time in excess of stated temperatures with respect to pollutants other than those listed in this paragraph.

(5) **REVIEW AND REVISION.** -- Not later than 5 years following the initial promulgation of any performance standards and other requirements under this section and section 111 applicable to a category of solid waste incineration units, and at 5 year intervals thereafter, the Administrator shall review, and in accordance with this section and section 111, revise such standards and requirements.

(b) **EXISTING UNITS.**

(1) **GUIDELINES.** -- Performance standards under this section and section 111 for solid waste incineration units shall include guidelines promulgated pursuant to section 111(d) and this section applicable to existing units. Such guidelines shall include, as provided in this section, each of the elements required by subsection (a) (emissions limitations, notwithstanding any restriction in section 111(d) regarding issuance of such limitations), subsection (c) (monitoring), subsection (d) (operator training), subsection (e) (permits), and subsection (h)(4) (residual risk).

(2) **STATE PLANS.** -- Not later than 1 year after the Administrator promulgates guidelines for a category of solid waste incineration units, each State in which units in the category are operating shall submit to the Administrator a plan to implement and enforce the guidelines with respect to such units. The State plan shall be at least as protective as the guidelines promulgated by the Administrator and shall provide that each unit subject to the guidelines shall be in compliance with all requirements of this section not later than 3 years after the State plan is approved by the Administrator but not later than 5 years after the guidelines were promulgated. The Administrator shall

approve or disapprove any State plan within 180 days of the submission, and if a plan is disapproved, the Administrator shall state the reasons for disapproval in writing. Any State may modify and resubmit a plan which has been disapproved by the Administrator.

(3) **FEDERAL PLAN.** -- The Administrator shall develop, implement and enforce a plan for existing solid waste incineration units within any category located in any State which has not submitted an approvable plan under this subsection with respect to units in such category within 2 years after the date on which the Administrator promulgated the relevant guidelines. Such plan shall assure that each unit subject to the plan is in compliance with all provisions of the guidelines not later than 5 years after the date the relevant guidelines are promulgated.

(c) **MONITORING.** -- The Administrator shall, as part of each performance standard promulgated pursuant to subsection (a) and section 111, promulgate regulations requiring the owner or operator of each solid waste incineration unit

(1) to monitor emissions from the unit at the point at which such emissions are emitted into the ambient air (or within the stack, combustion chamber or pollution control equipment, as appropriate) and at such other points as necessary to protect public health and the environment;

(2) to monitor such other parameters relating to the operation of the unit and its pollution control technology as the Administrator determines are appropriate; and

(3) to report the results of such monitoring. Such regulations shall contain provisions regarding the frequency of monitoring, test methods and procedures validated on solid waste incineration units, and the form and frequency of reports containing the results of monitoring and shall require that any monitoring reports or test results indicating an exceedance of any standard under this section shall be reported separately and in a manner that facilitates review for purposes of enforcement actions. Such regulations shall require that copies of the results of such monitoring be maintained on file at the facility concerned and that copies shall be made available for inspection and copying by interested members of the public during business hours.

(d) **OPERATOR TRAINING.** -- Not later than 24 months after the enactment of the Clean Air Act Amendments of 1990, the Administrator shall develop and promote a model State program for the training and certification of solid waste incineration unit operators and high-capacity fossil fuel fired plant operators. The Administrator may authorize any State to implement a model program for the training of solid waste incineration unit operators and high-capacity fossil fuel fired plant operators, if the State has adopted a program which is at least as effective as the model program developed by the Administrator. Beginning on the date 36 months after the date on which performance standards and guidelines are promulgated under subsection (a) and section 111 for any category of solid waste incineration units it shall be unlawful to operate any unit in the category unless each person with control over processes affecting emissions from such unit has satisfactorily completed a training program meeting the requirements established by the Administrator under this subsection.

(e) **PERMITS.** -- Beginning (1) 36 months after the promulgation of a performance standard under subsection (a) and section 111 applicable to a category of solid waste incineration units, or (2) the effective date of a permit program under title V in the State in which the unit is located, whichever is later, each unit in the category shall operate

pursuant to a permit issued under this subsection and title V. Permits required by this subsection may be renewed according to the provisions of title V. Notwithstanding any other provision of this Act, each permit for a solid waste incineration unit combusting municipal waste issued under this Act shall be issued for a period of up to 12 years and shall be reviewed every 5 years after date of issuance or reissuance. Each permit shall continue in effect after the date of issuance until the date of termination, unless the Administrator or State determines that the unit is not in compliance with all standards and conditions contained in the permit. Such determination shall be made at regular intervals during the term of the permit, such intervals not to exceed 5 years, and only after public comment and public hearing. No permit for a solid waste incineration unit may be issued under this Act by an agency, instrumentality or person that is also responsible, in whole or part, for the design and construction or operation of the unit. Notwithstanding any other provision of this subsection, the Administrator or the State shall require the owner or operator of any unit to comply with emissions limitations or implement any other measures, if the Administrator or the State determines that emissions in the absence of such limitations or measures may reasonably be anticipated to endanger public health or the environment. The Administrator's determination under the preceding sentence is a discretionary decision.

(f) EFFECTIVE DATE AND ENFORCEMENT.

(1) NEW UNITS. -- Performance standards and other requirements promulgated pursuant to this section and section 111 and applicable to new solid waste incineration units shall be effective as of the date 6 months after the date of promulgation.

(2) EXISTING UNITS. -- Performance standards and other requirements promulgated pursuant to this section and section 111 and applicable to existing solid waste incineration units shall be effective as expeditiously as practicable after approval of a State plan under subsection (b)(2) (or promulgation of a plan by the Administrator under subsection (b)(3)) but in no event later than 3 years after the State plan is approved or 5 years after the date such standards or requirements are promulgated, whichever is earlier.

(3) PROHIBITION. -- After the effective date of any performance standard, emission limitation or other requirement promulgated pursuant to this section and section 111, it shall be unlawful for any owner or operator of any solid waste incineration unit to which such standard, limitation or requirement applies to operate such unit in violation of such limitation, standard or requirement or for any other person to violate an applicable requirement of this section.

(4) COORDINATION WITH OTHER AUTHORITIES. -- For purposes of sections 111(e), 113, 114, 116, 120, 303, 304, 307 and other provisions for the enforcement of this Act, each performance standard, emission limitation or other requirement established pursuant to this section by the Administrator or a State or local government, shall be treated in the same manner as a standard of performance under section 111 which is an emission limitation.

(g) DEFINITIONS. -- For purposes of section 306 of the Clean Air Act Amendments of 1990 and this section only

(1) SOLID WASTE INCINERATION UNIT. -- The term 'solid waste incineration unit' means a distinct operating unit of any facility which combusts any solid waste

material from commercial or industrial establishments or the general public (including single and multiple residences, hotels, and motels). Such term does not include incinerators or other units required to have a permit under section 3005 of the Solid Waste Disposal Act. The term 'solid waste incineration unit' does not include (A) materials recovery facilities (including primary or secondary smelters) which combust waste for the primary purpose of recovering metals, (B) qualifying small power production facilities, as defined in section 3(17)(C) of the Federal Power Act (16 U.S.C. 769(17)(C)), or qualifying cogeneration facilities, as defined in section 3(18)(B) of the Federal Power Act (16 U.S.C. 796(18)(B)), which burn homogeneous waste (such as units which burn tires or used oil, but not including refuse-derived fuel) for the production of electric energy or in the case of qualifying cogeneration facilities which burn homogeneous waste for the production of electric energy and steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating or cooling purposes, or (C) air curtain incinerators provided that such incinerators only burn wood wastes, yard wastes and clean lumber and that such air curtain incinerators comply with opacity limitations to be established by the Administrator by rule.

(2) **NEW SOLID WASTE INCINERATION UNIT.** -- The term 'new solid waste incineration unit' means a solid waste incineration unit the construction of which is commenced after the Administrator proposes requirements under this section establishing emissions standards or other requirements which would be applicable to such unit or a modified solid waste incineration unit.

(3) **MODIFIED SOLID WASTE INCINERATION UNIT.** -- The term 'modified solid waste incineration unit' means a solid waste incineration unit at which modifications have occurred after the effective date of a standard under subsection (a) if (A) the cumulative cost of the modifications, over the life of the unit, exceed 50 per centum of the original cost of construction and installation of the unit (not including the cost of any land purchased in connection with such construction or installation) updated to current costs, or (B) the modification is a physical change in or change in the method of operation of the unit which increases the amount of any air pollutant emitted by the unit for which standards have been established under this section or section 111.

(4) **EXISTING SOLID WASTE INCINERATION UNIT.** -- The term 'existing solid waste incineration unit' means a solid waste unit which is not a new or modified solid waste incineration unit.

(5) **MUNICIPAL WASTE.** -- The term 'municipal waste' means refuse (and refuse-derived fuel) collected from the general public and from residential, commercial, institutional, and industrial sources consisting of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials and non-combustible materials such as metal, glass and rock, provided that: (A) the term does not include industrial process wastes or medical wastes that are segregated from such other wastes; and (B) an incineration unit shall not be considered to be combusting municipal waste for purposes of section 111 or this section if it combusts a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal waste.

(6) **OTHER TERMS.** -- The terms 'solid waste' and 'medical waste' shall have the meanings established by the Administrator pursuant to the Solid Waste Disposal Act.

(h) **OTHER AUTHORITY.**

(1) **STATE AUTHORITY.** -- Nothing in this section shall preclude or deny the right of any State or political subdivision thereof to adopt or enforce any regulation, requirement, limitation or standard relating to solid waste incineration units that is more stringent than a regulation, requirement, limitation or standard in effect under this section or under any other provision of this Act.

(2) **OTHER AUTHORITY UNDER THIS ACT.** -- Nothing in this section shall diminish the authority of the Administrator or a State to establish any other requirements applicable to solid waste incineration units under any other authority of law, including the authority to establish for any air pollutant a national ambient air quality standard, except that no solid waste incineration unit subject to performance standards under this section and section 111 shall be subject to standards under section 112(d) of this Act.

(3) **RESIDUAL RISK.** -- The Administrator shall promulgate standards under section 112(f) for a category of solid waste incineration units, if promulgation of such standards is required under section 112(f). For purposes of this preceding sentence only

(A) the performance standards under subsection (a) and section 111 applicable to a category of solid waste incineration units shall be deemed standards under section 112(d)(2), and

(B) the Administrator shall consider and regulate, if required, the pollutants listed under subsection (a)(4) and no others.

(4) **ACID RAIN.** -- A solid waste incineration unit shall not be utility unit as defined in title IV: provided, that, more than 80 per centum of its annual average fuel consumption measured on a Btu basis, during a period or periods to be determined by the Administrator, is from a fuel (including any waste burned as a fuel) other than a fossil fuel.

(5) **REQUIREMENTS OF PARTS C AND D.** -- No requirement of an applicable implementation plan under section 165 (relating to construction of facilities in regions identified pursuant to section 107(d)(1)(A)(ii) or (iii)) or under section 172(c)(5) (relating to permits for construction and operation in nonattainment areas) may be used to weaken the standards in effect under this section.

(b) **CONFORMING AMENDMENT.** -- Section 169(1) of the Clean Air Act is amended by striking "two hundred and" after "municipal incinerators capable of charging more than".

(c) **REVIEW OF ACID GAS SCRUBBING REQUIREMENTS.** -- Prior to the promulgation of any performance standard for solid waste incineration units combusting municipal waste under section 111 or section 129 of the Clean Air Act, the Administrator shall review the availability of acid gas scrubbers as a pollution control technology for small new units and for existing units (as defined in 54 Federal Register 52190 (December 20, 1989), taking into account the provisions of subsection (a)(2) of section 129 of the Clean Air Act.

Appendix O
40 CFR 60 Subpart B

APPENDIX O--40 CFR 60 SUBPART B WITH 12/19/95 INSERTS

Subpart B -- Adoption and Submittal of State Plans
for Designated Facilities

60.20 Applicability.

The provisions of this subpart apply to States upon publication of a final guideline document under section 60.22(a).

60.21 Definitions.

Terms used but not defined in this subpart shall have the meaning given them in the Act and in Subpart A:

(a) "Designated pollutant" means any air pollutant, emissions of which are subject to a standard of performance for new stationary sources but for which air quality criteria have not been issued, and which is not included on a list published under section 108(a) or section 112(b)(1)(A) of the Act.

(b) "Designated facility" means any existing facility (see section 60.2(aa)) which emits a designated pollutant and which would be subject to a standard of performance for that pollutant if the existing facility were an affected facility (see section 60.2).

(c) "Plan" means a plan under section 111(d) of the Act which establishes emission standards for designated pollutants from designated facilities and provides for the implementation and enforcement of such emission standards.

(d) "Applicable plan" means the plan, or most recent revision thereof, which has been approved under section 60.27(b) or promulgated under section 60.27(d).

(e) "Emission guideline" means a guideline set forth in Subpart C of this part, or in a final guideline document published under ^U 60.22(a), which reflects the degree of emission reduction achievable through the application of the best system of emission reduction which (taking into account the cost of such reduction) the Administrator has determined has been adequately demonstrated for designated facilities.

(f) "Emission standard" means a legally enforceable regulation setting forth an allowable rate of emissions into the atmosphere, or prescribing equipment specifications for control of air pollution emissions.

(g) "Compliance schedule" means a legally enforceable schedule specifying a date or dates by which a source or category of sources must comply with specific emission standards contained in a plan or with any increments of progress to achieve such compliance.

(h) "Increments of progress" means steps to achieve compliance which must be taken by an owner or operator of a designated facility, including:

- (1) Submittal of a final control plan for the designated facility to the appropriate air pollution control agency;
 - (2) Awarding of contracts for emission control systems or for process modifications, or issuance of orders for the purchase of component parts to accomplish emission control or process modification;
 - (3) Initiation of on-site construction or installation of emission control equipment or process change;
 - (4) Completion of on-site construction or installation of emission control equipment or process change; and
 - (5) Final compliance.
- (i) "Region" means an air quality control region designated under section 107 of the Act and described in Part 81 of this chapter.
- (j) "Local agency" means any local governmental agency.

60.22 Publication of guideline documents, emission guidelines, and final compliance times.

(a) Concurrently upon or after proposal of standards of performance for the control of a designated pollutant from affected facilities, the Administrator will publish a draft guideline document containing information pertinent to control of the designated pollutant from designated facilities. Notice of the availability of the draft guideline document will be published in the FEDERAL REGISTER and public comments on its contents will be invited. After consideration of Public comments and upon or after promulgation of standards of performance for control of a designated pollutant from affected facilities, a final guideline document will be published and notice of its availability will be published in the FEDERAL REGISTER.

(b) Guideline documents published under this section will provide information for the development of State plans, such as:

(1) Information concerning known or suspected endangerment of public health or welfare caused, or contributed to, by the designated pollutant.

(2) A description of systems of emission reduction which, in the judgment of the Administrator, have been adequately demonstrated.

(3) Information on the degree of emission reduction which is achievable with each system, together with information on the costs and environmental effects of applying each system to designated facilities.

(4) Incremental periods of time normally expected to be necessary for the design, installation, and startup of identified control systems.

(5) An emission guideline that reflects the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated for designated facilities, and the time within which compliance with emission standards of equivalent stringency can be achieved. The Administrator will specify different emission guidelines or

compliance times or both for different sizes, types, and classes of designated facilities when costs of control, physical limitations, geographical location, or similar factors make subcategorization appropriate.

(6) Such other available information as the Administrator determines may contribute to the formulation of State plans.

(c) Except as provided in paragraph (d)(1) of this section, the emission guidelines and compliance times referred to in paragraph (b)(5) of this section will be proposed for comment upon publication of the draft guideline document, and after consideration of comments will be promulgated in Subpart C of this part with such modifications as may be appropriate.

(d)(1) If the Administrator determines that a designated pollutant may cause or contribute to endangerment of public welfare, but that adverse effects on public health have not been demonstrated, he will include the determination in the draft guideline document and in the FEDERAL REGISTER notice of its availability. Except as provided in paragraph (d)(2) of this section, paragraph (c) of this section shall be inapplicable in such cases.

(2) If the Administrator determines at any time on the basis of new information that a prior determination under paragraph (d)(1) of this section is incorrect or no longer correct, he will publish notice of the determination in the FEDERAL REGISTER, revise the guideline document as necessary under paragraph (a) of this section, and propose and promulgate emission guidelines and compliance times under paragraph (c) of this section.

60.23 Adoption and submittal of State plans; public hearings.

(a)(1) Unless otherwise specified in the applicable subpart, within 9 months after notice of the availability of a final guideline document is published under section 60.22a), each State shall adopt and submit to the Administrator, in accordance with section 60.4 of subpart A of this part, a plan for the control of the designated pollutant to which the guideline document applies.

(2) Within nine months after notice of the availability of a final revised guideline document is published as provided in section 60.22(d)(2), each State shall adopt and submit to the Administrator any plan revision necessary to meet the requirements of this subpart.

(b) If no designated facility is located within a State, the State shall submit a letter of certification to that effect to the Administrator within the time specified in paragraph (a) of this section. Such certification shall exempt the State from the requirements of this subpart for that designated pollutant.

(c)(1) Except as provided in paragraphs (c)(2) and (c)(3) of this section, the State shall, prior to the adoption of any plan or revision thereof, conduct one or more public hearings within the State on such plan or plan revision.

(2) No hearing shall be required for any change to an increment of progress in an approved compliance schedule unless

the change is likely to cause the facility to be unable to comply with the final compliance date in the schedule.

(3) No hearing shall be required on an emission standard in effect prior to the effective date of this subpart if it was adopted after a public hearing and is at least as stringent as the corresponding emission guideline specified in the applicable guideline document published under section 60.22(a).

(d) Any hearing required by paragraph (c) of this section shall be held only after reasonable notice. Notice shall be given at least 30 days prior to the date of such hearing and shall include:

(1) Notification to the public by prominently advertising the date, time, and place of such hearing in each region affected;

(2) Availability, at the time of public announcement, of each proposed plan or revision thereof for public inspection in at least one location in each region to which it will apply;

(3) Notification to the Administrator;

(4) Notification to each local air pollution control agency in each region to which the plan or revision will apply; and

(5) In the case of an interstate region, notification to any other State included in the region.

(e) The State shall prepare and retain, for a minimum of 2 years, a record of each hearing for inspection by any interested party. The record shall contain, as a minimum, a list of witnesses together with the text of each presentation.

(f) The State shall submit with the plan or revision:

(1) Certification that each hearing required by paragraph (c) of this section was held in accordance with the notice required by paragraph (d) of this section; and

(2) A list of witnesses and their organizational affiliations, if any, appearing at the hearing and a brief written summary of each presentation or written submission.

(g) Upon written application by a State agency (through the appropriate Regional Office), the Administrator may approve State procedures designed to insure public participation in the matters for which hearings are required and public notification of the opportunity to participate if, in the judgment of the Administrator, the procedures, although different from the requirements of this subpart, in fact provide for adequate notice to and participation of the public. The Administrator may impose such conditions on his approval as he deems necessary. Procedures approved under this section shall be deemed to satisfy the requirements of this subpart regarding procedures for public hearings.

60.24 Emission standards and compliance schedules.

(a) Each plan shall include emission standards and compliance schedules.

(b)(1) Emission standards shall prescribe allowable rates of emissions except when it is clearly impracticable. Such cases will be identified in the guideline documents issued under

section 60.22. Where emission standards prescribing equipment specifications are established, the plan shall, to the degree possible, set forth the emission reductions achievable by implementation of such specifications, and may permit compliance by the use of equipment determined by the State to be equivalent to that prescribed.

(2) Test methods and procedures for determining compliance with the emission standards shall be specified in the plan. Methods other than those specified in Appendix A to this part may be specified in the plan if shown to be equivalent or alternative methods as defined in section 60.2(t) and (u).

(3) Emission standards shall apply to all designated facilities within the State. A plan may contain emission standards adopted by local jurisdictions provided that the standards are enforceable by the State.

(c) Except as provided in paragraph (f) of this section, where the Administrator has determined that a designated pollutant may cause or contribute to endangerment of public health, emission standards shall be no less stringent than the corresponding emission guideline(s) specified in Subpart C of this part, and final compliance shall be required as expeditiously as practicable but no later than the compliance times specified in Subpart C of this part.

(d) Where the Administrator has determined that a designated pollutant may cause or contribute to endangerment of public welfare but that adverse effects on public health have not been demonstrated, States may balance the emission guidelines, compliance times, and other information provided in the applicable guideline document against other factors of public concern in establishing emission standards, compliance schedules, and variances. Appropriate consideration shall be given to the factors specified in section 60.22(b) and to information presented at the public hearing(s) conducted under section 60.23(c).

(e)(1) Any compliance schedule extending more than 12 months from the date required for submittal of the plan shall include legally enforceable increments of progress to achieve compliance for each designated facility or category of facilities. Increments of progress shall include, where practicable, each increment of progress specified in section 60.21(h) and shall include such additional increments of progress as may be necessary to permit close and effective supervision of progress toward final compliance.

(2) A plan may provide that compliance schedules for individual sources or categories of sources will be formulated after plan submittal. Any such schedule shall be the subject of a public hearing held according to section 60.23 and shall be submitted to the Administrator within 60 days after the date of adoption of the schedule but in no case later than the date prescribed for submittal of the first semiannual report required by section 60.25(e).

(f) Unless otherwise specified in the applicable subpart on a case-by-case basis for particular designated facilities or

classes of facilities, States may provide for the application of less stringent emissions standards or longer compliance schedules than those otherwise required by paragraph (c) of this section, provided that the State demonstrates with respect to each such facility (or class of facilities):

(1) Unreasonable cost of control resulting from plant age, location, or basic process design;

(2) Physical impossibility of installing necessary control equipment; or

(3) Other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable.

(g) Nothing in this subpart shall be construed to preclude any State or political subdivision thereof from adopting or enforcing

(1) emission standards more stringent than emission guidelines specified in Subpart C of this part or in applicable guideline documents or

(2) compliance schedules requiring final compliance at earlier times than those specified in Subpart C or in applicable guideline documents.

60.25 Emission inventories, source surveillance, reports.

(a) Each plan shall include an inventory of all designated facilities, including emission data for the designated pollutants and information related to emissions as specified in Appendix D to this part. Such data shall be summarized in the plan, and emission rates of designated pollutants from designated facilities shall be correlated with applicable emission standards. As used in this subpart, "correlated" means presented in such a manner as to show the relationship between measured or estimated amounts of emissions and the amounts of such emissions allowable under applicable emission standards.

(b) Each plan shall provide for monitoring the status of compliance with applicable emission standards. Each plan shall, as a minimum, provide for:

(1) Legally enforceable procedures for requiring owners or operators of designated facilities to maintain records and periodically report to the State information on the nature and amount of emissions from such facilities, and/or such other information as may be necessary to enable the State to determine whether such facilities are in compliance with applicable portions of the plan.

(2) Periodic inspection and, when applicable, testing of designated facilities.

(c) Each plan shall provide that information obtained by the State under paragraph (b) of this section shall be correlated with applicable emission standards (see section 60.25(a)) and made available to the general public.

(d) The provisions referred to in paragraphs (b) and (c) of this section shall be specifically identified. Copies of such provisions shall be submitted with the plan unless:

(1) They have been approved as portions of a preceding plan submitted under this subpart or as portions of an implementation plan submitted under section 110 of the Act, and

(2) The State demonstrates:

(i) That the provisions are applicable to the designated pollutant(s) for which the plan is submitted, and

(ii) That the requirements of section 60.26 are met.

(e) The State shall submit reports on progress in plan enforcement to the Administrator on an annual (calendar year) basis, commencing with the first full report period after approval of a plan or after promulgation of a plan by the Administrator. Information required under this paragraph must be included in the annual report required by section 51.321 of this chapter.

(f) Each progress report shall include:

(1) Enforcement actions initiated against designated facilities during the reporting period, under any emission standard or compliance schedule of the plan.

(2) Identification of the achievement of any increment of progress required by the applicable plan during the reporting period.

(3) Identification of designated facilities that have ceased operation during the reporting period.

(4) Submission of emission inventory data as described in paragraph (a) of this section for designated facilities that were not in operation at the time of plan development but began operation during the reporting period.

(5) Submission of additional data as necessary to update the information submitted under paragraph (a) of this section or in previous progress reports.

(6) Submission of copies of technical reports on all performance testing on designated facilities conducted under paragraph (b)(2) of this section, complete with concurrently recorded process data.

60.26 Legal authority.

(a) Each plan shall show that the State has legal authority to carry out the plan, including authority to:

(1) Adopt emission standards and compliance schedules applicable to designated facilities.

(2) Enforce applicable laws, regulations, standards, and compliance schedules, and seek injunctive relief.

(3) Obtain information necessary to determine whether designated facilities are in compliance with applicable laws, regulations, standards, and compliance schedules, including authority to require recordkeeping and to make inspections and conduct tests of designated facilities.

(4) Require owners or operators of designated facilities to install, maintain, and use emission monitoring devices and to make periodic reports to the State on the nature and amounts of emissions from such facilities; also authority for the State to

make such data available to the public as reported and as correlated with applicable emission standards.

(b) The provisions of law or regulations which the State determines provide the authorities required by this section shall be specifically identified. Copies of such laws or regulations shall be submitted with the plan unless:

(1) They have been approved as portions of a preceding plan submitted under this subpart or as portions of an implementation plan submitted under section 110 of the Act, and

(2) The State demonstrates that the laws or regulations are applicable to the designated pollutant(s) for which the plan is submitted.

(c) The plan shall show that the legal authorities specified in this section are available to the State at the time of submission of the plan. Legal authority adequate to meet the requirements of paragraphs (a)(3) and (4) of this section may be delegated to the State under section 114 of the Act.

(d) A State governmental agency other than the State air pollution control agency may be assigned responsibility for carrying out a portion of a plan if the plan demonstrates to the Administrator's satisfaction that the State governmental agency has the legal authority necessary to carry out that portion of the plan.

(e) The State may authorize a local agency to carry out a plan, or portion thereof, within the local agency's jurisdiction if the plan demonstrates to the Administrator's satisfaction that the local agency has the legal authority necessary to implement the plan or portion thereof, and that the authorization does not relieve the State of responsibility under the Act for carrying out the plan or portion thereof.

60.27 Actions by the Administrator.

(a) The Administrator may, whenever he determines necessary, extend the period for submission of any plan or plan revision or portion thereof.

(b) After receipt of a plan or plan revision, the Administrator will propose the plan or revision for approval or disapproval. The Administrator will, within four months after the date required for submission of a plan or plan revision, approve or disapprove such plan or revision or each portion thereof.

(c) The Administrator will, after consideration of any State hearing record, promptly prepare and publish proposed regulations setting forth a plan, or portion thereof, for a State if:

(1) The State fails to submit a plan within the time prescribed;

(2) The State fails to submit a plan revision required by section 60.23(a)(2) within the time prescribed; or

(3) The Administrator disapproves the State plan or plan revision or any portion thereof, as unsatisfactory because the requirements of this subpart have not been met.

(d) The Administrator will, within six months after the date required for submission of a plan or plan revision, promulgate the regulations proposed under paragraph (c) of this section with such modifications as may be appropriate unless, prior to such promulgation, the State has adopted and submitted a plan or plan revision which the Administrator determines to be approvable.

(e)(1) Except as provided in paragraph (e)(2) of this section, regulations proposed and promulgated by the Administrator under this section will prescribe emission standards of the same stringency as the corresponding emission guideline(s) specified in the final guideline document published under section 60.22(a) and will require final compliance with such standards as expeditiously as practicable but no later than the times specified in the guideline document.

(2) Upon application by the owner or operator of a designated facility to which regulations proposed and promulgated under this section will apply, the Administrator may provide for the application of less stringent emission standards or longer compliance schedules than those otherwise required by this section in accordance with the criteria specified in section 60.24(f).

(f) If a State failed to hold a public hearing as required by section 60.23(c), the Administrator will provide opportunity for a hearing within the State prior to promulgation of a plan under paragraph (d) of this section.

60.28 Plan revisions by the State.

(a) Plan revisions which have the effect of delaying compliance with applicable emission standards or increments of progress or of establishing less stringent emission standards shall be submitted to the Administrator within 60 days after adoption in accordance with the procedures and requirements applicable to development and submission of the original plan.

(b) More stringent emission standards, or orders which have the effect of accelerating compliance, may be submitted to the Administrator as plan revisions in accordance with the procedures and requirements applicable to development and submission of the original plan.

(c) A revision of a plan, or any portion thereof, shall not be considered part of an applicable plan until approved by the Administrator in accordance with this subpart.

60.29 Plan revisions by the Administrator.

After notice and opportunity for public hearing in each affected State, the Administrator may revise any provision of an applicable plan if:

(a) The provision was promulgated by the Administrator, and

(b) The plan, as revised, will be consistent with the Act and with the requirements of this subpart.

Appendix P

40 CFR 60 Subparts Cb and Eb

- P1 40 CFR 60 Subpart Cb**
- P2 40 CFR 60 Subpart Eb**

Appendix P1

40 CFR 60 Subpart Cb

APPENDIX P--40 CFR 60 SUBPARTS Cb AND Eb

APPENDIX P1--40 CFR 60 SUBPART Cb

Part 60, chapter I, title 40 of the Code of Federal Regulations is amended as follows:

PART 60 - [AMENDED]

1. The authority citation for part 60 is revised to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7414, 7416, 7429, and 7601.

* * * * *

2. Section 60.17 of subpart A of part 60 is amended by revising paragraphs (h)(1), (h)(2), and (h)(3) to read as follows:

§ 60.17 Incorporation by reference.

* * * * *

(h) * * *

(1) ASME QRO-1-1994, Standard for the Qualification and Certification of Resource Recovery Facility Operators, IBR approved for §§ 60.56a and 60.58b(i)(6)(ii).

(2) ASME PTC 4.1-1964 (Reaffirmed 1991), Power Test Codes: Test Code for Steam Generating Units (with 1968 and 1969 Addenda), IBR approved for §§ 60.46b, 60.54b(a), 60.54b(b), and 60.58a(h).

(3) ASME Interim Supplement 19.5 on Instruments and Apparatus: Application, Part II of Fluid Meters, 6th Edition (1971), IBR approved for §§ 60.58a(h) and 60.58b(i)(6)(ii).

* * * * *

3. Section 60.23 of subpart B of part 60 is amended by revising paragraph (a)(1) to read as follows:

§ 60.23 Adoption and submittal of State plans; public hearings.

(a) * * *

(1) Unless otherwise specified in the applicable subpart, within 9 months after notice of the availability of a final guideline document is published under § 60.22(a), each State shall adopt and submit to the Administrator, in accordance with § 60.4 of subpart A of this part, a plan for the control of the designated pollutant to which the guideline document applies.

* * * * *

4. Section 60.24 of subpart B of part 60 is amended by revising paragraph (f) to read as follows:

§ 60.24 Emission standards and compliance schedules.

* * * * *

(f) Unless otherwise specified in the applicable subpart on a case-by-case basis for particular designated facilities or classes of facilities, States may provide for the application of less stringent emissions standards or longer compliance schedules than those otherwise required by paragraph (c) of this section, provided that the State demonstrates with respect to each such facility (or class of facilities):

* * * * *

5. Subpart C of part 60 is amended by revising § 60.30 to read as follows:

§ 60.30 Scope.

The following subparts contain emission guidelines and compliance times for the control of certain designated pollutants in accordance with section 111(d) and section 129 of the Clean Air Act and subpart B of this part.

- (a) Subpart Ca--[Removed and Reserved]
- (b) Subpart Cb--Municipal Waste Combustors
- (c) Subpart Cc--[Reserved]
- (d) Subpart Cd--Sulfuric Acid Production Plants

* * * * *

6. Part 60 is amended by redesignating subpart Cb as Cd, reserving subpart Cc, and revising the new subpart Cd to read as follows:

Subpart Cd--Emissions Guidelines and Compliance Times for Sulfuric Acid Production Units
Sec.

60.30d Designated facilities.

60.31d Emission guidelines.

60.32d Compliance times.

Subpart Cd--Emission Guidelines and Compliance Times for Sulfuric Acid Production Units

§ 60.30d Designated facilities.

Sulfuric acid production units. The designated facility to which §§ 60.31d and 60.32d apply is each existing "sulfuric acid production unit" as defined in § 60.81(a) of subpart H of this part.

§ 60.31d Emissions guidelines.

Sulfuric acid production units. The emission guideline for designated facilities is 0.25 grams sulfuric acid mist (as measured by EPA Reference Method 8 of appendix A of this part) per kilogram (0.5 pounds per ton) of sulfuric acid produced, the production being expressed as 100 percent sulfuric acid.

§ 60.32d Compliance times.

Sulfuric acid production units. Planning, awarding of contracts, and installation of equipment capable of attaining the level of the emission guideline established under § 60.31d can be accomplished within 17 months after the effective date of a State emission standard for sulfuric acid mist.

* * * * *

7. Part 60 is further amended by adding a new subpart Cb to read as follow:

Subpart Cb--Emissions Guidelines and Compliance Times for Municipal Waste Combustors that are constructed on or before [insert date of publication in the Federal Register]

Sec.

60.30b Scope.

60.31b Definitions.

60.32b Designated facilities.

60.33b Emission guidelines for municipal waste combustor metals, acid gases, organics, and nitrogen oxides.

60.34b Emission guidelines for municipal waste combustor operating practices.

60.35b Emission guidelines for municipal waste combustor operator training and certification.

60.36b Emission guidelines for municipal waste combustor fugitive ash emissions.

60.37b Emission guidelines for air curtain incinerators.

60.38b Compliance and performance testing.

60.39b Reporting and recordkeeping guidelines, and compliance schedules.

Subpart Cb--Emissions Guidelines and Compliance Schedules for Municipal Waste Combustors

§ 60.30b Scope.

This subpart contains emission guidelines and compliance schedules for the control of certain designated pollutants from certain municipal waste combustors in accordance with section 111(d) and section 129 of the Clean Air Act and subpart B of this part. The provisions in these emission guidelines supersede the provisions of § 60.24(f) of subpart B of this part.

§ 60.31b Definitions.

Terms used but not defined in this subpart have the meaning given them in the Clean Air Act and subparts A, B, and Eb of this part.

Municipal waste combustor plant means one or more municipal waste combustor units at the same location for which construction was commenced on or before September 20, 1994.

Municipal waste combustor plant capacity means the aggregate municipal waste combustor unit capacity of all municipal waste

combustor units at a municipal waste combustor plant for which construction was commenced on or before September 20, 1994.

§ 60.32b Designated facilities.

(a) The designated facility to which these guidelines apply is each municipal waste combustor unit located within a municipal waste combustor plant with an aggregate municipal waste combustor plant capacity greater than 35 megagrams per day of municipal solid waste for which construction was commenced on or before September 20, 1994.

(b) Any waste combustion unit at a medical, industrial, or other type of waste combustor plant that is capable of combusting more than 35 megagrams per day of municipal solid waste and is subject to a federally enforceable permit limiting the plantwide maximum amount of municipal solid waste that may be combusted to less than or equal to 10 megagrams per day is not subject to this subpart if the owner or operator (1) notifies the Administrator of an exemption claim, (2) provides a copy of the federally enforceable permit that limits the firing of municipal solid waste to less than 10 megagrams per day, and (3) keeps records of the amount of municipal solid waste fired on a daily basis.

(c) Physical or operational changes made to an existing municipal waste combustor unit primarily for the purpose of complying with emission guidelines under this subpart are not considered in determining whether the unit is a modified or reconstructed facility under subpart Ea or subpart Eb of this part.

(d) A qualifying small power production facility, as defined in section 3(17)(C) of the Federal Power Act (16 U.S.C. 796(17)(C)), that burns homogeneous waste (such as automotive tires or used oil, but not including refuse-derived fuel) for the production of electric energy is not subject to this subpart if the owner or operator of the facility notifies the Administrator of this exemption and provides data documenting that the facility qualifies for this exemption.

(e) A qualifying cogeneration facility, as defined in section 3(18)(B) of the Federal Power Act (16 U.S.C. 796(18)(B)), that burns homogeneous waste (such as automotive tires or used oil, but not including refuse-derived fuel) for the production of electric energy and steam or forms of useful energy (such as heat) that are used for industrial, commercial, heating, or cooling purposes, is not subject to this subpart if the owner or operator of the facility notifies the Administrator of this exemption and provides data documenting that the facility qualifies for this exemption.

(f) Any unit combusting a single-item waste stream of tires is not subject to this subpart if the owner or operator of the unit (1) notifies the Administrator of an exemption claim, and (2) provides data documenting that the unit qualifies for this exemption.

(g) Any unit required to have a permit under section 3005 of the Solid Waste Disposal Act is not subject to this subpart.

(h) Any materials recovery facility (including primary or secondary smelters) that combusts waste for the primary purpose of recovering metals is not subject to this subpart.

(i) Any cofired combustor, as defined under § 60.51b of subpart Eb of this part, that meets the capacity specifications in paragraph (a) of this section is not subject to this subpart if the owner or operator of the cofired combustor (1) notifies the Administrator of an exemption claim, (2) provides a copy of the federally enforceable permit (specified in the definition of cofired combustor in this section), and (3) keeps a record on a calendar quarter basis of the weight of municipal solid waste combusted at the cofired combustor and the weight of all other fuels combusted at the cofired combustor.

(j) Air curtain incinerators, as defined under § 60.51b of subpart Eb of this part, that meet the capacity specifications in paragraph (a) of this section, and that combust a fuel stream composed of 100 percent yard waste are exempt from all provisions of this subpart except the opacity standard under § 60.37b, the testing procedures under § 60.38b, and the reporting and recordkeeping provisions under § 60.39b.

(k) Air curtain incinerators that meet the capacity specifications in paragraph (a) of this section and that combust municipal solid waste other than yard waste are subject to all provisions of this subpart.

(l) Pyrolysis/combustion units that are an integrated part of a plastics/rubber recycling unit (as defined in § 60.51b) are

not subject to this subpart if the owner or operator of the plastics/rubber recycling unit keeps records of (1) the weight of plastics, rubber, and/or rubber tires processed on a calendar quarter basis, (2) the weight of chemical plant feedstocks and petroleum refinery feedstocks produced and marketed on a calendar quarter basis, and (3) the name and address of the purchaser of the feedstocks. The combustion of gasoline, diesel fuel, jet fuel, fuel oils, residual oil, refinery gas, petroleum coke, liquified petroleum gas, propane, or butane produced by chemical plants or petroleum refineries that use feedstocks produced by plastics/rubber recycling units are not subject to this subpart.

§ 60.33b Emission guidelines for municipal waste combustor metals, acid gases, organics, and nitrogen oxides.

(a) The emission limits for municipal waste combustor metals are specified in paragraphs (a)(1) through (a)(3) of this section.

(1) For approval, a State plan shall include emission limits for particulate matter and opacity at least as protective as the emission limits for particulate matter and opacity specified in paragraphs (a)(1)(i) through (a)(1)(iii) of this section.

(i) The emission limit for particulate matter contained in the gases discharged to the atmosphere from a designated facility located within a large municipal waste combustor plant is 27 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(ii) The emission limit for particulate matter contained in the gases discharged to the atmosphere from a designated facility located within a small municipal waste combustor plant is 70 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(iii) The emission limit for opacity exhibited by the gases discharged to the atmosphere from a designated facility located within a small or large municipal waste combustor plant is 10 percent (6-minute average).

(2) For approval, a State plan shall include emission limits for cadmium and lead at least as protective as the emission limits for cadmium and lead specified in paragraphs (a)(2)(i) through (a)(2)(iv) of this section.

(i) The emission limit for cadmium contained in the gases discharged to the atmosphere from a designated facility located within a large municipal waste combustor plant is 0.040 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(ii) The emission limit for cadmium contained in the gases discharged to the atmosphere from a designated facility located within a small municipal waste combustor plant is 0.10 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(iii) The emission limit for lead contained in the gases discharged to the atmosphere from a designated facility located within a large municipal waste combustor plant is 0.49 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(iv) The emission limit for lead contained in the gases discharged to the atmosphere from a designated facility located within a small municipal waste combustor plant is 1.6 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(3) For approval, a State plan shall include emission limits for mercury at least as protective as the emission limits specified in this paragraph. The emission limit for mercury contained in the gases discharged to the atmosphere from a designated facility located within a small or large municipal waste combustor plant is 0.080 milligrams per dry standard cubic meter or 15 percent of the potential mercury emission concentration (an 85-percent reduction by weight), corrected to 7 percent oxygen, whichever is less stringent.

(b) The emission limits for municipal waste combustor acid gases, expressed as sulfur dioxide and hydrogen chloride, are specified in paragraphs (b)(1) and (b)(2) of this section.

(1) For approval, a State plan shall include emission limits for sulfur dioxide at least as protective as the emission limits for sulfur dioxide specified in paragraphs (b)(1)(i) and (b)(1)(ii) of this section.

(i) The emission limit for sulfur dioxide contained in the gases discharged to the atmosphere from a designated facility located within a large municipal waste combustor plant is 31 parts per million by volume or 25 percent of the potential sulfur dioxide emission concentration (75-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis),

whichever is less stringent. Compliance with this emission limit is based on a 24-hour daily geometric mean.

(ii) The emission limit for sulfur dioxide contained in the gases discharged to the atmosphere from a designated facility located within a small municipal waste combustor plant is 80 parts per million by volume or 50 percent of the potential sulfur dioxide emission concentration (50-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent. Compliance with this emission limit is based on a 24-hour geometric mean.

(2) For approval, a State plan shall include emission limits for hydrogen chloride at least as protective as the emission limits for hydrogen chloride specified in paragraphs (b)(2)(i) and (b)(2)(ii) of this section.

(i) The emission limit for hydrogen chloride contained in the gases discharged to the atmosphere from a designated facility located within a large municipal waste combustor plant is 31 parts per million by volume or 5 percent of the potential hydrogen chloride emission concentration (95-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent.

(ii) The emission limit for hydrogen chloride contained in the gases discharged to the atmosphere from an affected facility located within a small municipal waste combustor plant is 250 parts per million by volume or 50 percent of the potential hydrogen chloride emission concentration (50-percent reduction by

weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent.

(c) The emission limits for municipal waste combustor organics, expressed as total mass dioxins/furans, are specified in paragraphs (c)(1) and (c)(2) of this section.

(1) For approval, a State plan shall include an emission limit for dioxins/furans contained in the gases discharged to the atmosphere from a designated facility located within a large municipal waste combustor plant at least as protective as the emission limit for dioxins/furans specified in either paragraph (c)(1)(i) or (c)(1)(ii) of this section, as applicable.

(i) The emission limit for designated facilities that employ an electrostatic precipitator-based emission control system is 60 nanograms per dry standard cubic meter (total mass), corrected to 7 percent oxygen.

(ii) The emission limit for designated facilities that do not employ an electrostatic precipitator-based emission control system is 30 nanograms per dry standard cubic meter (total mass), corrected to 7 percent oxygen.

(2) For approval, a State plan shall include an emission limit for dioxins/furans contained in the gases discharged to the atmosphere from a designated facility located within a small municipal waste combustor plant at least as protective as the emission limit for dioxins/furans specified in this paragraph. The emission limit for dioxins/furans for designated facilities located within a small municipal waste combustor plant is

125 nanograms per dry standard cubic meter (total mass),
corrected to 7 percent oxygen.

(d) For approval, a State plan shall include emission limits for nitrogen oxides at least as protective as the emission limits listed in table 1 of this subpart for designated facilities located within large municipal waste combustor plants. Table 1 provides emission limits for the nitrogen oxides concentration level for each type of designated facility.

TABLE 1. NITROGEN OXIDES GUIDELINES FOR DESIGNATED FACILITIES AT LARGE MUNICIPAL WASTE COMBUSTOR PLANTS

Municipal waste combustor technology	Nitrogen oxides emission limit (parts per million by volume) ^a
Mass burn waterwall	200
Mass burn rotary waterwall	250
Refuse-derived fuel combustor	250
Fluidized bed combustor	240
Mass burn refractory combustors	no limit
Other ^b	200

^a Corrected to 7 percent oxygen, dry basis.

^b Excludes mass burn refractory municipal waste combustors.

(1) A State plan may allow nitrogen oxides emissions averaging as specified in paragraphs (d)(1)(i) through (d)(1)(v) of this section.

(i) An owner or operator of a large municipal waste combustor plant may elect to implement a nitrogen oxides emissions averaging plan for the designated facilities that are located at that plant and that are subject to subpart Cb, except as specified in paragraphs (d)(1)(i)(A) and (d)(1)(i)(B) of this section.

(A) Municipal waste combustor units subject to subpart Ea or Eb cannot be included in the emissions averaging plan.

(B) Mass burn refractory municipal waste combustor units cannot be included in the emissions averaging plan.

(ii) The designated facilities included in the nitrogen oxides emissions averaging plan must be identified in the initial compliance report specified in § 60.59b(f) or in the annual report specified in § 60.59b(g), as applicable, prior to implementing the averaging plan. The designated facilities being included in the averaging plan may be redesignated each calendar year. Partial year redesignation is allowable with State approval.

(iii) To implement the emissions averaging plan, the average daily (24-hour) nitrogen oxides emission concentration level for gases discharged from the designated facilities being included in the emissions averaging plan must be no greater than the levels specified in table 2 of this subpart. Table 2

provides emission limits for the nitrogen oxides concentration level for each type of designated facility.

TABLE 2. NITROGEN OXIDES LIMITS FOR EXISTING DESIGNATED FACILITIES INCLUDED IN AN EMISSIONS AVERAGING PLAN AT LARGE MUNICIPAL WASTE COMBUSTOR PLANTS

Municipal waste combustor technology	Nitrogen oxides emission limit (parts per million by volume) ^a
Mass burn waterwall	180
Mass burn rotary waterwall	220
Refuse-derived fuel combustor	230
Fluidized bed combustor	220
Other ^b	180

^a Corrected to 7 percent oxygen, dry basis.

^b Excludes mass burn refractory municipal waste combustors. Mass burn refractory municipal waste combustors may not be included in an emissions averaging plan.

(iv) Under the emissions averaging plan, the average daily nitrogen oxides emissions specified in paragraph (d)(1)(iii) of this section shall be calculated using equation (1). Designated facilities that are offline shall not be included in calculating the average daily nitrogen oxides emission level.

$$\text{NO}_{\text{x}24\text{-hr}} = \frac{\sum_{i=1}^h (\text{NO}_{\text{x}i}) (S_i)}{\sum_{i=1}^h (S_i)} \quad (1)$$

where:

$\text{NO}_{\text{x}24\text{-hr}}$ = 24-hr daily average nitrogen oxides emission concentration level for the emissions averaging plan (parts per million by volume corrected to 7 percent oxygen).

$\text{NO}_{\text{x}i}$ = 24-hr daily average nitrogen oxides emission concentration level for designated facility i (parts per million by volume, corrected to 7 percent oxygen), calculated according to the procedures in § 60.58b(h) of this subpart.

S_i = maximum demonstrated municipal waste combustor unit load for designated facility i (pounds per hour steam or feedwater flow as determined in the most recent dioxin/furan performance test).

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

(v) For any day in which any designated facility included in the emissions averaging plan is offline, the owner or operator of the municipal waste combustor plant must demonstrate compliance according to either paragraph (d)(1)(v)(A) of this section or both paragraphs (d)(1)(v)(B) and (d)(1)(v)(C) of this section.

(A) Compliance with the applicable limits specified in table 2 of this subpart shall be demonstrated using the averaging procedure specified in paragraph (d)(1)(iv) of this section for the designated facilities that are online.

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

(C) The average nitrogen oxides emissions (kilograms per day) calculated according to paragraph (d)(1)(v)(C)(2) of this section shall not exceed the average nitrogen oxides emissions

(kilograms per day) calculated according to paragraph (d)(1)(v)(C)(1) of this section.

(1) For all days during which the emissions averaging plan was implemented and achieved and during which all designated facilities were online, the average nitrogen oxides emissions shall be calculated. The average nitrogen oxides emissions (kilograms per day) shall be calculated on a calendar year basis according to paragraphs (d)(1)(v)(C)(1)(i) through (d)(1)(v)(C)(1)(iii) of this section.

(i) For each designated facility included in the emissions averaging plan, the daily amount of nitrogen oxides emitted (kilograms per day) shall be calculated based on the hourly nitrogen oxides data required under § 60.38b(a) and specified under § 60.58b(h)(5) of subpart Eb of this part, the flue gas flow rate determined using table 19-1 of EPA Reference Method 19 or a State-approved method, and the hourly average steam or feedwater flow rate.

(ii) The daily total nitrogen oxides emissions shall be calculated as the sum of the daily nitrogen oxides emissions from each designated facility calculated under paragraph (d)(1)(v)(C)(1)(i) of this section.

(iii) The average nitrogen oxides emissions (kilograms per day) on a calendar year basis shall be calculated as the sum of all daily total nitrogen oxides emissions calculated under paragraph (d)(1)(v)(C)(1)(ii) of this section divided by the number of calendar days for which a daily total was calculated.

(2) For all days during which one or more of the designated facilities under the emissions averaging plan was offline, the average nitrogen oxides emissions shall be calculated. The average nitrogen oxides emissions (kilograms per day) shall be calculated on a calendar year basis according to paragraphs (d)(1)(v)(C)(2)(i) through (d)(1)(v)(C)(2)(iii) of this section.

(i) For each designated facility included in the emissions averaging plan, the daily amount of nitrogen oxides emitted (kilograms per day) shall be calculated based on the hourly nitrogen oxides data required under § 60.38b(a) and specified under § 60.58b(h)(5) of subpart Eb of this part, the flue gas flow rate determined using table 19-1 of EPA Reference Method 19 or a State-approved method, and the hourly average steam or feedwater flow rate.

(ii) The daily total nitrogen oxides emissions shall be calculated as the sum of the daily nitrogen oxides emissions from each designated facility calculated under paragraph (d)(1)(v)(C)(2)(i) of this section.

(iii) The average nitrogen oxides emissions (kilograms per day) on a calendar year basis shall be calculated as the sum of all daily total nitrogen oxides emissions calculated under paragraph (d)(1)(v)(C)(2)(ii) of this section divided by the number of calendar days for which a daily total was calculated.

(2) A State plan may establish a program to allow owners or operators of municipal waste combustor plants to engage in

trading of nitrogen oxides emission credits. A trading program must be approved by the Administrator before implementation.

§ 60.34b Emission guidelines for municipal waste combustor operating practices.

(a) For approval, a State plan shall include emission limits for carbon monoxide at least as protective as the emission limits for carbon monoxide listed in table 3 of this subpart. Table 3 provides emission limits for the carbon monoxide concentration level for each type of designated facility located within a small or large municipal waste combustor plant.

TABLE 3. MUNICIPAL WASTE COMBUSTOR OPERATING GUIDELINES

Municipal waste combustor technology	Carbon monoxide emissions level (parts per million by volume) ^a	Averaging time
Mass burn waterwall	100	4-hour
Mass burn refractory	100	4-hour
Mass burn rotary refractory	100	24-hour
Mass burn rotary waterwall	250	24-hour
Modular starved air	50	4-hour
Modular excess air	50	4-hour
Refuse-derived fuel stoker	200	24-hour
Bubbling fluidized bed combustor	100	4-hour
Circulating fluidized bed combustor	100	4-hour
Pulverized coal/refuse-derived fuel mixed fuel-fired combustor	150	4-hour
Spreader stoker coal/refuse-derived fuel mixed fuel-fired combustor	200	24-hour

^a Measured at the combustor outlet in conjunction with a measurement of oxygen concentration, corrected to 7 percent oxygen, dry basis. Calculated as an arithmetic average.

(b) For approval, a State plan shall include requirements for municipal waste combustor operating practices at least as protective as those requirements listed in § 60.53b(b) and (c) of subpart Eb of this part.

§ 60.35b Emission guidelines for municipal waste combustor operator training and certification.

For approval, a State plan shall include requirements for designated facilities located within small or large municipal waste combustor plants for municipal waste combustor operator training and certification at least as protective as those requirements listed in § 60.54b of subpart Eb of this part. The State plan shall require compliance with these requirements according to the schedule specified in § 60.39b(c)(4).

§ 60.36b Emission guidelines for municipal waste combustor fugitive ash emissions.

For approval, a State plan shall include requirements for municipal waste combustor fugitive ash emissions at least as protective as those requirements listed in § 60.55b of subpart Eb of this part.

§ 60.37b Emission guidelines for air curtain incinerators.

For approval, a State plan shall include emission limits for opacity for air curtain incinerators at least as protective as those listed in § 60.56b of subpart Eb of this part.

§ 60.38b Compliance and performance testing.

(a) For approval, a State plan shall include the performance testing methods listed in § 60.58b of subpart Eb of

this part, as applicable, except as provided for under § 60.24(b)(2) of subpart B of this part and paragraphs (b) and (c) of this section.

(b) For approval, a State plan shall include for designated facilities at large municipal waste combustor plants the alternative performance testing schedule for dioxins/furans specified in § 60.58b(g)(5)(iii) of subpart Eb of this part, as applicable, for those designated facilities that achieve a dioxin/furan emission level less than or equal to 15 nanograms per dry standard cubic meter total mass, corrected to 7 percent oxygen.

(c) For approval, a State plan shall include for designated facilities at small municipal waste combustor plants the alternative performance testing schedule for dioxins/furans specified in § 60.58b(g)(5)(iii) of subpart Eb of this part, as applicable, for those designated facilities that achieve a dioxin/furan emission level less than or equal to 30 nanograms per dry standard cubic meter total mass, corrected to 7 percent oxygen.

§ 60.39b Reporting and recordkeeping guidelines and compliance schedules.

(a) For approval, a State plan shall include the reporting and recordkeeping provisions listed in § 60.59b of subpart Eb of this part, as applicable, except for the siting requirements under § 60.59b(a), (b)(5), and (d)(11) of subpart Eb of this part.

(b) Not later than [insert the date 1 year after the date of publication in the Federal Register], each State in which a designated facility is operating shall submit to the Administrator a plan to implement and enforce the emission guidelines. The compliance schedule specified in this paragraph is in accordance with section 129(b)(2) of the Act and supersedes the compliance schedule provided in § 60.23(a)(1) of subpart B of this part.

(c) For approval, a State plan shall include the compliance schedules specified in paragraphs (c)(1) through (c)(5) of this section.

(1) A State plan shall allow designated facilities located within large municipal waste combustor plants to comply with all requirements of a State plan (or close) within 1 year after approval of the State plan, except as provided by paragraph (c)(1)(i) and (c)(1)(ii) of this section.

(i) A State plan that allows designated facilities more than 1 year but less than 3 years following the date of issuance of a revised construction or operation permit, if a permit modification is required, or more than 1 year but less than 3 years following approval of the State plan, if a permit modification is not required shall include measurable and enforceable incremental steps of progress toward compliance. Suggested measurable and enforceable activities are specified in paragraphs (c)(1)(i)(A) through (c)(1)(i)(J) of this section.

- (A) Date for obtaining services of an architectural and engineering firm regarding the air pollution control device(s);
- (B) Date for obtaining design drawings of the air pollution control device(s);
- (C) Date for submittal of permit modifications, if necessary;
- (D) Date for submittal of the final control plan to the Administrator. [§60.21 (h)(1) of subpart B of this part.];
- (E) Date for ordering the air pollution control device(s);
- (F) Date for obtaining the major components of the air pollution control device(s);
- (G) Date for initiation of site preparation for installation of the air pollution control device(s);
- (H) Date for initiation of installation of the air pollution control device(s);
- (I) Date for initial startup of the air pollution control device(s); and
- (J) Date for initial performance test(s) of the air pollution control device(s).

(ii) A State plan that allows designated facilities more than 1 year but up to 3 years after State plan approval to close shall require a closure agreement. The closure agreement must include the date of plant closure.

(2) If the State plan requirements for a designated facility located within a large municipal waste combustor plant include a compliance schedule longer than 1 year after approval

of the State plan in accordance with paragraph (c)(1)(i) or (c)(1)(ii) of this section, the State plan submittal (for approval) shall include performance test results for dioxin/furan emissions for each designated facility that has a compliance schedule longer than 1 year following the approval of the State plan, and the performance test results shall have been conducted during or after 1990. The performance test shall be conducted according to the procedures in § 60.38b.

(3) A State plan shall allow designated facilities located within small municipal waste combustor plants to comply with all requirements of the State plan (or close) within 3 years following the date of issuance of a revised construction or operation permit, if a permit modification is required, or within 3 years following approval of the State plan, if a permit modification is not required.

(4) A State plan shall require compliance with the municipal waste combustor operator training and certification requirements under § 60.35b according to the schedule specified in paragraphs (c)(4)(i) through (c)(4)(iii) of this section.

(i) For designated facilities located within small municipal waste combustor plants, the State plan shall require compliance with the municipal waste combustor operator training and certification requirements specified under § 60.54b(a) through (c) of subpart Eb of this part by the date 6 months after startup of a designated facility or 18 months after State plan approval, whichever is later.

(ii) For designated facilities located within large municipal waste combustor plants, the State plan shall require compliance with the municipal waste combustor operator training and certification requirements specified under § 60.54b(a) through (c) of subpart Eb of this part by the date 6 months after the date of startup or 12 months after State plan approval, whichever is later.

(iii) For designated facilities located within small or large municipal waste combustor plants, the State plan shall require compliance with the requirements specified in § 60.54b(d), (f), and (g) of subpart Eb of this part no later than 6 months after startup or 12 months after State plan approval, whichever is later.

(A) The requirement specified in § 60.54b(d) of subpart Eb of this part does not apply to chief facility operators, shift supervisors, and control room operators who have obtained full certification from the American Society of Mechanical Engineers on or before the date of State plan approval.

(B) The owner or operator may request that the Administrator waive the requirement specified in § 60.54b(d) of subpart Eb of this part for chief facility operators, shift supervisors, and control room operators who have obtained provisional certification from the American Society of Mechanical Engineers on or before the date of State plan approval.

(C) The initial training requirements specified in § 60.54b(f)(1) of subpart Eb of this part shall be completed no

later than the date specified in paragraph (c)(4)(iii)(C)(1), (c)(4)(iii)(C)(2), or (c)(4)(iii)(C)(3), of this section whichever is later.

(1) The date 6 months after the date of startup of the affected facility;

(2) Twelve months after State plan approval; or

(3) The date prior to the day when the person assumes responsibilities affecting municipal waste combustor unit operation.

(5) A State plan shall require all designated facilities for which construction, modification, or reconstruction is commenced after June 26, 1987 that are located within a large municipal waste combustor plant to comply with the emission limit for mercury specified in § 60.33b(a)(3) and the emission limit for dioxins/furans specified in § 60.33b(c)(1) within 1 year following issuance of a revised construction or operation permit, if a permit modification is required, or within 1 year following approval of the State plan, whichever is later.

(d) In the event no plan for implementing the emission guidelines is adopted, all designated facilities meeting the applicability requirements under § 60.32b shall be in compliance with the guidelines no later than [insert the date 5 years after the date of publication in the Federal Register].

8. Part 60 is amended by adding subpart Eb as follows:
Subpart Eb--Standards of Performance for Municipal Waste

Combustors for which Construction is Commenced after
September 20, 1994.

Sec.

60.50b Applicability and delegation of authority.

60.51b Definitions.

60.52b Standards for municipal waste combustor metals, acid
gases, organics, and nitrogen oxides.

60.53b Standards for municipal waste combustor operating
practices.

60.54b Standards for municipal waste combustor operator training
and certification.

60.55b Standards for municipal waste combustor fugitive ash
emissions.

60.56b Standards for air curtain incinerators.

60.57b Siting requirements.

60.58b Compliance and performance testing.

60.59b Reporting and recordkeeping requirements.

Appendix P2

40 CFR 60 Subpart Eb

APPENDIX P2--40 CFR 60 SUBPART Eb

Subpart Eb--Standards of Performance for Municipal Waste Combustors for which Construction is Commenced after September 20, 1994.

§ 60.50b Applicability and delegation of authority.

(a) The affected facility to which this subpart applies is each municipal waste combustor unit located within a municipal waste combustor plant with an aggregate municipal waste combustor plant capacity greater than 35 megagrams per day of municipal solid waste for which construction is commenced after September 20, 1994 or for which modification or reconstruction is commenced after [insert the date 6 months after the date of publication in the Federal Register.]

(b) Any waste combustion unit at a medical, industrial, or other type of waste combustor plant that is capable of combusting more than 35 megagrams per day of municipal solid waste and is subject to a federally enforceable permit limiting the plantwide maximum amount of municipal solid waste that may be combusted to less than or equal to 10 megagrams per day is not subject to this subpart if the owner or operator (1) notifies the Administrator of an exemption claim, (2) provides a copy of the federally enforceable permit that limits the firing of municipal solid waste to less than 10 megagrams per day, and (3) keeps records of the amount of municipal solid waste fired on a daily basis.

(c) An affected facility to which this subpart applies is not subject to subpart E or Ea of this part.

(d) Physical or operational changes made to an existing municipal waste combustor unit primarily for the purpose of complying with emission guidelines under subpart Cb are not considered a modification or reconstruction and do not result in an existing municipal waste combustor unit becoming subject to this subpart.

(e) A qualifying small power production facility, as defined in section 3(17)(C) of the Federal Power Act (16 U.S.C. 796(17)(C)), that burns homogeneous waste (such as automotive tires or used oil, but not including refuse-derived fuel) for the production of electric energy is not subject to this subpart if the owner or operator of the facility notifies the Administrator of this exemption and provides data documenting that the facility qualifies for this exemption.

(f) A qualifying cogeneration facility, as defined in section 3(18)(B) of the Federal Power Act (16 U.S.C. 796(18)(B)), that burns homogeneous waste (such as automotive tires or used oil, but not including refuse-derived fuel) for the production of electric energy and steam or forms of useful energy (such as heat) that are used for industrial, commercial, heating, or cooling purposes, is not subject to this subpart if the owner or operator of the facility notifies the Administrator of this exemption and provides data documenting that the facility qualifies for this exemption.

(g) Any unit combusting a single-item waste stream of tires is not subject to this subpart if the owner or operator of the

unit (1) notifies the Administrator of an exemption claim, and (3) provides data documenting that the unit qualifies for this exemption.

(h) Any unit required to have a permit under section 3005 of the Solid Waste Disposal Act is not subject to this subpart.

(i) Any materials recovery facility (including primary or secondary smelters) that combusts waste for the primary purpose of recovering metals is not subject to this subpart.

(j) Any cofired combustor, as defined under § 60.51b, located at a plant that meets the capacity specifications in paragraph (a) of this section is not subject to this subpart if the owner or operator of the cofired combustor (1) notifies the Administrator of an exemption claim, (2) provides a copy of the federally enforceable permit (specified in the definition of cofired combustor in this section), and (3) keeps a record on a calendar quarter basis of the weight of municipal solid waste combusted at the cofired combustor and the weight of all other fuels combusted at the cofired combustor.

(k) Air curtain incinerators, as defined under § 60.51b, located at a plant that meet the capacity specifications in paragraph (a) of this section and that combust a fuel stream composed of 100 percent yard waste are exempt from all provisions of this subpart except the opacity limit under § 60.56b, the testing procedures under § 60.58b(1), and the reporting and recordkeeping provisions under § 60.59b(e) and (i).

(l) Air curtain incinerators located at plants that meet the capacity specifications in paragraph (a) of this section combusting municipal solid waste other than yard waste are subject to all provisions of this subpart.

(m) Pyrolysis/combustion units that are an integrated part of a plastics/rubber recycling unit (as defined in § 60.51b) are not subject to this subpart if the owner or operator of the plastics/rubber recycling unit keeps records of (1) the weight of plastics, rubber, and/or rubber tires processed on a calendar quarter basis, (2) the weight of chemical plant feedstocks and petroleum refinery feedstocks produced and marketed on a calendar quarter basis, and (3) the name and address of the purchaser of the feedstocks. The combustion of gasoline, diesel fuel, jet fuel, fuel oils, residual oil, refinery gas, petroleum coke, liquified petroleum gas, propane, or butane produced by chemical plants or petroleum refineries that use feedstocks produced by plastics/rubber recycling units are not subject to this subpart.

(n) The following authorities shall be retained by the Administrator and not transferred to a State: None.

(o) This subpart shall become effective [insert the date 6 months after the date of publication in the Federal Register].

§ 60.51b Definitions.

Air curtain incinerator means an incinerator that operates by forcefully projecting a curtain of air across an open chamber or pit in which burning occurs. Incinerators of this type can be

constructed above or below ground and with or without refractory walls and floor.

Batch municipal waste combustor means a municipal waste combustor unit designed so that it cannot combust municipal solid waste continuously 24 hours per day because the design does not allow waste to be fed to the unit or ash to be removed while combustion is occurring.

Bubbling fluidized bed combustor means a fluidized bed combustor in which the majority of the bed material remains in a fluidized state in the primary combustion zone.

Calendar quarter means a consecutive 3-month period (nonoverlapping) beginning on January 1, April 1, July 1, and October 1.

Calendar year means the period including 365 days starting January 1 and ending on December 31.

Chief facility operator means the person in direct charge and control of the operation of a municipal waste combustor and who is responsible for daily onsite supervision, technical direction, management, and overall performance of the facility.

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

Clean wood means untreated wood or untreated wood products including clean untreated lumber, tree stumps (whole or chipped), and tree limbs (whole or chipped). Clean wood does not include

yard waste, which is defined elsewhere in this section, or construction, renovation, and demolition wastes (including but not limited to railroad ties and telephone poles), which are exempt from the definition of municipal solid waste in this section.

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

Continuous emission monitoring system means a monitoring system for continuously measuring the emissions of a pollutant from an affected facility.

Dioxin/furan means tetra- through octa- chlorinated dibenzo-p-dioxins and dibenzofurans.

Federally enforceable means all limitations and conditions that are enforceable by the Administrator including the requirements of 40 CFR parts 60, 61, and 63, requirements within any applicable State implementation plan, and any permit requirements established under 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24.

First calendar half means the period starting on January 1 and ending on June 30 in any year.

Four-hour block average or 4-hour block average means the average of all hourly emission concentrations when the affected

facility is operating and combusting municipal solid waste measured over 4-hour periods of time from 12:00 midnight to 4 a.m., 4 a.m. to 8 a.m., 8 a.m. to 12:00 noon, 12:00 noon to 4 p.m., 4 p.m. to 8 p.m., and 8 p.m. to 12:00 midnight.

Large municipal waste combustor plant means a municipal waste combustor plant with a municipal waste combustor aggregate plant capacity for affected facilities that is greater than 225 megagrams per day of municipal solid waste. Mass burn refractory municipal waste combustor means a field-erected combustor that combusts municipal solid waste in a refractory wall furnace. Unless otherwise specified, this includes combustors with a cylindrical rotary refractory wall furnace.

Mass burn rotary waterwall municipal waste combustor means a field-erected combustor that combusts municipal solid waste in a cylindrical rotary waterwall furnace.

Mass burn waterwall municipal waste combustor means a field-erected combustor that combusts municipal solid waste in a waterwall furnace.

Materials separation plan means a plan that identifies both a goal and an approach to separate certain components of municipal solid waste for a given service area in order to make the separated materials available for recycling. A materials separation plan may include elements such as dropoff facilities, buy-back or deposit-return incentives, curbside pickup programs, or centralized mechanical separation systems. A materials separation plan may include different goals or approaches for

different subareas in the service area, and may include no materials separation activities for certain subareas or, if warranted, an entire service area.

Maximum demonstrated municipal waste combustor unit load means the highest 4-hour arithmetic average municipal waste combustor unit load achieved during four consecutive hours during the most recent dioxin/furan performance test demonstrating compliance with the applicable limit for municipal waste combustor organics specified under § 60.52b(c).

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 during the most recent dioxin/furan performance test demonstrating compliance with the applicable limit for municipal waste combustor organics specified under § 60.52b(c).

Modification or modified municipal waste combustor unit means a municipal waste combustor unit to which changes have been made after [insert date 6 months after the date of publication in the Federal Register] if (1) the cumulative cost of the changes, over the life of the unit, exceed 50 percent of the original cost of construction and installation of the unit (not including the cost of any land purchased in connection with such construction or installation) updated to current costs, or (2) any physical change in the municipal waste combustor unit or change in the method of operation of the municipal waste combustor unit

increases the amount of any air pollutant emitted by the unit for which standards have been established under section 129 or section 111. Increases in the amount of any air pollutant emitted by the municipal waste combustor unit are determined at 100-percent physical load capability and downstream of all air pollution control devices, with no consideration given for load restrictions based on permits or other nonphysical operational restrictions.

Modular excess-air municipal waste combustor means a combustor that combusts municipal solid waste and that is not field-erected and has multiple combustion chambers, all of which are designed to operate at conditions with combustion air amounts in excess of theoretical air requirements.

Modular starved-air municipal waste combustor means a combustor that combusts municipal solid waste and that is not field-erected and has multiple combustion chambers in which the primary combustion chamber is designed to operate at substoichiometric conditions.

Municipal solid waste or municipal-type solid waste means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or

facilities. Institutional waste includes material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities. Household, commercial/retail, and institutional waste does not include used oil; sewage sludge; wood pallets; construction, renovation, and demolition wastes (which includes but is not limited to railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles (including motor vehicle parts or vehicle fluff). Household, commercial/retail, and institutional wastes include (1) yard waste, (2) refuse-derived fuel, and (3) motor vehicle maintenance materials limited to vehicle batteries and tires except as specified in § 60.50b(g).

Municipal waste combustor or municipal waste combustor unit means any setting or equipment that combusts solid, liquid, or gasified municipal solid waste including, but not limited to, field-erected incinerators (with or without heat recovery), modular incinerators (starved-air or excess-air), boilers (i.e., steam generating units), furnaces (whether suspension-fired, grate-fired, mass-fired, air curtain incinerators, or fluidized bed-fired), and pyrolysis/combustion units. Municipal waste combustors do not include pyrolysis/combustion units located at a plastics/rubber recycling unit (as specified in § 60.50b(m) of this section). Municipal waste combustors do not include internal combustion engines, gas turbines, or other combustion

devices that combust landfill gases collected by landfill gas collection systems.

The boundaries of a municipal solid waste combustor are defined as follows. The municipal waste combustor unit includes, but is not limited to, the municipal solid waste fuel feed system, grate system, flue gas system, bottom ash system, and the combustor water system. The municipal waste combustor boundary starts at the municipal solid waste pit or hopper and extends through:

(1) The combustor flue gas system, which ends immediately following the heat recovery equipment or, if there is no heat recovery equipment, immediately following the combustion chamber,

(2) The combustor bottom ash system, which ends at the truck loading station or similar ash handling equipment that transfer the ash to final disposal, including all ash handling systems that are connected to the bottom ash handling system; and

(3) The combustor water system, which starts at the feed water pump and ends at the piping exiting the steam drum or superheater.

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

Municipal waste combustor acid gases means all acid gases emitted in the exhaust gases from municipal waste combustor units including, but not limited to, sulfur dioxide and hydrogen chloride gases.

Municipal waste combustor metals means metals and metal compounds emitted in the exhaust gases from municipal waste combustor units.

Municipal waste combustor organics means organic compounds emitted in the exhaust gases from municipal waste combustor units and includes tetra- through octa- chlorinated dibenzo-p-dioxins and dibenzofurans.

Municipal waste combustor plant means one or more municipal waste combustor units at the same location for which construction, modification, or reconstruction is commenced after September 20, 1994.

Municipal waste combustor plant capacity means the aggregate municipal waste combustor unit capacity of all municipal waste combustor units at a municipal waste combustor plant for which construction, modification, or reconstruction of the units commenced after September 20, 1994. Any municipal waste combustor units for which construction, modification, or reconstruction is commenced on or before September 20, 1994 are not included for determining applicability under this subpart.

Municipal waste combustor unit capacity means the maximum charging rate of a municipal waste combustor unit expressed in megagrams per day of municipal solid waste combusted, calculated according to the procedures under § 60.58b(j). Section 60.58b(j) includes procedures for determining municipal waste combustor unit capacity for continuous and batch feed municipal waste combustors.

Municipal waste combustor unit load means the steam load of the municipal waste combustor unit measured as specified in § 60.58b(i)(6).

Particulate matter means total particulate matter emitted from municipal waste combustor units as measured by EPA Reference Method 5 (see § 60.58b(c)).

Plastics/rubber recycling unit means an integrated processing unit where plastics, rubber, and/or rubber tires are the only feed materials (incidental contaminants may be included in the feed materials) and they are processed into a chemical plant feedstock or petroleum refinery feedstock, where the feedstock is marketed to and used by a chemical plant or petroleum refinery as input feedstock. The combined weight of the chemical plant feedstock and petroleum refinery feedstock produced by the plastics/rubber recycling unit on a calendar quarter basis shall be more than 70 percent of the combined weight of the plastics, rubber, and rubber tires processed by the plastics/rubber recycling unit on a calendar quarter basis. The plastics, rubber, and/or rubber tire feed materials to the plastics/rubber recycling unit may originate from the separation or diversion of plastics, rubber, or rubber tires from MSW or industrial solid waste, and may include manufacturing scraps, trimmings, and off-specification plastics, rubber, and rubber tire discards. The plastics, rubber, and rubber tire feed materials to the plastics/rubber recycling unit may contain

incidental contaminants (e.g., paper labels on plastic bottles, metal rings on plastic bottle caps, etc.).

Potential hydrogen chloride emission concentration means the hydrogen chloride emission concentration that would occur from combustion of municipal solid waste in the absence of any emission controls for municipal waste combustor acid gases.

Potential mercury emission concentration means the mercury emission concentration that would occur from combustion of municipal solid waste in the absence of any mercury emissions control.

Potential sulfur dioxide emissions means the sulfur dioxide emission concentration that would occur from combustion of municipal solid waste in the absence of any emission controls for municipal waste combustor acid gases.

Pulverized coal/refuse-derived fuel mixed fuel-fired combustor means a combustor that fires coal and refuse-derived fuel simultaneously, in which pulverized coal is introduced into an air stream that carries the coal to the combustion chamber of the unit where it is fired in suspension. This includes both conventional pulverized coal and micropulverized coal.

Pyrolysis/combustion unit means a unit that produces gases, liquids, or solids through the heating of municipal solid waste, and the gases, liquids, or solids produced are combusted and emissions vented to the atmosphere. Reconstruction means rebuilding a municipal waste combustor unit for which the reconstruction commenced after [insert the date 6 months after

the date of publication in the Federal Register] and the cumulative costs of the construction over the life of the unit exceed 50 percent of the original cost of construction and installation of the unit (not including any cost of land purchased in connection with such construction or installation) updated to current costs (current dollars).

Refractory unit or refractory wall furnace means a combustion unit having no energy recovery (e.g., via a waterwall) in the furnace (i.e., radiant heat transfer section) of the combustor.

Refuse-derived/fuel means a type of municipal solid waste produced by processing municipal solid waste through shredding and size classification. This includes all classes of refuse-derived fuel including low-density fluff refuse-derived fuel through densified refuse-derived fuel and pelletized refuse-derived fuel.

Refuse-derived fuel stoker means a steam generating unit that combusts refuse-derived fuel in a semisuspension firing mode using air-fed distributors.

Same location means the same or contiguous property that is under common ownership or control including properties that are separated only by a street, road, highway, or other public right-of-way. Common ownership or control includes properties that are owned, leased, or operated by the same entity, parent entity, subsidiary, subdivision, or any combination thereof including any

municipality or other governmental unit, or any quasi-governmental authority (e.g., a public utility district or regional waste disposal authority).

Second calendar half means the period starting July 1 and ending on December 31 in any year.

Shift supervisor means the person who is in direct charge and control of the operation of a municipal waste combustor and who is responsible for onsite supervision, technical direction, management, and overall performance of the facility during an assigned shift.

Small municipal waste combustor plant means a municipal waste combustor plant with a municipal waste combustor plant capacity for affected facilities that is greater than 35 megagrams per day but equal to or less than 225 megagrams per day of municipal solid waste.

Spreader stoker coal/refuse-derived fuel mixed fuel-fired combustor means a combustor that fires coal and refuse-derived fuel simultaneously, in which coal is introduced to the combustion zone by a mechanism that throws the fuel onto a grate from above. Combustion takes place both in suspension and on the grate.

Standard conditions means a temperature of 20 °C and a pressure of 101.3 kilopascals.

Total mass dioxin/furan or total mass 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 § 60.58b(g).

Twenty-four hour daily average or 24-hour daily average means either the arithmetic mean or geometric mean (as specified) of all hourly emission concentrations when the affected facility is operating and combusting municipal solid waste measured over a 24-hour period between 12:00 midnight and the following midnight.

Untreated lumber means wood or wood products that have been cut or shaped and include wet, air-dried, and kiln-dried wood products. Untreated lumber does not include wood products that have been painted, pigment-stained, or "pressure-treated." Pressure-treating compounds include, but are not limited to, chromate copper arsenate, pentachlorophenol, and creosote.

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

Yard waste means grass, grass clippings, bushes, shrubs, and clippings from bushes and shrubs that are generated by residential, commercial/retail, institutional, and/or industrial sources as part of maintenance activities associated with yards or other private or public lands. Yard waste does not include construction, renovation, and demolition wastes, which are exempt from the definition of municipal solid waste in this section. Yard waste does not include clean wood, which is exempt from the definition of municipal solid waste in this section.

§ 60.52b Standards for municipal waste combustor metals, acid gases, organics, and nitrogen oxides.

(a) The limits for municipal waste combustor metals are specified in paragraphs (a)(1) through (a)(5) of this section.

(1) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain particulate matter in excess of 24 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(2) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 10 percent opacity (6-minute average).

(3) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain cadmium in excess of 0.020 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(4) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from the affected facility any gases that contain lead in excess of 0.20 milligrams per dry standard cubic meter, corrected to 7 percent oxygen.

(5) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from the affected facility any gases that contain mercury in excess of 0.080 milligrams per dry standard cubic meter or 15 percent of the potential mercury emission concentration (85-percent reduction by weight), corrected to 7 percent oxygen, whichever is less stringent.

(b) The limits for municipal waste combustor acid gases are specified in paragraphs (b)(1) and (b)(2) of this section.

(1) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain sulfur dioxide

in excess of 30 parts per million by volume or 20 percent of the potential sulfur dioxide emission concentration (80-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent. The averaging time is specified under § 60.58b(e).

(2) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain hydrogen chloride in excess of 25 parts per million by volume or 5 percent of the potential hydrogen chloride emission concentration (95-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent.

(c) The limits for municipal waste combustor organics are specified in paragraphs (c)(1) and (c)(2) of this section.

(1) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant for which construction, modification, or reconstruction commences after September 20, 1994, but on or before November 20, 1997 shall cause to be discharged into the atmosphere from that affected facility any gases that contain dioxin/furan emissions that exceed 30 nanograms per dry standard

cubic meter (total mass), corrected to 7 percent oxygen, for the first 3 years following the date of initial startup. After the first 3 years following the date of initial startup, no owner or operator shall cause to be discharged into the atmosphere from that affected facility any gases that contain dioxin/furan total mass emissions that exceed 13 nanograms per dry standard cubic meter (total mass), corrected to 7 percent oxygen.

(2) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant for which construction, modification, or reconstruction commences after November 20, 1997 shall cause to be discharged into the atmosphere from that affected facility any gases that contain dioxin/furan total mass emissions that exceed 13 nanograms per dry standard cubic meter (total mass), corrected to 7 percent oxygen.

(d) The limits for nitrogen oxides are specified in paragraphs (d)(1) and (d)(2) of this section.

(1) During the first year of operation after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides in excess of 180 parts per million by volume,

corrected to 7 percent oxygen (dry basis). The averaging time is specified under § 60.58b(h).

(2) After the first year of operation following the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides in excess of 150 parts per million by volume, corrected to 7 percent oxygen (dry basis). The averaging time is specified under § 60.58b(h).

§ 60.53b Standards for municipal waste combustor operating practices.

(a) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain carbon monoxide in excess of the emission limits specified in table 1 of this subpart.

TABLE 1. MUNICIPAL WASTE COMBUSTOR OPERATING STANDARDS

Municipal waste combustor technology	Carbon monoxide emission limit (parts per million by volume) ^a	Averaging time
Mass burn waterwall	100	4-hour
Mass burn refractory	100	4-hour
Mass burn rotary waterwall	100	24-hour
Modular starved air	50	4-hour
Modular excess air	50	4-hour
Refuse-derived fuel stoker	150	24-hour
Bubbling fluidized bed combustor	100	4-hour
Circulating fluidized bed combustor	100	4-hour
Pulverized coal/refuse-derived fuel mixed fuel-fired combustor	150	4-hour
Spreader stoker coal/refuse-derived fuel mixed fuel-fired combustor	150	24-hour

^a Measured at the combustor outlet in conjunction with a measurement of oxygen concentration, corrected to 7 percent oxygen (dry basis). The averaging times are specified in greater detail in § 60.58b(i).

(b) No owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause such facility to operate at a load level greater than 110 percent of the maximum demonstrated municipal waste combustor unit load as defined in § 60.51b, except as specified in paragraphs (b)(1) and (b)(2) of this section. The averaging time is specified under § 60.58b(i).

(1) During the annual dioxin/furan performance test and the 2 weeks preceding the annual dioxin/furan performance test, no municipal waste combustor unit load limit is applicable.

(2) The municipal waste combustor unit load limit may be waived in accordance with permission granted by the Administrator or delegated State regulatory authority for the purpose of evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

(c) No owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause such facility to operate at a temperature, measured at the particulate matter control device inlet, exceeding 17 °C above the maximum demonstrated particulate matter control device temperature as defined in § 60.51b, except as specified in paragraphs (c)(1) and (c)(2) of this section. The averaging time is specified under § 60.58b(i). The requirements specified in

this paragraph apply to each particulate matter control device utilized at the affected facility.

(1) During the annual dioxin/furan performance test and the 2 weeks preceding the annual dioxin/furan performance test, no particulate matter control device temperature limitations are applicable.

(2) The particulate matter control device temperature limits may be waived in accordance with permission granted by the Administrator or delegated State regulatory authority for the purpose of evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

§ 60.54b Standards for municipal waste combustor operator training and certification.

(a) No later than the date 6 months after the date of startup of an affected facility located within a small or large municipal waste combustor plant or on [insert date 12 months after the date of publication in the Federal Register], whichever is later, each chief facility operator and shift supervisor shall obtain and maintain a current provisional operator certification from either the American Society of Mechanical Engineers [QRO-1-1994 (incorporated by reference -- see § 60.17 of subpart A of this part)] or a State certification program.

(b) Not later than the date 6 months after the date of startup of an affected facility located within a small or large municipal waste combustor plant or on [insert date 12 months after the date of publication in the Federal Register], whichever is later, each chief facility operator and shift supervisor shall have completed full certification or shall have scheduled a full certification exam with either the American Society of Mechanical Engineers [QRO-1-1994 (incorporated by reference -- see § 60.17 of subpart A of this part)] or a State certification program.

(c) No owner or operator of an affected facility located within a small or large municipal waste combustor plant shall allow the facility to be operated at any time unless one of the following persons is on duty and at the affected facility: A fully certified chief facility operator, a provisionally certified chief facility operator who is scheduled to take the full certification exam according to the schedule specified in paragraph (b) of this section, a fully certified shift supervisor, or a provisionally certified shift supervisor who is scheduled to take the full certification exam according to the schedule specified in paragraph (b) of this section.

(i) The requirement specified in paragraph (c) of this section shall take effect 6 months after the date of startup of the affected facility or on [insert date 12 months after the date of publication in the Federal Register], whichever is later.

(ii) If one of the persons listed in paragraph (c) of this section must leave the affected facility during their operating

shift, a provisionally certified control room operator who is onsite at the affected facility may fulfill the requirement in paragraph (c) of this section.

(d) All chief facility operators, shift supervisors, and control room operators at affected facilities located within a small or large municipal waste combustor plant must complete the EPA or State municipal waste combustor operator training course no later than the date 6 months after the date of startup of the affected facility or by [insert the date 12 months after the date of publication in the Federal Register], whichever is later.

(e) The owner or operator of an affected facility located within a small or large municipal waste combustor plant shall develop and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the elements of municipal waste combustor unit operation specified in paragraphs (e)(1) through (e)(11) of this section.

(1) A summary of the applicable standards under this subpart;

(2) A description of basic combustion theory applicable to a municipal waste combustor unit;

(3) Procedures for receiving, handling, and feeding municipal solid waste;

(4) Municipal waste combustor unit startup, shutdown, and malfunction procedures;

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

(6) Procedures for operating the municipal waste combustor unit within the standards established under this subpart;

(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 municipal waste combustor unit emissions; and

(11) Reporting and recordkeeping procedures.

(f) The owner or operator of an affected facility located within a small or large municipal waste combustor plant shall establish a training program to review the operating manual according to the schedule specified in paragraphs (f)(1) and (f)(2) of this section with each person who has responsibilities affecting the operation of an affected facility including, but not limited to, chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load handlers.

(1) Each person specified in paragraph (f) of this section shall undergo initial training no later than the date specified in paragraph (f)(1)(i), (f)(1)(ii), or (f)(1)(iii) whichever is later.

(i) The date 6 months after the date of startup of the affected facility;

(ii) The date prior to the day the person assumes responsibilities affecting municipal waste combustor unit operation; or

(iii) [insert date 12 months after the date of publication in the Federal Register].

(2) Annually, following the initial review required by paragraph (f)(1) of this section.

(g) The operating manual required by paragraph (e) of this section shall be kept in a readily accessible location for all persons required to undergo training under paragraph (f) of this section. The operating manual and records of training shall be available for inspection by the EPA or its delegated enforcement agency upon request.

§ 60.55b Standards for municipal waste combustor fugitive ash emissions.

(a) On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, no owner or operator of an affected facility located within a small or large municipal waste combustor plant shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 percent of the observation period (i.e., 9 minutes per 3-hour period), as determined by EPA Reference Method 22 observations as specified in § 60.58b(k), except as provided in paragraphs (b) and (c) of this section.

(b) The emission limit specified in paragraph (a) of this section does not cover visible emissions discharged inside buildings or enclosures of ash conveying systems; however, the emission limit specified in paragraph (a) of this section does cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems.

(c) The provisions specified in paragraph (a) of this section do not apply during maintenance and repair of ash conveying systems.

§ 60.56b Standards for air curtain incinerators.

On and after the date on which the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, the owner or operator of an air curtain incinerator located at a plant with a plant capacity to combust greater than 35 megagrams per day of municipal solid waste and that combusts a fuel feed stream composed of 100 percent yard waste and no other municipal solid waste materials shall at no time cause to be discharged into the atmosphere from that incinerator any gases that exhibit greater than 10-percent opacity (6-minute average), except that an opacity level of up to 35 percent (6-minute average) is permitted during startup periods during the first 30 minutes of operation of the unit.

§ 60.57b Siting requirements.

(a) The owner or operator of an affected facility located within a small or large municipal waste combustor plant, for which the initial application for a construction permit under

40 CFR part 51, subpart I, or part 52, as applicable, is submitted after [insert the date of publication in the Federal Register] shall prepare a materials separation plan, as defined in § 60.51b, for the affected facility and its service area, and shall comply with the requirements specified in paragraphs (a)(1) through (a)(10) of this section. The initial application is defined as representing a good faith submittal for complying with the requirements under 40 CFR part 51, subpart I, or part 52, as applicable, as determined by the Administrator.

(1) The owner or operator shall prepare a preliminary draft materials separation plan and shall make the plan available to the public as specified in paragraphs (a)(1)(i) and (a)(1)(ii) of this section.

(i) The owner or operator shall distribute the preliminary draft materials separation plan to the principal public libraries in the area where the affected facility is to be constructed.

(ii) The owner or operator shall publish a notification of a public meeting in the principal newspaper(s) serving the area where the affected facility is to be constructed and where the waste treated by the affected facility will primarily be collected. As a minimum, the notification shall include the information specified in paragraphs (a)(1)(ii)(A) through (a)(1)(ii)(D) of this section.

(A) The date, time, and location of the public meeting.

(B) The location of the public libraries where the preliminary draft materials separation plan may be found, including normal business hours of the libraries.

(C) An agenda of the issues to be discussed at the public meeting.

(D) The dates that the public comment period on the preliminary draft materials separation plan begins and ends.

(2) The owner or operator shall conduct a public meeting, accept comments on the preliminary draft materials separation plan, and comply with the requirements specified in paragraphs (a)(2)(i) through (a)(2)(iv) of this section.

(i) The public meeting shall be conducted in the county where the affected facility is to be located.

(ii) The public meeting shall be scheduled to occur 30 days or more after making the preliminary draft materials separation plan available to the public as specified under paragraph (a)(1) of this section.

(iii) Suggested issues to be addressed at the public meeting are listed in paragraphs (a)(2)(iii)(A) through (a)(2)(iii)(H) of this section.

(A) The expected size of the service area for the affected facility.

(B) The amount of waste generation anticipated for the service area.

(C) The types and estimated amounts of materials proposed for separation.

- (D) The methods proposed for materials separation.
- (E) The amount of residual waste to be disposed.
- (F) Alternate disposal methods for handling the residual waste.
- (G) Identification of the location(s) where responses to public comment on the preliminary draft materials separation plan will be available for inspection, as specified in paragraphs (a)(3) and (a)(4) of this section.
- (H) Identification of the locations where the final draft materials separation plan will be available for inspection, as specified in paragraph (a)(7).
- (iv) Nothing in this section shall preclude an owner or operator from combining this public meeting with any other public meeting required as part of any other Federal, State, or local permit review process except the public meeting required under paragraph (b)(4) of this section.
- (3) Following the public meeting required by paragraph (a)(2) of this section, the owner or operator shall prepare responses to the comments received at the public meeting.
- (4) The owner or operator shall make the document summarizing responses to public comments available to the public (including distribution to the principal public libraries used to announce the meeting) in the service area where the affected facility is to be located.

(5) The owner or operator shall prepare a final draft materials separation plan for the affected facility considering the public comments received at the public meeting.

(6) As required under § 60.59b(a), the owner or operator shall submit to the Administrator a copy of the notification of the public meeting, a transcript of the public meeting, the document summarizing responses to public comments, and copies of both the preliminary and final draft materials separation plans on or before the time the facility's application for a construction permit is submitted under 40 CFR part 51, subpart I, or part 52, as applicable.

(7) As part of the distribution of the siting analysis required under paragraph (b)(3) of this section, the owner or operator shall make the final draft materials separation plan required under paragraph (a)(5) of this section available to the public, as specified in paragraph (b)(3) of this section.

(8) As part of the public meeting for review of the siting analysis required under paragraph (b)(4) of this section, the owner or operator shall address questions concerning the final draft materials separation plan required by paragraph (a)(5) of this section including discussion of how the final draft materials separation plan has changed from the preliminary draft materials separation plan that was discussed at the first public meeting required by paragraph (a)(2) of this section.

(9) If the owner or operator receives any comments on the final draft materials separation plan during the public meeting

required in paragraph (b)(4) of this section, the owner or operator shall respond to those comments in the document prepared in accordance with paragraph (b)(5) of this section.

(10) The owner or operator shall prepare a final materials separation plan and shall submit, as required under § 60.59b(b)(5)(ii), the final materials separation plan as part of the initial notification of construction.

(b) The owner or operator of an affected facility located within a small or large municipal waste combustor plant, for which the initial application for a construction permit under 40 CFR part 51, subpart I, or part 52, as applicable, is submitted after [insert the date of publication in the Federal Register] shall prepare a siting analysis in accordance with paragraphs (b)(1) and (b)(2) of this section and shall comply with the requirements specified in paragraphs (b)(3) through (b)(7) of this section.

(1) The siting analysis shall be an analysis of the impact of the affected facility on ambient air quality, visibility, soils, and vegetation.

(2) The analysis shall consider air pollution control alternatives that minimize, on a site-specific basis, to the maximum extent practicable, potential risks to the public health or the environment.

(3) The owner or operator shall make the siting analysis and final draft materials separation plan required by paragraph

(a)(5) of this section available to the public as specified in paragraphs (b)(3)(i) and (b)(3)(ii) of this section.

(i) The owner or operator shall distribute the siting analysis and final draft materials separation plan to the principal public libraries in the area where the affected facility is to be constructed.

(ii) The owner or operator shall publish a notification of a public meeting in the principal newspaper(s) serving the area where the affected facility is to be constructed and where the waste treated by the affected facility will primarily be collected. As a minimum, the notification shall include the information specified in paragraphs (b)(3)(ii)(A) through (b)(3)(ii)(D) of this section.

(A) The date, time, and location of the public meeting.

(B) The location of the public libraries where the siting analyses and final draft materials separation plan may be found, including normal business hours.

(C) An agenda of the issues to be discussed at the public meeting.

(D) The dates that the public comment period on the siting analyses and final draft materials separation plan begins and ends.

(4) The owner or operator shall conduct a public meeting and accept comments on the siting analysis and the final draft materials separation plan required under paragraph (a)(5) of this section. The public meeting shall be conducted in the county

where the affected facility is to be located and shall be scheduled to occur 30 days or more after making the siting analysis available to the public as specified under paragraph (b)(3) of this section.

(5) The owner or operator shall prepare responses to the comments on the siting analysis and the final draft materials separation plan that are received at the public meeting.

(6) The owner or operator shall make the document summarizing responses to public comments available to the public (including distribution to all public libraries) in the service area where the affected facility is to be located.

(7) As required under § 60.59b(b)(5), the owner or operator shall submit a copy of the notification of the public meeting, a transcript of the public meeting, the document summarizing responses to public comments, and the siting analysis as part of the initial notification of construction.

(c) The owner or operator of an affected facility located within a small or large municipal waste combustor plant, for which construction is commenced after September 20, 1994 shall prepare a siting analysis in accordance with 40 CFR part 51, Subpart I, or part 52, as applicable, and shall submit the siting analysis as part of the initial notification of construction. Affected facilities subject to paragraphs (a) and (b) of this section are not subject to this paragraph.

§ 60.58b Compliance and performance testing.

(a) The provisions for startup, shutdown, and malfunction are provided in paragraphs (a)(1) and (a)(2) of this section.

(1) Except as provided by § 60.56b, the standards under this subpart apply at all times except during periods of startup, shutdown, or malfunction. Duration of startup, shutdown, or malfunction periods are limited to 3 hours per occurrence.

(i) The startup period commences when the affected facility begins the continuous burning of municipal solid waste and does not include any warmup period when the affected facility is combusting fossil fuel or other nonmunicipal solid waste fuel, and no municipal solid waste is being fed to the combustor.

(ii) Continuous burning is the continuous, semicontinuous, 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. 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 is not considered to be continuous burning.

(2) The opacity limits for air curtain incinerators specified in § 60.56b apply at all times as specified under § 60.56b except during periods of malfunction. Duration of malfunction periods are limited to 3 hours per occurrence.

(b) The owner or operator of a small or large municipal waste combustor plant shall install, calibrate, maintain, and

operate a continuous emission monitoring system and record the output of the system for measuring the oxygen or carbon dioxide content of the flue gas at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides emissions are monitored and shall comply with the test procedures and test methods specified in paragraphs (b)(1) through (b)(7) of this section.

(1) The span value of the oxygen (or carbon dioxide) monitor shall be 25 percent oxygen (or carbon dioxide).

(2) The monitor shall be installed, evaluated, and operated in accordance with § 60.13 of subpart A of this part.

(3) The initial performance evaluation shall be completed no later than 180 days after the date of initial startup of the municipal waste combustor, as specified under § 60.8 of subpart A of this part.

(4) The monitor shall conform to Performance Specification 3 in appendix B of this part except for section 2.3 (relative accuracy requirement).

(5) The quality assurance procedures of appendix F of this part except for section 5.1.1 (relative accuracy test audit) shall apply to the monitor.

(6) If carbon dioxide is selected for use in diluent corrections, the relationship between oxygen and carbon dioxide levels shall be established during the initial performance test according to the procedures and methods specified in paragraphs (b)(6)(i) through (b)(6)(iv) of this section. This relationship may be reestablished during performance compliance tests.

(i) The emission rate correction factor and the integrated bag sampling and analysis procedure of EPA Reference Method 3B shall be used to determine the oxygen concentration at the same location as the carbon dioxide monitor.

(ii) Samples shall be taken for at least 30 minutes in each hour.

(iii) Each sample shall represent a 1-hour average.

(iv) A minimum of three runs shall be performed.

(7) As required by § 60.59b(f)(5), the relationship between carbon dioxide and oxygen concentrations that is established in accordance with paragraph (b)(6) of this section shall be submitted to the EPA as part of the initial performance test report.

(c) The procedures and test methods specified in paragraphs (c)(1) through (c)(11) of this section shall be used to determine compliance with the emission limits for particulate matter and opacity under § 60.52b(a)(1) and (a)(2).

(1) The EPA Reference Method 1 shall be used to select sampling site and number of traverse points.

(2) The EPA Reference Method 3 shall be used for gas analysis.

(3) The EPA Reference Method 5 shall be used for determining compliance with the particulate matter emission limit. The minimum sample volume shall be 1.7 cubic meters. The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than 160 ± 14 °C.

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

(4) An owner or operator may request that compliance with the particulate matter emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(5) As specified under § 60.8 of subpart A of this part, all performance tests shall consist of three test runs. The average of the particulate matter emission concentrations from the three test runs is used to determine compliance.

(6) In accordance with paragraphs (c)(7) and (c)(11) of this section, EPA Reference Method 9 shall be used for determining compliance with the opacity limit except as provided under § 60.11(e) of subpart A of this part.

(7) The owner or operator of an affected facility located within a small or large municipal waste combustor plant shall conduct an initial performance test for particulate matter emissions and opacity as required under § 60.8 of subpart A of this part.

(8) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a continuous opacity monitoring system for measuring opacity and shall follow the methods and procedures specified in paragraphs (c)(8)(i) through (c)(8)(iv) of this section.

(i) The output of the continuous opacity monitoring system shall be recorded on a 6-minute average basis.

(ii) The continuous opacity monitoring system shall be installed, evaluated, and operated in accordance with § 60.13 of subpart A of this part.

(iii) The continuous opacity monitoring system shall conform to Performance Specification 1 in appendix B of this part.

(iv) The initial performance evaluation shall be completed no later than 180 days after the date of the initial startup of the municipal waste combustor unit, as specified under § 60.8 of subpart A of this part.

(9) Following the date that the initial performance test for particulate matter is completed or is required to be completed under § 60.8 of subpart A of this part for an affected facility located within a large municipal waste combustor plant, the owner or operator shall conduct a performance test for particulate matter on an annual basis (no more than 12 calendar months following the previous performance test).

(10) Following the date that the initial performance test for particulate matter is completed or is required to be completed under § 60.8 of subpart A of this part for an affected facility located within a small municipal waste combustor plant, the owner or operator shall conduct a performance test for particulate matter on an annual basis (no more than 12 calendar months following the previous performance test). If all

performance tests over a 3-year period indicate compliance with the particulate matter emission limit, the owner or operator may elect not to conduct a performance test for the subsequent 2 years. At a minimum, a performance test for particulate matter shall be conducted every third year (no more than 36 months following the previous performance test) at a small municipal waste combustor plant. If a performance test conducted every third year indicates compliance with the particulate matter emission limit, the owner or operator may elect not to conduct a performance test for an additional 2 years. If any performance test indicates noncompliance with the particulate matter emission limit, performance tests shall be required annually until all annual performance tests over a 3-year period indicate compliance with the particulate matter emission limit.

(11) Following the date that the initial performance test for opacity is completed or is required to be completed under § 60.8 of subpart A of this part for an affected facility located within a small or large municipal waste combustor plant, the owner or operator shall conduct a performance test for opacity on an annual basis (no more than 12 calendar months following the previous performance test) using the test method specified in paragraph (c)(6) of this section.

(d) The procedures and test methods specified in paragraphs (d)(1) and (d)(2) of this section shall be used to determine compliance with the emission limits for cadmium, lead, and mercury under § 60.52b(a).

(1) The procedures and test methods specified in paragraphs (d)(1)(i) through (d)(1)(ix) of this section shall be used to determine compliance with the emission limits for cadmium and lead under § 60.52b(a)(3) and (4).

(i) The EPA Reference Method 1 shall be used for determining the location and number of sampling points.

(ii) The EPA Reference Method 3 shall be used for flue gas analysis.

(iii) The EPA Reference Method 29 shall be used for determining compliance with the cadmium and lead emission limits.

(iv) An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 29 test run for cadmium and lead required under paragraph (d)(1)(iii) of this section.

(v) An owner or operator may request that compliance with the cadmium or lead emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(vi) All performance tests shall consist of a minimum of three test runs conducted under representative full load operating conditions. The average of the cadmium or lead emission concentrations from three test runs or more shall be used to determine compliance.

(vii) Following the date of the initial performance test or the date on which the initial performance test is required to be

completed under § 60.8 of subpart A of this part, the owner or operator of an affected facility located within a large municipal waste combustor plant shall conduct a performance test for compliance with the emission limits for cadmium and lead on an annual basis (no more than 12 calendar months following the previous performance test).

(viii) Following the date that the initial performance test for cadmium is completed or is required to be completed under § 60.8 of subpart A of this part for an affected facility located within a small municipal waste combustor plant, the owner or operator shall conduct a performance test for cadmium emissions on an annual basis (no more than 12 calendar months following the previous performance test). If all performance tests over a 3-year period indicate compliance with the cadmium emission limit, the owner or operator may elect not to conduct a performance test for the subsequent 2 years. At a minimum, a performance test for cadmium shall be conducted every third year (no more than 36 months following the previous performance test) at a small municipal waste combustor plant. If a performance test conducted every third year indicates compliance with the cadmium emission limit, the owner or operator may elect not to conduct a performance test for an additional 2 years. If any performance test indicates noncompliance with the cadmium emission limit, performance tests shall be conducted annually until all annual performance tests over a 3-year period indicate compliance with the cadmium emission limit.

(ix) Following the date that the initial performance test for lead is completed or is required to be completed under § 60.8 of subpart A of this part for an affected facility located within a small municipal waste combustor plant, the owner or operator shall conduct a performance test for lead emissions on an annual basis (no more than 12 calendar months following the previous performance test). If all three performance tests over a 3-year period indicate compliance with the lead emission limit, the owner or operator may elect not to conduct a performance test for the subsequent 2 years. At a minimum, a performance test for lead shall be conducted every third year (no more than 36 months following the previous performance test) at a small municipal waste combustor plant. If a performance test conducted every third year indicates compliance with the lead emission limit, the owner or operator may elect not to conduct a performance test for an additional 2 years. If any performance test indicates noncompliance with the lead emission limit, performance tests shall be conducted annually until all annual performance tests over a 3-year period indicate compliance with the lead emission limit.

(2) The procedures and test methods specified in paragraphs (d)(2)(i) through (d)(2)(xi) of this section shall be used to determine compliance with the mercury emission limit under § 60.52b(a)(5).

(i) The EPA Reference Method 1 shall be used for determining the location and number of sampling points.

(ii) The EPA Reference Method 3 shall be used for flue gas analysis.

(iii) The EPA Reference Method 29 shall be used to determine the mercury emission concentration. The minimum sample volume when using Method 29 for mercury shall be 1.7 cubic meters.

(iv) An oxygen (or carbon dioxide) measurement shall be obtained simultaneously with each Method 29 test run for mercury required under paragraph (d)(2)(iii) of this section.

(v) The percent reduction in the potential mercury emissions ($\%P_{Hg}$) is computed using equation 1:

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

where:

$\%P_{Hg}$ = percent reduction of the potential mercury emissions achieved.

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

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

(vi) All performance tests shall consist of a minimum of three test runs conducted under representative full load operating conditions. The average of the mercury emission

concentrations or percent reductions from three test runs or more is used to determine compliance.

(vii) An owner or operator may request that compliance with the mercury emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(viii) The owner or operator of an affected facility located within a small or large municipal waste combustor plant shall conduct an initial performance test for mercury emissions as required under § 60.8 of subpart A of this part.

(ix) Following the date that the initial performance test for mercury is completed or is required to be completed under § 60.8 of subpart A of this part, the owner or operator of an affected facility located within a large municipal waste combustor plant shall conduct a performance test for mercury emissions on an annual basis (no more than 12 calendar months from the previous performance test).

(x) Following the date that the initial performance test for mercury is completed or is required to be completed under § 60.8 of subpart A of this part for an affected facility located within a small municipal waste combustor plant, the owner or operator shall conduct a performance test for mercury emissions on an annual basis (no more than 12 calendar months following the previous performance test). If all three performance tests over

a 3-year period indicate compliance with the mercury emission limit, the owner or operator may elect not to conduct a performance test for the subsequent 2 years. At a minimum, a performance test for mercury shall be conducted every third year (no more than 36 months following the previous performance test) at a small municipal waste combustor plant. If a performance test conducted every third year indicates compliance with the mercury emission limit, the owner or operator may elect not to conduct a performance test for an additional 2 years. If any performance test indicates noncompliance with the mercury emission limit, performance tests shall be conducted annually until all annual performance tests over a 3-year period indicate compliance with the mercury emission limit.

(xi) The owner or operator of an affected facility where activated carbon injection is used to comply with the mercury emission limit shall follow the procedures specified in paragraph (m) of this section for measuring and calculating carbon usage.

(e) The procedures and test methods specified in paragraphs (e)(1) through (e)(14) of this section shall be used for determining compliance with the sulfur dioxide emission limit under § 60.52b(b)(1).

(1) The EPA Reference Method 19, section 4.3, shall be used to calculate the daily geometric average sulfur dioxide emission concentration.

(2) The EPA Reference Method 19, section 5.4, shall be used to determine the daily geometric average percent reduction in the potential sulfur dioxide emission concentration.

(3) An owner or operator may request that compliance with the sulfur dioxide emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(4) The owner or operator of an affected facility shall conduct an initial performance test for sulfur dioxide emissions as required under § 60.8 of subpart A of this part. Compliance with the sulfur dioxide emission limit (concentration or percent reduction) shall be determined by using the continuous emission monitoring system specified in paragraph (e)(5) of this section to measure sulfur dioxide and calculating a 24-hour daily geometric average emission concentration or a 24-hour daily geometric average percent reduction using EPA Reference Method 19, sections 4.3 and 5.4, as applicable.

(5) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a continuous emission monitoring system for measuring sulfur dioxide emissions discharged to the atmosphere and record the output of the system.

(6) Following the date that the initial performance test for sulfur dioxide is completed or is required to be completed under § 60.8 of subpart A of this part, compliance with the

sulfur dioxide emission limit shall be determined based on the 24-hour daily geometric average of the hourly arithmetic average emission concentrations using continuous emission monitoring system outlet data if compliance is based on an emission concentration, or continuous emission monitoring system inlet and outlet data if compliance is based on a percent reduction.

(7) At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs (e)(7)(i) and (e)(7)(ii) for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that the affected facility is combusting municipal solid waste.

(i) At least two data points per hour shall be used to calculate each 1-hour arithmetic average.

(ii) Each sulfur dioxide 1-hour arithmetic average shall be corrected to 7 percent oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) continuous emission monitoring system data.

(8) The 1-hour arithmetic averages required under paragraph (e)(6) of this section shall be expressed in parts per million corrected to 7 percent oxygen (dry basis) and used to calculate the 24-hour daily geometric average emission concentrations and daily geometric average emission percent reductions. The 1-hour arithmetic averages shall be calculated using the data points required under § 60.13(e)(2) of subpart A of this part.

(9) All valid continuous emission monitoring system data shall be used in calculating average emission concentrations and percent reductions even if the minimum continuous emission monitoring system data requirements of paragraph (e)(7) of this section are not met.

(10) The procedures under § 60.13 of subpart A of this part shall be followed for installation, evaluation, and operation of the continuous emission monitoring system.

(11) The initial performance evaluation shall be completed no later than 180 days after the date of initial startup of the municipal waste combustor as specified under § 60.8 of subpart A of this part.

(12) The continuous emission monitoring system shall be operated according to Performance Specification 2 in appendix B of this part.

(i) During each relative accuracy test run of the continuous emission monitoring system required by Performance Specification 2 in appendix B of this part, sulfur dioxide and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified in paragraphs (e)(12)(i)(A) and (e)(12)(i)(B) of this section.

(A) For sulfur dioxide, EPA Reference Method 6, 6A, or 6C shall be used.

(B) For oxygen (or carbon dioxide), EPA Reference Method 3A or 3B shall be used.

(ii) The span value of the continuous emissions monitoring system at the inlet to the sulfur dioxide control device shall be 125 percent of the maximum estimated hourly potential sulfur dioxide emissions of the municipal waste combustor unit. The span value of the continuous emission monitoring system at the outlet of the sulfur dioxide control device shall be 50 percent of the maximum estimated hourly potential sulfur dioxide emissions of the municipal waste combustor unit.

(13) Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with procedure 1 in appendix F of this part.

(14) When sulfur dioxide emissions data are not obtained because of continuous emission monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the Administrator or EPA Reference Method 19 to provide, as necessary, valid emissions data for a minimum of 75 percent of the hours per day that the affected facility is operated and combusting municipal solid waste for 90 percent of the days per calendar quarter that the affected facility is operated and combusting municipal solid waste.

(f) The procedures and test methods specified in paragraphs (f)(1) through (f)(8) of this section shall be used for determining compliance with the hydrogen chloride emission limit under § 60.52b(b)(2).

(1) The EPA Reference Method 26 or 26A, as applicable, shall be used to determine the hydrogen chloride emission concentration. The minimum sampling time for Method 26 shall be 1 hour.

(2) An oxygen (or carbon dioxide) measurement shall be obtained simultaneously with each Method 26 test run for hydrogen chloride required by paragraph (f)(1) of this section.

(3) The percent reduction in potential hydrogen chloride emissions (% P_{HCl}) is computed using equation 2:

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

where:

$\%P_{HCl}$ = percent reduction of the potential hydrogen chloride emissions achieved.

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

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

(4) An owner or operator may request that compliance with the hydrogen chloride emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent

oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(5) As specified under § 60.8 of subpart A of this part, all performance tests shall consist of three test runs. The average of the hydrogen chloride emission concentrations or percent reductions from the three test runs is used to determine compliance.

(6) The owner or operator of an affected facility shall conduct an initial performance test for hydrogen chloride as required under § 60.8 of subpart A of this part.

(7) Following the date that the initial performance test for hydrogen chloride is completed or is required to be completed under § 60.8 of subpart A of this part, the owner or operator of an affected facility located within a large municipal waste combustor plant shall conduct a performance test for hydrogen chloride emissions on an annual basis (no more than 12 calendar months following the previous performance test).

(8) Following the date that the initial performance test for hydrogen chloride is completed or is required to be completed under § 60.8 of this part, the owner or operator of an affected facility located within a small municipal waste combustor plant shall conduct a performance test for hydrogen chloride emissions on an annual basis (no more than 12 calendar months following the previous performance test). If all performance tests over a 3-year period indicate compliance with the hydrogen chloride

emission limit, the owner or operator may elect not to conduct a performance test for the subsequent 2 years. At a minimum, a performance test for hydrogen chloride shall be conducted every third year (no more than 36 months following the previous performance test) at a small municipal waste combustor plant. If a performance test conducted every third year indicates compliance with the hydrogen chloride emission limit, the owner or operator may elect not to conduct a performance test for an additional 2 years. If any performance test indicates noncompliance with the hydrogen chloride emission limit, performance tests shall be conducted annually until all annual performance tests over a 3-year period indicate compliance with the hydrogen chloride emission limit.

(g) The procedures and test methods specified in paragraphs (g)(1) through (g)(9) of this section shall be used to determine compliance with the limits for dioxin/furan emissions under § 60.52b(c).

(1) The EPA Reference Method 1 shall be used for determining the location and number of sampling points.

(2) The EPA Reference Method 3 shall be used for flue gas analysis.

(3) The EPA Reference Method 23 shall be used for determining the dioxin/furan emission concentration.

(i) The minimum sample time shall be 4 hours per test run.

(ii) An oxygen (or carbon dioxide) measurement shall be obtained simultaneously with each Method 23 test run for dioxins/furans.

(4) The owner or operator of an affected facility shall conduct an initial performance test for dioxin/furan emissions in accordance with paragraph (g)(3) of this section, as required under § 60.8 of subpart A of this part.

(5) Following the date that the initial performance test for dioxins/furans is completed or is required to be completed under § 60.8 of subpart A of this part, the owner or operator of an affected facility located within small and large municipal waste combustor plants shall conduct performance tests for dioxin/furan emissions in accordance with paragraph (g)(3) of this section, according to one of the schedules specified in paragraphs (g)(5)(i) through (g)(5)(iii) of this section.

(i) For affected facilities located within small and large municipal waste combustor plants, performance tests shall be conducted on an annual basis (no more than 12 calendar months following the previous performance test.) (ii) For affected facilities located within small municipal waste combustor plants where all performance tests for an affected facility over a 3-year period indicate compliance with the dioxin/furan emission limit, the owner or operator may elect not to conduct a performance test for the subsequent 2 years for that affected facility. At a minimum, a performance test for dioxin/furan emissions shall be conducted every third year (no more than

36 months following the previous performance test) for each affected facility. If a performance test conducted every third year indicates compliance with the dioxin/furan emission limit, the owner or operator may elect not to conduct a performance test on the affected facility for an additional 2 years. If any performance test indicates noncompliance with the dioxin/furan emission limit, performance tests shall be conducted annually until all annual performance tests for the affected facility over a 3-year period indicate compliance with the dioxin/furan emission limit.

(iii) For affected facilities located within small or large municipal waste combustor plants where all performance tests for all affected facilities over a 2-year period indicate that dioxin/furan emissions are less than or equal to 7 nanograms per dry standard cubic meter (total mass) for all affected facilities located within a municipal waste combustor plant, the owner or operator of the municipal waste combustor plant may elect to conduct annual performance tests for one affected facility (i.e., unit) per year at the municipal waste combustor plant. At a minimum, a performance test for dioxin/furan emissions shall be conducted annually (no more than 12 months following the previous performance test) for one affected facility at the municipal waste combustor plant. Each year a different affected facility at the municipal waste combustor plant shall be tested, and the affected facilities at the plant shall be tested in sequence (e.g., unit 1, unit 2, unit 3, as applicable). If each annual

performance test continues to indicate a dioxin/furan emission level less than or equal to 7 nanograms per dry standard cubic meter (total mass), the owner or operator may continue conducting a performance test on only one affected facility per year. If any annual performance test indicates a dioxin/furan emission level greater than 7 nanograms per dry standard cubic meter (total mass), performance tests thereafter shall be conducted annually on all affected facilities at the plant until and unless all annual performance tests for all affected facilities at the plant over a 2-year period indicate a dioxin/furan emission level less than or equal to 7 nanograms per dry standard cubic meter (total mass).

(6) The owner or operator of an affected facility that selects to follow the performance testing schedule specified in paragraph (g)(5)(iii) of this section shall follow the procedures specified in § 60.59b(g)(4) for reporting the selection of this schedule.

(7) The owner or operator of an affected facility where activated carbon is used to comply with the dioxin/furan emission limits specified in § 60.52b(c) or the dioxin/furan emission level specified in paragraph (g)(5)(iii) of this section shall follow the procedures specified in paragraph (m) of this section for measuring and calculating the carbon usage rate.

(8) An owner or operator may request that compliance with the dioxin/furan emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent

oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(9) As specified under § 60.8 of subpart A of this part, all performance tests shall consist of three test runs. The average of the dioxin/furan emission concentrations from the three test runs is used to determine compliance.

(h) The procedures and test methods specified in paragraphs (h)(1) through (h)(12) of this section shall be used to determine compliance with the nitrogen oxides emission limit for municipal waste combustors located at large municipal waste combustor plants under § 60.52b(d) (no nitrogen oxides performance tests are required for affected facilities located within small municipal waste combustor plants).

(1) The EPA Reference Method 19, section 4.1, shall be used for determining the daily arithmetic average nitrogen oxides emission concentration.

(2) An owner or operator may request that compliance with the nitrogen oxides emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(3) The owner or operator of an affected facility located within a large municipal waste combustor plant subject to the nitrogen oxides limit under § 60.52b(d) shall conduct an initial

performance test for nitrogen oxides as required under § 60.8 of subpart A of this part. Compliance with the nitrogen oxides emission limit shall be determined by using the continuous emission monitoring system specified in paragraph (h)(4) of this section for measuring nitrogen oxides and calculating a 24-hour daily arithmetic average emission concentration using EPA Reference Method 19, section 4.1.

(4) The owner or operator of an affected facility located within a large municipal waste combustor plant subject to the nitrogen oxides emission limit under § 60.52b(d) shall install, calibrate, maintain, and operate a continuous emission monitoring system for measuring nitrogen oxides discharged to the atmosphere, and record the output of the system.

(5) Following the date that the initial performance test for nitrogen oxides is completed or is required to be completed under § 60.8 of subpart A of this part, compliance with the emission limit for nitrogen oxides required under § 60.52b(d) shall be determined based on the 24-hour daily arithmetic average of the hourly emission concentrations using continuous emission monitoring system outlet data.

(6) At a minimum, valid continuous emission monitoring system hourly averages shall be obtained as specified in paragraphs (h)(6)(i) and (h)(6)(ii) of this section for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that the affected facility is combusting municipal solid waste.

(i) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average.

(ii) Each nitrogen oxides 1-hour arithmetic average shall be corrected to 7 percent oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) continuous emission monitoring system data.

(7) The 1-hour arithmetic averages required by paragraph (h)(5) of this section shall be expressed in parts per million by volume (dry basis) and used to calculate the 24-hour daily arithmetic average concentrations. The 1-hour arithmetic averages shall be calculated using the data points required under § 60.13(e)(2) of subpart A of this part.

(8) All valid continuous emission monitoring system data must be used in calculating emission averages even if the minimum continuous emission monitoring system data requirements of paragraph (h)(6) of this section are not met.

(9) The procedures under § 60.13 of subpart A of this part shall be followed for installation, evaluation, and operation of the continuous emission monitoring system. The initial performance evaluation shall be completed no later than 180 days after the date of initial startup of the municipal waste combustor unit, as specified under § 60.8 of subpart A of this part.

(10) The owner or operator shall operate the continuous emission monitoring system according to Performance Specification 2 in appendix B of this part and shall follow the

procedures and methods specified in paragraphs (h)(10)(i) and (h)(10)(ii) of this section.

(i) During each relative accuracy test run of the continuous emission monitoring system required by Performance Specification 2 of appendix B of this part, nitrogen oxides and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified in paragraphs (h)(10)(i)(A) and (h)(10)(i)(B) of this section.

(A) For nitrogen oxides, EPA Reference Method 7, 7A, 7C, 7D, or 7E shall be used.

(B) For oxygen (or carbon dioxide), EPA Reference Method 3A or 3B shall be used.

(ii) The span value of the continuous emission monitoring system shall be 125 percent of the maximum estimated hourly potential nitrogen oxide emissions of the municipal waste combustor unit.

(11) Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with procedure 1 in appendix F of this part.

(12) When nitrogen oxides continuous emissions data are not obtained because of continuous emission monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained using other monitoring systems as approved by the Administrator or EPA Reference Method 19 to provide, as necessary, valid emissions

data for a minimum of 75 percent of the hours per day for 90 percent of the days per calendar quarter the unit is operated and combusting municipal solid waste.

(i) The procedures specified in paragraphs (i)(1) through (i)(12) of this section shall be used for determining compliance with the operating requirements under § 60.53b.

(1) Compliance with the carbon monoxide emission limits in § 60.53b(a) shall be determined using a 4-hour block arithmetic average for all types of affected facilities except mass burn rotary waterwall municipal waste combustors and refuse-derived fuel stokers.

(2) For affected mass burn rotary waterwall municipal waste combustors and refuse-derived fuel stokers, compliance with the carbon monoxide emission limits in § 60.53b(a) shall be determined using a 24-hour daily arithmetic average.

(3) The owner or operator of an affected facility shall install, calibrate, maintain, and operate a continuous emission monitoring system for measuring carbon monoxide at the combustor outlet and record the output of the system and shall follow the procedures and methods specified in paragraphs (i)(3)(i) through (i)(3)(iii) of this section.

(i) The continuous emission monitoring system shall be operated according to Performance Specification 4A in appendix B of this part.

(ii) During each relative accuracy test run of the continuous emission monitoring system required by Performance

Specification 4A in appendix B of this part, carbon monoxide and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified in paragraphs (i)(3)(ii)(A) and (i)(3)(ii)(B) of this section.

(A) For carbon monoxide, EPA Reference Method 10, 10A, or 10B shall be used.

(B) For oxygen (or carbon dioxide), EPA Reference Method 3A or 3B shall be used.

(iii) The span value of the continuous emission monitoring system shall be 125 percent of the maximum estimated hourly potential carbon monoxide emissions of the municipal waste combustor unit.

(4) The 4-hour block and 24-hour daily arithmetic averages specified in paragraphs (i)(1) and (i)(2) of this section shall be calculated from 1-hour arithmetic averages expressed in parts per million by volume corrected to 7 percent oxygen (dry basis). The 1-hour arithmetic averages shall be calculated using the data points generated by the continuous emission monitoring system. At least two data points shall be used to calculate each 1-hour arithmetic average.

(5) An owner or operator may request that compliance with the carbon monoxide emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide

levels for the affected facility shall be established as specified in paragraph (b)(6) of this section.

(6) The procedures specified in paragraphs (i)(6)(i) through (i)(6)(v) of this section shall be used to determine compliance with load level requirements under § 60.53b(b).

(i) The owner or operator of an affected facility with steam generation capability shall install, calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; measure steam (or feedwater) flow in kilograms per hour (or pounds per hour) on a continuous basis; and record the output of the monitor. Steam (or feedwater) flow shall be calculated in 4-hour block arithmetic averages.

(ii) The method included in the "American Society of Mechanical Engineers Power Test Codes: Test Code for Steam Generating Units, Power Test Code 4.1 -- 1964 (R1991)" section 4 (incorporated by reference, see § 60.17 of subpart A of this part) shall be used for calculating the steam (or feedwater) flow required under paragraph (i)(6)(i) of this section. The recommendations in "American Society of Mechanical Engineers Interim Supplement 19.5 on Instruments and Apparatus: Application, Part II of Fluid Meters, 6th edition (1971)," chapter 4 (incorporated by reference -- see § 60.17 of subpart A of this part) shall be followed for design, construction, installation, calibration, and use of nozzles and orifices except as specified in (i)(6)(iii) of this section.

(iii) Measurement devices such as flow nozzles and orifices are not required to be recalibrated after they are installed.

(iv) All signal conversion elements associated with steam (or feedwater flow) measurements must be calibrated according to the manufacturer's instructions before each dioxin/furan performance test, and at least once per year.

(v) The owner or operator of an affected facility without steam generation capability shall meet the requirements specified in paragraph (i)(6)(v)(A) of this section.

(A) [Reserved].

(7) To determine compliance with the maximum particulate matter control device temperature requirements under § 60.53b(c), the owner or operator of an affected facility shall install, calibrate, maintain, and operate a device for measuring on a continuous basis the temperature of the flue gas stream at the inlet to each particulate matter control device utilized by the affected facility. Temperature shall be calculated in 4-hour block arithmetic averages.

(8) The maximum demonstrated municipal waste combustor unit load shall be determined during the initial performance test for dioxins/furans and each subsequent performance test during which compliance with the dioxin/furan emission limit specified in § 60.52b(c) is achieved. The maximum demonstrated municipal waste combustor unit load shall be the highest 4-hour arithmetic average load achieved during four consecutive hours during the

most recent test during which compliance with the dioxin/furan emission limit was achieved.

(9) For each particulate matter control device employed at the affected facility, the maximum demonstrated particulate matter control device temperature shall be determined during the initial performance test for dioxins/furans and each subsequent performance test during which compliance with the dioxin/furan emission limit specified in § 60.52b(c) is achieved. The maximum demonstrated particulate matter control device temperature shall be the highest 4-hour arithmetic average temperature achieved at the particulate matter control device inlet during four consecutive hours during the most recent test during which compliance with the dioxin/furan limit was achieved.

(10) At a minimum, valid continuous emission monitoring system hourly averages shall be obtained as specified in paragraphs (i)(10)(i) and (i)(10)(ii) of this section for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that the affected facility is combusting municipal solid waste.

(i) At least two data points per hour shall be used to calculate each 1-hour arithmetic average.

(ii) At a minimum, each carbon monoxide 1-hour arithmetic average shall be corrected to 7 percent oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) continuous emission monitoring system data.

(11) All valid continuous emission monitoring system data must be used in calculating the parameters specified under paragraph (i) of this section even if the minimum data requirements of paragraph (i)(10) of this section are not met. When carbon monoxide continuous emission data are not obtained because of continuous emission monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained using other monitoring systems as approved by the Administrator or EPA Reference Method 10 to provide, as necessary, the minimum valid emission data.

(12) Quarterly accuracy determinations and daily calibration drift tests for the carbon monoxide continuous emission monitoring system shall be performed in accordance with procedure 1 in appendix F of this part.

(j) The procedures specified in paragraphs (j)(1) and (j)(2) of this section shall be used for calculating municipal waste combustor unit capacity as defined under § 60.51b.

(1) For municipal waste combustor units capable of combusting municipal solid waste continuously for a 24-hour period, municipal waste combustor unit capacity, in megagrams per day of municipal solid waste combusted, shall be calculated based on 24 hours of operation at the maximum charging rate. The maximum charging rate shall be determined as specified in paragraphs (j)(1)(i) and (j)(1)(ii) of this section as applicable.

(i) For combustors that are designed based on heat capacity, the maximum charging rate shall be calculated based on the maximum design heat input capacity of the unit and a heating value of 10,500 kilojoules per kilogram.

(ii) For combustors that are not designed based on heat capacity, the maximum charging rate shall be the maximum design charging rate.

(2) For batch feed municipal waste combustor units, municipal waste combustor unit capacity, in megagrams per day of municipal solid waste combusted, shall be calculated as the maximum design amount of municipal solid waste that can be charged per batch multiplied by the maximum number of batches that could be processed in a 24-hour period. The maximum number of batches that could be processed in a 24-hour period is calculated as 24 hours divided by the design number of hours required to process one batch of municipal solid waste, and may include fractional batches (e.g., if one batch requires 16 hours, then $24/16$, or 1.5 batches, could be combusted in a 24-hour period). For batch combustors that are designed based on heat capacity, the design heating value of 10,500 kilojoules per kilogram for all municipal solid waste shall be used in calculating the municipal waste combustor unit capacity in megagrams per day of municipal solid waste.

(k) The procedures specified in paragraphs (k)(1) through (k)(3) of this section shall be used for determining compliance with the fugitive ash emission limit under § 60.55b.

(1) The EPA Reference Method 22 shall be used for determining compliance with the fugitive ash emission limit under § 60.55b. The minimum observation time shall be a series of three 1-hour observations. The observation period shall include times when the facility is transferring ash from the municipal waste combustor unit to the area where ash is stored or loaded into containers or trucks.

(2) The average duration of visible emissions per hour shall be calculated from the three 1-hour observations. The average shall be used to determine compliance with § 60.55b.

(3) The owner or operator of an affected facility shall conduct an initial performance test for fugitive ash emissions as required under § 60.8 of subpart A of this part.

(1) The procedures specified in paragraphs (1)(1) through (1)(3) of this section shall be used to determine compliance with the opacity limit for air curtain incinerators under § 60.56b.

(1) The EPA Reference Method 9 shall be used for determining compliance with the opacity limit.

(2) The owner or operator of the air curtain incinerator shall conduct an initial performance test for opacity as required under § 60.8 of subpart A of this part.

(3) Following the date that the initial performance test is completed or is required to be completed under § 60.8 of subpart A of this part, the owner or operator of the air curtain incinerator shall conduct a performance test for opacity on an

annual basis (no more than 12 calendar months following the previous performance test).

(m) The owner or operator of an affected facility where activated carbon injection is used to comply with the mercury emission limit under § 60.52b(a)(5), or the dioxin/furan emission limits under § 60.52(b)(c), or the dioxin/furan emission level specified in § 60.58b(g)(5)(iii) shall follow the procedures specified in paragraphs (m)(1) through (m)(3) of this section.

(1) During the performance tests for dioxins/furans and mercury, as applicable, the owner or operator shall estimate an average carbon mass feed rate based on carbon injection system operating parameters such as the screw feeder speed, hopper volume, hopper refill frequency, or other parameters appropriate to the feed system being employed, as specified in paragraphs (m)(1)(i) and (m)(1)(ii) of this section.

(i) An average carbon mass feed rate in kilograms per hour or pounds per hour shall be estimated during the initial performance test for mercury emissions and each subsequent performance test for mercury emissions.

(ii) An average carbon mass feed rate in kilograms per hour or pounds per hour shall be estimated during the initial performance test for dioxin/furan emissions and each subsequent performance test for dioxin/furan emissions.

(2) During operation of the affected facility, the carbon injection system operating parameter(s) that are the primary indicator(s) of the carbon mass feed rate (e.g., screw feeder

setting) must equal or exceed the level(s) documented during the performance tests specified under paragraphs (m)(1)(i) and (m)(1)(ii) of this section.

(3) The owner or operator shall estimate the total carbon usage of the plant (kilograms or pounds) for each calendar quarter by two independent methods, according to the procedures in paragraphs (m)(3)(i) and (m)(3)(ii) of this section.

(i) The weight of carbon delivered to the plant.

(ii) Estimate the average carbon mass feed rate in kilograms per hour or pounds per hour for each hour of operation for each affected facility based on the parameters specified under paragraph (m)(1) of this section, and sum the results for all affected facilities at the plant for the total number of hours of operation during the calendar quarter.

§ 60.59b Reporting and recordkeeping requirements.

(a) The owner or operator of an affected facility located at a municipal waste combustor plant with a capacity to combust greater than 35 megagrams per day shall submit, on or before the date the application for a construction permit is submitted under 40 CFR part 51, subpart I, or part 52, as applicable, the items specified in paragraphs (a)(1) through (a)(4) of this section.

(1) The preliminary and final draft materials separation plans required by § 60.57b(a)(1) and (a)(5).

(2) A copy of the notification of the public meeting required by § 60.57b(a)(1)(ii).

(3) A transcript of the public meeting required by § 60.57b(a)(2).

(4) A copy of the document summarizing responses to public comments required by § 60.57b(a)(3).

(b) The owner or operator of an affected facility located at a municipal waste combustor plant with a capacity to combust greater than 35 megagrams per day shall submit a notification of construction, which includes the information specified in paragraphs (b)(1) through (b)(5) of this section.

(1) Intent to construct.

(2) Planned initial startup date.

(3) The types of fuels that the owner or operator plans to combust in the affected facility.

(4) The municipal waste combustor unit capacity, municipal waste combustor plant capacity, and supporting capacity calculations prepared in accordance with § 60.58b(j).

(5) Documents associated with the siting requirements under § 60.57b(a) and (b), as specified in paragraphs (b)(5)(i) through (b)(5)(v) of this section.

(i) The siting analysis required by § 60.57b(b)(1) and (b)(2).

(ii) The final materials separation plan for the affected facility required by § 60.57b(a)(10).

(iii) A copy of the notification of the public meeting required by § 60.57b(b)(3)(ii).

(iv) A transcript of the public meeting required by § 60.57b(b)(4).

(v) A copy of the document summarizing responses to public comments required by § 60.57b(a)(9) and (b)(5).

(c) The owner or operator of an air curtain incinerator subject to the opacity limit under § 60.56b shall provide a notification of construction that includes the information specified in paragraphs (b)(1) through (b)(4) of this section.

(d) The owner or operator of an affected facility located within a small or large municipal waste combustor plant and subject to the standards under §§ 60.52b, 60.53b, 60.54b, 60.55b, and 60.57b shall maintain records of the information specified in paragraphs (d)(1) through (d)(15) of this section, as applicable, for each affected facility for a period of at least 5 years.

(1) The calendar date of each record.

(2) The emission concentrations and parameters measured using continuous monitoring systems as specified under paragraphs (d)(2)(i) and (d)(2)(ii) of this section.

(i) The measurements specified in paragraphs (d)(2)(i)(A) through (d)(2)(i)(D) of this section shall be recorded and be available for submittal to the Administrator or review onsite by an inspector.

(A) All 6-minute average opacity levels as specified under § 60.58b(c).

(B) All 1-hour average sulfur dioxide emission concentrations as specified under § 60.58b(e).

(C) All 1-hour average nitrogen oxides emission concentrations as specified under § 60.58b(h) (large municipal waste combustor plants only).

(D) All 1-hour average carbon monoxide emission concentrations, municipal waste combustor unit load measurements, and particulate matter control device inlet temperatures as specified under § 60.58b(i).

(ii) The average concentrations and percent reductions, as applicable, specified in paragraphs (d)(2)(ii)(A) through (d)(2)(ii)(D) of this section shall be computed and recorded, and shall be available for submittal to the Administrator or review on-site by an inspector.

(A) All 24-hour daily geometric average sulfur dioxide emission concentrations and all 24-hour daily geometric average percent reductions in sulfur dioxide emissions as specified under § 60.58b(e).

(B) All 24-hour daily arithmetic average nitrogen oxides emission concentrations as specified under § 60.58b(h) (large municipal waste combustor plants only).

(C) All 4-hour block or 24-hour daily arithmetic average carbon monoxide emission concentrations, as applicable, as specified under § 60.58b(i).

(D) All 4-hour block arithmetic average municipal waste combustor unit load levels and particulate matter control device inlet temperatures as specified under § 60.58b(i).

(3) Identification of the calendar dates when any of the average emission concentrations, percent reductions, or operating parameters recorded under paragraphs (d)(2)(ii)(A) through (d)(2)(ii)(E) of this section, or the opacity levels recorded under paragraph (d)(2)(i)(A) of this section are above the applicable limits, with reasons for such exceedances and a description of corrective actions taken.

(4) For affected facilities that apply activated carbon for mercury or dioxin/furan control, the records specified in paragraphs (d)(4)(i) through (d)(4)(v) of this section.

(i) The average carbon mass feed rate (in kilograms per hour or pounds per hour) estimated as required under § 60.58b(m)(1)(i) of this section during the initial mercury performance test and all subsequent annual performance tests, with supporting calculations.

(ii) The average carbon mass feed rate (in kilograms per hour or pounds per hour) estimated as required under § 60.58b(m)(1)(ii) of this section during the initial dioxin/furan performance test and all subsequent annual performance tests, with supporting calculations.

(iii) The average carbon mass feed rate (in kilograms per hour or pounds per hour) estimated for each hour of operation as

required under § 60.58b(m)(3)(ii) of this section, with supporting calculations.

(iv) The total carbon usage for each calendar quarter estimated as specified by paragraph 60.58b(m)(3) of this section, with supporting calculations.

(v) Carbon injection system operating parameter data for the parameter(s) that are the primary indicator(s) of carbon feed rate (e.g., screw feeder speed).

(5) [Reserved]

(6) Identification of the calendar dates for which the minimum number of hours of any of the data specified in paragraphs (d)(6)(i) through (d)(6)(v) of this section have not been obtained including reasons for not obtaining sufficient data and a description of corrective actions taken.

(i) Sulfur dioxide emissions data;

(ii) Nitrogen oxides emissions data (large municipal waste combustor plants only);

(iii) Carbon monoxide emissions data;

(iv) Municipal waste combustor unit load data; and

(v) Particulate matter control device temperature data.

(7) Identification of each occurrence that sulfur dioxide emissions data, nitrogen oxides emissions data (large municipal waste combustors only), or operational data (i.e., carbon monoxide emissions, unit load, and particulate matter control device temperature) have been excluded from the calculation of

average emission concentrations or parameters, and the reasons for excluding the data.

(8) The results of daily drift tests and quarterly accuracy determinations for sulfur dioxide, nitrogen oxides (large municipal waste combustors only), and carbon monoxide continuous emission monitoring systems, as required under appendix F of this part, procedure 1.

(9) The test reports documenting the results of the initial performance test and all annual performance tests listed in paragraphs (d)(9)(i) and (d)(9)(ii) of this section shall be recorded along with supporting calculations.

(i) The results of the initial performance test and all annual performance tests conducted to determine compliance with the particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission limits.

(ii) For the initial dioxin/furan performance test and all subsequent dioxin/furan performance tests recorded under paragraph (d)(9)(i) of this section, the maximum demonstrated municipal waste combustor unit load and maximum demonstrated particulate matter control device temperature (for each particulate matter control device).

(10) [Reserved]

(11) For each municipal waste combustor subject to the siting provisions under § 60.57b, the siting analysis, the final materials separation plan, a record of the location and date of

the public meetings, and the documentation of the responses to public comments received at the public meetings.

(12) The records specified in paragraphs (d)(12)(i) through (d)(12)(iii) of this section.

(i) Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have been provisionally certified by the American Society of Mechanical Engineers or an equivalent State-approved certification program as required by § 60.54b(a) including the dates of initial and renewal certifications and documentation of current certification.

(ii) Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have been fully certified by the American Society of Mechanical Engineers or an equivalent State-approved certification program as required by § 60.54b(a) including the dates of initial and renewal certifications and documentation of current certification.

(iii) Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course as required by § 60.54b(d) including documentation of training completion.

(13) Records showing the names of persons who have completed a review of the operating manual as required by

§ 60.54b(f) including the date of the initial review and subsequent annual reviews.

(14) For affected facilities that apply activated carbon for mercury or dioxin/furan control, identification of the calendar dates when the average carbon mass feed rates recorded under (d)(4)(iii) of this section were less than either of the hourly carbon feed rates estimated during performance tests for mercury or dioxin/furan emissions and recorded under paragraphs (d)(4)(i) and (d)(4)(ii) of this section, respectively, with reasons for such feed rates and a description of corrective actions taken.

(15) For affected facilities that apply activated carbon for mercury or dioxin/furan control, identification of the calendar dates when the carbon injection system operating parameter(s) that are the primary indicator(s) of carbon mass feed rate (e.g., screw feeder speed) recorded under paragraph (d)(4)(v) of this section are below the level(s) estimated during the performance tests as specified in § 60.58b(m)(1)(i) and § 60.58b(m)(1)(ii) of this section, with reasons for such occurrences and a description of corrective actions taken.

(e) The owner or operator of an air curtain incinerator subject to the opacity limit under § 60.56b shall maintain records of results of the initial opacity performance test and subsequent performance tests required by § 60.58b(1) for a period of at least 5 years.

(f) The owner or operator of an affected facility located within a small or large municipal waste combustor plant shall submit the information specified in paragraphs (f)(1) through (f)(6) of this section in the initial performance test report.

(1) The initial performance test data as recorded under paragraphs (d)(2)(ii)(A) through (d)(2)(ii)(D) of this section for the initial performance test for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, and particulate matter control device inlet temperature.

(2) The test report documenting the initial performance test recorded under paragraph (d)(9) of this section for particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emissions.

(3) The performance evaluation of the continuous emission monitoring system using the applicable performance specifications in appendix B of this part.

(4) The maximum demonstrated municipal waste combustor unit load and maximum demonstrated particulate matter control device inlet temperature(s) established during the initial dioxin/furan performance test as recorded under paragraph (d)(9) of this section.

(5) For affected facilities that apply activated carbon injection for mercury control, the owner or operator shall submit the average carbon mass feed rate recorded under paragraph (d)(4)(i) of this section.

(6) For those affected facilities that apply activated carbon injection for dioxin/furan control, the owner or operator shall submit the average carbon mass feed rate recorded under paragraph (d)(4)(ii) of this section.

(g) Following the first year of municipal combustor operation, the owner or operator of an affected facility located within a small or large municipal waste combustor plant shall submit an annual report including the information specified in paragraphs (g)(1) through (g)(4) of this section, as applicable, no later than February 1 of each year following the calendar year in which the data were collected (once the unit is subject to permitting requirements under Title V of the Act, the owner or operator of an affected facility must submit these reports semiannually).

(1) A summary of data collected for all pollutants and parameters regulated under this subpart, which includes the information specified in paragraphs (g)(1)(i) through (g)(1)(v) of this section.

(i) A list of the particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission levels achieved during the performance tests recorded under paragraph (d)(9) of this section.

(ii) A list of the highest emission level recorded for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, and particulate matter control device

inlet temperature based on the data recorded under paragraphs (d)(2)(ii)(A) through (d)(2)(ii)(D) of this section.

(iii) List the highest opacity level measured, based on the data recorded under paragraph (d)(2)(i)(A) of this section.

(iv) The total number of days that the minimum number of hours of data for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load, and particulate matter control device temperature data were not obtained based on the data recorded under paragraph (d)(6) of this section.

(v) The total number of hours that data for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load, and particulate matter control device temperature were excluded from the calculation of average emission concentrations or parameters based on the data recorded under paragraph (d)(7) of this section.

(2) The summary of data reported under paragraph (g)(1) of this section shall also provide the types of data specified in paragraphs (g)(1)(i) through (g)(1)(vi) of this section for the calendar year preceding the year being reported, in order to provide the Administrator with a summary of the performance of the affected facility over a 2-year period.

(3) The summary of data including the information specified in paragraphs (g)(1) and (g)(2) of this section shall highlight any emission or parameter levels that did not achieve the emission or parameter limits specified under this subpart.

(4) A notification of intent to begin the reduced dioxin/furan performance testing schedule specified in § 60.58b(g)(5)(iii) of this section during the following calendar year.

(h) The owner or operator of an affected facility located within a small or large municipal waste combustor plant shall submit a semiannual report that includes the information specified in paragraphs (h)(1) through (h)(5) of this section for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit specified under this subpart, according to the schedule specified under paragraph (h)(6) of this section.

(1) The semiannual report shall include information recorded under paragraph (d)(3) of this section for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, particulate matter control device inlet temperature, and opacity.

(2) For each date recorded as required by paragraph (d)(3) of this section and reported as required by paragraph (h)(1) of this section, the semiannual report shall include the sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, particulate matter control device inlet temperature, or opacity data, as applicable, recorded under paragraphs (d)(2)(ii)(A) through (d)(2)(ii)(D) and (d)(2)(i)(A) of this section, as applicable.

(3) If the test reports recorded under paragraph (d)(9) of this section document any particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission levels that were above the applicable pollutant limits, the semiannual report shall include a copy of the test report documenting the emission levels and the corrective actions taken.

(4) The semiannual report shall include the information recorded under paragraph (d)(15) of this section for the carbon injection system operating parameter(s) that are the primary indicator(s) of carbon mass feed rate.

(5) For each operating date reported as required by paragraph (h)(4) of this section, the semiannual report shall include the carbon feed rate data recorded under paragraph (d)(4)(iii) of this section.

(6) Semiannual reports required by paragraph (h) of this section shall be submitted according to the schedule specified in paragraphs (h)(6)(i) and (h)(6)(ii) of this section.

(i) If the data reported in accordance with paragraphs (h)(1) through (h)(5) of this section were collected during the first calendar half, then the report shall be submitted by August 1 following the first calendar half.

(ii) If the data reported in accordance with paragraphs (h)(1) through (h)(5) of this section were collected during the second calendar half, then the report shall be submitted by February 1 following the second calendar half.

(i) The owner or operator of an air curtain incinerator subject to the opacity limit under § 60.56b shall submit the results of the initial opacity performance test and all subsequent annual performance tests recorded under paragraph (e) of this section. Annual performance tests shall be submitted by February 1 of the year following the year of the performance test.

(j) All reports specified under paragraphs (a), (b), (c), (f), (g), (h), and (i) of this section shall be submitted as a paper copy, postmarked on or before the submittal dates specified under these paragraphs, and maintained onsite as a paper copy for a period of 5 years.

(k) All records specified under paragraphs (d) and (e) of this section shall be maintained onsite in either paper copy or computer-readable format, unless an alternative format is approved by the Administrator.

(l) If an owner or operator would prefer to select a different annual or semiannual date for submitting the periodic reports required by paragraphs (g), (h) and (i) of this section, then the dates may be changed by mutual agreement between the owner or operator and the Administrator according to the procedures specified in § 60.19(c) of subpart A of this part.

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Appendix Q

Key Elements of an Acceptable Section 111(d)/129 State Plan for MWCs

APPENDIX Q--KEY ELEMENTS FOR AN ACCEPTABLE SECTION 111(d)/129 STATE PLAN FOR MWCs

This document is provided to facilitate preparation of the required State Plans.

Section 129 of the Clean Air Act (Act) requires that states submit to the Environmental Protection Agency (EPA) State Plans to implement and enforce the Emission Guidelines (EG) promulgated for Municipal Waste Combustors (MWCs) pursuant to Sections 111(d) and 129 of the Act. Section 129 requires that the state submit the State Plans not later than one year after EPA promulgates the EG. On December 19, 1995, EPA promulgated the EG as 40 CFR Part 60, Subpart Cb. Thus, the State Plans are due no later than December 19, 1996.

The official procedures for adoption and submittal of State Plans are codified in 40 CFR Part 60, Subpart B. EPA promulgated the Subpart B provisions on November 17, 1975. EPA amended them on December 19, 1995, to allow the subparts developed under Section 129 to include specifications that supersede the provisions in Subpart B regarding the schedule for submittal of State Plans, the stringency of the emission limitations, and the compliance schedules. That is, these amendments were promulgated in order to allow conformity with Section 129, which requires the State Plans for MWCs be submitted within one year and requires the State Plans to be as protective as the EG and requires that each unit be in compliance not later than three years after the State Plan is approved by EPA and no later than five years after the EG is promulgated (rather than the case-by-case exceptions the state may demonstrate as otherwise specified in Subpart B).

States must adopt their State Plans according to state procedures prior to official submittal to EPA. [60.23 (a)]

The following pages include information about public participation, legal authority, emission standards and other emission limitations, compliance schedules, emission inventories, source surveillance, compliance assurance, enforcement, and cross-references to the EG.

A. Public Participation

Public participation, under the Clean Air Act, is an important right and responsibility of citizens in the state process of developing, adopting, and implementing the required Section 111(d)/129 State Plans. Under 40 CFR Part 60, Subpart B, the minimum requirements for the state to conduct public hearings on the adoption of State Plans and any revisions thereof are as follows:

1. Reasonable notice of one or more public hearing(s) at least 30 days prior to the hearing(s). [60.23(d)]

2. One or more public hearing(s) on the State Plan (or revisions) conducted in location(s) within the state. *[60.23(c)(1)]*
3. Date, time and place of hearing(s) prominently advertised in each region affected. *[60.23(d)(1)]* "Region" is defined as "air quality control region". *[60.21(i)]*
4. Availability of draft State Plan for public inspection in at least one location in each region to which it will apply. *[60.23(d)(2)]*
5. Notice of hearing provided to: (a) EPA Regional Administrator, (b) local affected agencies, and (c) other states affected. *[60.23(d)(3),(4),&(5)]*
6. Retention of hearing records (e.g., list of commentors and their affiliation and summary of each presentation and comments submitted and the state's responses to those comments) for at least 2 years. *[60.23(e) and (f)]*
7. Certification that public participation was conducted in accordance with Subpart B and state procedures. *[60.23(f)]* Upon written application by the state agency, EPA may (expected only for limited special cases) approve different procedures provided that they ensure adequate public participation. *[60.23(g)]*

No hearing is required on a state or local emission standard in effect prior to December 19, 1995, the effective date of Subpart Cb, if it was adopted after a public hearing and is at least as stringent as the emission guideline. *[60.23(c)(3)]*

Similarly, no public hearing is required for any change to an increment of progress unless the change is likely to cause the facility to be unable to comply with the final compliance date. *[60.23(c)(2)]*

For new MWCs, there are special public participation requirements in Subpart Eb as part of the 40 CFR 60.57b siting requirements for new MWCs. *[60FR65425-65247]*

B. Legal Authority *[60.26(a)]*

1. The State Plan shall include demonstration of the state's legal authority to:
 - (a) adopt emission standards (enforceable conditions) and compliance schedules applicable to the designated facilities and designated pollutants for which the State Plan is submitted
 - (b) enforce applicable laws, regulations, standards, and compliance schedules, and seek injunctive relief

- (c) obtain information necessary to determine compliance
- (d) require recordkeeping, make inspections, and conduct tests
- (e) require the use of monitors and require emission reports of owners or operators
- (f) make emission data publicly available

[60.26(a)]

2. The state must specifically identify the provisions above and include copies of the provisions of the law establishing such legal authority unless they have been approved as a portion of a previous SIP. To facilitate its review of State Plans, EPA encourages states to submit an opinion by the state's Attorney General as part of the demonstration required above. States may use previously submitted Attorney General opinions (e.g., under Title V) to the extent those documents specifically address the requirements of Section 60.26 as they apply to the designated facilities and the designated pollutants. [60.26(b)]
3. The legal authority shown must be in effect at time of State Plan submission. [60.26(c)]
4. The state may authorize another state governmental agency to carry out a portion of the State Plan, provided the state demonstrates that the state governmental agency has adequate authority. [60.26(e)]
5. The state may authorize a local agency to carry out a portion of the State Plan provided that the state demonstrates that the local agency has adequate legal authority to implement that portion of the State Plan and the state is not relieved of responsibility. [60.26(e)]

C. Emission Standards and other Emission Limitations

1. The emission limitations must be at least as protective as the EG. If the limitations are not identical, the state must demonstrate that the standards are at least as protective. [60.24(f), as revised December 19, 1995, to be consistent with Section 129 of the Act and 60.33b and 60.34b of Subpart Cb]

NOTE: Nothing in the Clean Air Act nor the CFR restricts the state from having standards and schedules more stringent than the EG. [60.24(g)]

2. The State Plan shall include the specific emission limitations, preferably cross-referenced to the specific EG requirements. [60.24(a)]

3. Test methods and procedures for determining compliance shall be specified. *[60.24(b)2)]*
4. If the methods and procedures are not identical to those in Section 60.38b, the state must demonstrate equivalence or request EPA approval of acceptable alternatives per current EPA method review procedures. *[60.24(b)(2)]*
5. If emission standards are adopted by local agencies or other state agencies, they must also be included in the State Plan and if not identical to the EG, then the state must show that they are at least as protective as the emission guidelines. *[60.24(a)]*

D. Compliance Schedules

1. Compliance schedules must match the Cb and B specifications. *[Subpart Cb, 60.39b]*
2. For compliance schedules extending more than 12 months beyond the date of EPA approval of the State Plan, the compliance schedule must include legally enforceable increments of progress towards compliance for that MWC. Each increment of progress in Section 60.21(h) of Subpart B must have a compliance date and must be included as an enforceable increment in the State Plan. The State Plan may include such additional increments of progress as may be necessary to permit close and effective supervision of progress towards final compliance. *[60.24(e)(1), 60.21(h), & 60.39b]*

The minimum five increments of progress are as follows:

- (a) Submittal of Final Control Plan; (This may be a brief document or letter describing the controls that the source will use to comply with the emission limitations and other requirements. Most likely, the source, public, and state will have discussed this information as part of the state process for development of the compliance schedule for the draft State Plan prior to submittal of the State Plan to EPA.) *[60.21(h)(1)]*
- (b) Awarding of contracts for controls systems or process modifications or orders for purchase of components; *[60.21(h)(2)]*
- (c) Initiation of on-site construction or installation of the air pollution control device(s) or process changes; *[60.21(h)(3)]*
- (d) Completion of on-site construction or installation of control equipment or process changes; *[60.21(h)(4)]*

(e) Final compliance. [60.21(h)(5)]

The first four of these increments of progress can be set as calendar dates or floating dates tied to the date of the approval of the State Plan or the date of permit issuance, if a permit is required. For example, the date for submitting a final control plan could be set as three months following approval of the State Plan. If an increment of progress is set based on the date of permit issuance the State Plan must identify the specific permit.

The fifth increment of progress, the date for final compliance, can be set as a calendar date or a floating date, but if it is floating, it can be tied only to the date of approval of the State Plan, not the date of permit issuance, and must include the limitation that the date can in no case be later than December 19, 2000.

3. Suggested measurable and enforceable activities are listed in 60.39b(c)(1)(i)(A) through (J) of Subpart Cb. [60FR65418-65419] The state may choose to include them in the State Plan as enforceable increments of progress with compliance dates, or as non-enforceable increments of progress with reporting requirements only, or choose to leave them out of the State Plan.

The suggested increments of progress activities are:

- (A) Date for obtaining services of an architectural and engineering firm regarding the air pollution control device;
- (B) Date for obtaining design drawings of the air pollution control device(s);
- (C) Date for submittal of permit modifications, if necessary;
- (D) Date for submittal of final control plan to the Administrator [*already required where practicable by 60.24(e)(1) and 60.21(h)(1)*];
- (E) Date for ordering the air pollution control device(s) [*already required where practicable by 60.24(e)(1) and 60.21(h)(1)*];
- (F) Date for obtaining the major components of the air pollution control device(s);
- (G) Date for initiation of site preparation for installation of the air pollution control device(s) [*already required where practicable by 60.24(e)(1) and 60.21(h)(1)*];

- (H) Date for installation of the air pollution control device(s) [*already required where practicable* by 60.24(e)(1) and 60.21(h)(1)];
- (I) Date for initial startup of the air pollution control device(s);
- (J) Date for initial performance test(s) of the air pollution control device(s);

EPA strongly recommends that activities (I) and (J) be included in the compliance schedules. Performance tests must be conducted within 180 days after the final retrofit, and the report of the test results must be submitted within 60 days after the test is conducted. The test results will demonstrate whether or not the MWC is in compliance with the emission standards. This performance test timing is consistent with other EPA air regulations for existing sources, such as the Part 63 NESHAP general provisions. EPA also strongly encourages states and MWC owners or operators to conduct preliminary performance tests at least 2-3 months prior to the scheduled final compliance date in order for the MWC to make any necessary shakedown changes and retest(s), as necessary, prior to the final compliance date.

- 4. The State Plan may include one set of increments with compliance dates applicable to all MWC units, or the State Plan may vary the compliance dates to address specific issues relevant to individual plants. However, the enforceable increments of progress must be arranged chronologically and the compliance dates must be set to ensure full compliance with the applicable requirements as expeditiously as practicable. [60.24(c)] For example, a State Plan that requires a large plant to “submit a final control plan and to award contracts no later than the third year of the compliance schedule” will be closely examined to determine whether the state is requiring the MWC to comply as expeditiously as practicable.

E. Emission Inventories

The State Plan must include an “emission inventory” of all designated pollutants for all designated facilities. [60.25(a)]

Emission data must be included where available but estimates can be used where data are not currently available. Emission factors and default values are described in this Summary Document.

In addition to the initial inventory, updates are required. [60.25(f)(5)] The updated information is required to be submitted annually in the 51.321 reports. [60.24(e)(1)] The emission data should be submitted to the Aerometric Information Retrieval System (AIRS) [51.321-51.323]

F. Source Surveillance, Compliance Assurance & Enforcement

The State Plan must provide for monitoring the status of compliance. As a minimum, the State Plan shall include:

1. Provisions for legally enforceable procedures to:
 - (a) require recordkeeping on nature and amount of emissions and reports to the state. [60.25(b)(1)]
 - (b) require any additional information to judge compliance. [60.25(b)(1)]
2. Provisions for periodic inspection and testing, if necessary. [60.25(b)(2)]
3. Provisions for emission data and other compliance monitoring information to be correlated with applicable emission standards and be made available to the public. "Correlated" means showing the relationship between the measured or estimated amounts of emissions and the amounts of such emissions allowable. For example, the emissions should be in the same units and averaging times. [60.25(a) and (c)]
4. MWC Requirements for Testing, Monitoring, Recordkeeping, and Reporting that are identical to those specified in 60.38b, 60.39b, 60.58b, and 60.59b. [Subpart Cb]
5. Specific identification of the provisions in 1 through 4 above. Copies of such provisions should be included unless they have been approved as portions of a preceding Section 111(d)/129 State Plan or State Implementation Plan (SIP) and the state demonstrates that the provisions are applicable and the requirements of 60.26 (legal authorities) are met. [60.25(d)]
6. Commitment to submit reports on progress in plan enforcement to the EPA Regional Administrator on an annual basis and include it in the reports required by 51.321. [60.25(e) and (f)] Each progress report shall include: enforcement actions, achievement of increments of progress, identification of sources that have ceased operation, emission inventory information for sources that were not in operation at the time of plan development, updated emission inventory and compliance information, and copies of technical reports on all performance testing, including concurrent process data. [60.25(f)(1) through 60.25(f)(6)]

Note: Some states and regions have developed more specific or tailored reporting and recordkeeping procedures via Memoranda of Agreements, Program Specific Guidance for

Section 105 Grants, and the Timely and Appropriateness Guidance that should also be followed. For example, some regions prefer that the state retain the performance test report until the region needs to review it as part of a compliance determination or other action.

Outline of Subpart Cb Requirements per 12/19/95 Federal Register:

60.30b Scope

60.31b Definitions

60.32b Designated facilities

Emission Limitations:

The emission limits for municipal waste combustor metals, acid gases, organics, and nitrogen oxides are specified in Section 60.33b, beginning on Federal Register page 65415 and continuing through page 65418.

60.33b Emission guidelines for MWC metals, acid gases, organics, and nitrogen oxides:

(a)(1) For approval, a State Plan shall include emission limits for **particulate matter and opacity** at least as protective as... (a)(1)(i) through (a)(1)(iii)...

(a)(2) For approval,... emission limits for **cadmium and lead** at least as protective as... (a)(2)(i) through (a)(2)(iv)...

(a)(3) For approval, ...emission limits for **mercury** at least as protective as... specified in this paragraph.

(b)(1) For approval, ... emission limits for **sulfur dioxide** at least as protective as... (b)(1)(i) and (ii)...

(b)(2) For approval, ... emission limits for **hydrogen chloride** at least as protective as (b)(2)(i) and (ii)...

(c)(1) For approval, ... emission limits for **dioxins/furans**...from...a large MWC plant at least as protective as ...either(c)(1)(i) or (c)(1)(ii)..., as applicable.

(c)(2) For approval,... emission limits for **dioxins/furans**...from...a small MWC plant at least as protective as...this paragraph...

(d) For approval, ...emission limits for **nitrogen oxides** at least as protective as... Table 1 ... for large MWC plants...

(d)(1)... may allow **nitrogen oxides emissions averaging** as specified in (d)(1)(i) through (d)(1)(v)

60.34b Emission guidelines for MWC operating practices:

(a) For approval,... emission limits for carbon monoxide at least as protective as... Table 3...

(b) For approval, ...requirements for MWC operating practices at least as protective as... listed in 60.53b(b) and (c) of Subpart Eb (60FR65424)

60.35b Emission guidelines for MWC operator training and certification:

For approval, ...requirements for ...operator training and certification at least as protective as ...Section 60.54b of Subpart Eb (60FR65424 et seq) ...The State plan shall require compliance with these requirements according to the schedule in Section 60.39b(c)(4).

60.36b Emission guidelines for MWC fugitive ash emissions

For approval, ...requirements for MWC fugitive ash emissions at least as protective as...Section 60.55b of Subpart Eb (60FR65425)...

60.37b Emission guidelines for air curtain incinerators

For approval, ... include emission limits for opacity for air curtain incinerators at least as protective as those listed in Section 60.56b of Subpart Eb (60FR65425).

60.38b Compliance and performance testing

(a) For approval, ...shall include the performance testing methods listed in Section 60.58b of Subpart Eb (60FR65427-65434), as applicable, except as provided for under Section 60.24(b)(2) of Subpart B and paragraphs (b) and (c) of this section.

(b) For approval, ...shall include for... at large MWC plants the alternative performance testing schedule for dioxins/furans specified in Section 60.58b(g)(5)(iii) of Subpart Eb (60FR65431), as applicable, for those ...facilities...that achieve a dioxin/furan emission level less than or equal to 15 ng/dscm...

(c) For approval, ...shall include for... at small MWC plants the alternative performance testing schedule for dioxins/furans specified in Section 60.58b(g)(5)(iii) of Subpart Eb (60FR65431), as applicable, for those..facilities that achieve a dioxin/furan emission level less than or equal to 30 ng/dscm...

60.39b Reporting and recordkeeping guidelines and compliance schedules

(a) For approval,...include the reporting and recordkeeping provisions listed in Section 60.59b of Subpart Eb (60FR65434-65436), as applicable, except for the siting requirements under Section 60.59b(a), (b)(5), and (d)(11).

(b) Not later than December 19, 1996, each state ...shall submit to the Administrator a plan to implement and enforce the emission guidelines. The compliance schedules specified in this paragraph is in accordance with Section 129(b) of the Act supersede and supersedes the compliance schedule provided in Section 60.23 (a)(1) of Subpart B of this part.

[Note: See the Summary Document for more information on compliance schedules regarding emission limitations.]

...

(c)(2) If the State Plan requirements for ...large MWC plant include a compliance schedule longer than 1 year after approval of the State Plan ... the State Plan submittal shall include performance test results for dioxin/furan emissions... and the test shall have been conducted during or after 1990. The performance test shall be conducted according to the procedures of Section 60.38b.

[Note: See the Summary Document for more information on compliance schedules regarding operator training and certification.]

...

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