WEST VIRGINIA

SECRETARY OF STATE

KEN HECHLER

ADMINISTRATIVE LAW DIVISION

FORM #1

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OFFICE OF WEST VIRGINIA
SECRETARY OF STATE

NOTICE OF PUBLIC HEARING ON A PROPOSED RULE

AGENCY: Division of Environmental Protection, Office of Air Quality TITLE NUMBER: 45

RULE TYPE: Legislative ; CITE AUTHORITY W.Va. Code §§22-5-1 et seq.

AMENDMENT TO AN EXISTING RULE: YES X NO ____

IF YES, SERIES NUMBER OF RULE BEING AMENDED: 16

TITLE OF RULE BEING AMENDED: "Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60"

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED: ____

TITLE OF RULE BEING PROPOSED: ____

DATE OF PUBLIC HEARING: August 13, 1996 TIME: 6:00 p.m.

LOCATION OF PUBLIC HEARING: Office of Air Quality
1558 Washington Street, East
Charleston, West Virginia 25311

COMMENTS LIMITED TO: ORAL ____, WRITTEN ____, BOTH X

COMMENTS MAY ALSO BE MAILED TO THE FOLLOWING ADDRESS:

G. Dale Farley, Chief
Office of Air Quality
1558 Washington Street, East
Charleston, WV 25311

The Department requests that persons wishing to make comments at the hearing make an effort to submit written comments in order to facilitate the review of these comments.

The issues to be heard shall be limited to the proposed rule.

21.50

ATTACH A BRIEF SUMMARY OF YOUR PROPOSAL

G. Dale Farley

BUREAU OF ENVIRONMENT
10 McJunkin Road
Nitro, WV 25143-2506

GASTON CAPERTON
GOVERNOR

LAIDLEY ELI MCCOY, PH.D.
COMMISSIONER

July 8, 1996

Ms. Judy Cooper
Director, Administrative Law Division
Office of the Secretary of State
Capitol Complex
Charleston, West Virginia 25305

RE: 45CSR16 - "Standards of Performance
for New Stationary Sources"

Dear Ms. Cooper:

This is to advise you that I am giving approval for filing with your office the above-referenced rule as Notice of Public Hearing and Comment Period on a proposed rule.

Your cooperation in this regard is very much appreciated. If you have any questions or require additional information, please feel free to contact Mark A. Scott at 759-0515.

Sincerely yours,

Laidley Eli McCoy, Ph.D.
Commissioner

LEM:cc

Attachment

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JUL 10 4 29 PM '96

OFFICE OF WEST VIRGINIA
SECRETARY OF STATE

BUREAU OF ENVIRONMENT
DIVISION OF ENVIRONMENTAL PROTECTION

BRIEFING DOCUMENT

Rule Title: 45CSR16 - "Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60"

A. AUTHORITY: W.Va. Code §§22-5-1 et seq.

B. SUMMARY OF RULE:

The current version of 45CSR16, "Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60", adopts by reference New Source Performance Standards (NSPS) promulgated by the United States Environmental Protection Agency (USEPA) through July 1, 1994. This revision to the rule updates NSPS requirements through June 15, 1996.

Section 111 of the Clean Air Act (CAA), 42 U.S.C. 7411, charges the Administrator of USEPA with developing standards for sources if the sources cause or contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. These standards are enforceable by USEPA. In turn, the State may request delegation from USEPA to implement and enforce such standards. To that end, federal standards, as contained in the proposed rule, are adopted by reference.

C. STATEMENT OF CIRCUMSTANCES WHICH REQUIRE RULE:

This rule adopts standards of performance for new stationary sources promulgated by the USEPA under the CAA, as amended, regulating the construction or modification of new stationary sources. It is the intent of the Director to adopt these standards by reference. It is also the intent of the Director to adopt associated reference methods, performance specifications and other test methods which are appended to such standards.

Any person who constructs, modifies, or reconstructs an affected facility after the effective date of any NSPS under 40 CFR Part 60 must comply with the NSPS. The final adoption of the proposed rule amendment will enable the WVDEP to become the primary enforcement authority for NSPS subparts promulgated by USEPA as of June 15, 1996.

Promulgation of this rule by the legislature is necessary for the State to fulfill its responsibilities under the CAA.

D. FEDERAL COUNTERPART REGULATIONS - INCORPORATION BY REFERENCE/DETERMINATION OF STRINGENCY:

A federal counterpart to this proposed rule exists. In accordance with the Director's recommendation, and with limited exception, the Office of Air Quality proposes that the rule incorporate by reference the federal counterparts.

Because the proposed rule incorporates by reference the federal counterpart, no determination of stringency is required.

E. CONSTITUTIONAL TAKINGS DETERMINATION:

The Director has determined that this rule will not result in taking of private property within the meaning of the Constitutions of West Virginia and the United States of America. The Director further finds that this rule is consistent with the requirements of chapter 22 article 1A of the W.Va. Code.

F. CONSULTATION WITH THE ENVIRONMENTAL PROTECTION ADVISORY COUNCIL:

The proposed amendments to this rule will be reviewed by the Council at its meeting on July 17, 1996. Recommendations of the Council and the Director's response to Council's recommendations will be included in the proposed rule filing with the Secretary of State's Office and Legislative Rulemaking Review Committee.

APPENDIX B

FISCAL NOTE FOR PROPOSED RULES

Rule Title: 45CSR16 - "Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60"

Type of Rule: X Legislative ______ Interpretive ______ Procedural

Agency: Office of Air Quality

Address: 1558 Washington Street, East
Charleston, WV 25311-2599

1. Effect of Proposed Rule	Annual		Fiscal Year		
	Increase	Decrease	Current	Next	There-after
Estimated Total Cost	$ -0-	$ -0-	$ -0-	$ -0-	$ -0-
Personal Services	-0-	-0-	-0-	-0-	-0-
Current Expense	-0-	-0-	-0-	-0-	-0-
Repairs and Alterations	-0-	-0-	-0-	-0-	-0-
Equipment	-0-	-0-	-0-	-0-	-0-
Other	-0-	-0-	-0-	-0-	-0-

2. Explanation of above estimates: The above estimates reflect that there will be no anticipated changes in costs to administer 45CSR16 (currently in effect) as a result of the changes to federal rules under 40CFR60 since the last update to 45CSR16. WVDEP/OAQ anticipates that most costs associated with state implementation of the federal rules under 40CFR60 will be covered by fees collected pursuant to 45CSR30 authorized by the legislature in 1994. These fees and the associated budget analyses were incorporated into the fiscal note for 45CSR30. West Virginia received interim approval for its Title V program (45CSR30) in a final rule promulgated by EPA on November 16, 1995. With respect to those minor facilities subject to 45CSR16 which are eventually deferred or exempted from 45CSR30 requirements, OAQ oversight costs will not be funded by the fee program and would have to be paid from general revenue funds, non-Title V fees and federal grant awards. In the event that sufficient funding is not available to cover the costs for OAQ regulation of non-Title V sources, WVDEP would request that EPA withdraw its delegation of authority to the state to enforce the federal standards as they relate to non-Title V (minor) sources.

3. Objectives of these rules: This rule adopts standards of performance for new stationary sources promulgated by the USEPA under the federal Clean Air Act, as amended.

Rule Title: 45 CSR 16 - "Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60"

4. **Explanation of Overall Economic Impact of Proposed Rule.**

   A. **Economic Impact on State Government.**

   Please see section 2.

   B. **Economic Impact on Political Subdivisions; Specific Industries; Specific groups of Citizens.**

   No impact above that resulting from the currently applicable federal requirements.

   C. **Economic Impact on Citizens/Public at Large.**

   No impact above that resulting from the currently applicable federal requirements.

Date: July 9, 1996

Signature of Agency Head or Authorized Reprensentative

G. Dale Farley
Chief, Office of Air Quality

45CSR16

TITLE 45
LEGISLATIVE RULE
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF AIR QUALITY

SERIES 16
STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES PURSUANT TO 40 CFR PART 60

§45-16-1. General.

1.1. Scope. -- This rule adopts standards of performance for new stationary sources promulgated by the United States Environmental Protection Agency under the federal Clean Air Act, as amended. It is the intent of the Director to adopt these standards by reference. It is also the intent of the Director to adopt associated reference methods, performance specifications and other test methods which are appended to such standards.

1.2. Authority. -- W. Va. Code §§22-5-1 et seq.

1.3. Filing Date. -- ~~April 28, 1995~~.

1.4. Effective Date. -- ~~May 1, 1995~~.

1.5. Incorporation By Reference -- Federal Counterpart Regulation. The Director has determined that a federal counterpart rule exists, in accordance with the Director's recommendation, and with limited exception, this rule incorporates by reference, 40 CFR Part 60.

§45-16-2. Requirements.

2.1. No person may construct, reconstruct, modify, or operate or cause to be constructed, modified, or operated a New Source Performance Standard (NSPS) source which results or will result in violations of this rule.

§45-16-3. Adoption of Standards.

3.1. Standards. -- Standards of performance for new stationary sources including associated reference methods, performance specifications and other test methods which are appended to such standards promulgated by the United States Environmental Protection Agency pursuant to 42 U.S.C. 7411(b) [C.A.A. §111(b)]of the federal Clean Air Act, as amended, as of ~~July 1, 1994~~June 15, 1996, and contained in 40 CFR Part 60 are hereby adopted in their entirety and incorporated herein by reference, except as follows:

3.1.a. Part 60.9 is amended to provide that information shall be available to the public in accordance with W. Va. Code §§22-5-1 et seq., W. Va. Code 29B-1-1 et seq., and 45CSR31.

3.1.b. Sub-parts B, C, Ca, Cb, Cc, Ea, and ~~Ea~~WWW of 40 CFR 60 shall be excluded.

§45-16-4. Director.

4.1. Any and all references in said 40 CFR 60 to the "Administrator" is amended to be the "Director" of the West Virginia Division of Environmental Protection" except in the following references which such references shall remain "Administrator of the United States Environmental Protection Agency":

4.1.a. Part 60.2.

4.1.b. Part 60.4.

4.1.c. Part 60.8(b)(2).

4.1.d. Part 60.8(b)(3).

4.1.e. That sentence of part 60.8(b) which deals with the authority of the Administrator to require testing under Section 114 of the Clean Air Act, as amended.

4.1.f. Part 60.11(e).

4.1.g. Part 60.13(c).

4.1.h. Part 60.45(a).

4.1.i. Part 60.194(d).

4.1.j. Part 60.332(a).

4.1.k. Part 60.335(f)(1).

4.1.l. Part 60.335(f)(1).

4.1.m. Part 60.33b(d)(2)

4.1.n. Part 60.39b(b)

4.1.o. Part 60.50b(n)

4.1.p. Part 60.51b

4.1.q. Part 60.53b(b)(2)

4.1.r. Part 60.53b(c)(2)

4.1.s. Part 60.58b(e)(14)

4.1.t. Part 60.58b(h)(12)

§45-16-5. Permits.

5.1. Nothing contained in this adoption by reference shall be construed or inferred to mean that permit requirements in accordance with applicable rules shall be in any way be limited or inapplicable.

§45-16-6. Inconsistency Between Rules.

6.1. In the event of any inconsistency between this rule and any other existing rule of the West Virginia Division of Environmental Protection, such inconsistency shall be resolved by the determination of the Director and such determination shall be based upon the application of the more stringent provision, term, condition, method or rule.

SUMMARY OF NSPS ACTIONS

July 1,1994 - June 15,1996

ADOPTIVE ACTIONS

- Subject -	- Class -	- Summary -
April 25, 1996		**Vol. 61, No. 81**
NSPS: Addition of Method 29 to Appendix A of Part 60	Final Rule	This rule adds Method 29, "Determination of Metals Emissions from Stationary Sources," to Appendix A of Part 60.
December 19, 1995		**Vol. 60, No. 243**
NSPS: Municipal Waste Combustors	Final Rule	This action adds standards of performance for new Municipal Waste Combustor (MWC) units and emission guidelines for existing MWC's.
November 27, 1995		**Vol. 60, No. 227**
NSPS: VOC Emissions from Synthetic *Organic* Chemical Manufacturing Industry (SOCMI) Distillation Operations and Reactor Processes; Amendment	*Notice*	This *document contains amendments* to the standards of performance for new, modified, and reconstructed distillation operations in the synthetic organic chemical industry (SOCMI)(Subpart NNN) published on June 29, 1990.

SUMMARY OF NSPS ACTIONS

July 1,1994 - June 15,1996

- Subject -	- Class -	- Summary -
May 08, 1996		**Vol. 61, No. 90**
NSPS: Small Industrial-Commercial-Institutional Steam Generating Units	Final Action	This action promulgates revisions to the new source performance standards (NSPS) for new, modified, and reconstructed small industrial-commercial-institutional steam generating units (40 CFR part 60, Subpart Dc) that were proposed on November 15, 1995.
September 11, 1995		**Vol. 60, No. 175**
NSPS: Amendments to Method 24 for the Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings	Final Rule	This rule establishes procedures for determination of volatile matter content for non thin film ultraviolet radiation-cured coatings.
EXCLUDING ACTIONS		
March 12, 1996		**Vol. 61, No. 49**
NSPS: Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfill	Final Rule	This action adds subparts WWW and Cc to 40 CFR part 60 by promulgating standards of performance for new municipal solid waste landfills and emission guidelines for existing municipal solid waste landfills.

action must be filed in the United States Court of Appeals for the appropriate circuit by June 24, 1996. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for the purposes of judicial review, nor does it extend the time within which a petition for judicial review may be filed and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements (*See* Section 307(b)(2)).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Hydrocarbons, Incorporation by reference, Intergovernmental relations, Ozone, Reporting and recordkeeping requirements.

Dated: April 5, 1996.

Valdas V. Adamkus,

Regional Administrator.

For the reasons stated in the preamble, part 52, chapter I, title 40 of the Code of Federal Regulations is amended as follows:

PART 52—[AMENDED]

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart YY—Wisconsin

2. Section 52.2570 is amended by adding paragraph (c)(93) to read as follows:

§ 52.2570 Identification of plan.

* * * * *

(c) * * *

(93) A revision to the ozone State Implementation Plan (SIP) was submitted by the Wisconsin Department of Natural Resources on December 11, 1995 and later supplemented on January 12, 1996. This revision consists of a volatile organic compound regulation that establishes reasonably available control technology for facilities that use industrial adhesives.

(i) Incorporation by reference. The following sections of the Wisconsin Administrative Code are incorporated by reference.

(A) NR 422.02(1e), (1m) and (28j) as created and published in the (Wisconsin) Register, August, 1995, No. 476, effective September 1, 1995.

(B) NR 422.127 as created and published in the (Wisconsin) Register, August, 1995, No. 476, effective September 1, 1995.

(C) NR 422.132(1)(c) as repealed, recreated and published in the (Wisconsin) Register, August, 1995, No. 476, effective September 1, 1995.

[FR Doc. 96–10129 Filed 4–24–96; 8:45 am]

BILLING CODE 6560–50–P

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40 CFR Part 52

[FL–64–2–9611a; FRL–5444–4]

Approval and Promulgation of Implementation Plans, Florida: Approval of Revisions to the Florida SIP

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule.

SUMMARY: EPA is approving revisions to the Florida State Implementation Plan (SIP) submitted by the State of Florida through the Florida Department of Environmental Protection (FDEP) on April 24, 1995. This submittal includes amendments to the federally enforceable state operating permit program and the SIP regulations for perchloroethylene dry cleaning facilities.

DATES: This final rule will be effective June 24, 1996 unless adverse or critical comments are received by May 28, 1996. If the effective date is delayed, timely notice will be published in the **Federal Register.**

ADDRESSES: Written comments on this action should be addressed to Joey LeVasseur, at the EPA Regional Office listed below. Copies of the documents relative to this action are available for public inspection during normal business hours at the following locations.

Air and Radiation Docket and Information Center (Air Docket 6102), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460.

EPA, Region 4 Air Programs Branch, 345 Courtland Street NE., Atlanta, Georgia 30365.

Florida Department of Environmental Protection, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32399–2400.

FOR FURTHER INFORMATION CONTACT: Interested persons wanting to examine documents relative to this action should make an appointment with the Region 4 Air Programs Branch at least 24 hours before the visiting day. To schedule the appointment or to request additional information, contact Joey LeVasseur, Regulatory Planning and Development Section, Air Programs Branch, Air, Pesticides & Toxics Management Division, Region 4 EPA, 345 Courtland Street, NE., Atlanta, Georgia 30365. The telephone number is 404/347–3555 ext. 4215. Reference file FL64–2–9611a.

SUPPLEMENTARY INFORMATION: EPA is approving revisions to the Florida SIP submitted by the State of Florida through the FDEP on April 24, 1995. These revisions amend the federally enforceable state operating permit program and the SIP regulations for perchloroethylene dry cleaning facilities. The following is a description of the revisions. The regulations are more fully discussed in the official SIP submittal that is available at the Region IV office listed under the **ADDRESSES** section of this notice.

62–210.200 and 62.296.200

These sections were updated to include "emission control equipment" within the definition of "dry cleaning facility," for consistency with the definitions and requirements of the Title V program.

62–210.300(2)(b)

This section previously was unclear and was revised to clarify the requirements for federally enforceable state operating permits (FESOPs).

62–210.300(4)

This section was revised to provide a temporary exemption to area source dry cleaning facilities from the State's minor source preconstruction review requirements.

62–296.412

This section was revised to update the applicable requirements for perchloroethylene dry cleaning facilities. The amendments make it clear that perchloroethylene facilities which have not yet been permitted under Title V continue to be subject to the requirements of this section in the interim.

Final Action

In this action, EPA is approving the revision to the SIP submitted by the State of Florida through the FDEP on April 24, 1995. The EPA is publishing this rule making without a prior proposal for approval because the Agency views this as a noncontroversial amendment and anticipates no adverse comments. However, in a separate document in this **Federal Register** publication, the EPA is proposing to approve the SIP revision should adverse or critical comments be filed. This action will be effective June 24, 1996 unless, within 30 days of its publication, adverse or critical comments are received.

If the EPA receives such comments, this action will be withdrawn before the effective date by publishing a subsequent document that will withdraw the final action. All public comments received will then be addressed in a subsequent final rule based on the separate proposed rule. The EPA will not institute a second comment period on this action. Any parties interested in commenting on this action should do so at this time. If no such comments are received, the public is advised that this action will be effective June 24, 1996.

Under section 307(b)(1) of the Clean Air Act (CAA), 42 U.S.C. 7607(b)(1), petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by June 24, 1996. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. (See section 307(b)(2) of the CAA, 42 U.S.C. 7607(b)(2).)

This action has been classified as a Table 3 action for signature by the Regional Administrator under the procedures published in the **Federal Register** on January 19, 1989 (54 FR 2214–2225), as revised by a July 10, 1995 memorandum from Mary Nichols, Assistant Administrator for Air and Radiation. The Office of Management and Budget (OMB) has exempted this regulatory action from E.O. 12866 review.

Nothing in this action shall be construed as permitting or allowing or establishing a precedent for any future request for a revision to any state implementation plan. Each request for revision to the state implementation plan shall be considered separately in light of specific technical, economic, and environmental factors and in relation to relevant statutory and regulatory requirements.

Under the Regulatory Flexibility Act, 5 U.S.C. 600 *et seq.*, EPA must prepare a regulatory flexibility analysis assessing the impact of any proposed or final rule on small entities. 5 U.S.C. 603 and 604. Alternatively, EPA may certify that the rule will not have a significant impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and government entities with jurisdiction over populations of less than 50,000.

SIP approvals under section 110 and subchapter I, part D of the CAA do not create any new requirements, but simply approve requirements that the State is already imposing. Therefore, because the Federal SIP-approval does not impose any new requirements, I certify that it does not have a significant impact on any small entities affected. Moreover, due to the nature of the Federal-state relationship under the CAA, preparation of a regulatory flexibility analysis would constitute Federal inquiry into the economic reasonableness of state action. The CAA forbids EPA to base its actions concerning SIPs on such grounds. *Union Electric Co.* v. *U.S. E.P.A.*, 427 U.S. 246, 256–66 (S.Ct. 1976); 42 U.S.C. section 7410(a)(2) and 7410(k)(3).

Unfunded Mandates

Under Sections 202, 203, and 205 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act"), signed into law on March 22, 1995, EPA must undertake various actions in association with proposed or final rules that include a Federal mandate that may result in estimated costs of $100 million or more to the private sector, or to State, local, or tribal governments in the aggregate.

Through submission of this state implementation plan or plan revision, the State and any affected local or tribal governments have elected to adopt the program provided for under Section 110 of the CAA. These rules may bind State, local and tribal governments to perform certain actions and also require the private sector to perform certain duties. EPA has examined whether the rules being approved by this action will impose no new requirements, since such sources are already subject to these regulations under State law. Accordingly, no additional costs to State, local, or tribal governments, or to the private sector, result from this action, and therefore there will be no significant impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Hydrocarbons, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Reporting and recordkeeping requirements.

Dated: January 29, 1996.

Phyllis P. Harris,

Acting Regional Administrator.

Part 52 of chapter I, title 40, *Code of Federal Regulations*, is amended as follows:

PART 52—[AMENDED]

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart K—Florida

2. Section 52.520, is amended by adding paragraph (c)(94) to read as follows:

§ 52.520 Identification of plan.

* * * * *

(c) * * *

(94) Revisions to the Florida SIP regarding perchloroethylene dry cleaning facilities submitted on April 24, 1995.

(i) Incorporation by reference.

Sections 62–210.200(17) and (48)(c); 62–210.300(2)(b) and (4); 62–296.200(58); and 62–296.412 of the F.A.C., effective April 18, 1995.

(ii) Other material. None.

[FR Doc. 96–10127 Filed 4–24–96; 8:45 am]
BILLING CODE 6560–50–P

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40 CFR Parts 60 and 61 NSPS

[AD–FRL 5407–4]

Standards of Performance for New Stationary Sources National Emission Standards for Hazardous Air Pollutants Addition of Method 29 to Appendix A of Part 60 and Amendments to Method 101A of Appendix B of Part 61

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This rule adds Method 29, "Determination of Metals Emissions from Stationary Sources," to Appendix A of Part 60, and makes amendments to Method 101A of Appendix B of Part 61. Method 29 is being added so that it can be used to determine cadmium, lead, and mercury emissions from municipal waste combustors (MWC) under subpart Ea of part 60. The amendments to Method 101A of appendix B of part 61 are to expand that method's applicability, and to revise procedures for handling and analyzing samples collected by the sampling train.

EFFECTIVE DATE: April 25, 1996.

Incorporation by Reference. The incorporation by reference of certain publications listed in the regulation is approved by the Director of the Office of the Federal Register April 25, 1996.

ADDRESSES: *Docket.* Docket No. A–94–28, containing materials relevant to this rulemaking, is available for public inspection and copying between 8:30 a.m. and Noon, and 1:30 and 3:30 p.m., Monday through Friday, at EPA's Air And Docket Section, Room M1500, First Floor, Waterside Mall, Gallery 1, 401 M Street, S.W., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: William Grimley at (919) 541–1065, Source Characterization Group B (MD–19), Emissions, Monitoring, and Analysis Division, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION:

I. The Rulemaking

Under Subparts Ca and Ea, the EPA promulgated guidelines and standards to regulate mercury, cadmium, and lead emissions from MWC's which were published in the **Federal Register** on December 19, 1995 (see 60 FR 65382). Method 29 is being promulgated for addition to Appendix A of 40 CFR Part 60 and will serve as the compliance test method for mercury, cadmium, and lead. Amendments to Method 101A of Appendix B of Part 61 are being promulgated to provide consistency with Method 29. These regulations were proposed on September 20, 1994 (see 59 FR 48259).

II. Public Participation

The opportunity to hold a public hearing on October 20, 1994 at 10 a.m. was present in the proposal notice, but no one wanted to make an oral presentation. The public comment period was from September 21, 1994 to November 21, 1994.

III. Significant Comments and Changes to the Proposed Rulemaking

One comment letter was received from the proposed rulemaking. The comments and responses are summarized in this preamble.

The first comment dealt with the analytical detection limits stated in Method 29. The commenter believes the detection limits are unrealistically low, and represent values achievable only under ideal conditions. The commenter concludes by saying that the method should state that it is the analyst's responsibility to determine the actual detection limit achieved.

The detection limits stated in Method 29 are those listed in the *SW–846* methods manual, and EPA believes they are reasonable ones for use in this application of *SW–846* analytical methods. However, Method 29 as proposed is clear in its discussion of the application of quality assurance procedures to document the quality of the data actually produced, and is also clear in the description of the procedure to be used to establish the actual detection limits achieved during the measurement of emissions.

The second comment addressed the point that dilution is likely to be effective in avoiding the analytical problem of spectral interference only if the analyte is present at a much greater concentration than the interferant. The commenter then suggests that Method 29 be revised to say that the effective way to adjust for spectral interference is by making background corrections or overlap corrections.

The EPA agrees with this comment, and Section 2.5 of the Method has been revised to permit these corrective techniques.

The third comment addressed the use of an alumina torch in the inductively coupled argon plasma (ICAP) emission spectroscopy procedure. The commenter believes that few ICAP users have this capability, and that an alternative technique for dealing with hydrogen fluoride could be suggested in the Method.

The EPA notes that the use of an alumina torch in this procedure has been described in related methodology for several years and is commercially available and is in use by many analysts. The alternative procedure suggested in the comment may be suitable if the detection limits needed in the particular emission measurement situation can be met.

The fourth comment addressed the required purity of the nickel nitrate used to produce the nickel nitrate matrix modifier. The commenter suggests that commercial nickel nitrate may contain small amounts of impurities.

The EPA is not aware of instances where commercial nickel nitrate that would be purchased for this purpose would contain objectionable amounts of impurities, however the Method has been revised to permit other nickel compounds of suitable purity to be used.

The fifth and final comment made a general statement concerning the length and complexity of the Method, with the commenter suggesting that the EPA should attempt to streamline and simplify the Method in order to make it less costly and easier to use.

The EPA recognizes the need to simplify methods to reduce costs, and believes that to meet the needed quality of the data to be generated by Method 29, that the best possible effort has been made.

IV. Administrative Requirements

A. Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered by the EPA in the development of this final rulemaking. The principal purposes of the docket are: (1) to allow interested parties to identify and locate documents so that they can effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review (except for interagency review materials) [Section 307(d)(7)(A)].

B. Office of Management and Budget Review

1. Paperwork Reduction Act

This rule does not contain any information collection requirements subject to the Office of Management and Budget (OMB) review under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

2. Executive Order 12866 Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the EPA must determine whether the regulatory action is "significant" and therefore subject to the OMB review and the requirements of the Executive Order. The Order defines "significant" regulatory action as one that is likely to lead to a rule that may:

1. Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities;
2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
3. Materially alter the budgetary impact of entitlements, grants, users fees, or loan programs or the rights and obligations of recipients thereof; or
4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, the EPA does not consider this action to be significant because it does not involve any of the above mentioned items.

D. Unfunded Mandates Act

Section 202 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act") (signed into law on March 22, 1995) requires that the Agency prepare a budgetary impact statement before promulgating a rule that includes a Federal mandate that may result in expenditure by State, local, and tribal governments, in aggregate, or by the private sector of $100 million or more in any one year. Section 204 requires the Agency to establish a plan for obtaining input from and informing, educating, and advising any small governments that may be significantly or uniquely affected by the rule.

Under section 205 of the Unfunded Mandates Act, the Agency must identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a budgetary impact statement must be prepared. The agency must select from those alternatives the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule, unless the Agency explains why this alternative is not selected or the selection of this alternative is inconsistent with law.

Because this rule is estimated to result in the expenditure by State, local, and tribal governments or the private sector of less than $100 million in any one year, the Agency has not prepared a budgetary impact statement or specifically addressed the selection of the least costly, most cost-effective, or least burdensome alternative. Because small governments will not be significantly or uniquely affected by this rule, the Agency is not required to develop a plan with regard to small governments.

E. Regulatory Flexibility Act Compliance

Pursuant to the provisions of 5 U.S.C. 601 *et seq.*, I hereby certify that this final rule will not have an economic impact on small entities because no additional costs will be incurred.

List of Subjects in 40 CFR Parts 60 and 61

Environmental protection, Air pollution control, Arsenic, Asbestos, Beryllium, Cadmium, Lead, Hazardous materials, Incorporation by reference, Intergovernmental relations, Mercury, Municipal waste combustors, Reporting and recordkeeping requirements, Sewage sludge incineration.

Statutory Authority. The statutory authority for this final rule is provided by sections 101, 111, 112, 114, 116, 129, and 301 of the Clean Air Act, as amended; 42 U.S.C., 7401, 7411, 7412, 7414, 7416, 7429, and 7601.

Dated: January 18, 1996.

Carol M. Browner,

Administrator.

40 CFR parts 60 and 61 are amended as follows:

PART 60—[AMENDED]

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7412, 7414, 7416, and 7601.

2. Section 60.17 is amended by revising paragraph (a)(22) and by adding paragraphs (i) and (j) to read as follows:

§ 60.17 Incorporations by reference.

* * * * *

(a) * * *

(22) ASTM D 1193–77, Standard Specification for Reagent Water, for appendix A to part 60, Method 6, par. 3.1.1; Method 7, par. 3.2.2; Method 7C, par. 3.1.1; Method 7D, par. 3.1.1; Method 8, par. 3.1.3; Method 12, par. 4.1.3; Method 25D, par. 3.2.2.4; Method 26A, par. 3.1.1; Method 29, pars. 4.2.2., 4.4.2., and 4.5.6.

* * * * *

(i) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846 Third Edition (November 1986), as amended by Updates I (July, 1992), II (September 1994), IIA (August, 1993), and IIB (January, 1995). Test Method are incorporated by reference for appendix A to part 60, Method 29, pars. 2.2.1; 2.3.1; 2.5; 3.3.12.1; 3.3.12.2; 3.3.13; 3.3.14; 5.4.3; 6.2; 6.3; 7.2.1; 7.2.3; and Table 29–2. The Third Edition of SW–846 and Updates I, II, IIA, and IIB (document number 955–001–00000–1) are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 512–1800. Copies may be obtained from the Library of the U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

(j) Standard Methods for the Examination of Water and Wastewater, 16th edition, 1985. Method 303F Determination of Mercury by the Cold Vapor Technique. This document may be obtained from the American Public Health Association, 1015 18th Street, NW., Washington, DC 20036, and is incorporated by reference for Method 29, pars 5.4.3; 6.3; and 7.2.3 of appendix A to part 60.

3. In part 60, by adding method 29 to appendix A to read as follows:

Appendix A—Test Methods

* * * * *

Method 29—Determination of Metals Emissions from Stationary Sources

1. Applicability and Principle

1.1 Applicability. This method is applicable to the determination of antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), phosphorus (P), selenium (Se), silver (Ag), thallium (T1), and zinc (Zn) emissions from stationary sources. This method may be used to determine particulate emissions in addition to the metals emissions if the prescribed procedures and precautions are followed.

1.1.1 Hg emissions can be measured, alternatively, using EPA Method 101A of Appendix B, 40 CFR Part 61. Method 101–A measures only Hg but it can be of special interest to sources which need to measure both Hg and Mn emissions.

1.2 Principle. A stack sample is withdrawn isokinetically from the source, particulate emissions are collected in the probe and on a heated filter, and gaseous emissions are then collected in an aqueous acidic solution of hydrogen peroxide (analyzed for all metals including Hg) and an aqueous acidic solution of potassium permanganate (analyzed only for Hg). The recovered samples are digested, and appropriate fractions are analyzed for Hg by cold vapor atomic absorption spectroscopy (CVAAS) and for Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, P, Se, Ag, Tl, and Zn by inductively coupled argon plasma emission spectroscopy (ICAP) or atomic absorption spectroscopy (AAS). Graphite furnace atomic absorption spectroscopy (GFAAS) is used for analysis of Sb, As, Cd, Co, Pb, Se, and Tl if these elements require greater analytical sensitivity than can be obtained by ICAP. If one so chooses, AAS may be used for analysis of all listed metals if the resulting in-stack method detection limits meet the goal of the testing program. Similarly, inductively coupled plasma-mass spectroscopy (ICP–MS) may be used for analysis of Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, As, Tl and Zn.

2. Range, Detection Limits, Precision, and Interferences

2.1 Range. For the analysis described and for similar analyses, the ICAP response is linear over several orders of magnitude. Samples containing metal concentrations in the nanograms per ml (ng/ml) to micrograms per ml (µg/ml) range in the final analytical solution can be analyzed using this method. Samples containing greater than approximately 50 µg/ml As, Cr, or Pb should be diluted to that level or lower for final analysis. Samples containing greater than approximately 20 µg/ml of Cd should be diluted to that level before analysis.

2.2 Analytical Detection Limits. (Note: See section 2.3 for the description of in-stack detection limits.)

2.2.1 ICAP analytical detection limits for the sample solutions (based on Method 6010 in EPA Publication SW–846, Third Edition (November 1986) including updates I, II, IIA, and IIB, as incorporated by reference in § 60.17(i)) are approximately as follows: Sb (32 ng/ml), As (53 ng/ml), Ba (2 ng/ml), Be (0.3 ng/ml), Cd (4 ng/ml), Cr (7 ng/ml), Co (7 ng/ml), Cu (6 ng/ml), Pb (42 ng/ml), Mn (2 ng/ml), Ni (15 ng/ml), P (75 ng/ml), Se (75 ng/ml), Ag (7 ng/ml), Tl (40 ng/ml), and Zn (2 ng/ml). ICP–MS analytical detection limits (based on based on Method 6020 in EPA Publication SW–846, Third Edition (November 1986) as incorporated by reference in § 60.17(i)) are lower generally by a factor of ten or more. Be is lower by a factor of three. The actual sample analytical detection limits are sample dependent and may vary due to the sample matrix.

2.2.2 The analytical detection limits for analysis by direct aspiration AAS are approximately as follow: Sb (200 ng/ml), As (2 ng/ml), Ba (100 ng/ml), Be (5 ng/ml), Cd (5 ng/ml), Cr (50 ng/ml), Co (50 ng/ml), Cu (20 ng/ml), Pb (100 ng/ml), Mn (10 ng/ml), Ni (40 ng/ml), Se (2 ng/ml), Ag (10 ng/ml), Tl (100 ng/ml), and Zn (5 ng/ml).

2.2.3 The detection limit for Hg by CVAAS (on the resultant volume of the *disgestion* of the aliquots taken for Hg analyses) can be approximately 0.02 to 0.2ng/ml, depending upon the type of CVAAS analytical instrument used.

2.2.4 The use of GFAAS can enhance the detection limits compared to direct aspiration AAS as follows: Sb (3 ng/ml), As (1 ng/ml), Be (0.2 ng/ml), Cd (0.1 ng/ml), Cr (1 ng/ml), Co (1 ng/ml), Pb (1 ng/ml), Se (2 ng/ml), and T1 (ng/ml).

2.3 *In-stack Detection Limits.*

2.3.1 For test planning purposes in-stack detection limits can be developed by using the following information (1) the procedures described in this method, (2) the analytical detection limits described in Section 2.2 and in EPA Publication SW–846, Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i), (3) the normal volumes of 300 ml (Analytical Fraction 1) for the front-half and 150 ml (Analytical Fraction 2A) for the back-half samples, and (4) a stack gas sample volume of 1.25 m^3. The resultant in-stack method detection limits for the above set of conditions are presented in Table 29–1 and were calculated by using Eq. 29–1.

$$A \times B/C = D \qquad \text{Eq. 29–1}$$

Where:

A=Analytical detectin limit, μg/ml.
B=Liquid volume of digested sample prior to aliquotting for analysis, Ml.
C=Stack sample gas volume, dsm^3.
D=In-stack detection limit, μg/m^3.

TABLE 29–1.—IN-STACK METHOD DETECTION LIMITS (μg/m^3) FOR THE FRONT-HALF, THE BACK-HALF, AND THE TOTAL SAMPLING TRAIN USING ICAP AND AAS

Metal	Front-half: Probe and filter	Back-half: Impingers 1–3	Back-half: Impingers (4–6)[a]	Total train:
Antimony	[1] 7.7 (0.7)	[1] 3.8 (0.4)		[1] 11.5 (1.1)
Arsenic	[1] 12.7 (0.3)	[1] 6.4 (0.1)		[1] 19.1 (0.4)
Barium	0.5	0.3		0.8
Beryllium	[1] 0.07 (0.05)	[1] 0.04 (0.03)		[1] 0.11 (0.08)
Cadmium	[1] 1.0 (0.02)	[1] 0.5 (0.01)		[1] 1.5 (0.03)
Chromium	[1] 1.7 (0.2)	[1] 0.8 (0.1)		[1] 2.5 (0.3)
Cobalt	[1] 1.7 (0.2)	[1] 0.8 (0.1)		[1] 2.5 (0.3)
Copper	1.4	0.7		2.1
Lead	[1] 10.1 (0.2)	[1] 5.0 (0.1)		[1] 15.1 (0.3)
Manganese	[1] 0.5 (0.2)	[1] 0.2 (0.1)		[1] 0.7 (0.3)
Mercury	[2] 0.06	[2] 0.3	[2] 0.2	[2] 0.56
Nickel	3.6	1.8		5.4
Phosphorus	18	9		27
Selenium	[1] 18 (0.5)	[1] 9 (0.3)		[1] 27 (0.8)
Silver	1.7	0.9		2.6
Thallium	[1] 9.6 (0.2)	[1] 4.8 (0.1)		[1] 14.4 (0.3)
Zinc	0.5	0.3		0.8

[a] Mercury analysis only.
[1] Detection limit when analyzed by GFAAS.
[2] Detection limit when analyzed by CVAAS, estimated for Back-Half and Total Train. See Sections 2.2 and 5.4.3.
Note: Actual method in-stack detection limits may vary from these values, as described in Section 2.3.3.

2.3.2 To ensure optimum precision/resolution in the analyses, the target concentrations of metals in the analytical solutions should be at least ten times their respective analytical detection limits. Under certain conditions, and with greater care in the analytical procedure, these concentrations can be as low as approximately three times the respective analytical detection limits without seriously impairing the precision of the analyses. On at least one sample run in the source test, and for each metal analyzed, perform either repetitive analyses, Method of Standard Additions, serial dilution, or matrix spike addition, etc., to document the quality of the data.

2.3.3 Actual in-stack method detection limits are based on actual source sampling parameters and analytical results as described above. If required, the method in-stack detection limits can be improved over those shown in Table 29–1 for a specific test by either increasing the sampled stack gas volume, reducing the total volume of the digested samples, improving the analytical detection limits, or any combination of the three. For extremely low levels of *Hg only*, the aliquot size selected for digestion and analysis can be increased to as much as 10 ml, thus improving the in-stack detection limit by a factor of ten compared to a 1 ml aliquot size.

2.3.3.1 A nominal one hour sampling run will collect a stack gas sampling volume of about 1.25 m^3. If the sampling time is increased to four hours and 5 m^3 are collected, the in-stack method detection limits would be improved by a factor of four compared to the values shown in Table 29–1.

2.3.3.2 The in-stack detection limits assume that all of the sample is digested and the final liquid volumes for analysis are the normal values of 300 ml for Analytical Fraction 1, and 150 ml for Analytical Fraction 2A. If the volume of Analytical Fraction 1 is reduced from 300 to 30 ml, the in-stack detection limits for that fraction of the sample would be improved by a factor of ten. If the volume of Analytical Fraction 2A is reduced from 150 to 25 ml, the in-stack detection limits for that fraction of the sample would be improved by a factor of six. Matrix effect checks are necessary on sample analyses and typically are of much greater significance for samples that have been concentrated to less than the normal original sample volume. Reduction of Analytical Fractions 1 and 2A to volumes of less than 30 and 25 ml, respectively, could interfere with the redissolving of the residue and could increase interference by other compounds to an intolerable level.

2.3.3.3 When both of the modifications described in Sections 2.3.3.1 and 2.3.3.2 are used simultaneously on one sample, the resultant improvements are multiplicative. For example, an increase in stack gas volume by a factor of four and a reduction in the total liquid sample digested volume of both Analytical Fractions 1 and 2A by a factor of six would result in an improvement by a factor of twenty-four of the in-stack method detection limit.

2.4 Precision. The precision (relative standard deviation) for each metal detected in a method development test performed at

3.1.1 Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe Liner. Same as Method 5, Sections 2.1.1 and 2.1.2, except that glass nozzles are required unless alternate tips are constructed of materials that are free from contamination and will not interfere with the sample. If a probe tip other than glass is used, no correction to the sample test results to compensate for the nozzle's effect on the sample is allowed. Probe fittings of plastic such as Teflon, polypropylene, etc. are recommended instead of metal fittings to prevent contamination. If one chooses to do so, a single glass piece consisting of a combined probe tip and probe liner may be used.

3.1.2 Pitot Tube and Differential Pressure Gauge. Same as Method 2, Sections 2.1 and 2.2, respectively.

3.1.3 Filter Holder. Glass, same as Method 5, Section 2.1.5, except use a Teflon filter support or other non-metallic, non-contaminating support in place of the glass frit.

3.1.4 Filter Heating System. Same as Method 5, Section 2.1.6.

3.1.5 Condenser. Use the following system for condensing and collecting gaseous metals and determining the moisture content of the stack gas. The condensing system shall consist of four to seven impingers connected in series with leak-free ground glass fittings or other leak-free, non-contaminating fittings. Use the first impinger as a moisture trap. The second impinger (which is the first HNO_3/H_2O_2 impinger) shall be identical to the first impinger in Method 5. The third impinger (which is the second HNO_3/H_2O_2 impinger) shall be a Greenburg Smith impinger with the standard tip as described for the second impinger in Method 5, Section 2.1.7. The fourth (empty) impinger and the fifth and sixth (both acidified $KMnO_4$) impingers are the same as the first impinger in Method 5. Place a thermometer capable of measuring to within 1°C (2°F) at the outlet of the last impinger. If no Hg analysis is planned, then the fourth, fifth, and sixth impingers are not used.

3.1.6 Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.8 through 2.1.10, respectively.

3.1.7 Teflon Tape. For capping openings and sealing connections, if necessary, on the sampling train.

3.2. Sample Recovery. Same as Method 5, Sections 2.2.1 through 2.2.8 (Probe-Liner and Probe-Nozzle Brushes or Swabs, Wash Bottles, Sample Storage Containers, Petri Dishes, Glass Graduated Cylinder, Plastic Storage Containers, Funnel and Rubber Policeman, and Glass Funnel), respectively, with the following exceptions and additions:

3.2.1 Non-metallic Probe-Liner and Probe-Nozzle Brushes or Swabs. Use non-metallic probe-liner and probe-nozzle brushes or swabs for quantitative recovery of materials collected in the front-half of the sampling train.

3.2.2 Sample Storage Containers. Use glass bottles (see the *Precaution:* in Section 4.3.2 of this Method) with Teflon-lined caps that are non-reactive to the oxidizing solutions, with capacities of 1000- and 500-ml, for storage of acidified $KMnO_4$-containing samples and blanks. Glass or polyethylene bottles may be used for other sample types.

3.2.3 Graduated Cylinder. Glass or equivalent.

3.2.4 Funnel. Glass or equivalent.

3.2.5 Labels. For identifying samples.

3.2.6 Polypropylene Tweezers and/or Plastic Gloves. For recovery of the filter from the sampling train filter holder.

3.3 Sample Preparation and Analysis.

3.3.1 Volumetric Flasks, 100-ml, 250-ml, and 100-ml. For preparation of standards and sample dilutions.

3.3.2 Graduated Cylinders. For preparation of reagents.

3.3.3 Parr® Bombs or Microwave Pressure Relief Vessels with Capping Station (CEM Corporation model or equivalent). For sample digestion.

3.3.4 Beakers and Watch Glasses. 250-ml beakers, with watch glass covers, for sample digestion.

3.3.5 Ring Stands and Clamps. For securing equipment such as filtration apparatus.

3.3.6 Filter Funnels. For holding filter paper.

3.3.7 Disposable Pasteur Pipets and Bulbs.

3.3.8 Volumetric Pipets.

3.3.9 Analytical Balance. Accurate to within .01 mg.

3.3.10 Microwave or Conventional Oven. For heating samples at fixed power levels or temperatures, respectively.

3.3.11 Hot Plates.

3.3.12 Atomic Absorption Spectrometer (AAS). Equipped with a background corrector.

3.3.12.1 Graphite Furnace Attachment. With Sb, As, Cd, Co, Pb, Se, and Tl hollow cathode lamps (HCLs) or electrodeless discharge lamps (EDLs). Same as Methods 7041 (Sb), 7060 (As), 7131 (Cd), 7201 (Co), 7421 (Pb), 7740 (Se), and 7841 (Tl) in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i).

3.3.12.2 Cold Vapor Mercury Attachment. With a mercury HCL or EDL, an air recirculation pump, a quartz cell, an aerator apparatus, and a heat lamp or desiccator tube. The heat lamp shall be capable of raising the temperature at the quartz cell by 10°C above ambient, so that no condensation forms on the wall of the quartz cell. Same as Method 6020 in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i). See Note No. 2: Section 5.4.3 for other acceptable approaches for analysis of Hg in which analytical detection limits of 0.002 ng/ml were obtained.

3.3.13 Inductively Coupled Argon Plasma Spectrometer. With either a direct or sequential reader and an alumina torch. Same as EPA Method 6010 in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i).

3.3.14 Inductively Coupled Plasma-Mass Spectrometer. Same as EPA Method 6020 in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i).

4. Reagents

4.1 Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Otherwise, use the best available grade.

4.2 Sampling Reagents.

4.2.1 Sample Filters. Without organic binders. The filters shall contain less than 1.3 $\mu g/in.^2$ of each of the metals to be measured. Analytical results provided by filter manufacturers stating metals content of the filters are acceptable. However, if no such results are available, analyze filter blanks for each target metal prior to emission testing. Quartz fiber filters meeting these requirements are recommended. However, if glass fiber filters become available which meet these requirements, they may be used. Filter efficiencies and unreactiveness to sulfur dioxide (SO_2) or sulfur trioxide (SO_3) shall be as described in Section 3.1.1 of Method 5.

4.2.2 Water. To conform to ASTM Specification D1193–77, Type II (incorporated by reference—See § 60.17). If necessary, analyze the water for all target metals prior to field use. All target metals should be less than 1 ng/ml.

4.2.3 Nitric Acid (HNO_3). Concentrated. Baker Instra-analyzed or equivalent.

4.2.4 Hydrochloric Acid (HCL). Concentrated. Baker Instra-analyzed or equivalent.

4.2.5 Hydrogen Peroxide (H_2O_2), 30 Percent (V/V).

4.2.6 Potassium Permanganate ($KMnO_4$).

4.2.7 Sulfuric Acid (H_2SO_4). Concentrated.

4.2.8 Silica Gel and Crushed Ice. Same as Method 5, Sections 3.1.2 and 3.1.4, respectively.

4.3 Pretest Preparation of Sampling Reagents.

4.3.1 HNO_3/H_2O_2 Absorbing Solution, 5 Percent HNO_3/10 Percent H_2O_2. Add carefully with stirring 50 ml of concentrated HNO_3 to a 1000-ml volumeric flask containing approximately 500 ml of water, and then add carefully with stirring 333 ml of 30 percent H_2O_2. Dilute to volume with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.3.2 Acidic $KMnO_4$ Absorbing Solution, 4 Percent $KMnO_4$ (W/V), 10 Percent H_2SO_4 (V/V). Prepare fresh daily. Mix carefully, with stirring, 100 ml of concentrated H_2SO_4 into approximately 800 ml of water, and add water with stirring to make a volume of 1 liter: this solution is 10 percent H_2SO_4 (V/V). Dissolve, with stirring, 40 g of $KMnO_4$ into 10 percent H_2SO_4 (V/V) and add 10 percent H_2SO_4 (V/V) with stirring to make a volume of 1 liter. Prepare and store in glass bottles to prevent degradation. This reagent shall contain less than 2 ng/ml of Hg.

Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541

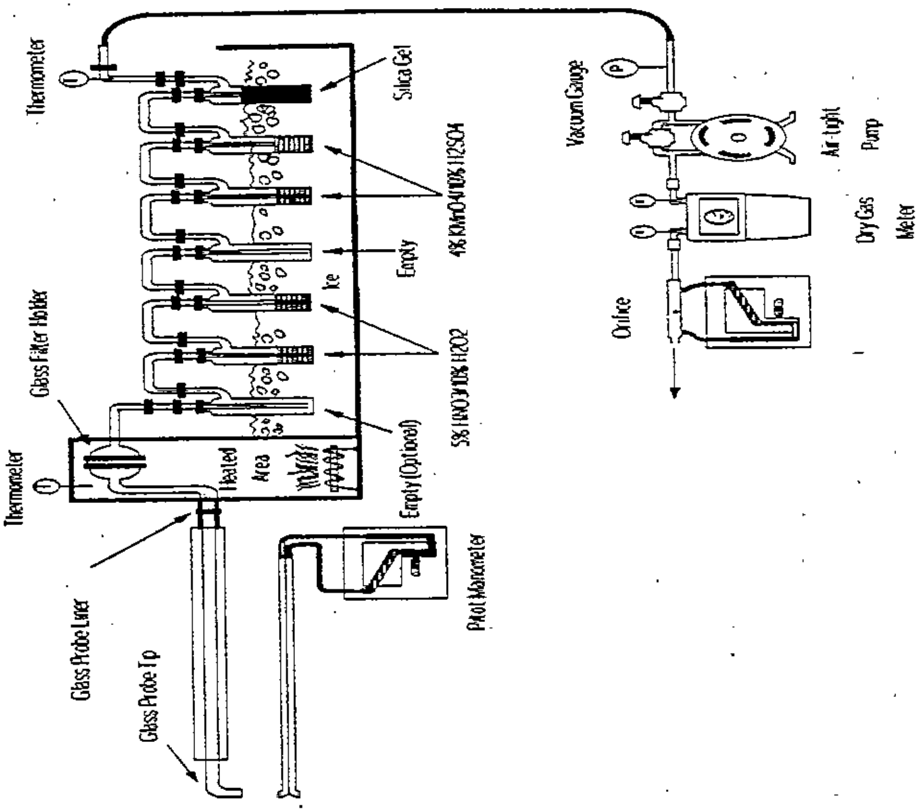

Figure 29-1. Sampling train.

BILLING 6560-50-C

3.1.1 Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe Liner. Same as Method 5, Sections 2.1.1 and 2.1.2, except that glass nozzles are required unless alternate tips are constructed of materials that are free from contamination and will not interfere with the sample. If a probe tip other than glass is used, no correction to the sample test results to compensate for the nozzle's effect on the sample is allowed. Probe fittings of plastic such as Teflon, polypropylene, etc. are recommended instead of metal fittings to prevent contamination. If one chooses to do so, a single glass piece consisting of a combined probe tip and probe liner may be used.

3.1.2 Pitot Tube and Differential Pressure Gauge. Same as Method 2, Sections 2.1 and 2.2, respectively.

3.1.3 Filter Holder. Glass, same as Method 5, Section 2.1.5, except use a Teflon filter support or other non-metallic, non-contaminating support in place of the glass frit.

3.1.4 Filter Heating System. Same as Method 5, Section 2.1.6.

3.1.5 Condenser. Use the following system for condensing and collecting gaseous metals and determining the moisture content of the stack gas. The condensing system shall consist of four to seven impingers connected in series with leak-free ground glass fittings or other leak-free, non-contaminating fittings. Use the first impinger as a moisture trap. The second impinger (which is the first HNO_3/H_2O_2 impinger) shall be identical to the first impinger in Method 5. The third impinger (which is the second HNO_3/H_2O_2 impinger) shall be a Greenburg Smith impinger with the standard tip as described for the second impinger in Method 5, Section 2.1.7. The fourth (empty) impinger and the fifth and sixth (both acidified $KMnO_4$) impingers are the same as the first impinger in Method 5. Place a thermometer capable of measuring to within 1°C (2°F) at the outlet of the last impinger. If no Hg analysis is planned, then the fourth, fifth, and sixth impingers are not used.

3.1.6 Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.8 through 2.1.10; respectively.

3.1.7 Teflon Tape. For capping openings and sealing connections, if necessary, on the sampling train.

3.2. Sample Recovery. Same as Method 5, Sections 2.2.1 through 2.2.8 (Probe-Liner and Probe-Nozzle Brushes or Swabs, Wash Bottles, Sample Storage Containers, Petri Dishes, Glass Graduated Cylinder, Plastic Storage Containers, Funnel and Rubber Policeman, and Glass Funnel), respectively, with the following exceptions and additions:

3.2.1 Non-metallic Probe-Liner and Probe-Nozzle Brushes or Swabs. Use non-metallic probe-liner and probe-nozzle brushes or swabs for quantitative recovery of materials collected in the front-half of the sampling train.

3.2.2 Sample Storage Containers. Use glass bottles (see the *Precaution:* in Section 4.3.2 of this Method) with Teflon-lined caps that are non-reactive to the oxidizing solutions, with capacities of 1000- and 500-ml, for storage of acidified $KMnO_4$-containing samples and blanks. Glass or polyethylene bottles may be used for other sample types.

3.2.3 Graduated Cylinder. Glass or equivalent.

3.2.4 Funnel. Glass or equivalent.

3.2.5 Labels. For identifying samples.

3.2.6 Polypropylene Tweezers and/or Plastic Gloves. For recovery of the filter from the sampling train filter holder.

3.3 Sample Preparation and Analysis.

3.3.1 Volumetric Flasks, 100-ml, 250-ml, and 100-ml. For preparation of standards and sample dilutions.

3.3.2 Graduated Cylinders. For preparation of reagents.

3.3.3 Parr^{R} Bombs or Microwave Pressure Relief Vessels with Capping Station (CEM Corporation model or equivalent). For sample digestion.

3.3.4 Beakers and Watch Glasses. 250-ml beakers, with watch glass covers, for sample digestion.

3.3.5 Ring Stands and Clamps. For securing equipment such as filtration apparatus.

3.3.6 Filter Funnels. For holding filter paper.

3.3.7 Disposable Pasteur Pipets and Bulbs.

3.3.8 Volumetric Pipets.

3.3.9 Analytical Balance. Accurate to within .01 mg.

3.3.10 Microwave or Conventional Oven. For heating samples at fixed power levels or temperatures, respectively.

3.3.11 Hot Plates.

3.3.12 Atomic Absorption Spectrometer (AAS). Equipped with a background corrector.

3.3.12.1 Graphite Furnace Attachment. With Sb, As, Cd, Co, Pb, Se, and Tl hollow cathode lamps (HCLs) or electrodeless discharge lamps (EDLs). Same as Methods 7041 (Sb), 7060 (As), 7131 (Cd), 7201 (Co), 7421 (Pb), 7740 (Se), and 7841 (Tl) in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i).

3.3.12.2 Cold Vapor Mercury Attachment. With a mercury HCL or EDL, an air recirculation pump, a quartz cell, an aerator apparatus, and a heat lamp or desiccator tube. The heat lamp shall be capable of raising the temperature at the quartz cell by 10°C above ambient, so that no condensation forms on the wall of the quartz cell. Same as Method 6020 in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i). See Note No. 2: Section 5.4.3 for other acceptable approaches for analysis of Hg in which analytical detection limits of 0.002 ng/ml were obtained.

3.3.13 Inductively Coupled Argon Plasma Spectrometer. With either a direct or sequential reader and an alumina torch. Same as EPA Method 6010 in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i).

3.3.14 Inductively Coupled Plasma-Mass Spectrometer. Same as EPA Method 6020 in EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i).

4. Reagents

4.1 Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Otherwise, use the best available grade.

4.2 Sampling Reagents.

4.2.1 Sample Filters. Without organic binders. The filters shall contain less than 1.3 $\mu g/in.^2$ of each of the metals to be measured. Analytical results provided by filter manufacturers stating metals content of the filters are acceptable. However, if no such results are available, analyze filter blanks for each target metal prior to emission testing. Quartz fiber filters meeting these requirements are recommended. However, if glass fiber filters become available which meet these requirements, they may be used. Filter efficiencies and unreactiveness to sulfur dioxide (SO_2) or sulfur trioxide (SO_3) shall be as described in Section 3.1.1 of Method 5.

4.2.2 Water. To conform to ASTM Specification D1193–77, Type II (incorporated by reference—See § 60.17). If necessary, analyze the water for all target metals prior to field use. All target metals should be less than 1 ng/ml.

4.2.3 Nitric Acid (HNO_3). Concentrated. Baker Instra-analyzed or equivalent.

4.2.4 Hydrochloric Acid (HCL). Concentrated. Baker Instra-analyzed or equivalent.

4.2.5 Hydrogen Peroxide (H_2O_2), 30 Percent (V/V).

4.2.6 Potassium Permanganate ($KMnO_4$).

4.2.7 Sulfuric Acid (H_2SO_4). Concentrated.

4.2.8 Silica Gel and Crushed Ice. Same as Method 5, Sections 3.1.2 and 3.1.4, respectively.

4.3 Pretest Preparation of Sampling Reagents.

4.3.1 HNO_3/H_2O_2 Absorbing Solution, 5 Percent HNO_3/10 Percent H_2O_2. Add carefully with stirring 50 ml of concentrated HNO_3 to a 1000-ml volumeric flask containing approximately 500 ml of water, and then add carefully with stirring 333 ml of 30 percent H_2O_2. Dilute to volume with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.3.2 Acidic $KMnO_4$ Absorbing Solution, 4 Percent $KMnO_4$ (W/V), 10 Percent H_2SO_4 (V/V). Prepare fresh daily. Mix carefully, with stirring, 100 ml of concentrated H_2SO_4 into approximately 800 ml of water, and add water with stirring to make a volume of 1 liter: this solution is 10 percent H_2SO_4 (V/V). Dissolve, with stirring, 40 g of $KMnO_4$ into 10 percent H_2SO_4 (V/V) and add 10 percent H_2SO_4 (V/V) with stirring to make a volume of 1 liter. Prepare and store in glass bottles to prevent degradation. This reagent shall contain less than 2 ng/ml of Hg.

Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541 filter paper. Also, due to the potential reaction of the potassium permanganate with the acid, there could be pressure buildup in the solution storage bottle. Therefore these bottles shall not be fully filled and shall be vented to relieve excess pressure and prevent explosion potentials. Venting is required, but not in a manner that will allow contamination of the solution. A No. 70–72 hole drilled in the container cap and Teflon liner has been used.

4.3.3 HNO_3, 0.1 N. Add with stirring 6.3 ml of concentrated HNO_3 (70 percent) to a flask containing approximately 900 ml of water. Dilute to 1000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.3.4 HCl, 8 N. Carefully add with stirring 690 ml of concentrated HCl to a flask containing 250 ml of water. Dilute to 1000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of Hg.

4.4 Glassware Cleaning Reagents.

4.4.1 HNO_3, Concentrated. Fisher ACS grade or equivalent.

4.4.2 Water. To conform to ASTM Specification D1193–77, Type II (incorporated by reference—See § 60.17).

4.4.3 HNO_3, 10 Percent (V/V). Add with stirring 500 ml of concentrated HNO_3 to a flask containing approximately 4000 ml of water. Dilute to 5000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.5 Sample Digestion and Analysis Reagents.

The metals standards, except Hg, may also be made from solid chemicals as described in Citation 3 of the Bibliography. Refer to Citations 1, 2, or 5 of the Bibliography for additional information on Hg standards. The 1000 µg/ml Hg stock solution standard may be made according to Section 6.2.5 of Method 101A.

4.5.1 HCL, Concentrated.

4.5.2 Hydrofluoric Acid (HF), Concentrated.

4.5.3 HNO_3, Concentrated. Baker Instra-analyzed or equivalent.

4.5.4 HNO_3, 50 Percent (V/V). Add with stirring 125 ml of concentrated HNO_3 to 100 ml of water. Dilute to 250 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.5.5 HNO_3, 5 Percent (V/V). Add with stirring 50 ml of concentrated HNO_3 to 800 ml of water. Dilute to 1000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.5.6 Water. To conform to ASTM Specification D1193–77, Type II (incorporated by reference—See § 60.17).

4.5.7 Hydroxylamine Hydrochloride and Sodium Chloride Solution. See Citation 2 of the Bibliography for preparation.

4.5.8 Stannous Chloride. See Citation 2 of the Bibliography for preparation.

4.5.9 $KMnO_4$, 5 Percent (W/V). See Citation 2 of the Bibliography for preparation.

4.5.10 H_2SO_4, Concentrated.

4.5.11 Potassium Persulfate, 5 Percent (W/V). See Citation 2 of the Bibliography for preparation.

4.5.12 Nickel Nitrate, $Ni(NO_3)_2 \, 6H_2O$.

4.5.13 Lanthanum Oxide, La_2O_3.

4.5.14 Hg Standard (AAS Grade), 1000 µg/ml.

4.5.15 Pb Standard (AAS Grade), 1000 µg/ml.

4.5.16 As Standard (AAS Grade), 1000 µg/ml.

4.5.17 Cd Standard (AAS Grade), 1000 µg/ml.

4.5.18 Cr Standard (AAS Grade), 1000 µg/ml.

4.5.19 Sb Standard (AAS Grade), 1000 µg/ml.

4.5.20 Ba Standard (AAS Grade), 1000 µg/ml.

4.5.21 Be Standard (AAS Grade), 1000 µg/ml.

4.5.22 Co Standard (AAS Grade), 1000 µg/ml.

4.5.23 Cu Standard (AAS Grade), 1000 µg/ml.

4.5.24 Mn Standard (AAS Grade), 1000 µg/ml.

4.5.25 Ni Standard (AAS Grade), 1000 µg/ml.

4.5.26 P Standard (AAS Grade), 1000 µg/ml.

4.5.27 Se Standard (AAS Grade), 1000 µg/ml.

4.5.28 Ag Standard (AAS Grade), 1000 µg/ml.

4.5.29 Tl Standard (AAS Grade), 1000 µg/ml.

4.5.30 Zn Standard (AAS Grade), 1000 µg/ml.

4.5.31 Al Standard (AAS Grade), 1000 µg/ml.

4.5.32 Fe Standard (AAS Grade), 1000 µg/ml.

4.5.33 Hg Standards and Quality Control Samples. Prepare fresh weekly a 10 µg/ml intermediate Hg standard by adding 5 ml of 1000 µg/ml Hg stock solution prepared according to Method 101A to a 500-ml volumetric flask; dilute with stirring to 500 ml by first carefully adding 20 ml of 15 percent HNO_3 and then adding water to the 500-ml volume. Mix well. Prepare a 200 ng/ml working Hg standard solution fresh daily: add 5 ml of the 10 µg/ml intermediate standard to a 250-ml volumetric flask, and dilute to 250 ml with 5 ml of 4 percent $KMnO_4$, 5 ml of 15 percent HNO_3, and then water. Mix well. Use at least five separate aliquots of the working Hg standard solution and a blank to prepare the standard curve. These aliquots and blank shall contain 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0 ml of the working standard solution containing 0, 200, 400, 600, 800, and 1000 ng Hg, respectively. Prepare quality control samples by making a separate 10 µg/ml standard and diluting until in the calibration range.

4.5.34 ICAP Standards and Quality Control Samples. Calibration standards for ICAP analysis can be combined into four different mixed standard solutions as follows:

MIXED STANDARD SOLUTIONS FOR ICAP ANALYSIS

Solution	Elements
I	As, Be, Cd, Mn, Pb, Se, Zn.
II	Ba, Co, Cu, Fe.
III	Al, Cr, Ni.
IV	Ag, P, Sb, Tl.

Prepare these standards by combining and diluting the appropriate volumes of the 1000 µg/ml solutions with 5 percent HNO_3. A minimum of one standard and a blank can be used to form each calibration curve. However, prepare a separate quality control sample spiked with known amounts of the target metals in quantities in the mid-range of the calibration curve. Suggested standard levels are 25 µg/ml for Al, Cr and Pb, 15 µg/ml for Fe, and 10 µg/ml for the remaining elements. Prepare any standards containing less than 1 µg/ml of metal on a daily basis. Standards containing greater than 1 µg/ml of metal should be stable for a minimum of 1 to 2 weeks. For ICP–MS, follow Method 6020 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i).

4.5.35 GFAAS Standards. Sb, As, Cd, Co, Pb, Se, and Tl. Prepare a 10 µg/ml standard by adding 1 ml of 1000 µg/ml standard to a 100-ml volumetric flask. Dilute with stirring to 100 ml with 10 percent HNO_3. For GFAAS, matrix match the standards. Prepare a 100 ng/ml standard by adding 1 ml of the 10 µg/ml standard to a 100-ml volumetric flask, and dilute to 100 ml with the appropriate matrix solution. Prepare other standards by diluting the 100 ng/ml standards. Use at least five standards to make up the standard curve. Suggested levels are 0, 10, 50, 75, and 100 ng/ml. Prepare quality control samples by making a separate 10 µg/ml standard and diluting until it is in the range of the samples. Prepare any standards containing less than 1 µg/ml of metal on a daily basis. Standards containing greater than 1 µg/ml of metal should be stable for a minimum of 1 to 2 weeks.

4.5.36 Matrix Modifiers.

4.5.36.1 Nickel Nitrate, 1 Percent (V/V). Dissolve 4.956 g of $Ni(NO_3)_2 \cdot 6H_2O$ or other nickel compound suitable for preparation of this matrix modifier in approximately 50 ml of water in a 100-ml volumetric flask. Dilute to 100 ml with water.

4.5.36.2 Nickel Nitrate, 0.1 Percent (V/V). Dilute 10 ml of 1 percent nickel nitrate solution to 100 ml with water. Inject an equal amount of sample and this modifier into the graphite furnace during GFAAS analysis for As.

4.5.36.3 Lanthanum. Carefully dissolve 0.5864 g of La_2O_3 in 10 ml of concentrated HNO_3, and dilute the solution by adding it with stirring to approximately 50 ml of water. Dilute to 100 ml with water, and mix well. Inject an equal amount of sample and this modifier into the graphite furnace during GFAAS analysis for Pb.

4.5.37 Whatman 40 and 541 Filter Paper (or equivalent). For filtration of digested samples.

5. Procedure

5.1 Sampling. The complexity of this method is such that, to obtain reliable results, both testers and analysts must be trained and experienced with the test procedures, including source sampling; reagent preparation and handling; sample handling; safety equipment and procedures; analytical calculations; reporting; and the specific procedural descriptions throughout this method.

5.1.1 Pretest Preparation. Follow the same general procedure given in Method 5, Section 4.1.1, except that, unless particulate emissions are to be determined, the filter need not be desiccated or weighed. First, rinse all sampling train glassware with hot tap water and then wash in hot soapy water. Next, rinse glassware three times with tap water, followed by three additional rinses with water. Then soak all glassware in a 10 percent (V/V) nitric acid solution for a minimum of 4 hours, rinse three times with water, rinse a final time with acetone, and allow to air dry. Cover all glassware openings where contamination can occur until the sampling train is assembled for sampling.

5.1.2 Preliminary Determinations. Same as Method 5, Section 4.1.2.

5.1.3 Preparation of Sampling Train.

5.1.3.1 Set up the sampling train as shown in Figure 29–1. Follow the same general procedures given in Method 5, Section 4.1.3, except place 100 ml of the HNO_3/H_2O_2 solution (Section 4.3.1. of this method) in each of the second and third impingers as shown in Figure 29–1. Placee 100 ml of the acidic $KMnO_4$ absorbing solution (Section 4.3.2 of this method) in each of the fifth and sixth impingers as shown in Figure 29–1, and transfer approximately 200 to 300 g of pre-weighed silica gel from its container to the last impinger. Alternatively, the silica gel may be weighed directly in the impinger just prior to final train assembly.

5.1.3.2 Based on the specific source sampling conditions, the use of an empty first impinger can be eliminated if the moisture to be collected in the impingers will be less than approximately 100 ml.

5.1.3.3 If Hg analysis will not be performed, the fourth, fifth, and sixth impingers as shown in Figure 29–1 are not required.

5.1.3.4 To insure leak-free sampling train connections and to prevent possible sample contamination problems, use Teflon tape or other non-contaminating material instead of silicone grease.

Precaution: Exercise extreme care to prevent contamination within the train. Prevent the acidic $KMnO_4$ from contacting any glassware that contains sample material to be analyzed for Mn. Prevent acidic H_2O_2 from mixing with the acidic $KMnO_4$.

5.1.4 Leak-Check Procedures. Follow the leak-check procedures given in Method 5, Section 4.1.4.1 (Pretest Leak-Check), Section 4.1.4.2 (Leak-Checks During the Sample Run), and Section 4.1.4.3 (Post-Test Leak-Checks).

5.1.5 Sampling Train Operation. Follow the procedures given in Method 5, Section 4.1.5. When sampling for Hg, use a procedure analagous to that described in Section 7.1.1 of Method 101A, 40 CFR Part 61, Appendix B, if necessary to maintain the desired color in the last acidified permanganate impinger. For each run, record the data required on a data sheet such as the one shown in Figure 5–2 of Method 5.

5.1.6 Calculation of Percent Isokinetic. Same as Method 5, Section 4.1.6.

5.2 Sample Recovery.

5.2.1 Begin cleanup procedures as soon as the probe is removed from the stack at the end of a sampling period. The probe should be allowed to cool prior to sample recovery. When it can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a rinsed, non-contaminating cap over the probe nozzle to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling; a vacuum can form in the filter holder with the undesired result of drawing liquid from the impingers onto the filter.

5.2.2 Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet. Be careful not to lose any condensate that might be present. Cap the filter inlet where the probe was fastened. Remove the umbilical cord from the last impinger and cap the impinger. Cap the filter holder outlet and impinger inlet. Use non-contaminating caps, whether ground-glass stoppers, plastic caps, serum caps, or Teflon tape to close these openings.

5.2.3 Alternatively, the following procedure may be used to disassemble the train before the probe and filter holder/oven are completely cooled: Initially disconnect the filter holder outlet/impinger inlet and loosely cap the open ends. Then disconnect the probe from the filter holder or cyclone inlet and loosely cap the open ends. Cap the probe tip and remove the umbilical cord as previously described.

5.2.4 Transfer the probe and filter-impinger assembly to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly and note any abnormal conditions. Take special precautions to assure that all the items necessary for recovery do not contaminate the samples. The sample is recovered and treated as follows (see schematic in Figures 29–2a and 29–2b):

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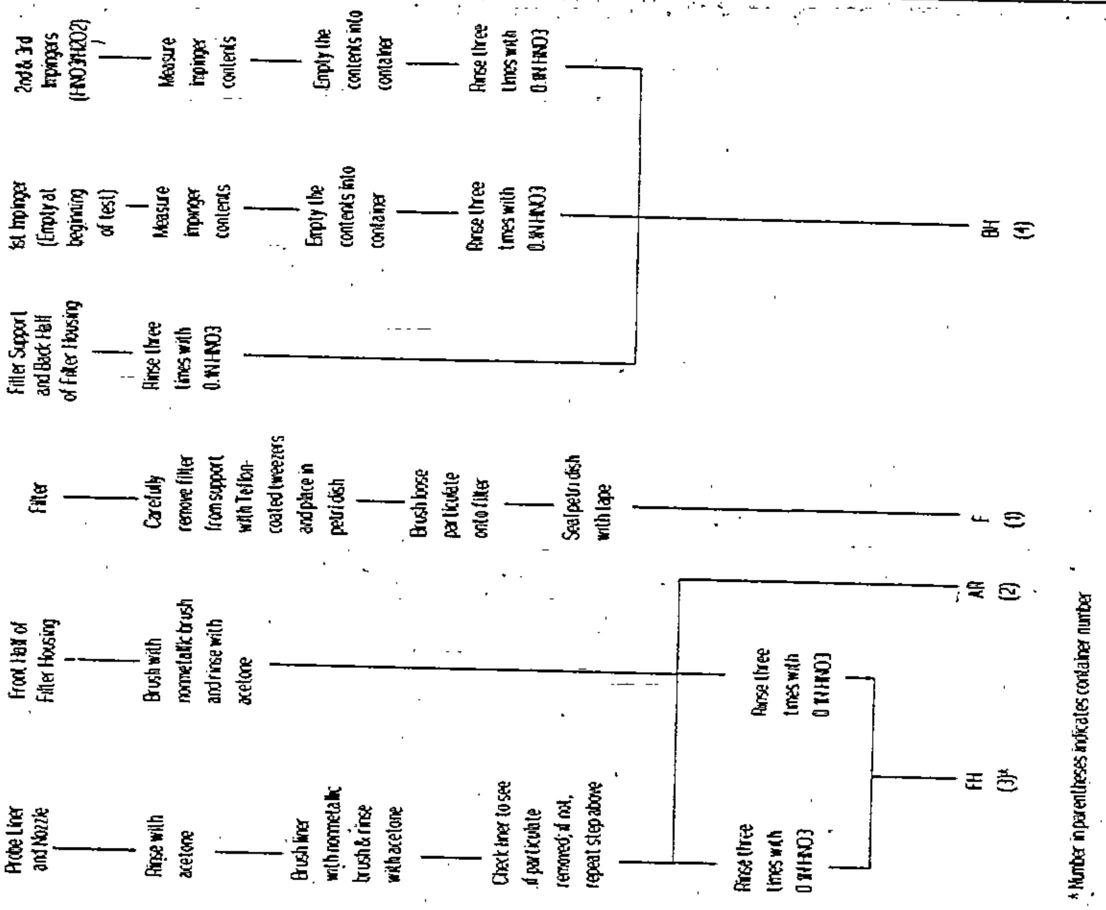

Figure 29-2a. Sample recovery scheme.

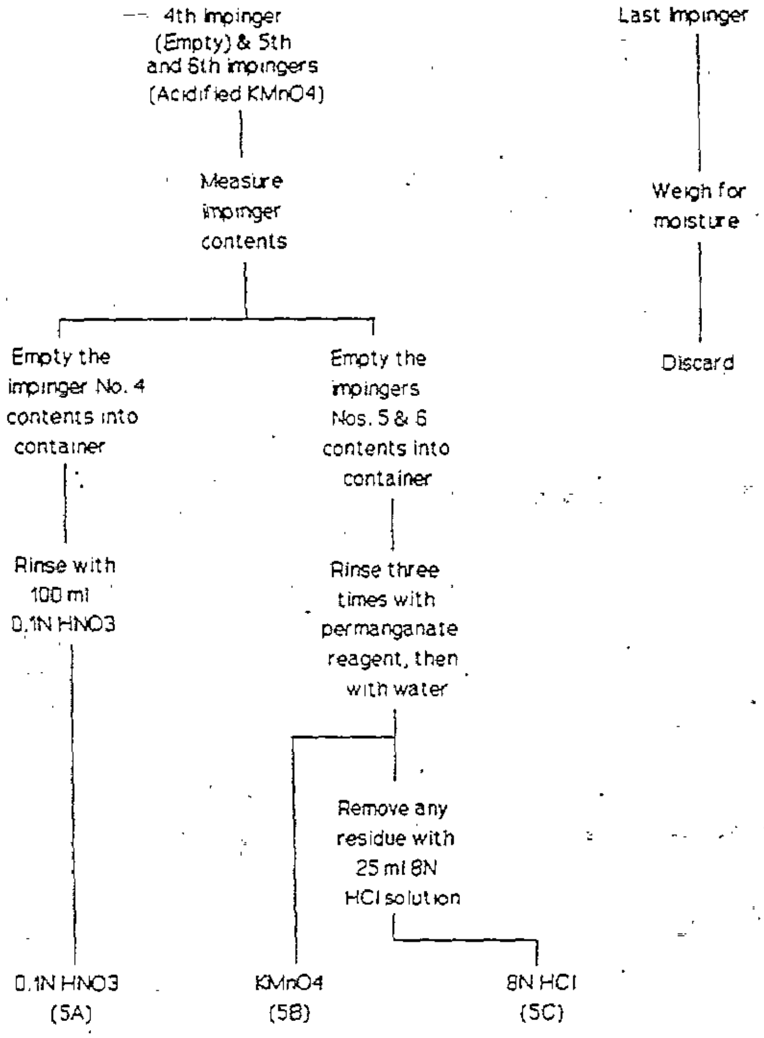

Figure 29-2b. Sample recovery scheme.

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5.2.5 Container No. 1 (Sample Filter). Carefully remove the filter from the filter holder and place it in its labeled petri dish container. To handle the filter, use either acid-washed polypropylene or Teflon coated tweezers or clean, disposable surgical gloves rinsed with water and dried. If it is necessary to fold the filter, make certain the particulate cake is inside the fold. Carefully transfer the filter and any particulate matter or filter fibers that adhere to the filter holder gasket to the petri dish by using a dry (acid-cleaned) nylon bristle brush. Do not use any metal-containing materials when recovering this train. Seal the labeled petri dish.

5.2.6 Container No. 2. (Acetone Rinse). Perform this procedure only if a determination of particulate emissions is to be made. Quantitatively recover particulate matter and any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with a total of 100 ml of acetone, while simultaneously taking great care to see that no dust on the outside of the probe or other surfaces gets in the sample. The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Distilled water may be used instead of acetone when approved by the Administrator and shall be used when specified by the Administrator; in these cases, save a water blank and follow the Administrator's directions on analysis.

5.2.6.1 Carefully remove the probe nozzle, and clean the inside surface by rinsing with acetone from a wash bottle while brushing with a non-metallic brush. Brush until the acetone rinse shows no visible particles, then make a final rinse of the inside surface with acetone.

5.2.6.2 Brush and rinse the sample exposed inside parts of the probe fitting with acetone in a similar way until no visible particles remain. Rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with acetone. Allow the acetone to drain from the lower end into the sample container. A funnel may be used to aid in transferring liquid washings to the container. Follow the acetone rinse with a non-metallic probe brush. Hold the probe in an inclined position, squirt acetone into the upper end as the probe brush is being pushed with a twisting action three times through the probe. Hold a sample container underneath the lower end of the probe, and catch any acetone and particulate matter which is brushed through the probe until no visible particulate matter is carried out with the acetone or until none remains in the probe liner on visual inspection. Rinse the brush with acetone, and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above.

5.2.6.3 It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination. Clean the inside of the front-half of the filter holder by rubbing the surfaces with a non-metallic brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. After all acetone washings and particulate matter have been collected in the sample container, tighten the lid so that acetone will not leak out when shipped to the laboratory. Mark the height of the fluid level to determine whether or not leakage occurred during transport. Clearly label the container to identify its contents.

5.2.7 Container No. 3 (Probe Rinse). Keep the probe assembly clean and free from contamination during the probe rinse. Rinse the probe nozzle and fitting, probe liner, and front-half of the filter holder thoroughly with a total of 100 ml of 0.1 N HNO_3, and place the wash into a sample storage container.

(**Note:** The use of a total of exactly 100 ml is necessary for the subsequent blank correction procedures.)

Perform the rinses as applicable and generally as described in Method 12, Section 5.2.2. Record the volume of the rinses. Mark the height of the fluid level on the outside of the storage container and use this mark to determine if leakage occurs during transport. Seal the container, and clearly label the contents. Finally, rinse the nozzle, probe liner, and front-half of the filter holder with water followed by acetone, and discard these rinses.

5.2.8 Container No. 4 (Impingers 1 through 3, Moisture Knockout Impinger, when used, HNO_3/H_2O_2 Impingers Contents and Rinses). Due to the potentially large quantity of liquid involved, the tester may place the impinger solutions from impingers 1 through 3 in more than one container, if necessary. Measure the liquid in the first three impingers to within 0.5 ml using a graduated cylinder. Record the volume. This information is required to calculate the moisture content of the sampled flue gas. Clean each of the first three impingers, the filter support, the back half of the filter housing, and connecting glassware by thoroughly rinsing with 100 ml of 0.1 N HNO_3 using the procedure as applicable in Method 12, Section 5.2.4.

(**Note:** The use of exactly 100 ml of 0.1 N HNO_3 rinse is necessary for the subsequent blank correction procedures. Combine the rinses and impinger solutions, measure and record the final total volume. Mark the height of the fluid level, seal the container, and clearly label the contents.)

5.2.9 Container Nos. 5A (0.1 N HNO_3), *5B* (*$KMnO_4$*/H_2SO_4 absorbing solution), and 5C (8 N HCl rinse and dilution).

5.2.9.1 When sampling for Hg, pour all the liquid from the impinger (normally impinger No. 4) that immediately preceded the two permanganate impingers into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place the liquid in Container No. 5A. Rinse the impinger with exactly 100 ml of 0.1 N HNO_3 and place this rinse in Container No. 5A.

5.2.9.2 Pour all the liquid from the two permanganate impingers into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place this acidic $KMnO_4$ solution into Container No. 5B. Using a total of exactly 100 ml of fresh acidified $KMnO_4$ solution for all rinses (approximately 33 ml per rinse), rinse the two permanganate impingers and connecting glassware a minimum of three times. Pour the rinses into Container No. 5B, carefully assuring transfer of all loose precipitated materials from the two impingers. Similarly, using 100 ml total of water, rinse the permanganate impingers and connecting glass a minimum of three times, and pour the rinses into Container 5B, carefully assuring transfer of any loose precipitated material. Mark the height of the fluid level, and clearly label the contents. Read the Precaution: in Section 4.3.2. *NOTE:* Due to the potential reaction of $KMnO_4$ with acid, pressure buildup can occur in the sample storage bottles. Do not fill these bottles completely and take precautions to relieve excess pressure. A No. 70–72 hole drilled in the container cap and Teflon liner has been used successfully.

5.2.9.3 If no visible deposits remain after the water rinse, no further rinse is necessary. However, if deposits remain on the impinger surfaces, wash them with 25 ml of 8 N HCl, and place the wash in a separate sample container labeled No. 5C containing 200 ml of water. First, place 200 ml of water in the container. Then wash the impinger walls and stem with the HCl by turning the impinger on its side and rotating it so that the HC1 contacts all inside surfaces. Use a total of only 25 ml of 8 N HCl for rinsing both permanganate impingers combined. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse. Finally, pour the 25 ml of 8 N HCl rinse carefully into the container. Mark the height of the fluid level on the outside of the container to determine if leakage occurs during transport.

5.2.10 Container No. 6 (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal it. The tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. The small amount of particles that might adhere to the impinger wall need not be removed. Do not use water or other liquids to transfer the silica gel since weight gained in the silica gel impinger is used for moisture calculations. Alternatively, if a balance is available in the field, record the weight of the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g.

5.2.11 Container No. 7 (Acetone Blank). If particulate emissions are to be determined, at least once during each field test, place a 100-ml portion of the acetone used in the sample recovery process into a container labeled No. 7. Seal the container.

5.2.12 Container No. 8A (0.1 N HNO_3 Blank). At least once during each field test, place 300 ml of the 0.1 N HNO_3 solution used in the sample recovery process into a container labeled No. 8A. Seal the container.

5.2.13 Container No. 8B (Water Blank). At least once during each field test, place 100 ml of the water used in the sample recovery process into a container labeled No. 8B. Seal the container.

5.2.14 Container No. 9 (5 Percent HNO_3/10 Percent H_2O_2 Blank). At least once during each field test, place 200 ml of the 5 Percent HNO_3/10 Percent H_2O_2 solution used as the nitric acid impinger reagent into a container labeled No. 9. Seal the container.

5.2.15 Container No. 10 (Acidified $KMnO_4$ Blank). At least once during each field test, place 100 ml of the acidified $KMnO_4$ solution used as the impinger solution and in the sample recovery process into a container labeled No. 10. Prepare the container as described in Section 5.2.9.2. Read the *Precaution:* in Section 4.3.2. and read the Note in Section 5.2.9.2.

5.2.16 Container No. 11 (8 N HCl Blank). At least once during each field test, place 200 ml of water into a sample container labeled No. 11. Then carefully add with stirring 25 ml of 8 N HCl. Mix well and seal the container.

5.2.17 Container No. 12 (Sample Filter Blank). Once during each field test, place into a petri dish labeled No. 12 three unused blank filters from the same lot as the sampling filters. Seal the petri dish.

5.3 *Sample Preparation.* Note the level of the liquid in each of the containers and determine if any sample was lost during shipment. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. A diagram illustrating sample preparation and analysis procedures for each of the sample train components is shown in Figure 29–3.

5.3.1 *Container No. 1 (Sample Filter).*

5.3.1.1 If particulate emissions are being determined, first desiccate the filter and filter catch without added heat (do not heat the filters to speed the drying) and weigh to a constant weight as described in Section 4.3 of Method 5.

5.3.1.2 Following this procedure, or initially, if particulate emissions are not being determined in addition to metals analysis, divide the filter with its filter catch into portions containing approximately 0.5 g each. Place the pieces in the analyst's choice of either individual microwave pressure relief vessels or Parr^R Bombs. Add 6 ml of concentrated HNO_3 and 4 ml of concentrated HF to each vessel. For microwave heating, microwave the samples for approximately 12 to 15 minutes total heating time as follows: heat for 2 to 3 minutes, then turn off the microwave for 2 to 3 minutes, then heat for 2 to 3 minutes, etc., continue this alternation until the 12 to 15 minutes total heating time are completed (this procedure should comprise approximately 24 to 30 minutes at 600 watts). Microwave heating times are approximate and are dependent upon the number of samples being digested simultaneously. Sufficient heating is evidenced by sorbent reflux within the vessel. For conventional heating, heat the Parr^R Bombs at 140 °C (285 °F) for 6 hours. Then cool the samples to room temperature, and combine with the acid digested probe rinse as required in Section 5.3.3.

5.3.1.3 If the sampling train includes an optional glass cyclone in front of the filter, prepare and digest the cyclone catch by the procedures described in section 5.3.1.2 and then combine the digestate with the digested filter sample.

5.3.2 Container No. 2 (Acetone Rinse). Note the level of liquid in the container and confirm on the analysis sheet whether or not leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in this container either volumetrically within 1 ml or gravimetrically within 0.5 g. Transfer the contents to an acid-cleaned, tared 250-ml beaker and evaporate to dryness at ambient temperature and pressure. If particulate emissions are being determined, desiccate for 24 hours without added heat, weigh to a constant weight according to the procedures described in Section 4.3 of Method 5, and report the results to the nearest 0.1 mg. Redissolve the residue with 10 ml of concentrated HNO_3.

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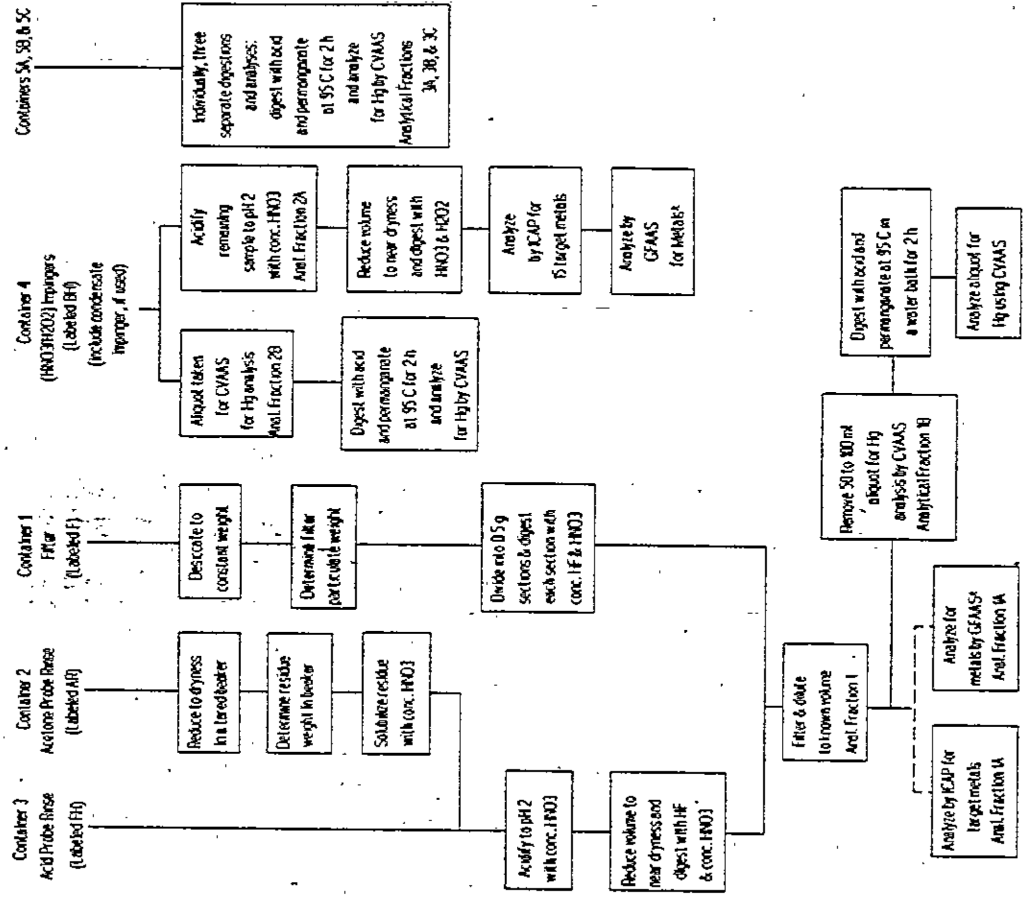

*Analysis by AAS for metals found at less than 2 ug/ml in digestate solution, if desired. Or analyze for each metal by AAS, if desired.

Figure 29-3. Sample preparation and analysis scheme.

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Quantitatively combine the resultant sample, including all liquid and any particulate matter, with Container No. 3 before beginning Section 5.3.3.

5.3.3 Container No. 3 (Probe Rinse). Verify that the pH of this sample is 2 or lower. If it is not, acidify the sample by careful addition with stirring of concentrated HNO_3 to pH 2. Use water to rinse the sample into a beaker, and cover the beaker with a ribbed watch glass. Reduce the sample volume to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Digest the sample in microwave vessels or Parr^R Bombs by quantitatively transferring the sample to the vessel or bomb, carefully adding the 6 ml of concentrated HNO_3, 4 ml of concentrated HF, and then continuing to follow the procedures described in Section 5.3.1.2. Then combine the resultant sample directly with the acid digested portions of the filter prepared previously in Section 5.3.1.2. The resultant combined sample is referred to as *"Sample Fraction 1"*. Filter the combined sample using Whatman 541 filter paper. Dilute to 300 ml (or the appropriate volume for the expected metals concentration) with water. This diluted sample is *"Analytical Fraction 1"*. Measure and record the volume of Analytical Fraction 1 to within 0.1 ml. Quantitatively remove a 50-ml aliquot and label as *"Analytical Fraction 1B"*. Label the remaining 250-ml portion as *"Analytical Fraction 1A"*. Analytical Fraction 1A is used for ICAP or AAS analysis for all desired metals except Hg. Analytical Fraction 1B is used for the determination of front-half Hg.

5.3.4 Container No. 4 (Impingers 1–3). Measure and record the total volume of this sample to within 0.5 ml and label it *"Sample Fraction 2"*. Remove a 75- to 100-ml aliquot for Hg analysis and label the aliquot *"Analytical Fraction 2B"*. Label the remaining portion of Container No. 4 as *"Sample Fraction 2A"*. Sample Fraction 2A defines the volume of Analytical Fraction 2A *prior* to digestion. All of Sample Fraction 2A is digested to produce *"Analytical Fraction 2A"*. Analytical Fraction 2A defines the volume of Sample Fraction 2A *after* its digestion and the volume of Analytical Fraction 2A is normally 150 ml. Analytical Fraction 2A is analyzed for all metals except Hg. Verify that the pH of Sample Fraction 2A is 2 or lower. If necessary, use concentrated HNO_3 by careful addition and stirring to lower Sample Fraction 2A to pH 2. Use water to rinse Sample Fraction 2A into a beaker and then cover the beaker with a ribbed watch glass. Reduce Sample Fraction 2A to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Then follow either of the digestion procedures described in Sections 5.3.4.1 or 5.3.4.2.

5.3.4.1 Conventional Digestion Procedure. Add 30 ml of 50 percent HNO_3, and heat for 30 minutes on a hot plate to just below boiling. Add 10 ml of 3 percent H_2O_2 and heat for 10 more minutes. Add 50 ml of hot water, and heat the sample for an additional 20 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution produces Analytical Fraction 2A. Measure and record the volume to within 0.1 ml.

5.3.4.2 Microwave Digestion Procedure. Add 10 ml of 50 percent HNO_3 and heat for 6 minutes total *heating* time in alternations of 1 to 2 minutes at 600 Watts followed by 1 to 2 minutes with no power, etc., similar to the procedure described in Section 5.3.1. Allow the sample to cool. Add 10 ml of 3 percent H_2O_2 and heat for 2 more minutes. Add 50 ml of hot water, and heat for an additional 5 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution produces Analytical Fraction 2A. Measure and record the volume to within 0.1 ml.

(Note: All microwave heating times given are approximate and are dependent upon the number of samples being digested at a time. Heating times as given above have been found acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by solvent reflux within the vessel.)

5.3.5 Container No. 5A (Impinger 4), Container Nos. 5B and 5C (Impingers 5 and 6). Keep the samples in Containers Nos. 5A, 5B, and 5C separate from each other. Measure and record the volume of 5A to within 0.5 ml. Label the contents of Container No. 5A to be Analytical Fraction 3A. To remove any brown MnO_2 precipitate from the contents of Container No. 5B, filter its contents through Whatman 40 filter paper into a 500 ml volumetric flask and dilute to volume with water. Save the filter for digestion of the brown MnO_2 precipitate. Label the 500 ml filtrate from Container No. 5B to be Analytical Fraction 3B. Analyze Analytical Fraction 3B for Hg within 48 hours of the filtration step. Place the saved filter, which was used to remove the brown MnO_2 precipitate, into an appropriately sized *vented* container, which will allow release of any gases including chlorine formed when the filter is digested. In a laboratory hood which will remove any gas produced by the digestion of the MnO_2, add 25 ml of 8 N HCl to the filter and allow to digest for a minimum of 24 hours at room temperature. Filter the contents of Container No. 5C through a Whatman 40 filter into a 500-ml volumetric flask. Then filter the result of the digestion of the brown MnO_2 from Container No. 5B through a Whatman 40 filter into the same 500-ml volumetric flask, and dilute and mix well to volume with water. Discard the Whatman 40 filter. Mark this combined 500-ml dilute HCl solution as Analytical Fraction 3C.

5.3.6 Container No. 6 (Silica Gel). Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g using a balance.

5.4 Sample Analysis. For each sampling train sample run, seven individual analytical samples are generated; two for all desired metals except Hg, and five for Hg. A schematic identifying each sample container and the prescribed analytical preparation and analysis scheme is shown in Figure 29–3. The first two analytical samples, labeled Analytical Fractions 1A and 1B, consist of the digested samples from the front-half of the train. Analytical Fraction 1A is for ICAP, ICP–MS or AAS analysis as described in Sections 5.4.1 and 5.4.2, respectively. Analytical Fraction 1B is for front-half Hg analysis as described in Section 5.4.3. The contents of the back-half of the train are used to prepare the third through seventh analytical samples. The third and fourth analytical samples, labeled Analytical Fractions 2A and 2B, contain the samples from the moisture removal impinger No. 1, if used, and $HNO_3H_2O_2$ impingers Nos. 2 and 3. Analytical Fraction 2A is for ICAP, ICP–MS or AAS analysis for target metals, except Hg. Analytical Fraction 2B is for analysis for Hg. The fifth through seventh analytical samples, labeled Analytical Fractions 3A, 3B, and 3C, consist of the impinger contents and rinses from the empty impinger No. 4 and the $H_2SO_4/KMnO_4$ Impingers Nos. 5 and 6. These analytical samples are for analysis for Hg as described in Section 5.4.3. The total back-half Hg catch is determined from the sum of Analytical Fractions 2B, 3A, 3B, and 3C. Analytical Fractions 1A and 2A can be combined proportionally prior to analysis.

5.4.1 ICAP and ICP–MS Analysis. Analyze Analytical Fractions 1A and 2A by ICAP using Method 6010 or Method 200.7 (40 CFR part 136, appendix C). Calibrate the ICAP, and set up an analysis program as described in Method 6010 or Method 200.7. Follow the quality control procedures described in Section 7.3.1. Recommended wavelengths for analysis are as follows:

Element	Wavelength (nm)
Aluminum	308.215
Antimony	206.833
Arsenic	193.696
Barium	455.403
Beryllium	313.042
Cadmium	226.502
Chromium	267.716
Cobalt	228.616
Copper	324.754
Iron	259.940
Lead	220.353
Manganese	257.610
Nickel	231.604
Phosphorous	214.914
Selenium	196.026
Silver	328.068
Thallium	190.864
Zinc	213.856

These wavelengths represent the best combination of specificity and potential detection limit. Other wavelengths may be substituted if they can provide the needed specificity and detection limit, and are treated with the same corrective techniques for spectral interference. Initially, analyze all samples for the target metals (except Hg) plus Fe and Al. If Fe and Al are present, the sample might have to be diluted so that each of these elements is at a concentration of less than 50 ppm so as to reduce their spectral interferences on As, Cd, Cr, and Pb. Perform ICP–MS analysis by following Method 6020 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA, and IIB, as incorporated by reference in § 60.17(i).

(Note: When analyzing samples in a HF matrix, an alumina torch should be used;

since all front-half samples will contain HF, use an alumina torch.)

5.4.2. AAS by Direct Aspiration and/or GFAAS. If analysis of metals in Analytical Fractions 1A and 2A by using GFAAS or direct aspiration AAS is needed, use Table 29–2 to determine which techniques and procedures to apply for each target metal. Use Table 29–2, if necessary, to determine techniques for minimization of interferences. Calibrate the instrument according to Section 6.3 and follow the quality control procedures specified in Section 7.3.2.

TABLE 29–2.—APPLICABLE TECHNIQUES, METHODS AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS

Metal	Technique	SW–846[1] method No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Fe	Aspiration	7380	248.3	Contamination	Great care taken to avoid contamination.
Pb	Aspiration	7420	283.3	217.0 nm alternate	Background correction required.
Pb	Furnace	7421	283.3	Poor recoveries	Matrix modifier, add 10 ul of phosphorus acid to 1 ml of prepared sample in sampler cup.
Mn	Aspiration	7460	279.5	403.1 nm alternate	Background correction required.
Ni	Aspiration	7520	232.0	352.4 nm alternate Fe, Co, and Cr.	Background correction required. Matrix matching or nitrous-oxide/acetylene flame.
				Nonlinear response	sample dilution or use 352.3 nm line.
Se	Furnace	7740	196.0	Volatility	Spike samples and reference materials and add nickel nitrate to minimize volatilization.
				Adsorption & scatter	Background correction is required and Zeeman background correction can be useful.
Ag	Aspiration	7760	328.1	Adsorption & Scatter AgCl insoluble.	Background correction is required. Avoid Hydrochloric acid unless silver is in solution as a chloride complex Sample and standards monitored for aspiration rate.
Tl	Aspiration	7840	276.8		Background correction is required. Hydrochloric acid should not be used.
Tl	Furnace	7841	276.8	Hydrochloric acid or chloride	Background correction is required. Verify that losses are not occurring for volatization by spiked samples or standard addition; Palladium is a suitable matrix modifier.
Zn	Aspiration	7950	213.9	High Si, Cu, & P Contamination	Strontium removes Cu and phosphate, Great care taken to avoid contamination.
Sb	Aspiration	7040	217.6	1000 mg/ml Pb Ni, Cu, or acid	Use secondary wavelengths of 231.1.nm; match sample & standards acid concentration or use nitrous oxidefacetylene flame.
Sb	Furnace	7041	217.6	High Pb	Secondary Wavelength or Zeeman correction.
As	Furnace	7060	193.7	Arsenic volatilization Aluminum	Spiked samples and add nickel nitrate solution to digestates prior to analysis. Use Zeeman background correction.
Ba	Aspiration 7080	7080	553.6	Calcium Barium Ionization	High hollow cathode current and narrow band set. 2 ml of KCl per 100 ml of sample.
Be	Aspiration	7090	234.9	500 ppm Al High Mg and Si	Add 0.1% fluoride. Use method of standard additions.
Be	Furnace	7091	234.9	Be in optical path	Optimize parameters to minimize effects.
Cd	Aspiration	7130	228.8	Absorption and light scattering	Background correction is required.

TABLE 29–2.—APPLICABLE TECHNIQUES, METHODS AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS—Continued

Metal	Technique	SW–846[1] method No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Cd	Furnace	7131	228.8	As above Excess Chloride Pipet tips	As above. Ammonium phosphate used as a matrix modifier. Use cadmiun-free tips.
Cr	Aspiration	7190	357.9	Akali metal	KCl ionization suppressant in samples and standards—Consult mfgs literature.
Co	Furnace	7201	240.7	Excess chloride	Use Method of Standard Additions.
Cr	Furnace	7191	357.9	200 mg/L Ca and P	All calcium nitrate for a known constant effect and to eliminate effect of phosphate.
Cu	Aspiration	7210	324.7	Absorption & scatter	Consult manufacturer's manual.

[1] Refer to EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA, and IIB, as incorporated by reference in §60.17(i).

5.4.3 CVAAS Hg analysis. Analyze Analytical Fractions 1B, 2B, 3A, 3B, and 3C separately for Hg using CVAAS following the method outlined in Method 7470 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i) or in *Standard Methods for the Examination of Water and Wastewater*, 16th Edition, (1985), Method 303F, as incorporated by reference in §60.17, or, optionally using *NOTE No. 2* in this section. Set up the calibration curve (zero to 1000 ng) as described in Method 7470 or similar to Method 303F using 300-ml BOD bottles instead of Erlenmeyers. Perform the following for each Hg analysis. From each original sample, select and record an aliquot in the size range from 1 ml to 10 ml. If no prior knowledge of the expected amount of Hg in the sample exists, a 5 ml aliquot is suggested for the first dilution to 100 ml (see *NOTE No. 1* in this Section). The total amount of Hg in the aliquot shall be less than 1 μg and within the range (zero to 1000 ng) of the calibration curve. Place the sample aliquot into a separate 300-ml BOD bottle, and add enough water to make a total volume of 100 ml. Next add to it sequentially the sample digestion solutions and perform the sample preparation described in the procedures of Method 7470 or Method 303F. (See *NOTE No. 2* in this Section). If the maximum readings are off-scale (because Hg in the aliquot exceeded the calibration range; including the situation where only a 1-ml aliquot of the original sample was digested), then dilute the original sample (or a portion of it) with 0.15 percent HNO_3 (1.5 ml concentrated HNO_3 per liter aqueous solution) so that when a 1- to 10-ml aliquot of the "0.15 HNO_3 percent dilution of the original sample" is digested and analyzed by the procedures described above, it will yield an analysis within the range of the calibration curve.

Note No. 1 to Section 5.4.3. When Hg levels in the sample fractions are below the in-stack detection limit given in Table 29–1, select a 10 ml aliquot for digestion and analysis as described.

Note No. 2 to Section 5.4.3. Optionally, Hg can be analyzed by using the CVAAS analytical procedures given by some instrument manufacturer's directions. These include calibration and quality control procedures for the Leeman Model PS200, the Perkin Elmer FIAS systems, and similar models, if available, of other instrument manufacturers. For digestion and analyses by these instruments, perform the following two steps:

(1) Digest the sample aliquot through the addition of the aqueous hydroxylamine hydrochloride/sodium chloride solution the same as described in this Section 5.4.3.: (*The Leeman, Perkin Elmer, and similar instruments described in this note add automatically the necessary stannous chloride solution during the automated analysis of Hg.*) and

(2) Upon completion of the digestion described in paragraph (1), of this note, analyze the sample according to the instrument manufacturer's directions. This approach allows multiple (including duplicate) automated analyses of a digested sample aliquot.

6. Calibration

Maintain a laboratory log of all calibrations.

6.1 Sampling Train Calibration. Calibrate the sampling train components according to the indicated sections of Method 5: Probe Nozzle (Section 5.1); Pitot Tube (Section 5.2); Metering System (Section 5.3); Probe Heater (Section 5.4); Temperature Gauges (Section 5.5); Leake-Check of the Metering System (Section 5.6); and Barometer (Section 5.7).

6.2 Industively Coupled Argon Plasma Spectrometer Calibration. Prepare standards as outlined in Section 4.5. Profile and calibrate the instrument according to the manufacturer's recommended procedures using those standards. Check the calibration once per hour. If the instrument does not reproduce the standard concentrations within 10 percent, perform the complete calibration procedures. Perform ICP–MS analysis by following Method 6020 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i).

6.3 Atomic Absorption Spectrometer—Direct Aspiration AAS, GFAAS, and CVAAS analyses. Prepare the standards as outlined in Section 4.5 and use them to calibrate the spectrometer. Calibration procedures are also outlined in the EPA methods referred to in Table 29–2 and in Method 7470 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i) or in *Standard Methods for the Examination of Water and Wastewater*, 16th Edition, (1985), Method 303F (for Hg) as incorporated by reference in §60.17. Run each standard curve in duplicate and use the mean values to calculate the calibration line. Recalibrate the instrument approximately once every 10 to 12 samples.

7. Quality Control

7.1 Field Reagent Blanks, if analyzed. Perform the digestion and analysis of the blanks in Container Nos. 7 through 12 that were produced in Sections 5.2.11 through 5.2.17, respectively. For Hg field reagent blanks, use a 10 ml aliquot for digestion and analysis.

7.1.1 Digest and analyze one of the filters from Container No. 12 per Section 5.3.1, 100 ml from Container No. 7 per Section 5.3.2, and 100 ml from Container No. 8A per Section 5.3.3. This step produces blanks for Analytical Fractions 1A and 1B.

7.1.2 Combine 100 ml of Container No. 8A with 200 ml from Container No. 9, and digest and analyze the resultant volume per Section 5.3.4. This step produces blanks for Analytical Fractions 2A and 2B.

7.1.3 Digest and analyze a 100-ml portion of Container No. 8A to produce a blank for Analytical Fraction 3A.

7.1.4 Combine 100 ml from Container No. 10 with 33 ml from Container No. 8B to produce a blank for Analytical Fraction 3B. Filter the resultant 133 ml as described for Container No. 5B in Section 5.3.5, except do not dilute the 133ml. Analyze this blank for Hg within 48 hrs. of the filtration step, and use 400 ml as the blank volume when calculating the blank mass value. Use the actual volumes of the other analytical blanks when calculating their mass values.

7.1.5 Digest the filter that was used to remove any brown MnO_2 precipitate from the blank for Analytical Fraction 3B by the same procedure as described in Section 5.3.5 for the similar sample filter. Filter the digestate and the contents of Container No. 11 through Whatman 40 paper into a 500-ml volumetric flask, and dilute to volume with water. These steps produce a blank for Analytical Fraction 3C.

7.1.6 Analyze the blanks for Analytical Fraction Blanks 1A and 2A per Section 5.4.1 and/or Section 5.4.2. Analyze the blanks for Analytical Fractions 1B, 2B, 3A, 3B, and 3C per Section 5.4.3. Analysis of the blank for Analytical Fraction 1A produces the front-half reagent blank correction values for the desired metals except for Hg; Analysis of the blank for Analytical Fraction 1B produces the front-half reagent blank correction value for Hg. Analysis of the blank for Analytical Fraction 2A produces the back-half reagent blank correction values for all of the desired metals except for Hg, while separate analyses of the blanks for Analytical Fractions 2B, 3A, 3B, and 3C produce the back-half reagent blank correction value for Hg.

7.2 Quality Control Samples. Analyze the following quality control samples.

7.2.1 ICAP and ICP-MS Analysis. Follow the respective quality control descriptions in Section 8 of Methods 6010 and 6020 of EPA Publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i). For the purposes of a source test that consists of three sample runs, modify those requirements to include the following: two instrument check standard runs, two calibration blank runs, one interference check sample at the beginning of the analysis (analyze by Method of Standard Additions unless within 25 percent), one quality control sample to check the accuracy of the calibration standards (required to be within 25 percent of calibration), and one duplicate analysis (required to be within 20 percent of average or repeat all analyses).

7.2.2. Direct Aspiration AAS and/or GFAAS Analysis for Sb, As, Ba, Be, Cd, Cu, Cr, Co, Pb, Ni, Mn, Hg, P, Se, Ag, Tl, and Zn. Analyze all samples in duplicate. Perform a matrix spike on at least one front-half sample and one back-half sample, or one combined sample. If recoveries of less than 75 percent or greater than 125 percent are obtained for the matrix spike, analyze each sample by the Method of Standard Additions. Analyze a quality control sample to check the accuracy of the calibration standards. If the results are not within 20 percent, repeat the calibration.

7.2.3 CVAAS Analysis for Hg. Analyze all samples in duplicate. Analyze a quality control sample to check the accuracy of the calibration standards (if not within 15 percent, repeat calibration). Perform a matrix spike on one sample (if not within 25 percent, analyze all samples by the Method of Standard Additions). Additional information on quality control can be obtained from Method 7470 of EPA Publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i) or in *Standard Methods for the Examination of Water and Wastewater*, 16th Edition, (1985), Method 303F as incorporated by reference in § 60.17.

8. Calculations

8.1 Dry Gas Volume. Using the data from this test, calculate $V_{m(std)}$, the dry gas sample volume at standard conditions as outlined in Section 6.3 of Method 5.

8.2 Volume of Water Vapor and Moisture Content. Using the total volume of condensate collected during the source sampling, calculate the volume of water vapor $V_{w(std)}$ and the moisture content B_{ws} of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

8.3 Stack Gas Velocity. Using the data from this test and Equation 2-9 of Method 2, calculate the average stack gas velocity.

8.4 Metals (Except Hg) in Source Sample.

8.4.1 Analytical Fraction 1A, Front-Half, Metals (except Hg). Calculate separately the amount of each metal collected in Sample Fraction 1 of the sampling train using the following equation:

$$M_{fh}=C_{a1}\,F_d\,V_{soln,1} \qquad \text{Eq. 29-1}$$

where:

M_{fh}=Total mass of each metal (except Hg) collected in the front half of the sampling train (Sample Fraction 1), µg.

C_{a1}=Concentration of metal in Analytical Fraction 1A as read from the standard curve, µg/ml.

F_d=Dilution factor (F_d = the inverse of the fractional portion of the concentrated sample in the solution actually used in the instrument to produce the reading C_{a1}. For example, if a 2 ml aliquot of Analytical Fraction 1A is diluted to 10 ml to place it in the calibration range, F_d = 5).

$V_{soln,1}$=Total volume of digested sample solution (Analytical Fraction 1), ml.

8.4.1.1 If Analytical Fractions 1A and 2A are combined, use proportional aliquots. Then make appropriate changes in Equations 29-1 through 29-3 to reflect this approach.

8.4.2 Analytical Fraction 2A, Back-Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 2 of the sampling train using the following equation.

$$M_{bh}=C_{a2}\,F_a\,V_a \qquad \text{Eq. 29-2}$$

where:

M_{bh}=Total mass of each metal (except Hg) collected in the back-half of the sampling train (Sample Fraction 2), µg.

C_{a2}=Concentration of metal in Analytical Fraction 2A as read from the standard curve, (µg/ml).

F_a=Aliquot factor, volume of Sample Fraction 2 divided by volume of Sample Fraction 2A (*see Section 5.3.4.*)

V_a=Total volume of digested sample solution (Analytical Fraction 2A), ml (see Section 5.3.4.1 or 5.3.4.2, as applicable).

8.4.3 Total Train, Metals (except Hg). Calculate the total amount of each of the quantified metals collected in the sampling train as follows:

$$M_t=(M_{fh}-M_{fhb})+(M_{bh}-M_{bhb}) \qquad \text{Eq. 29-3}$$

where:

M_t=Total mass of each metal (separately stated for each metal) collected in the sampling train, µg.

M_{fhb}=Blank correction value for mass of metal detected in front-half field reagent blank, µg.

M_{bhb}=Blank correction value for mass of metal detected in back-half field reagent blank, µg.

8.4.3.1 If the measured blank value for the front half (M_{fhb}) is in the range 0.0 to "A" µg [where "A" µg equals the value determined by multiplying 1.4 µg/in.^{2} times the actual area in in.^{2} of the sample filter], use M_{fhb} to correct the emission sample value (M_{fh}); if M_{fhb} exceeds "A" µg, use the greater of I or II:

I. "A" µg.

II. the lesser of (a) M_{fhb}, or (b) 5 percent of M_{fh}.

If the measured blank value for the black-half (M_{bhb}) is in the range 0.0 to 1 µg, use M_{bhb} to correct the emission sample value (M_{bh}); if M_{bhb}) exceeds 1 µg, use the greater of I or II:

I. 1 µg.

II. the lesser of (a) M_{bhb} or (b) 5 percent of M_{bh}.

8.5 Hg in Source Sample.

8.5.1 Analytical Fraction 1B; Front-Half Hg. Calculate the amount of Hg collected in the front-half, Sample Fraction 1, of the sampling train by using Equation 29-4:

$$Hg_{fh}=\frac{Q_{fh}}{V_{f1B}}\left(V_{soln,1}\right) \qquad \text{Eq. 29-4}$$

where:

Hg_{fh}=Total mass of Hg collected in the front-half of the sampling train (Sample Fraction 1), µg.

Q_{fh}=Quantity of Hg, µg, *TOTAL in the ALIQUOT of Analytical Fraction 1B selected for digestion and analysis.*

8.5.1.1 For example, if a 10 ml aliquot of Analytical Fraction 1B is taken and digested and analyzed (according to Section 5.4.3 and its NOTES Nos. 1 and 2), then calculate and use the total amount of Hg in the 10 ml aliquot for Q_{fh}.

$V_{soln,1}$=Total volume of Analytical Fraction 1, ml.

V_{f1B}=Volume of aliquot of Analytical Fraction 1B analyzed, ml.

8.5.1.2 For example, if a 1 ml aliquot of Analytical Fraction 1B was diluted to 50 ml with 0.15 percent HNO_3 as described in Section 5.4.3 to bring it into the proper analytical range, and then 1 ml of that 50-ml wa digested according to Section 5.4.3 and analyzed, V_{f1B} would be 0.02 ml.

8.5.2 Analytical Fractions 2B, 3A, 3B, and 3C; Back Half Hg.

8.5.2.1 Calculate the amount of Hg collected in Sample Fraction 2 by using Equation 29-5:

$$Hg_{bh2}=\frac{Q_{bh2}}{V_{f2B}}\left(V_{soln,2}\right) \qquad \text{Eq. 29-5}$$

where:

Hg_{bh2}=Total mass of Hg collected in Sample Fraction 2, µg.

Q_{bh2}=Quantity of Hg, µg, *TOTAL in the ALIQUOT of Analytical Fraction 2B selected for digestion and analysis.*

8.5.2.1.1 For example, if a 10 ml aliquot of Analytical Fraction 2B is taken and digested and analyzed (according to Section 5.4.3 and its NOTES Nos. 1 and 2), then calculate and use the total amount of Hg in the 10 ml aliquot for Q_{bh2}.

$V_{soln,2}$=Total volume of Sample Fraction 2, ml.

V_{f2B}=Volume of Analytical Fraction 2B analyzed, ml.

8.5.2.1.2 For example, if 1 ml of Analytical Fraction 2B was diluted to 10 ml with 0.15 percent HNO_3 as described in Section 5.4.3 to bring it into the proper analytical range, and then 5 ml of that 10-ml was analyzed, V_{f2B} would be 0.5 ml.

8.5.2.2 Calculate each of the back-half Hg values for Analytical Fractions 3A, 3B, and 3C by using Equation 29–6:

$$Hg_{bh3(A,B,C)} = \frac{Q_{bh3(A,B,C)}}{V_{f3(A,B,C)}}\left(V_{soln,3(A,B,C)}\right) \quad \text{Eq. 29-6}$$

where:

$Hg_{bh3\ (A,B,C)}$=Total mass of Hg collected separately in Fraction 3A, 3B, or 3C, µg.

$Q_{bh3\ (A,B,C)}$=Quantity of Hg, µg, *TOTAL, separately, in the ALIQUOT of Analytical Fraction 3A, 3B, and 3C selected for digestion and analysis,* (see previous notes in Sections 8.5.1 and 8.5.2 describing the quantity "Q" and calculate similarly).

$V_{f3\ (A,B,C)}$=Volume, separately, of Analytical Fraction 3A, 3B, or 3C analyzed, ml (see previous notes in Sections 8.5.1 and 8.5.2, describing the quantity "V" and calculate similarly).

$V_{soln,3\ (A,B,C)}$=Total volume, separately, of Analytical Fraction 3A, 3B, or 3C, ml.

8.5.2.3 Calculate the total amount of Hg collected in the back-half of the sampling train by using Equation 29–7:

$$Hg_{bh}=Hg_{bh2}+Hg_{bh3A}+Hg_{bh3B}+Hg_{bh3C} \quad \text{Eq. 29–7}$$

where:

Hg_{bh}=Total mass of Hg collected in the back-half of the sampling train, µg.

8.5.3 Total Train Hg Catch. Calculate the total amount of Hg collected in the sampling train by using Equation 29–8:

$$Hg_t=(Hg_{fh}-Hg_{fhb})+(Hg_{bh}-Hg_{bhb}) \quad \text{Eq. 29–8}$$

where:

Hg_t=Total mass of Hg collected in the sampling train, µg.

Hg_{fhb}=Blank correction value for mass of Hg detected in front-half field reagent blank, µg.

Hg_{bhb}=Blank correction value for mass of Hg detected in back-half field reagent blanks, µg.

8.5.4 If the total of the measured blank values ($Hg_{fhb}+Hg_{bhb}$) is in the range of 0.0 to 0.6 µg, then use the total to correct the sample value ($Hg_{fh}+Hg_{bh}$); if it exceeds 0.6 µg, use the greater of I. or II:

I. 0.6 µg.

II. the lesser of (a) ($Hg_{fhb}+Hg_{bhb}$), or (b) 5 percent of the sample value ($Hg_{fh}+Hg_{bh}$).

8.6 Individual Metal Concentrations in Stack Gas. Calculate the concentration of each metal in the stack gas (dry basis, adjusted to standard conditions) by using Equation 29–9:

$$C_s = \frac{K_4 M_t}{V_{m(std)}} \quad \text{Eq. 29-9}$$

C_s=Concentration of a metal in the stack gas, mg/dscm.

$K_4=10^{-3}$ mg/µg.

M_t=Total mass of that metal collected in the sampling train, µg; (substitute Hg_t for M_t for the Hg calculation).

$V_{m(std)}$=Volume of gas sample as measured by the dry gas meter, corrected to dry standard conditions, dscm.

8.7 Isokinetic Variation and Acceptable Results. Same as Method 5, Sections 6.11 and 6.12, respectively.

9. Bibliography

1. Method 303F in *Standard Methods for the Examination of Water Wastewater,* 16th Edition, 1985. Available from the American Pubic Health Association, 1015 18th Street NW., Washington, DC 20036.
2. EPA Methods 6010, 6020, 7000, 7041, 7060, 7131, 7421, 7470, 7740, and 7841, *Tesdt Methods for Evaluating Solid Waste: Physical/Chemical Methods.* SW–846, Third Edition, September 1986, with updates I, II, IIA and IIB. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC 20460.
3. EPA Method 200.7, *Code of Federal Regulations,* Title 40, Part 136, Appendix C. July 1, 1987.
4. EPA Methods 1 through 5, *Code of Federal Regulations,* Title 40, Part 60, Appendix A. July 1, 1991.
5. EPA Method 101A, *Code of Federal Regulations,* Title 40, Part 61, Appendix B. July 1, 1991.

PART 61—[AMENDED]

3. The authority citation for part 61 continues to read as follows:

Authority: 42 U.S.C. 7401, 7412, 7414, 7416, and 7601.

4. In part 61, Method 101A of appendix B, by revising the heading, Sections 6.1.5, 7.2.1, 7.2.3, 7.2.5, 7.3.1., 7.3.2, 7.3.3, and 9.2; and by adding sections 5.2.4 through 5.2.7, 6.1.7, 6.1.8, 7.2.1.1 through 7.2.1.3, 7.2.6, 9.2.1, 9.2.2 and reference 3 of item 10 bibliograph; and by adding text to the end of section 6.1.6 to read as follows:

Appendix B—Test Methods

* * * * *

Method 101A—Determination of Particulate and Gaseous Mercury Emissions From Stationary Sources

* * * * *

5.2.4 Atomic Absorption Spectrophotometer or Equivalent. Any atomic absorption unit with an open sample presentation area in which to mount the optical cell is suitable. Use those instrument settings recommended by the particular manufacturer. Instruments designed specifically for the measurement of mercury using the cold-vapor technique are commercially available and may be substituted for the atomic absorption spectrophotometer.

5.2.5 Optical Cell. Alternatively, a heat lamp mounted above the cell or a moisture trap installed upstream of the cell may be used.

5.2.6 Aeration Cell. Alternatively, aeration cells available with commercial cold vapor instrumentation may be used.

5.2.7 Aeration Gas Cylinder. Nitrogen, argon, or dry, Hg-free air, equipped with a single-stage regulator. Alternatively, aeration may be provided by a peristaltic metering pump. If a commercial cold vapor instrument is used, follow the manufacturer's recommendations.

* * * * *

6.1.5 Sulfuric Acid (H_2SO_4), 10 Percent (V/V). Carefully add and mix 100 ml of concentrated H_2SO_4 to 800 ml of deionized distilled water. Then, by adding deionized distilled water, mix and bring to a final volume of 1000 ml.

6.1.6 * * *

Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541 filter paper. Also, due to the potential reaction of the potassium permanganate with the acid, there could be pressure buildup in the solution storage bottle; therefore these bottles shall not be fully filled and shall be vented to relieve excess pressure and prevent explosive potentials. Venting is required, but should not allow contamination of the solution; a No. 70–72 hole drilled in the container cap and Teflon liner has been used.

6.1.7 Hydrochloric Acid (HCL). Concentrated. Trace-metals grade is recommended. The Hg level shall be less than 3 ng/ml.

6.1.8 HCL, 8 N. Dilute 67 ml of concentrated HCl to 100 ml with water (slowly add the HCl to the water).

* * * * *

7.2.1 Container No. 1 (Impinger, Probe, and Filter Holder) and, if applicable, No. 1A (HCl rinse).

7.2.1.1 Using a graduated cylinder, measure the liquid in the first three impingers to within 1 ml. Record the volume of liquid present (e.g., see Figure 5–3 of Method 5 in 40 CFR Part 60). This information is required to calculate the moisture content of the effluent gas. (Use only graduated cylinder and glass storage bottles that have been precleaned as in Section 7.1.2.) Place the contents of the first three impingers into a 1000-ml glass sample bottle labeled Container No. 1. See the *Precaution* in Section 6.1.6.

Note No. 1 to Section 7.2.1.1: Due to the potential reaction of $KMnO_4$ with acid, there could be pressure buildup in the sample storage bottles. These bottles shall not be filled completely and shall be vented to relieve excess pressure. A No. 70–72 hole drilled in the container cap and Teflon liner has been used successfully).

Note No. 2 to Section 7.2.1.1: If a filter is used in the sampling train, remove the filter from its holder as outlined under "Container No. 3" below.)

7.2.1.2 Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover the Hg (and any condensate) from the probe nozzle, probe fitting, probe liner, front half of the filter holder (if applicable), and impingers as follows: Rinse these components with a total of 250 to 400 ml of fresh acidified 4 percent $KMnO_4$ solution carefully assuring removal of all loose particulate matter from the impingers; add all washings to Container No. 1. See the *Precaution* in Section 6.1.6 and see the *Note No. 1* in Section 7.2.1.1. To remove any residual brown deposits on the glassware following the permanganate rinse, rinse with approximately 100 ml of water carefully assuring removal of all loose particulate matter from the impingers, and add this rinse to Container No. 1. If no visible deposits remain after this water rinse, do not rinse with 8 N HCl. However, if deposits do remain on the glassware after the water rinse, wash the impinger walls and stems with a total of only 25 ml of 8 N HCl as follows; turn and shake the impingers so that the 8 N HCl contacts all inside surfaces (wash the first impinger, then pour the wash from the first impinger into the second impinger, and finally pour the wash from the second into the third). DO NOT PLACE THE HCl WASH INTO THE ACIDIFIED PERMANGANATE SOLUTION. Place the HCl wash into a separate container labeled Container No. 1A as follows: place 150 ml of water in an empty sample container labeled Container No. 1A. Pour the HCl wash carefully, with stirring, into Container No. 1A. Rinse the impinger walls and stem with a total of 50 ml of water, and place this rinse into Container No. 1A.

7.2.1.3 After all washings have been collected in the sample containers, prepare as described above to prevent leakage during shipment to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Label the containers to identify their contents clearly.

7.2.3 Container No. 3 (Filter). If a filter was used, carefully remove it from the filter holder, place it into a 100 ml glass sample container, and add 20 to 40 ml of acidified $KMnO_4$. If it is necessary to fold the filter, be sure that the particulate cake is inside the fold. Carefully transfer to the 100 ml sample bottle any particulate matter and filter fibers that might adhere to the filter holder gasket by using a dry Nylon bristle brush and a sharp edged blade. See the *Precaution* in Section 6.1.6 and see the *Note No. 1* in Section 7.2.1.1. Label the container to clearly identify its contents. Mark the height of the fluid level to determine whether leakage occurs during transport.

* * * * *

7.2.5 Container No. 5 (Absorbing Solution Blank). For a blank, place 500 ml of acidified absorbing solution in a 1000 ml sample bottle. See the *Precaution* in Section 6.1.6 and see the *Note No. 1* in Section 7.2.1.1.

7.2.6 Container No. 6 (HCl rinse blank). For a blank, place 200 ml of water in a 1000-ml sample bottle, and add 25 ml of 8 N HCl carefully with stirring. Seal the container. Only one blank sample per 3 runs is required.

* * * * *

7.3.1 Containers No. 3 and No. 4 (Filter and Filter Blank). If a filter is used, place the contents, including the filter, of Containers No. 3 and 4 in separate 250-ml beakers, and heat the beakers on a steam bath until most of the liquid has evaporated. Do not take to dryness. Add 20 ml of concentrated HNO_3 to the beakers, cover them with a watch glass, and heat on a hot plate at 70 °C for 2 hours. Remove from the hot plate. Filter the solution from digestion of the Container No. 3 contents through Whatman No. 40 filter paper, and save the filtrate for addition to the Container No. 1 filtrate as described in Section 7.3.2. Discard the filter. Filter the solution from the digestion of the Container No. 4 contents through Whatman No. 40 filter paper, and save the filtrate for addition to Container No. 5 filtrate as described in Section 7.3.3. Discard the filter.

7.3.2 Container No. 1 (Impingers, Probe, and Filter Holder) and, if applicable, No. 1A (HCl rinse). Filter the contents of Container No. 1 through Whatman 40 filter paper into a 1-liter volumetric flask to remove the brown MnO_2 precipitate. Save the filter for digestion of the brown MnO_2 precipitate. Add the sample filtrate from Container No. 3 to the 1-liter volumetric flask, and dilute to volume with water. If the combined filtrates are greater than 1000 ml, determine the volume to the nearest ml and make the appropriate corrections for blank subtractions. Mix thoroughly. Mark the combined filtrates as ANALYSIS SAMPLE No. A.1. and analyze for Hg within 48 hr of the filtration step (Note: Do not confuse ANALYSIS SAMPLE No. A.1. with the contents of field Sample Container No. 1A which contains the 8 N HCl wash). Place the saved filter, which was used to remove the brown MnO_2 precipitate, into an appropriate sized *vented* container, which will allow release of any gases including chlorine formed when the filter is digested. In a laboratory hood which will remove any gas produced by the digestion of the MnO_2, add 25 ml of 8 N HCl to the filter and allow to digest for a minimum of 24 hours at room temperature. Filter the contents of Container 1A through Whatman 40 paper into a 500-ml volumetric flask. Then filter the result of the digestion of the brown MnO_2 from Container No. 1 through Whatman 40 filter into the same 500-ml volumetric flask, and dilute and mix well to volume with water. Discard the filter. Mark this combined 500-ml dilute solution as ANALYSIS SAMPLE No. HCL A.2., and analyze for Hg.

7.3.3 Container No. 5 (Absorbing Solution Blank) and No. 6 (HCl Rinse Blank). Prepare the contents of Container No. 5 for analysis by the same procedure used for Container No. 1 as described in Section 7.3.2. Add the filter blank filtrate from Container No. 4 to the 1-liter volumetric flask, and dilute to volume. Mix thoroughly. Mark this as ANALYSIS SAMPLE No. A.1. BLANK, and analyze for Hg within 48 hours of the filtration step. Digest any brown precipitate remaining on the filter from the filtration of Container No. 5 by the same procedure as described in Section 7.3.2. Filter the contents of Container No. 6 by the same procedure as described in Section 7.3.2, and combine in the 500-ml volumetric flask with the filtrate from the digested blank MnO_2 precipitate. Mark this resultant 500-ml combined dilute solution as ANALYSIS SAMPLE No. HCl A.2 blank. (Note: When analyzing samples A.1 blank and HCl A.2 blank, always begin with 10-ml aliquots. This applies specifically to blank samples.)

* * * * *

9. * * *

9.2 Total Mercury. For each source sample, correct the average maximum absorbance of the two consecutive samples whose peak heights agree within 3 percent of their average for the contribution of the blank. Then calculate the total Hg content in µg in each sample. Correct for any dilutions made to bring the sample into the working range of the spectrophotometer.

$$m_{(HCl)Hg} = \left[\frac{\left[C_{(HCl)Hg}\ D.F._{(HCl)Hg}\right]}{S} - \frac{\left[C_{(HCl\,blk)Hg}\ D.F._{(HCl\,blk)Hg}\right]}{S_{blk}} \right] V_{f(HCl)} \left(10^{-3}\right) \quad \text{Eq. 101A-1}$$

where:

$m_{(HCl)\,Hg}$=Total blank corrected µg of Hg in HCl rinse and HCl digestate of filter sample

$C_{(HCl)\,Hg}$=Total ng of Hg analyzed in the aliquot from the 500-ml ANALYSIS SAMPLE No. HCl A.2.

$C_{(HCl\ blk)\,Hg}$=Total ng of Hg analyzed in aliquot of the 500-ml ANALYSIS SAMPLE No. HCl A.2 blank.

$D.F._{(HCl)\,Hg}$=Dilution factor for the HCl-digested Hg-containing solution, ANALYSIS SAMPLE No. "HCl A.2." This dilution factor applies only to the dilution steps, if necessary, of the 500 ml of the original sample volume [$V_{f\,(HCl)}$] of "HCl A.2" because the original volume has been factored out in the equation along with the sample aliquot (S). In Eq. 101A–1, the sample aliquot, S, is digested according to Sections 7.4, 8.1, and 8.2 and the Hg from this digestion is introduced directly into the aeration cell for analysis. A dilution factor is required only if it is necessary to bring the sample into the analytical instrument's calibration range. If no dilution is necessary, then $D.F._{(HCl)\,Hg}$ equals 1.0.

D.F. (HCl blk)Hg=Dilution factor for the HCl-digested Hg-containing solution, ANALYSIS SAMPLE No. "HCl A.2 blank." (Refer to sample No. "HCl A.2" dilution factor information above.)

$V_{f(HCl)}$=Solution volume of original sample, 500 ml for the HCl samples diluted as described in Section 7.3.

10^{-3}=Conversion factor µg/ng.

S=Aliquot volume of sample: digested according to Sections 7.4, 8.1, 8.2 and the Hg from this digestion is introduced directly into the aeration cell for analysis, ml.

S_{blk}=Aliquot volume of blank: digested according to Sections 7.4, 8.1, and 8.2 and the Hg from this digestion is introduced directly into the aeration cell for analysis, ml.

9.2.1 The maximum allowable blank subtraction for the Hg in the HCl washes is the lesser of the two following values: (1) the actual blank measured value (ANALYSIS SAMPLE NO. HCl A.2 blank), or (2) 5% of the Hg content in the combined HCl rinse and digested sample (ANALYSIS SAMPLE No. HCl A.2).

$$m_{(fltr)Hg}=\left[\frac{\left[C_{(fltr)Hg}\ D.F._{(fltr)Hg}\ V_{f(fltr)}\right]}{S_{(fltr)}}-\frac{\left[C_{(fltr\ blk)Hg}\ D.F._{(fltr\ blk)Hg}\ V_{f(fltr\ blk)}\right]}{S_{(fltr\ blk)}}\right]\left(10^{-3}\right)\quad \text{Eq. 101A-2}$$

where:

$m_{(fltr)Hg}$=Total blank corrected µg of Hg in $KMnO_4$ filtrate and HNO_3 digestion of filter sample.

$C_{(fltr)Hg}$=Total ng of Hg in aliquot of $KMnO_4$ filtrate and HNO_3 digestion of filter analyzed (aliquot of ANALYSIS SAMPLE No. A.1).

$C_{(fltr\ blk)Hg}$=Total ng of Hg analyzed in aliquot of $KMnO_4$ blank and HNO_3 digestion of blank filter (aliquot of ANALYSIS SAMPLE No. A.1 blank).

$V_{f(fltr)}$=Solution volume of original sample, normally 100 ml for samples diluted as described in Section 7.3.

$V_{f(blk)}$=Solution volume of blank sample, 1000 ml for samples diluted as described in Section 7.3.

$D.F._{(fltr)Hg}$=Dilution factors, if necessary for ANALYSIS SAMPLE No. A.1, calculated similarly to those above for the (HC1) Hg samples.

$D.F._{(fltr\ blk)Hg}$=Dilution factors, if necessary for ANALYSIS SAMPLE No. A.1 blank, calculated similarly to those above for the (HCl blk)Hg samples.

9.2.2 The maximum allowable blank subtraction for the HCl is the lesser of the two following values: (1) the actual blank measured value (ANALYSIS SAMPLE No. "A.1 blank"), or (2) 5% of the Hg content in the filtrate (ANALYSIS SAMPLE No. "A.1").

$$m_{Hg}=m_{(HCl)Hg}+m_{(fltr)Hg}\qquad \text{Eq. 101A-3}$$

where:

m_{Hg}=Total blank corrected Hg content in each sample, µg.

$m_{(HCl)Hg}$=Total blank corrected µg of Hg in HCl rinse and HCl digestate of filter sample.

$M_{(fltr)Hg}$=Total blank corrected µg of Hg in $KMnO_4$ filtrate and HNO_3 digestion of filter sample.

* * * * *

10. * * *

3. Wilshire, Frank W., J.E. Knoll, T.E. Ward, and M.R. Midgett. Reliability Study of the U.S. EPA's Method 101A—Determiantion of Particulate and Gaseous Mercury Emissions U.S. Environmental Protection Agency, Research Triangle Park, NC. Report No. 600/D–31/219 AREAL 367, NTIS Acc No. PB91–23361.

* * * * *

5. In Appendix B to part 61, Method 101A is amended by revising the second and last sentences of section 7.1.1 and by revising the last two sentences of the first paragraph of section 7.1.2 to read as follows:

Appendix B to Part 61—Test Methods

* * * * *

Method 101A Determination of Particulate and Gaseous Mercury Emissions From Sewage Sludge Incinerators Meth. 101A

* * * * *

7.1.1 * * * In this method, highly oxidizable matter could make it impossible to sample for the required minimum time.* * * In cases where an excess of water condensation is encountered, collect two runs to make one sample, or add an extra impinger in front of the first impinger (also containing acidified $KMnO_4$ solution).

7.2.1 * * * In this method, clean all the glass components (a hood is recommended) by rinsing with 50 percent HNO_3, tap water, 8 N HCl, tap water, and finally deionized distilled water. Then place 50 ml of the acidified 4 percent $KMnO_4$ absorbing solution in the first impinger and 100 ml in each of the second and third impingers.

* * * * *

[FR Doc. 96–9834 Filed 4–24–96; 8:45 am]

BILLING CODE 6560–50–M

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40 CFR Part 63

[FRL–5458–7]

State of Tennessee Request for Approval of Section 112(l) Authority

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule.

SUMMARY: State of Tennessee has applied for approval of its Rule No. 1200–3–11–.08, Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities; and also Rule No. 1200–3–11–.17, National Emission Standard for Radon Emissions From Department of Energy Facilities, under section 112(l) of the Clean Air Act (CAA) as amended November 15, 1990. The Environmental Protection Agency (EPA) has reviewed the State of Tennessee's submittal and has made the decision that the State of Tennessee's Rule No. 1200–3–11–.08 and Rule No. 1200–3–11–.17, satisfies all of the requirements necessary to qualify as a complete submittal. Thus, the EPA intends to take comment on whether the State of Tennessee's Rule No. 1200–3–11–.08 and Rule No. 1200–

pervisor of an affected facilty located within a large MWC plant shall obtain and keep current either a provisional or operator certification in accordance with ASME QRO–1–1994 (incorporated by reference, see § 60.17) or an equivalent State-approved certification program.

* * * * *

(f) * * *

(9) [Reserved]

* * * * *

7. Section 60.58a is amended by revising paragraphs (h)(1), (h)(2), (h)(6)(i), (h)(6)(ii), and (h)(10), redesignating paragraph (h)(6)(iii) as paragraph (h)(6)(v), adding new paragraphs (h)(6)(iii) and (h)(6)(iv), removing and reserving paragraph (j)(3), and revising paragraph (j)(4), to read as follows:

§ 60.58a Compliance and performance testing.

* * * * *

(h) * * *

(1) Compliance with the carbon monoxide emission limits in § 60.56a(a) shall be determined using a 4-hour block arithmetic average for all types of affected facilities except mass burn rotary waterwall MWC's, RDF stokers, and spreader stoker/RDF mixed fuel-fired combustors.

(2) For affected mass burn rotary waterwall MWC's, RDF stokers, and spreader stoker/RDF mixed fuel-fired combustors, compliance with the carbon monoxide emission limits in § 60.56a(a) shall be determined using a 24-hour daily arithmetic average.

* * * * *

(6) * * *

(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 (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 "American Society of Mechanical Engineers Power Test Codes: Test Code for Steam Generating Units, Power Test Code 4.1—1964", Section 4 (incorporated by reference, see § 60.17) shall be used for calculating the steam (or feedwater flow) required under paragraph (h)(6)(i) of this section. The recommendations of "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) shall be followed for design, construction, installation, calibration, and use of nozzles and orifices except as specified in (h)(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 compliance and performance test, and at least once per year.

* * * * *

(10) At a minimum, valid CEMS data for carbon monoxide, steam or feedwater flow, and particulate matter control device inlet temperature shall be obtained 75 percent of the hours per day for 75 percent of the days per month the affected facility is operated and combusting MSW.

* * * * *

(j) * * *

(3) [Reserved]

(4) The MWC unit capacity shall be calculated using a design heating value of 10,500 kilojoules per kilogram (4,500 British thermal units per pound) for all MSW.

* * * * *

§ 60.59a [Amended]

8. Section 60.59a is amended by removing paragraphs (a)(1), (b)(14), (b)(15), and (m), and removing the third sentence of paragraph (e).

[FR Doc. 95–30254 Filed 12–18–95; 8:45 am]

BILLING CODE 6560–50–P

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40 CFR Part 60

[AD-FRL-5327-5]

RIN 2060–AD00 NSPS

Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources

Municipal Waste Combustors

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This action adds standards of performance for new municipal waste combustor (MWC) units and emission guidelines for existing MWC's. The standards and guidelines implement sections 111 and 129 of the Clean Air Administrator's determination that MWC's cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare. The standards and guidelines apply to MWC units at plants with aggregate capacities to combust greater than 35 megagrams per day (Mg/day) (approximately 40 tons per day) of municipal solid waste (MSW) and require sources to achieve emission levels reflecting the maximum degree of reduction in emissions of air pollutants that the Administrator determined is achievable, taking into consideration the cost of achieving such emission reduction, and any non-air-quality health and environmental impacts and energy requirements. The promulgated standards and guidelines establish emission levels for MWC organics (dioxins/furans), MWC metals (cadmium (Cd), lead (Pb), mercury (Hg), particulate matter (PM), and opacity), MWC acid gases (hydrogen chloride (HCl) and sulfur dioxide (SO_2)), nitrogen oxides (NO_X), and MWC fugitive ash emissions. Some of the pollutants being regulated are considered to be carcinogens and at sufficient concentrations can cause toxic effects following exposure. The standards and guidelines also establish requirements for MWC operating practices (carbon monoxide (CO), load, flue gas temperature at the PM control device inlet, and operator training/certification). Additionally, the standards for new MWC plants also require a siting analysis and materials separation plan.

DATES: *Effective Dates.* June 19, 1996 for the standards for new sources (§§ 60.50b through 60.59b) and December 19, 1995 for the emission guidelines for existing sources (§§ 60.30b through 60.39b). The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of June 19, 1996 for the standards for new sources. See table 3 of this preamble for a summary of the retrofit schedules for existing MWC sources. See **SUPPLEMENTARY INFORMATION** for a discussion of the schedule for judicial review.

Comments. Comments on the Information Collection Request (ICR) document associated with the final standards for new sources are requested, as discussed in section VI.B of this preamble. Comments on the ICR document must be received on or before February 20, 1996. Refer to Section VI.B for further information on this request for comment.

ADDRESSES: *Comments.* As noted above, comments on the ICR document

standards and guidelines implement sections 111 and 129 of the Clean Air Act and are based on the

for comment.

associated with the final standards for new source are requested. See section VI.B and the SUPPLEMENTARY INFORMATION section of this preamble for further information on obtaining a copy of the ICR document and addresses for submitting comments on the ICR document.

Background Information. The principal background information for the final standards and guidelines includes: (1) A background information document (BID) entitled, "Municipal Waste Combustion: Background Information for Promulgated Standards and Guidelines—Summary of Public Comments and Responses" (EPA–453/R–95–0136), which contains a summary of all the significant public comments submitted regarding the proposed standards and guidelines, the EPA's response to these comments, and a summary of the changes made to the standards and guidelines as a result of the comments; and (2) several technical documents listed under SUPPLEMENTARY INFORMATION, including all of the background information documents that supported the proposal and promulgation of the subpart Ea standards and subpart Ca guidelines. A document entitled "FACT SHEET: New Municipal Waste Combustors—Subpart Eb Standards," which succinctly summarizes the final standards, and a document entitled "FACT SHEET: Existing Municipal Waste Combustors—Subpart Cb Emission Guidelines," which succinctly summarizes the guidelines, are also available. See SUPPLEMENTARY INFORMATION for instructions and addresses for obtaining these documents.

Docket. Docket Nos. A–90–45 and A–89–08, containing supporting information used in developing the standards and guidelines, are available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday except for Federal holidays at the following address: U.S. Environmental Protection Agency, Air and Radiation Docket and Information Center (Mail Code 6102), 401 M Street SW, Washington DC 20460 [phone: (202) 260–7548]. The docket is located at the above address in room M–1500, Waterside Mall (ground floor, central mall). A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Walter Stevenson at (919) 541–5264 or Mr. Fred Porter at (919) 541–5251, Combustion Group, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION:

Background Information.

On December 20, 1989, the EPA proposed standards and guidelines for MWC's in subparts Ea and Ca of 40 CFR 60, respectively. The subparts Ea and Ca were promulgated on February 11, 1991 and were developed under authority of paragraph (b) of section 111 of the Clean Air Act of 1977. The 1990 Amendments to the Clean Air Act required the EPA to review these emission standards and guidelines and determine if they were fully consistent with the requirements of section 129. The EPA reviewed the subpart Ea standards and subpart Ca guidelines and concluded that they were not fully consistent with the requirements of section 129. Therefore, the EPA proposed to revise the standards and guidelines in a September 20, 1994 proposal to make the standards and guidelines fully consistent with the requirements of section 129. Municipal waste combustors that begin construction after September 20, 1994 or that begin modification or reconstruction after June 19, 1996 and that meet all other applicability criteria are subject to the revised standards (subpart Eb). Municipal waste combustors that were constructed on or before September 20, 1994 and that meet all other applicability criteria are subject to the revised guidelines (subpart Cb). Municipal waste combustors that were constructed after December 20, 1989 and on or before September 20, 1994 and that meet all other applicability criteria are subject to both the subpart Ea standards (1991 standards for new sources) and the subpart Cb guidelines (1995 retrofit guidelines for existing sources). In this final rule, the EPA is withdrawing the subpart Ca guidelines (1991 guidelines for existing sources). In a separate action in today's **Federal Register** the EPA is publishing a direct final rule amending the text of subpart Ea.

This **Federal Register** final rule discusses: (1) The standards for new MWC's, (2) the guidelines for existing MWC's, (3) the withdrawal of the 1991 subpart Ca guidelines for existing MWC's, and (4) a request for public comment on the ICR document. This preamble and regulatory text are available on the EPA's Technology Transfer Network (TTN) electronic bulletin board. Also available on the EPA's TTN are FACT SHEETS, which summarize the final standards and guidelines. They are suggested reading for persons requiring an overview of the standards and guidelines. The FACT SHEETS can also be obtained by calling Donna Collins at (919) 541–5578. The TTN contains 18 electronic bulletin boards, and the following 5 items are included in the Clean Air Act Amendments (CAAA) bulletin board under menu item "Recently Signed Rules" in file "MWC2.ZIP":

(1) "FACT SHEET: New Municipal Waste Combustors—Subpart Eb Standards (1995)."

(2) "FACT SHEET: Existing Municipal Waste Combustors—Subpart Cb Emission Guidelines (1995)."

(3) **Federal Register** notice for this promulgation: "Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Municipal Waste Combustors" (this document).

(4) "Municipal Waste Combustion: Background Information for Promulgated Standards and Guidelines—Summary of Public Comments and Responses," EPA–453/R–95–0136.

(5) Information Collection Request document for these standards for new sources: "Standard Form 83 Supporting Statement for ICR No. 1506.5—1995 Standards for New Municipal Waste Combustors (Subpart Eb)," September 29, 1995.

The TTN is accessible 24 hours per day, 7 days per week except Monday morning from 8:00 a.m. to 12:00 p.m. when the system is updated. The service is free except for the cost of the phone call. Dial (919) 541–5742 to access the TTN. The TTN is compatible with up to a 14,400 bits-per-second (bps) modem. An alternative way to access the TTN is by "telenet," using access code "ttnbbs.rtpnc.epa.gov". Further instructions for accessing the TTN can be obtained by calling the help desk at (919) 541–5384.

Documents in the Docket. The background information for today's promulgation includes all of the documents that supported the proposal and promulgation of the subpart Ea standards and subpart Ca guidelines (docket No. A–90–45 and docket No. A–89–08). Key background information documents used in developing the subpart Ea standards, the subpart Ca guidelines, and today's promulgated standards and guidelines are as follows:

(1) "Municipal Waste Combustors—Background Information for Proposed Standards: 111(b) Model Plant Description and Cost Report," EPA–450/3–89–27b, August 1989;

(2) "Municipal Waste Combustors—Background Information for Proposed Standards: Post-Combustion Technology Performance," EPA–450/3–89–27c, August 1989;

(3) "Municipal Waste Combustion Assessment: Combustion Control at

es," EPA–600/8–89–057.

icipal Waste Combustion ent, Technical Basis for Good stion Practices," EPA–600/8–89– August 1989;

(5) "Municipal Waste Combustors—Background Information for Proposed Standards: Control of NO_x Emissions," EPA–450/3–89–27d, August 1989;

(6) "Municipal Waste Combustors—Background Information for Proposed Standards: Cost Procedures," EPA–450/3–89–27a, August 1989;

(7) "Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Waste Combustors," EPA–450/3–91–029, March 1994;

(8) "Municipal Waste Combustors—Background Information for Proposed Guidelines for Existing Facilities," EPA–450/3–89–27e, August 1989;

(9) "Municipal Waste Combustion: Background Information for Promulgated Standards and Guidelines—Summary of Public Comments and Responses," EPA–453/R–95–0136, 1995.

These documents and additional technical information are contained in dockets A–90–45 and A–89–08. Docket materials are available for inspection and copying as described in the ADDRESSES section of this preamble.

Judicial Review. Under section 307(b)(1) of the Clean Air Act, judicial review of the actions taken by this notice is available by filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under section 307(b)(2) of the Clean Air Act, the requirements that are in today's notice may not be challenged later in the civil or criminal proceedings brought by the EPA to enforce these requirements (42 U.S.C. 7607(b)).

Preamble Outline. The following outline is provided to aid in locating information in the introductory text (preamble) to the final standards and guidelines.

I. Acronyms, Abbreviations, and Measurement Units

The following definitions, acronyms, and measurement units are provided to clarify the preamble to the final standards and guidelines.

A. Acronyms

ASME	American Society of Mechanical Engineers
BID	Background Information Document
CEMS	continuous emissions monitoring system(s)
COMS	continuous opacity monitoring system(s) dioxins/furans polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans
DSI	dry sorbent injection
EPA	U.S. Environmental Protection Agency
ESP	electrostatic precipitator
FF	fabric filter
GCP	good combustion practices
ICR	information collection request
MACT	maximum achievable control technology
MSW	municipal solid waste
MWC	municipal waste combustor
MWI	medical waste incinerator
NSR	New Source Review
NO_x	nitrogen oxides
OAQPS	Office of Air Quality Planning Standards
OMB	Office of Management and Budget
PM	particulate matter
RDF	refuse-derived fuel
RFA	Regulatory Flexibility Act
SD	spray dryer
SNCR	selective noncatalytic reduction
TEQ	basis 2,3,7,8-tetrachlorinated dibenzo-p-dioxin toxic equivalent based on the 1989 international toxic equivalency factors

B. Abbreviations and Measurement Units

°C=degrees Celsius (degrees Fahrenheit=°C*9/5+32)
Cd=cadmium
CO=carbon monoxide
CO_2=carbon dioxide
dscf=dry standard cubic feet (at 14.7 pounds per square inch, 68 °F)
dscm=dry standard cubic meters (at 14 pounds per square inch, 68 °F)
g=gram (454 grams per pound)
g/yr=grams per year
gr=grains (7,000 grains per pound)
HCl=hydrogen chloride
Hg=mercury
kg=kilogram (0.454 kilograms per pound)
kg/yr=kilograms per year
m3=cubic meter (35.3 cubic feet per cubic meter)
mg=milligrams (10^{-3} grams)
Mg=megagram (1.1 tons)
Mg/d=megagrams per day
Mg/yr=megagrams per year
ng=nanogram (10^{-9} grams)
Pb=lead
ppmv=parts per million by volume
SO_2=sulfur dioxide
tons/d=tons per day
tons/yr=tons per year
total mass basis (dioxins/furans=total mass of tetra- through octa-chlorinated dibenzo-p-dioxins and dibzofurans

II. Background and Withdrawal of the 1991 Subpart Ca Emission Guidelines

By the mid-1980's, several studies had been performed to determine whether MWC emissions should be regulated and, if so, under what section of the Clean Air Act. As set forth in the Advanced Notice of Proposed Rulemaking (52 FR 25399, July 7, 1987), the EPA decided to regulate air emissions from MWC's under section 111 of the Clean Air Act, and to base the

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tandards for new MWC's and
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nd 54 FR 52209, respectively).
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ndments to the Clean Air Act were
cted and added section 129 to the
lean Air Act. Section 129 of the Clean Air Act specifies that revised standards and guidelines must be developed for MWC's in accordance with the requirements of both section 111 and new section 129. Section 129 further specifies that revised standards and guidelines be developed for both large and small MWC plants and that the revised standards and guidelines must reflect more restrictive performance levels. Section 129 includes a schedule for revising the 1991 standards and guidelines.

When the EPA did not comply with the section 129 schedule, the Sierra Club, the Natural Resources Defense Council, and the Integrated Waste Services Association filed complaints with the U.S. District Court for the Eastern District of New York. The resulting consent decree required the EPA Administrator to sign a notice of proposed rulemaking not later than September 1, 1994 and a notice of promulgation not later than October 31, 1995 (Nos. CV–92–2093, CV–93–0284, and CV–93–5144). The proposal notice for the standards and guidelines was signed as scheduled and published on September 20, 1994 (59 FR 48198 and 59 FR 48228, respectively). This notice responds to the requirement for the Administrator to sign the final standards and guidelines by October 31, 1995.

The standards and guidelines promulgated on February 11, 1991 (56 FR 5488 and 56 FR 5514, respectively) apply to only large MWC's (capacities above 225 Mg/day) and reflect best demonstrated technology. Today's notice promulgates revised standards and guidelines that are fully consistent with sections 111 and 129 of the Clean Air Act and extend coverage of the revised standards and guidelines to MWC units located at MWC plants with aggregate plant capacity above 35 Mg/day.

Today's promulgated standards for new sources are more stringent than the standards promulgated on February 11, 1991. Today's promulgated standards will apply to plants for which construction commenced after September 20, 1994 or for which reconstruction or modification commenced after June 19, 1996. The guidelines will apply to all MWC's constructed prior to September 20, 1994. The February 11, 1991 subpart Ea standards will remain in effect for plants constructed, modified, or reconstructed between December 20, 1989 and September 20, 1994. Sources subject to the February 11, 1991 subpart Ea standards are also subject to the guidelines being promulgated today under subpart Cb. In some cases, the promulgated subpart Cb guidelines are more stringent than the existing subpart Ea standards. The control technologies being used to meet the emission limits included in the 1991 subpart Ea standards will be able to comply with the promulgated subpart Cb guidelines, except supplemental controls would be required to reduce Hg emissions and fugitive ash emissions. The direct final rule also being published in today's **Federal Register** will provide consistency between the subpart Ea and Cb rules.

Today's promulgated guidelines under subpart Cb for existing sources are more stringent than the guidelines promulgated under subpart Ca on February 11, 1991. Today's promulgated guidelines will apply to MWC's for which construction commenced on or before September 20, 1994. Today's promulgated guidelines are based on maximum achievable control technology, or MACT, and will require MWC plants to purchase and install different types of air pollution control equipment than the best demonstrated technology-based guidelines promulgated in 1991 under subpart Ca. In consideration of public comments, which supported the withdrawal of subpart Ca, and to satisfy the MACT requirements of section 129 of the Clean Air Act, the EPA is withdrawing the 1991 subpart Ca guidelines as a part of today's action.

III. Summary of Considerations in Developing the 1995 Standards for New Sources and Guidelines for Existing Sources

A. Purpose of the Standards and Guidelines

Under sections 111 and 129 of the Clean Air Act, the EPA is required to develop and adopt performance standards and guidelines for MWC's. Congress specifically added section 129 to the Clean Air Act to address public concerns about MWC's and other solid waste combustion units. Under section 111, performance standards and guidelines must be developed for new and existing stationary sources that may contribute to air pollution and that may reasonably be anticipated to endanger public health or welfare. Under section 129 of the Clean Air Act, the standards and guidelines adopted for MWC's must be based on MACT.

Independent of Clean Air Act requirements, the general public is concerned about emissions from all sources including MWC's. This is understandable considering (1) about two-thirds of the MWC population is located in air quality nonattainment areas with high population densities, and (2) the EPA's 1994 MWC Dioxin Survey identified a limited number of older poorly controlled MWC's with atypically high dioxin/furan emissions (interim corrective actions have been taken at these MWC's).

The MWC industry has aggressively controlled new MWC plants built since 1990, and almost half of the existing population currently is equipped with high efficiency air pollution control equipment. The other older half of the population has control equipment with lower efficiency. As mentioned earlier, health effects are associated with many of the pollutants emitted from MWC's, and the standards and guidelines being promulgated today will bring all MWC units up to the same high performance level.

The EPA estimates that in the United States, there are about 307 operating MWC units at 128 plants, providing a total U.S. MSW combustion capacity of about 94,000 Mg/day. Approximately 16 percent of MSW generated in the United States is combusted.

Emissions from MWC's contain organics (dioxins/furans), metals (Cd, Pb, Hg, PM, and opacity), acid gases (Hcl and SO_2), and NO_X. These pollutants can have adverse effects on both public health and welfare. The EPA recently released a draft report reassessing the health effects of human exposure to dioxins/furans. In the draft report, which is currently undergoing review, MWC's are identified as one source of dioxin/furan emissions. Other MWC emissions of principal concern include Pb, Cd, and Hg. Acid gas and NO_X emissions contribute to acid rain when emissions of SO_2 and NO_X are chemically transformed in the atmosphere into sulfuric and nitric acids and return to earth as wet deposition such as rain, fog, or snow, or as dry deposition such as fine particles or gases. Acid deposition damages lakes and harms forests and buildings. Nitrogen oxides also contribute to low-level ozone and urban area smog formation.

Today's standards and guidelines are set forth as emission limits and will significantly reduce MWC emissions.

B. Technical Basis of Standards and Guidelines

Section 129(a)(2) of the Clean Air Act requires the revised standards for new MWC's and revised guidelines for existing MWC's to reflect the maximum degree of reduction in emissions of designated air pollutants, taking into consideration the cost of achieving such emission reduction, and any non-air-quality health and environmental impacts and energy requirements that the Administrator determines are achievable for a particular category of sources. (This control level is commonly referred to as the "maximum achievable control technology, or "MACT".) Section 129 also provides that standards for new sources may not be less stringent than the emissions control achieved in practice by the best controlled similar unit. This is commonly referred to as the "MACT floor" for new MWC units. Additionally, section 129 provides that the emission limitations in the guidelines for existing MWC's may not be less stringent than the average emission limitations achieved by the best performing 12 percent of units in the category. This is commonly referred to as the "MACT floor" for existing MWC units. Emission control options less stringent than the MACT floor can not be considered in developing section 129 standards and guidelines.

Technical data on the number and size of MWC's, control technologies in use, permit emission limits, and emission test data were used to determine the MACT floor for new and existing MWC's and to define control alternatives. The types of data EPA considered in selecting final standards and guidelines included the following: (1) Over 100 MWC plant-specific questionnaires; (2) emissions information from literature, and State and local agencies; and (3) EPA and industry test reports. Overall, the EPA used performance test data from over 60 MWC plants to develop the standards and guidelines. After proposal, the EPA reviewed additional data submitted with public comments on the proposal and data that EPA gathered from States and industry. Based on the new information, the EPA reviewed both the proposed MACT determinations for new and existing MWC's and the regulatory alternatives. The reassessment of the standards and guidelines in light of the new data resulted in the EPA revising the MACT emission rates for some pollutants.

The most significant changes to the standards and guidelines since proposal are summarized in sections IV.B and V.B., respectively, of this preamble. The rationales for these changes as well as other changes are summarized in the preamble and discussed in more detail in the BID. In keeping with the Administrator's "reinventing government" initiative, several of the changes to the guidelines and standards were made to streamline the regulations and provide increased flexibility while optimizing environmental control by using common sense initiatives. Examples of these changes include the following: (1) Reduced dioxin/furan testing for MWC plants with low dioxin/furan emission levels; (2) NO_X guidelines for large MWC plants that allow plants to use an emissions averaging plan to demonstrate compliance for two or more existing MWC units located at the same facility; (3) clarification of siting requirements for new MWC's; (4) providing additional time for MWC operators to obtain operator training and certification; (5) replacing quarterly reporting with annual reporting (semiannual reporting if noncompliance); (6) revised text to clarify that the regulations do not apply to MWC plants with combustion capacity less than 35 Mg/day; (7) exemption for plants firing small amounts of MSW (10 Mg/day or less); (8) exemption for combustion of clean wood; and (9) allowing certain records to be maintained in either electronic or paper format without duplication. All of these changes are discussed further in sections IV and V of this preamble, and represent changes that improve the effectiveness and efficiency of the standards and guidelines without any reduction in environmental protection.

C. Stakeholders and Public Involvement

Prior to proposal, in accordance with section 117 of the Clean Air Act, the EPA consulated with advisory committees, independent experts, Federal departments and agencies, and owners, operators, and manufacturers of MWC's. Numerous discussions were held with governmental entities, industry representatives, and environmental groups including, but not limited to, the following groups: the U.S. Conference of Majors, the National League of Cities, the National Association of Counties, the Municipal Waste Management Association, the Solid Waste Association of North America, the Integrated Waste Services Association, the Sierra Club, and the Natural Resources Defense Council.

The standards and guidelines being adopted today were proposed in the Federal Register on September 20, 1994 (59 FR 48198 and 59 FR 48228, respectively). The preambles for the proposed standards and guidelines describe the rationale for the proposed standards and guidelines. After proposal, the EPA provided interested persons the opportunity to comment through a written comment period. The public comment period was from September 20, 1994 to November 21, 1994. Comments were received from private citizens, industry representatives, environmental groups, and governmental entities. The comments have been carefully considered, and changes have been made in the standards and guidelines where appropriate. Sections IV and V of this preamble discuss the major revisions to the standards and guidelines to address the commenters' concerns.

IV. Standards of Performance for New Sources (1995)—Summary of the Standards, Impacts of the Standards, and Significant Issues and Changes to the Proposed Standards

This section presents a summary of the final standards, including identification of the source category and pollutants being regulated, and presentation of the final emission limits and their associated performance testing, monitoring, recordkeeping and reporting requirements. This section also discusses the most significant changes to the proposed standards. Also discussed are the impacts of the final standards.

A. Summary of the Standards

The final standards (subpart Eb) apply to each new MWC unit located at an MWC facility that has an aggregate plant capacity to combust over 35 Mg/day of MSW, for which construction commenced after September 20, 1994 or modification or reconstruction commenced after June 19, 1996. Municipal waste combustors that commenced construction on or before September 20, 1994 are not covered under the subpart Eb standards. Municipal waste combustors constructed on or before September 20, 1994 are considered existing sources and are subject to the guidelines that are addressed in section V of this notice.

An MWC is defined as any setting or equipment that combusts MSW including air curtain incinerators. Municipal solid waste combustion includes the direct combustion of MSW or the combustion of MSW gases from pyrolysis or gasification. The MWC unit includes any type of setting or equipment including combustion equipment with or without heat recovery.

Municipal solid waste is defined as a mixture or a single-item waste stream of household, commercial, and/or institutional discards. This would include materials such as paper, yard waste, plastics, leather, rubber, glass, metals, and other combustible and noncombustible materials. The final MSW definition is revised slightly from proposal to make it clear that MSW does not include used motor oil; sewage sludge; wood pallets; construction, renovation, and demolition wastes (including but not limited to railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles. Although these wastes are not MSW, they can be intermixed with MSW and can be combusted in MWC plants. The regulations do not prohibit their combustion. The definition of MSW includes RDF, which is municipal solid waste that is shredded (or pelletized) before combustion. Any medical, industrial, or other type of waste combustor plant with capability to combust greater than 35 Mg/day of MSW and is in compliance with a federally enforceable permit to combust less than 10 Mg/day of MSW is not covered by this standard. Furthermore, cofired MWC plants that combust less than 30 percent MSW (on a calendar quarter basis) are exempt. A summary of the final standards is presented in table 1. In table 1, significant revisions made since proposal are marked with an asterisk (*) and are discussed in section IV.B.

TABLE 1.—SUMMARY OF STANDARDS FOR NEW MWC'S (SUBPART EB)[a]

[* indicates a significant change since proposal and the change is discussed in this preamble]

Applicability

The final standards apply to new MWC units located at plants with capacities to combust greater than 35 Mg/day of residential, commercial, and/or institutional discards. Industrial manufacturing discards are not covered by the standards. 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 standards.
>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

- Applies to large and small MWC plants.
- A site-specific operator training manual is required to be developed and made available for MWC personnel.
- The EPA or State MWC operator training course must be completed by the MWC chief facility operator, shift supervisors, and control room operators.
- The ASME (or State-equivalent) operator certification must be obtained by the MWC chief facility operator (mandatory), shift supervisors (mandatory), and control room operators (optional).*
- 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.
- The 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.
- The CO level is required to be measured using CEMS, and the concentration in the flue gas is required not to exceed the following:

MWC type	CO level	Averaging time (hours)
Modular starved-air and excess-air	50 ppmv	4
Mass burn waterwall and refractory	100 ppmv	4
Mass burn rotary refractory	100 ppmv	4
Fluidized-bed combustion	100 ppmv	4
Pulverized coal/RDF mixed fuel-fired	150 ppmv*	4
Spreader stoker coal/RDF mixed fuel-fired	150 ppmv*	24
RDF stoker	150 ppmv	24
Mass burn rotary waterwall	100 ppmv	24
MWC Organic Emissions (measured as total mass dioxins/furans):		
• Dioxins/furans (performance test by EPA Reference Method 23)		
Large and small MWC plants	13 ng/dscm total mass (mandatory) or 7 ng/dscm total mass (optional to qualify for less frequent testing).*[b]	

MWC type	CO level	Averaging time (hours)
• Basis for dioxin/furan limit	GCP and SD/FF/carbon injection.	
MWC Metal Emissions:		
• PM (performance test by EPA Reference Method 5)		
Large and small MWC plants	24 mg/dscm (0.010 gr/dscf).*	
• Opacity (performance test by EPA Reference Method 9)		
Large and small MWC plants	10 percent (6-minute average)	
• Cd (performance test by EPA Reference Method 29)		
Large and small MWC plants	0.020 mg/dscm (8.7 gr/million dscf).*	
• Pb (performance test by EPA Reference Method 29)		
Large and small MWC plants	0.20 mg/dscm (87 gr/million dscf).*	
• Hg (performance test by EPA Reference Method 29)		
Large and small MWC plants	0.080 mg/dscm (35 gr/million dscf) or 85-percent reduction in Hg emissions	
• Basis for PM, opacity, Cd, Pb, and Hg limits		
Large and small MWC plants	See basis for dioxin/furan limit	
MWC Acid Gas Emissions:		
• SO_2 (performance test by CEMS)		
Large and small MWC plants	30 ppmv or 80-percent reduction in SO_2 emissions	
• HCl (performance test by EPA Reference Method 26)		
Large and small MWC plants	25 ppmv or 95-percent reduction in HCl emissions	
• Basis for SO_2 and HCl limits	See basis for dioxin/furan limit.	
Nitrogen Oxides Emissions:		
• NOx (performance test by CEMS)		
Large MWC plants	150 ppmv, except 180 ppmv is allowed for the first year of operation.*	
Small MWC plants	No NO_X control requirement	
• Basis for NO_X limit		
Large MWC plants	SNCR	
Small MWC plants	No NO_X control requirement.	

MWC type	CO level	Averaging time (hours)
Fugitive Ash Emissions:		
• Fugitive emissions (performance test by EPA Reference Method 22)		
Large and small MWC plants	Visible emissions less than 5 percent of the time from the ash transfer system except during maintenance and repair activities.*	
• Basis for fugitive emissions limit	Wet ash handling or enclosed ash handling.	
Siting Requirements:		
• Large and small MWC plants	(1) Siting analysis*, (2) materials separation plan, and (3) public meetings (including response to comments)	
Performance Testing and Monitoring Requirements:		
• Reporting frequency	Annual (semiannual if violation).*	
• Load, flue gas temperature	Continuous monitoring, 4-hour block arithmetic average.	
• CO	CEMS, 4-hour block or 24-hour daily arithmetic average, as applicable.	
• Dioxins/furans, PM, Cd, Pb, HC1, and Hg		
Large MWC plants	Annual stack test (see reduced testing option for low emitters of dioxins/furans).*	
Small MWC plants	Annual or third year stack test.*	
• Opacity	COMS (6-minute average) and annual stack test.	
• SO_2	CEMS, 24-hour daily geometric mean.	

MWC type	CO level	Averaging time (hours)
• NO_X (large MWC plants only)	CEMS, 24-hour daily arithmetic average.	
• Fugitive ash emissions	Annual test.	

*=a significant change since proposal, and the change is discussed in this preamble.

[a] All concentration levels in the table are corrected to 7 percent O_2, dry basis.

[b] Although not part of the dioxin/furan limit, the limit of 13 ng/dscm total mass is equal to about 0.1 to 0.3 ng/dscm TEQ. The optional reduced testing limit of 7 ng/dscm total mass is equal to about 0.1 to 0.2 ng/dscm TEQ.

B. *Significant Issues and Changes to the Proposed Standards* (Issues were marked with the "*" symbol in table 1)

The most significant changes to the standards since proposal are discussed below. Additional rationales for these changes, as well as other changes being made are provided in the promulgation BID (EPA–453/R–95–0136). Some of the changes made that are not discussed below include GCP requirements, monitoring requirements, and reporting and recordkeeping requirements.

1. Applicability

At proposal, an MWC plant of 35 Mg/day capacity that cofired 30 percent (10 Mg/day) or less MSW would have been exempt from the standards. This 30 percent cofiring provision was retained in the final rule. Additionally, a 10 Mg/day exemption has been added to the final rule to exempt all combustion units independent of size that fire only a small amount of MSW. In the final standards, any medical, industrial manufacturing, or other type of waste combustor capable of combusting more than 35 Mg/day MSW but actually combusting less than 10 Mg/day of MSW is not subject to this rule, provided it submits an initial report containing a copy of the plant's federally enforceable permit limiting the amount of MSW that may be combusted by the plant to less than 10 Mg/day and keeps records on the daily weight of MSW fired.

At proposal, a cofired combustor was defined as a unit combusting a fuel feed stream where 30 percent or less was comprised of MSW, as measured on a 24-hour daily basis. Several commenters expressed concern about a cofired status determination being made on a daily basis. For example, some facilities that burn biomass material including yard waste would have difficulty making a determination of cofired status on a daily basis. Biomass material including yard waste (which is MSW) and clean wood (which is not MSW) are often collected together and stored on- or off-site for a period of time and intermixed before being combusted. In such cases, it is difficult or impossible to determine what percentage of the waste combusted daily was yard waste. After considering the public comments, the EPA determined that the definition of cofired combustor should be revised to allow for measuring the percent MSW burned on a calendar quarterly basis. This change is consistent with current waste refuse storage and recordkeeping procedures.

Also under the proposal, MWC plants of 25 to 35 Mg/day capacity were required to submit an initial notification of construction, but they were not subject to the proposed standards or guidelines. Only MWC plants greater than 35 Mg/day capacity were covered by the proposal. As part of the Administrator's "reinventing government" initiative, the initial notification requirement for MWC plants between 25 and 35 Mg/day capacity was removed from the final rule to minimize the reporting requirement for smaller plants. This change reduced reporting and recordkeeping requirements for both the MWC and the EPA, but did not reduce the level of environmental protection provided by the standards and guidelines being adopted today.

Under the proposed standards, clean wood was included in the definition of MSW. Several commenters disagreed with this decision to cover clean wood under the MWC standards. Under the final rule, clean wood is not considered to be MSW. Clean wood includes untreated wood or untreated wood products including clean untreated lumber, tree stumps (whole or chipped), and tree limbs (whole or chipped). Clean wood is exempt from the definition of MSW because available data indicate that combustion of clean wood results in low emission of dioxins/furans, Hg, and other pollutants. Clean wood is predominantly an agricultural, industrial, or other nonmunicipal solid waste; regulation of the combustion of these types of wastes is currently being addressed under a separate rulemaking. Clean wood does not include yard waste, which is covered by the final MWC standards; yard waste includes grass, grass clippings, bushes, shrubs, and clippings from bushes and shrubs that are generated by residential, commercial/retail, institutional, or nonmanufacturing industrial sources as part of maintenance activities associated with yards or other private or public lands.

2. Emission Limits for MWC Metals, Acid Gases, Organics, Nitrogen Oxides, and Ash Fugitive Emissions

Many commenters expressed concern as to whether the proposed emission limits for all regulated pollutants are actually achievable by an MWC. These commenters noted that no single MWC existed with all the controls proposed as MACT (SD/FF/SNCR and carbon injection) and the standards may not be achievable. Since proposal, the EPA has obtained data from 12 new MWC units at 5 MWC plants that have recently begun operation and all are equipped with the full set of controls proposed as MACT (SD/FF/SNCR and carbon injection). Data from these plants show that all proposed emission limits for all pollutants are simultaneously being achieved. Therefore, the EPA remains convinced that properly designed, constructed, maintained, and operated MWC plants can comply with all pollutant emission limits included in the final standards.

For new sources, the MACT floor for each regulated pollutant was established as the emission level achievable by the best controlled source. To determine new source MACT for proposal, the EPA evaluated the performance of SD/FF/SNCR/carbon injection. Since proposal, the EPA obtained additional information regarding the performance of the control technologies determined to be MACT (SD/FF/SNCR/carbon injection). Based on the new information and a reevaluation of the data used for proposal, the EPA revised the achievable performance levels for PM, Cd, Pb, Hg, dioxins/furans, and NO_X. Changes to the MACT floor levels and the selected MACT standards resulting from these reevaluations are discussed below.

a. *MWC Acid Gases.* The MACT floor levels and selected MACT emission limits for MWC acid gases are the same as proposed.

b. *MWC Metals.* Based on comments and data received since proposal, the EPA reassessed the achievable performance levels for PM, Cd, and Pb by SD/FF systems. Based on this reassessment of available data, the selected PM, Cd, and Pb MACT emission limits were revised. For both large and small plants, the PM MACT floor and selected MACT limit were revised to 24 mg/dscm (proposal was 15 mg/dscm). The Cd MACT floor and selected MACT limit were revised to 0.020 mg/dscm (proposal was 0.010 mg/dscm). The Pb MACT floor and selected MACT limit were revised to 0.20 mg/dscm (proposal was 0.10 mg/dscm). The selected MACT limits for all three pollutants were revised because, based on available data, emission levels more stringent than these levels are not considered to be continuously achievable.

The final MACT limits for Hg emissions for large and small plants remain at the same levels as proposed (0.080 mg/dscm or an 85 percent reduction in Hg emissions); however, the MACT floor level was revised. At proposal, the MACT floor for Hg was based on use of an SD/FF system combined with GCP. Carbon injection was not commercially operational at any MWC. At proposal, MACT for Hg was based on use of an SD/FF system in combination with carbon injection. This MACT selection was based on evaluation of emission reductions, costs, and other factors, as described in the proposal preamble (59 FR 48198, September 20, 1994). Several commenters questioned the selection of an Hg MACT limit based on carbon injection when carbon injection was not commercially operated. Since proposal, data have become available for 12 new MWC units initiating operation using carbon injection commercially, and all were meeting the proposed Hg limits. Since carbon injection is now in commercial operation, the EPA revised the final MACT floor for Hg to be based on SD/FF in combination with carbon injection and GCP.

c. *MWC Organics.* The final emission limits for dioxins/furans for new MWC's remain at the same level as proposed; however, the technology basis for the floor level of control has been changed. As discussed in section IV.B.2.b regarding MWC metals (Hg), the EPA reviewed new data received since proposal and concluded that SD/FF combined with GCP and carbon injection is the best emission control technology being used by MWC's for Hg and dioxin/furan control, and is, therefore, the basis of the final MACT floor. The data gathered prior to proposal as well as data for new units operating with these controls show that a dioxin/furan level of 13 ng/dscm is achievable. The final MACT emission limit for dioxins/furans for new units at both large and small plants is equal to the MACT floor and remains at 13 ng/dscm (total mass basis).

The format of the final dioxin/furan emission limit changed from the proposed format. The EPA proposed a dual format for the dioxin/furan emission limit (total or TEQ) and requested comments on the use of this dual format. No commenters agreed with the dual format as proposed. The EPA has selected total mass dioxin/furan emissions in the final standards. The TEQ format is not used. There is no indication that TEQ's would be a better measure of emissions control performance than total dioxins/furans. Furthermore, most test data on which the standards are based were expressed as total dioxins/furans. Additionally, because there have been different methods for calculating TEQ over time and the ratio of total dioxins/furans to TEQ dioxins/furans varies among MWC's, there would be additional uncertainty in using a TEQ data base. Refer to the promulgation preamble (56 FR 5504) for the 1991 subpart Ea standards for additional discussion.

Although not part of the dioxin/furan limit, the limit of 13 ng/dscm total mass is equal to about 0.1 to 0.3 ng/dscm TEQ.

In addition to the final dioxin/furan limit of 13 ng/dscm, a provision has been added to the final standards allowing less frequent dioxin/furan testing for new plants achieving dioxin/furan emission levels lower than 7 ng/dscm. Data for new MWC's using SD/FF/SNCR/carbon injection technology suggest this is a realistic goal for many new MWC's and will encourage MWC's to optimize performance of pollution control systems. Refer to section IV.B.7 for a description of the alternative dioxin/furan testing schedule.

d. *Nitrogen Oxides.* As explained at proposal (59 FR 48198, September 20, 1994), the combination of SD/FF, GCP, and SNCR was the basis of the new source MACT floor for NO_X. These technologies remain the basis for the final NO_X MACT floor. Since proposal, the EPA has obtained additional NO_X data showing that large MWC plants equipped with SNCR can continuously achieve an emission level of 150 ppmv over a 24-hour averaging period. The new data were obtained from the same plant that was the basis of the proposed NO_X emission level of 180 ppmv. The new data are representative of what NO_X emission level can be achieved after a plant has had a period of time to adjust to operation with the SNCR system. Applications of SNCR typically require some site-specific fine-tuning to achieve optimum performance levels. Based on the revised data, a two-phase standard is being adopted. The final NO_X standard for MWC's at large plants allows time to "fine-tune" the SNCR system. The final standard for MWC's at large plants is 180 ppmv (24-hour averaging period) for the first year of operation, and 150 ppmv (24-hour averaging period) thereafter.

The final standards do not require NO_X control for MWC's at small plants.

e. *MWC Fugitive Ash Emissions.* The proposed fugitive ash emission limit allowed no visible emissions from ash handling and transfer points. Several commenters objected to the proposed level of no visible emissions. The commenters were concerned that even where the best ash management practices such as wetting the ash or enclosing transfer systems, there may be short periods of time when visible emissions are observed, such as during maintenance. The proposal was based on about 16 hours of method 22 visible emissions data for ash handling practices at two MWC plants and observations (not using method 22) at two additional MWC plants. Since proposal, the EPA has reviewed visible emission data from other industries that use similar transfer systems. Based on comments received and the review of additional data, the final fugitive ash emission limit was revised to limit visible emissions to no more than 5 percent of the time.

As part of the final fugitive ash emission requirements, an exemption has been provided during maintenance and repair activities, because these necessary activities may require opening of an enclosure that could generate short-term visible emissions.

3. Good Combustion Practices

The proposed standards included CO limits for nine categories of combustor technologies, including, among others, RDF stoker combustors and coal/RDF mixed fuel-fired combustors. Commenters requested clarification on which CO limit applies to a stoker unit that is designed to combust coal and RDF but only combusts RDF. Under the final standards, a spreader stoker unit burning RDF only or cofiring RDF with coal would be subject to the proposed RDF stoker CO limit. To clarify this requirement, the final CO requirements include an additional category of combustor technology referred to as "spreader stoker coal/RDF mixed fuel-fired combustors," which are assigned the same CO limit and averaging time as RDF stoker combustors (150 ppmv, 24-hour averaging time). The final standards further clarify that the category of combustors referred to in the proposed standards as coal/RDF mixed fuel-fired combustors only includes pulverized coal/RDF mixed fuel streams, and the CO limit and averaging time remains the same as proposed (150 ppmv, 4-hour averaging time).

4. Operator Training and Certification

The proposed standards required full ASME certification of chief facility operators and shift supervisors within 6 months of startup of an affected MWC. Various commenters including ASME pointed out that the proposed standards did not include sufficient time for ASME to conduct full certification exams for all MWC operators. After considering these comments, the EPA revised the operator training requirements to allow additional time for ASME (or State) certification exams. In the final standards, chief facility operators and shift supervisors at new MWC plants must obtain ASME or State-approved provisional certification within 1 year after promulgation or 6 months after startup, whichever is later. In addition, by this same date (1 year after promulgation or 6 months after startup, whichever is later), the same personnel must be either fully certified or scheduled with ASME or the State to take a full certification exam (instead of actually obtaining full certification within 1 year, as proposed).

5. Air Curtain Incinerators

No changes were made to the proposed standards for air curtain incinerators. As discussed above in section IV.B.1, the final standards do not cover combustion of clean wood; therefore, air curtain incinerators combusting only clean wood are not covered by the standards.

6. Siting Analysis/Materials Separation Plan

Various commenters said the proposed siting analysis was not consistent with section 129 of the Clean Air Act. Commenters also argued that the proposed siting requirements were either too stringent or not stringent enough. The siting analysis in the final rule has been reworded to allow for a consideration of alternatives, on a site-specific basis, to minimize to the maximum extent practicable potential risks to the public health or the environment. These changes ensure consistency with section 129(a)(3) of the Clean Air Act.

7. Compliance and Performance Testing

Both the proposed and final standards require all plants to perform annual performance tests for dioxin/furan emissions. However, a provision for less frequent dioxin/furan testing has been added to the final rule to encourage MWC plants to achieve emission levels significantly lower than 13 ng/dscm. By achieving low dioxin/furan emissions, they would qualify for less frequent testing and thereby reduce their testing costs. If all MWC units at an MWC plant achieve 7 ng/dscm dioxins/furans or less during performance testing for 2 consecutive years of operation, the plant can elect to conduct dioxin/furan testing on one unit per year. The plant must test units in sequence (e.g., a 3-unit plant would test unit 1 (year 1), unit 2 (year 2), unit 3 (year 3), unit 1 (year 4), etc.). If an annual performance test conducted on any unit indicates total dioxin/furan emissions are greater than 7 ng/dscm, the plant must revert to testing all units annually beginning the following year until the 2-year compliance record is reestablished.

For small plants, two options are provided. The one-unit incentive schedule discussed above is provided for dioxin/furan testing. An alternative 3-year testing option is also provided for small plants. The alternative 3-year testing option allows small plants to conduct performance tests for dioxins/furans, as well as PM, HCl, Cd, Pb, and Hg only once every 3 years if the plant demonstrates compliance with all pollutant emission limits for 3 consecutive years and continues to demonstrate compliance every third year. The owner or operator of a small plant may choose either option for performance testing.

8. Reporting and Recordkeeping Requirements

Reporting requirements have been changed from quarterly as proposed to annual (semiannual if any emission limits or operating parameters are violated) to reduce the burden on affected plants. In recognition of the cost associated with reporting requirements, the EPA reconsidered the effectiveness of quarterly versus annual reporting for the purpose of determining compliance. After careful reconsideration, the EPA has concluded that annual reporting will provide adequate information for most plants. [The EPA notes, however, that once an MWC is required to obtain a Title V Operating Permit, the Title V reporting requirements given in Section 504(a) of the Act will supersede the annual reporting requirements presented above. Section 504(a) requires permittees to submit monitoring reports to the permitting authority no less often than every six months. See 42 U.S.C. 7661c(a).]

C. Impacts of the Standards

The final standards can be achieved by utilizing any technology. The basis for the MACT-based limits at both proposal and promulgation remain the combination of GCP/SD/FF and carbon injection for new large and small plants, and the additional use of SNCR at large plants. Because the technology basis for the final standards is the same as at proposal, the impacts analysis presented at proposal has not been revised. Table 2 provides a brief summary of the air and cost impacts of the standards. The summary in table 2 provides impacts estimates relative to two baseline scenarios: a pre-1989 baseline (typical control prior to the 1991 subpart Ea standards) and a 1991 baseline (typical control under the 1991 subpart Ea standards). Refer to the preamble to the proposed standards (59 FR 48198) for a detailed summary of these air and control cost impacts, as well as a discussion of the water, solid waste, energy, and economic impacts of the rule. The national impacts estimates provided in table 2 and discussed in the proposal preamble represent the EPA's estimate of the worst case of impacts that would result from implementation of the standards. Recent data suggest a reduction in the construction of new MWC's. This would reduce the cost of the standards.

TABLE 2.—IMPACTS OF THE CURRENT SUBPART EA AND PROMULGATED SUBPART EB STANDARDS

Parameter	Increment of promulgated standards over the 1991 standards	1991 Standards[a]	Total[b]
New MWC's subject to Standards in the Fifth Year After Promulgation:			
Combustion capacity (10^6 Mg/yr)	0.8	16.8	17.6
Number of MWC plants	24	48	72
Cost (1990 Dollars):			
Capital cost ($\$10^6$)	156	613	769
Annualized cost ($\$10^6$/yr)	43	157	200
Average cost increase ($/Mg MSW combusted)	1.95	11.55	13.50
Annual Emissions Reduction (Mg/yr):			
SO_2	3,000	35,000	38,000
Hcl	4,000	46,000	50,000
PM	800	5,700	6,500
Cd	1	9	10
Pb	17	140	157
Hg	18	9	27
No_x	200	10,300	10,500
Total dioxins/furans (kg/yr)	1	28	29

[a] The impacts are based on a pre-1989 baseline (i.e., a baseline prior to the effective date of the subpart Ea standards.

[b] The total impacts are calculated by adding the incremental impacts of the promulgated standards (subpart Eb) to the impacts of the 1991 standards (subpart Ea). These impacts would be equivalent to the total impacts of the promulgated standards over a pre-1989 baseline.

A number of comments were received on the possible effects on EPA's costing analysis following the recent Supreme Court decision that "flow control" is unconstitutional. The EPA considered the effect of flow control on the financing of new MWC's. In summary, the EPA finds that if tipping fees are raised to cover the increased costs of these regulations, then the lack of "flow control" requirements will likely result in fewer MWC's being constructed and a shift of wastes to other disposal options. The impacts of the flow control decision is likely to be very place-specific depending on the relative tipping fees of MWC's and other disposal options, transportation costs, and institutional factors.

V. Guidelines for Existing Sources (1995)—Summary of the Guidelines, Impacts of the Guidelines, and Significant Issues and Changes to the Proposed Guidelines

This section presents a summary of the final guidelines, including identification of the source category and pollutants being regulated, and presentation of the final emission limits and their associated performance testing, monitoring, recordkeeping, and reporting requirements and compliance schedules. This section also provides a discussion of the most significant issues and changes to the proposed guidelines. Also mentioned are the impacts of the final guidelines.

The EPA strongly believes (based on emissions data from MWC's which incorporate the necessary control technology) that the air pollution control technology to be retrofitted to existing MWC's to meet the emission guidelines will reduce actual emissions to levels significantly below the limits established by the emission guidelines. There remains, however, some uncertainty as to the actual performance level that will be achieved on a continuous basis by the control technology when installed at large MWC plants where ESP-based scrubber systems are used. Therefore, the dioxin/furan emission limits included in the emission guidelines for some types of MWC's, while still significantly below the MACT floor, are slightly less stringent than those included in the proposal.

The EPA will track the implementation of the guidelines and annual performance test results in order to monitor the level of emissions including dioxin/furan control actually achieved by the guidelines. Additionally, the EPA may conduct supplemental dioxin/furan tests. The EPA will also meet with MWC owners and operators as needed to review the performance of the air pollution control technology and the effectiveness of maintenance and operational practices in order to provide information that will lead to optimal performance of emission control technology, and will work with MWC owners and operators to assure a continued high level of public safety.

A. Summary of the Guidelines

The final guidelines require States to develop emission regulations limiting air emissions from each existing MWC unit located at a MWC plant that has an aggregate plant capacity to combust more than 35 Mg/day of MSW, for which construction commenced on or before September 20, 1994.

The aggregate design capacity of all existing MWC's at an MWC plant shall be considered in determining: (1) Whether a plant is subject to the guidelines; and (2) what control levels are applicable. The capacity of new MWC's (i.e., those that commenced construction after September 20, 1994 or that commenced modification or reconstruction after June 19, 1996 that are located at the MWC plant are not considered in determining applicability of the guidelines but would be considered in determining the applicability of subpart Eb (standards for new sources). Only MWC units constructed before September 20, 1994 are considered for determining the applicability of the guidelines. Modification of an existing MWC (or funds spent) to comply with the emission guidelines would not be considered in determining if an existing MWC unit was subject to the standards for new MWC's (subpart Ea or Eb).

Municipal waste combustion plants with a federally enforceable permit to combust less than 10 Mg/day of MSW are exempt from the requirements of the guidelines as long as they submit a notification of exemption and keep daily records of the weight of MSW combusted.

Cofired combustors (i.e., that combust less than 30 percent MSW) located at a plant with an aggregate plant capacity greater than 35 Mg/day are exempt from the requirements of the guidelines as long as they submit a notification of exemption and keep records of the weight of MSW combusted on a calendar quarter basis.

The definitions of MWC and MSW have been revised but are the same for the guidelines as for the standards, and are discussed in the summary of the standards in section IV.A of this notice.

A summary of the final guidelines is presented in table 3.

TABLE 3. SUMMARY OF GUIDELINES FOR EXISTING MWC'S (SUBPART CB) [a]

[* indicates a significant change since proposal and the change is discussed in this preamble]

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. 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.[b]

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

- Applies to large and small MWC plants.
- A site-specific operator training manual is required to be developed and made available for MWC personnel.
- 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.
- 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).*
- 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.
- 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.
- 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:

MWC type	CO level	Averaging time (hours)
Modular starved-air and excess-air	50 ppmv	4
Mass burn waterwall and refractory	100 ppmv	4
Mass burn rotary refractory	100 ppmv	24
Fluidized-bed combustion	100 ppmv	4
Pulverized coal/RDF mixed fuel-fired	150 ppmv*	4
Spreader stoker coal/RDF mixed fuel-fired	200 ppmv*	24
RDF stoker	200 ppmv	24
Mass burn rotary waterwall	250 ppmv	24

MWC Organic Emissions (measured as total mass dioxins/furans):	
• Dioxins/furans (performance test by EPA Reference Method 23)	
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]
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]
Small MWC plants	125 ng/dscm total mass (mandatory) or 30 ng/dscm total mass (optional to qualify for less frequent testing).* [c]
• Basis for dioxin/furan limits	
Large MWC plants	GCP and SD/ESP or GCP and SD/FF, as specified above.
Small MWC plants	GCP and DSI/ESP.
MWC Metal Emissions:	
• PM (performance test by EPA Reference Method 5)	
Large MWC plants	27 mg/dscm (0.012 gr/dscf).
Small MWC plants	70 mg/dscm (0.030 gr/dscf).*
• Opacity (performance test by EPA Reference Method 9)	
Large and small MWC plants	10 percent (6-minute average)
• Cd (performance test by EPA Reference Method 29)	
Large MWC plants	0.040 mg/dscm (18 gr/million dscf).
Small MWC plants	0.10 mg/dscm (44 gr/million dscf).
• Pb (performance test by EPA Reference Method 29)	
Large MWC plants	0.49 mg/dscm (200 gr/million dscf).*
Small MWC plants	1.6 mg/dscm (700 gr/million dscf).
• Hg (performance test by EPA Reference Method 29)	
Large and small MWC plants	0.080 mg/dscm (35 gr/million dscf) or 85-percent reduction in Hg emissions.
• 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.
MWC Acid Gas Emissions:	
• 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.
• 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.
• Basis for SO_2 and HCl limits	
Large and small MWC plants	See basis for MWC metals.
Nitrogen Oxides Emissions	
• NO_X (performance test by CEMS)	
Large MWC plants:	
Mass burn waterwall	200 ppmv[b].
Mass burn rotary waterwall	250 ppmv[b].
Refuse-derived fuel combustor	250 ppmv[b].
Fluidized bed combustor	240 ppmv[b].
Mass burn refractory	No NO_X control[b] requirement
Other	200 ppmv[b].
Small MWC plants	No NO_x control requirement.
• 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:	
• Fugitive Emissions (performance test by EPA Reference Method 22)	
Large and small plants	Visible emissions 5 percent of the time from ash transfer systems except for maintenance and repair activities.*
• Basis for fugitive emission limit	Wet ash handling or enclosed ash handling.
Performance Testing and Monitoring Requirements:	
• Reporting frequency	Annual (semiannual if violation)*.
• Load, flue gas temperature	Continuous monitoring, 4-hour block arithmetic average
• CO	CEMS, 4-hour block or 24-hour daily arithmetic average, as applicable
• Dioxins/furans, PM, Cd, Pb, HCl, and Hg	
Large MWC plants	Annual stack test.*
Small MWC plants	Annual or third year stack test.
• Opacity	COMS (6-minute average) and annual stack test.
• SO_2	CEMS, 24-hour daily geometric mean.
• NO_X (large MWC plants only)	CEMS, 24-hour daily arithmetic average.
• Fugitive ash emissions	Annual test.*
Compliance Schedule:	

- Large MWC plants

  State plans are required to include one of the following three retrofit schedules for compliance with regulatory 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 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; or (3) closure in 1 to 3 years following approval of the State plan, 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 submitted to EPA must contain post-1990 test data for dioxins/furans 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).
- Small MWC plants

  State plans 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.
- State plans 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 are required to specify that owners or operators of MWC's comply with the operator training and certification requirements by 6 months after startup or 1 year after State plan approval by the EPA, whichever is later, for large plants and by 6 months after startup or 18 months after State plan approval by the EPA, whichever is later, for small plants.

*=significant change since proposal, and the change is discussed in this preamble.

[a] All concentration levels in the table are converted to 7 percent O_2, dry basis.

[b] 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 requirements. State plans may also establish a program to allow emissions trading between non-contiguous 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.

[c] 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 0.3 to 0.8 ng/dscm TEQ, 0.7 to 1.4 ng/dscm TEQ, and 1.7 to 2.9 ng/dscm TEQ, respectively. The optional reduced testing limits of 15 ng/dscm and 30 ng/dscm total mass are equal to about 0.1 to 0.3 ng/dscm TEQ and 0.3 to 0.8 ng/dscm TEQ, respectively.

B. Significant Issues and Changes to the Proposed Guidelines

The most significant changes to the proposed guidelines are discussed below. Rationales for these changes as well as other changes not discussed below are provided in the promulgation BID (EPA–453/R–95–0136). Issues not discussed below include additional changes to GCP requirements, monitoring requirements, recordkeeping and reporting requirements, and compliance schedules.

1. Designated Facilities

Under the final guidelines, any medical, municipal, industrial manufacturing, or other type of waste combustion plant capable of combusting greater than 35 Mg/day MSW but actually combusting less than 10 Mg/day of MSW is not a designated facility, as long as the plant submits an initial report and keeps certain records. This exemption was not included in the proposed guidelines. This exemption is identical to the exemption in the standards for new sources. Section IV.B.1 provides further discussion of the exemption.

Under the final guidelines, a cofired combustor is defined as a unit combusting a fuel feed stream 30 percent or less MSW, as measured on a calendar quarterly basis. At proposal, determination of status as a cofired combustor was measured on a daily basis. This change is identical to the change made in the standards. Refer to section IV.B.1 for further discussion on the change.

The initial reporting requirement in the proposed guidelines for MWC plants with combustion capacity greater than 25 Mg/day but less than or equal to 35 Mg/day is not included in the final guidelines. Both the proposed and final guidelines exempt plants with capacity less than 35 Mg/day. Also, an exemption for combustion of clean wood or clean wood products is included in the final guidelines. This exemption is identical to the exemption in the standards. Refer to section IV.B.1 for discussion of EPA's rationale for this exemption.

2. Emission Limits for MWC Metals, Acid Gases, Organics, and Nitrogen Oxides, and Ash Fugitive Emissions

For existing MWC's, the MACT floor levels and the emission limits for several pollutants have been revised since proposal. See the proposal preamble (59 FR 48228, September 20, 1994), the promulgation BID (EPA–453/R–95–0136), and docket A–90–45 for additional details on the MACT floor analysis methodology and the selection of MACT.

Since proposal, the EPA revised the MACT floors for existing plants based on new permit information received and an updated inventory of operating MWC plants. This revision resulted in revised MACT floor levels for various pollutants for small and large MWC plants. The revised MACT floor pollutant levels for large plants have resulted in more stringent MACT emission limits for SO_2, HCl, and Pb. In addition, the revised MACT floors and emission limits for NO_X for large plants include emission levels based on combustor type. Revisions to the MACT floor that resulted in revisions to the selected MACT level of control for specific pollutants are discussed below.

While the final emission limits are somewhat different from proposal, the limits can be achieved using the same control technologies that were the basis of the proposed emission limits. The technology bases for large and small plants are summarized in table 3.

a. *MWC Acid Gases.* Based on the new information and test data received after proposal and the revised MACT floor analysis, the EPA revised the MACT limits for SO_2 and HCl for the final guidelines for large plants.

The revised SO_2 MACT floor for large plants is 31 ppmv. The final SO_2 emission limit for large plants, which was set at the MACT floor level of 35 ppmv at proposal, is 31 ppmv because of the change in the MACT floor at promulgation.

The MACT-based SO_2 limit of 80 ppmv for small plants has not changed from proposal; however, the SO_2 MACT floor for small plants is revised to 98 ppmv. Because the revised floor is more stringent than the proposal floor (the floor at proposal was 118 ppmv), the EPA's conclusion that acid gas controls will be needed to achieve the floor remains the same. In addition, the EPA's conclusion that a lower emission rate of 80 ppmv is achievable at minimal cost also remains the same. Therefore, the final SO_2 emission limit for small plants remains at 80 ppmv.

The revised HCl MACT floor for large plants is 31 ppmv. The final HCl emission limit for large plants, which was set at the MACT floor level of 35 ppmv at proposal, is 31 ppmv because of the change in the MACT floor at promulgation.

b. *MWC Metals.* Based on the new information and test data received after proposal and the revised MACT floor analysis, the Pb limit for large plants was revised for the final guidelines. The proposed Pb MACT emission level for large plants was 0.50 mg/dscm; however, the revised Pb MACT floor emission level for large plants is 0.49 mg/dscm. Therefore, the final Pb emission limit for large plants has been revised to 0.49 mg/dscm.

c. *MWC Organics.* The dioxin/furan emission limits for large and small plants were revised since proposal. The MACT floor for dioxins/furans for MWC's at large plants is 126 ng/dscm total mass. As documented in the preambles to these proposed guidelines (59 FR 48228, September 20, 1994) and the promulgated subpart Ca guidelines (56 FR 5514, February 11, 1991), in combination with GCP, SD/ESP systems can achieve dioxin/furan total mass emissions of 60 ng/dscm and SD/FF systems can achieve dioxin/furan total mass emissions of 30 ng/dscm. Therefore, the MACT floor of 126 ng/dscm can be achieved with either SD/ESP or SD/FF systems.

When determining the final MACT standard (which may be more stringent than the MACT floor), section 129(a)(2) requires the Administrator to consider certain factors, including the cost of achieving the emission reduction. In the Administrator's judgment, it would be prohibitively expensive and unreasonable to require existing MWC's with ESP's that can meet a dioxin/furan emission limit of 60 ng/dscm to retrofit an SD/FF in order to achieve an additional 30 ng/dscm reduction in emissions. For example, at a typical 1,400 Mg/day MWC plant already equipped with an SD/ESP, the capital cost to remove the ESP and retrofit a new FF would be about $14 million. This cost would be in addition to paying the remaining debt for a relatively new ESP (about $5 million including interest payments) and would result in a relatively small increase in control device efficiency.

For the final rule, the Administrator considered several regulatory options more stringent than the MACT floor; however, because of this high pollution control device retrofit cost, the Administrator decided to set separate MACT limits for MWC's with ESP-based control systems and MWC's with nonESP-based control systems. For MWC's with ESP-based control systems, the EPA selected a MACT level of 60 ng/dscm total mass, based on the performance of SD/ESP systems. For MWC's using or retrofitting nonESP-based control systems, the EPA selected a MACT level of 30 ng/dscm total mass, based on the performance of SD/FF systems. The number of MWC plants that will comply by using an SD/ESP will be limited (only about 10 percent of the MWC plants). The vast majority of MWC's are expected to use SD/FF systems to comply.

The MACT floor for dioxins/furans at small MWC plants is 1,500 ng/dscm total mass. As with large MWC plants, the final emission guidelines limit for dioxins/furans is more stringent than the MACT floor. The final guideline limit for dioxins/furans at small MWC plants is 125 ng/dscm total mass and is based on DSI/ESP technology.

The final MACT limit for Hg is based on use of activated carbon injection. Activated carbon injection technology used in combination with DSI/ESP, SD/ESP, or SD/FF technology is expected to result in supplemental dioxin/furan control, reducing dioxin/furan emissions from these control systems by more than 50 percent. The final MACT guideline levels for dioxins/furans for existing units at small and large plants do not consider supplemental dioxin/furan control from activated carbon injection because an insufficient amount of emissions data exist to adequately determine the performance level of activated carbon injection retrofitted to existing MWC air pollution control systems. Nonetheless, it is expected that the use of activated carbon injection will result in additional reduction of dioxins/furans to levels below the emission limits in the final guidelines.

As with the standards for new MWC's, the final guidelines include a provision that allows less frequent dioxin/furan testing if a plant is achieving a significantly lower level of dioxin/furan emissions (15 ng/dscm for MWC's at large plants and 30 ng/dscm for MWC's at small plants). This option will encourage optimal performance and minimal emissions. Refer to section IV.B.7 for a description of the alternative testing schedule.

Relative to the proposal, the optional TEQ format of the proposed dioxin/furan emission limits was removed in the final standards, as explained in section IV.B.2.c. 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 0.3 to 0.8 ng/dscm TEQ, 0.7 to 1.4 ng/dscm TEQ, and 1.7 to 2.9 ng/dscm TEQ, respectively.

d. *Nitrogen Oxides*. After considering data submitted by commenters regarding requiring SNCR for MWC units at large plants where some could already achieve the MACT floor level without SNCR, the EPA changed the proposed NO_X emission limit of 180 ppmv for all large plants. The NO_X MACT floor was revised by calculating the MACT floor separately for each subcategory of combustor type, and the MACT limits are being promulgated at levels equivalent to the MACT floors for each combustor type. The final guideline MACT limits are: 200 ppmv for mass burn waterwall combustors; 250 ppmv for refuse-derived fuel combustors; 250 ppmv for mass burn rotary waterwall combustors; 240 ppmv for fluidized bed combustors; no limit for mass burn refractory combustors; and 200 ppmv for other combustors not listed above.

In addition, the EPA has revised the emission guidelines to allow States to include in their State plans options for averaging of emissions from units within a large MWC plant, and for trading emissions between MWC plants. The plant average emission limits for units being included in an emissions averaging plan within a plant are approximately 10 percent less than the MACT limits for each combustor type, as follows: 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 rotary refractory combustors). Emissions trading between units at noncontiguous plants must be consistent with the requirements of the Open Market Trading Rule for Ozone Smog Precursors, proposed August 3, 1995 (60 FR 39668), as finally promulgated. Until the Open Market trading rule is finalized, it is not possible to reference the rule in the guidelines text. In the interim, the guideline text indicates NO_X emissions trading must be approved by the Administrator prior to implementation. After the Open Market Trading Rule is finalized, it is preapproved for use under the guidelines.

e. *Fugitive Ash Emissions*. The emission limit for fugitive ash emissions under the final guidelines is visible emissions no more than 5 percent of the time from ash conveying and transfer systems at MWC's. An exemption for maintenance and repair activities has been added. These same changes were made to the standards for new sources. See the discussion of the standards in section IV.B.2.e for an explanation of the reasons for these changes.

3. Good Combustion Practices

The final CO guidelines include an additional category of combustor technology referred to as "spreader stoker coal/RDF mixed fuel-fired combustors," which is assigned the same CO limit and averaging time as the RDF stoker combustor category (200 ppmv, 24-hour averaging time). In the final guidelines, the category of combustors referred to in the proposal as "coal/RDF mixed fuel-fired combustors" was revised to "pulverized coal/RDF mixed fuel-fired combustors," and the CO limit and averaging time remains the same as proposed (150 ppmv, 4-hour averaging time). These same changes were made to the standards for new sources. See the discussion of the standards in section IV.B.3 for an explanation of the reasons for these changes.

4. Operator Training and Certification

As discussed in section IV.B.4 for the standards for new sources, the EPA has clarified the provisional certification requirements and revised the schedule for full certification of chief facility operators and shift supervisors to allow sufficient time to schedule exams. As stated in the proposal preamble, a State approved ASME-equivalent certification program may be substituted for ASME certification.

For large plants, the final guidelines specify that a State plan must require chief facility operators and shift supervisors to obtain ASME provisional certification by 1 year after State plan approval or 6 months after startup, whichever is later. In addition, a State plan must require that, by the same date, these personnel obtain full certification or be scheduled with ASME to take the ASME full certification exam (instead of actually obtaining full certification within 1 year as proposed).

For small plants, the final guidelines specify that a State plan must require chief facility operators and shift supervisors to obtain ASME provisional certification by 18 months after State plan approval or 6 months after startup, whichever is later. In addition, a State plan must require that, by the same date, these personnel obtain full certification or be scheduled with ASME to take the ASME full certification exam (instead of actually obtaining full certification within 1 year as proposed).

5. Air Curtain Incinerators

No changes were made to the proposed guidelines for air curtain incinerators. As discussed in section V.B.1, the final guidelines do not cover combustion of clean wood; therefore, air curtain incinerators combusting only clean wood are not covered by the guidelines.

6. Compliance and Performance Testing

Under the final guidelines, State plans must specify that all plants are required to perform annual performance testing for dioxin/furan emissions. However, a provision for less frequent testing has been added to encourage plants to imize performance and achieve emission levels significantly lower than the dioxin/furan emission limits in the final guidelines. State plans may require that, to take advantage of this provision, existing MWC's must meet a dioxin/furan level of 15 ng/dscm (large plants) or 30 ng/dscm (small plants), for 2 consecutive years. Refer to the discussion on the standards for new MWC's under section IV.B.7 for a description of this reduced testing schedule.

7. Reporting and Recordkeeping Requirements and Compliance Schedules

Reporting requirements have been changed from quarterly to annual (semiannual if exceeding the emission limit for any pollutant) to reduce the economic burden on MWC's. Refer to section IV.B.8 for an explanation of the reasons for this change.

The EPA revised the proposed compliance schedule for large and small plants to allow more time for small plants to comply with the guidelines and to clarify the schedule for plants that select to close down operation rather than retrofit to comply with the guidelines. The final compliance schedule is as follows. For large MWC plants, State plans may allow three alternative compliance schedules: (1) Full compliance or closure within 1 year following 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 1 to 3 years following 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; or (3) closure in 1 to 3 years following approval of the State plan, 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 submitted to EPA must include post-1990 test data for dioxins/furans for all MWC units at large plants under the schedule. For small MWC plants, State plans must require full compliance or closure in up to 3 years following issuance of a revised construction or operation permit if a permit modification is required, or 3 years following approval of the State plan if a permit modification is not required.

C. Impacts of the Guidelines

The final guidelines can be achieved by designated facilities that utilize the same control technologies that were the basis for the proposed guidelines. The basis for the MACT guidelines selected at both proposal and promulgation is GCP/SD/ESP(or FF)/SNCR and carbon injection for large plants and GCP/DSI/ESP and carbon injection for small plants. Because the technology basis for the final guidelines is the same as at proposal, the impacts analysis presented at proposal has not been revised for the promulgated rule. Table 4 provides a brief summary of the air and cost impacts of the guidelines. The summary in table 4 provides impacts estimates based on two baseline scenarios: A pre-1989 baseline (control level prior to the 1991 subpart Ca guidelines) and a 1991 baseline (control level after the 1991 subpart Ca guidelines.) Refer to the preamble to the proposed guidelines (59 FR 48228) for a detailed summary of these air and control cost impacts, as well as a discussion of the water, solid waste, energy, and economic impacts of the guidelines.

TABLE 4.—IMPACTS OF THE 1991 SUBPART CA AND PROMULGATED SUBPART CB GUIDELINES

Parameter	1991 subpart Ca guidelines[a]	Promulgated 1995 subpart Cb guidelines[a]	Increment of promulgated 1995 subpart Cb guidelines over the 1991 subpart Ca guidelines[b]
Characteristics of Existing MWC's:			
Combustion capacity (10^6 Mg/yr)	35.9	39.0	3.1
Number of MWC plants	158	179	21
Cost (1990 Dollars):			
Capital cost ($\$10^6$)	888	2,100	1,212
Annualized cost ($\$10^6$/yr)	168	445	277
Average cost increase ($/Mg MSW combusted)	6.40	13.60	7.20
Annual Emissions Reduction (Mg/yr):			
SO_2	25,000	43,000	18,000
HCl	36,000	56,000	20,000
PM	1,100	3,100	2,000
Cd	2	5	3
Pb	30	83	53
Hg	11	47	36
NO_X	0	19,000	19,000
Total dioxins/furans (kg/yr)	117	157	40

[a] The impacts are based on a pre-1989 baseline (i.e., a baseline prior to the effective date of the subpart Ca guidelines).

[b] The impacts are calculated by subtracting the impacts of the 1991 subpart Ca guidelines from the impacts of the promulgated 1995 subpart Cb guidelines (based on a pre-1989 baseline).

The national impacts estimates provided in table 4 and discussed in the proposal preamble represent EPA's estimate of the upper limit of impacts that would result from implementation of the guidelines. To the extent that any existing MWC's close rather than comply with the guidelines or switch to other disposal options that may cost less, the national costs will be lower and air emissions will be less.

A number of comments were received on the possible effects on EPA's costing analysis following the recent Supreme Court decision that "flow control" is unconstitutional. The EPA considered the effect of flow control on the financing of existing MWC's. In summary, the EPA finds that if MWC's raise tipping fees to cover the increased costs of these regulations, then the lack of "flow control" will likely result in a shift of some wastes to other disposal options. The combined impacts of no flow control and increased tipping fees on individual MWC's and municipalities are likely to be very place-specific depending on the relative tipping fees of MWC's and other disposal options, transportation costs, and institutional factors. If tipping fees are not raised to offset emission control costs, then operators of MWC's will have to finance the costs of the regulations out of current revenues.

The EPA has identified several ways that State and local governments can guarantee a continued source of MSW for the MWC's and provide funds from the general revenue to support the operation of MWC facilities, accomplishing some of the outcomes that flow control can produce, including: (1) Government provision of collection services; (2) contractor provision of collection services under government contract; (3) franchising collection and hauling to designated facilities; (4) subsidizing facilities from the general revenues; and (5) supporting integrated solid waste management programs from the general revenue.

VI. Administrative Requirements

This section addresses the following administrative requirements: Docket, Paperwork Reduction Act, Executive Orders 12866 and 12875, Unfunded Mandates Act, Regulatory Flexibility Act, and Clean Air Act Procedural Requirements.

A. Docket

The docket is an organized and complete file of all the information considered in the development of this rulemaking. The principal purposes of the docket are: (1) To allow interested parties to identify and locate documents so that they can effectively participate in the rulemaking process; and (2) to serve as the record in case of judicial review, except for interagency review material. 42 U.S.C. § 7607(d)(7)(A). The docket number for this rulemaking is A–90–45. Docket No. A–89–08 also includes background information for this rulemaking that supported the proposal and promulgation of the subpart Ea standards and subpart Ca guidelines.

B. Paperwork Reduction Act

The information collection requirements in this rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared by EPA (ICR No. 1506.5) and a copy may be obtained from Sandy Farmer, OPPE Regulatory Information Division; U.S. Environmental Protection Agency (2136); 401 M St., S.W.; Washington, DC 20460 or by calling (202) 260–2740. This ICR document is also available on the EPA's TTN Clean Air Act Amendments electronic bulletin board. See the SUPPLEMENTARY INFORMATION section of this preamble for information on accessing EPA's TTN electronic bulletin board.

The information required to be collected by this rule is necessary to identify the regulated entities who are subject to the rule and to ensure their compliance with the rule. The recordkeeping and reporting requirements are mandatory and are being established under authority of Section 114 of the Act. All information submitted as part of a report to the Agency for which a claim of confidentiality is made will be safeguarded according to the Agency policies set forth in Title 40, Chapter 1, part 2, subpart B—Confidentiality of Business Information (see 40 CFR 2; 41 FR 36902, September 1, 1976, amended by 43 FR 39999, September 28, 1978; 43 FR 42251, September 28, 1978; 44 FR 17674, March 23, 1979).

The annual reporting and recordkeeping burden presented in this ICR document reflects only part of the burden imposed by this rule. The rest of the burden was presented to and approved by the OMB in an ICR document in 1991 for the subpart Ea NSPS promulgated in February 1991. The ICR document that accompanied the subpart Ea rulemaking summarized the reporting and recordkeeping requirements that MWC owners and operators of large MWC units are required to follow to demonstrate compliance with the 1991 NSPS. As explained elsewhere in this document, the Clean Air Act Amendments were passed by Congress in 1990, and they included section 129 that directs the Administrator to extend the NSPS to small MWC plants, as well as to include emission limits for additional pollutants and siting requirements. This ICR document for subpart Eb presents this additional burden imposed by section 129 of the Act, by summarizing the total annual burden on small plants (i.e., for the reporting and recordkeeping requirements associated with all pollutant emission limits and siting) and the additional annual burden on large MWC plants (i.e., only for requirements associated with Cd, Pb, Hg, and fugitive ash emission limits and siting).

The total annual reporting and recordkeeping burden summarized in this ICR document for this collection averaged over the first 3 years of NSPS application to new MWC's is estimated to be about 69,700 person hours per year. This would be the estimated annual burden for 64 respondents (i.e., MWC units). This is a worst-case burden estimate, as discussed under section IV.C. If fewer MWC units are constructed than have been projected, then the burden will be less than reported here. The average burden per respondent is about 1,100 person hours per year. The rule requires an initial one-time notification from each new MWC regarding all pollutant emission levels and siting and subsequent annual compliance reports regarding all pollutant emission levels. Additionally, if any of the pollutant emission limits are exceeded, respondents would be required to submit semi-annual reports. The rule includes continuous monitoring requirements for SO_2, opacity, CO, CO_2, O_2 and annual stack testing requirements for PM, dioxins/furans, opacity, HCl, Cd, Pb, Hg, and fugitive ash. Efforts were made to reduce the burden on small plants by allowing them to test emissions once every 3 years instead of annually if they demonstrate that they consistently meet the emissions requirements. This burden estimate includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

Comments on the ICR document are requested, including the Agency's need for the information presented in this ICR document, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden. Send comments on the ICR to the Director, OPPE Regulatory Information Division; U.S. Environmental Protection Agency (2136); 401 M St. S.W.; Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th St. N.W.; Washington, DC 20503; marked "Attention: Desk Officer for EPA". Include the ICR number in any correspondence. Since the OMB is required to make a decision concerning the ICR between 30 and 60 days after December 19, 1995, a comment to OMB is best assured of having its full effect if OMB receives it by January 18, 1996. The EPA will publish a response to

MB and public comments on the information collection requirements contained in this proposal in a subsequent Federal Register notice.

C. Executive Order 12866

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the EPA must determine whether the regulatory action is "significant," and therefore, subject to OMB review and the requirements of the Executive Order. The Order defines "significant" regulatory action as one that is likely to lead to a rule that may:

(1) Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, the promulgated standards for new sources will not be a "significant" rule because the annual effect on the economy is expected not to exceed $43 million over the cost of the existing subpart Ea standards. However, the EPA considers these promulgated standards to be "significant" because of their relationship to the guidelines for MWC's that are also being promulgated today. The final guidelines will cost $450 million per year or less based on a baseline prior to the effective date of the subpart Ea standards. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations are documented in the public docket for this rulemaking.

D. Unfunded Mandates Act

Under section 202 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act"), signed into law on March 22, 1995, the EPA must prepare a statement to accompany any rule where the estimated costs to State, local, or tribal governments, or to the private sector, will be $100 million or more in any 1 year. Section 203 requires the EPA to establish a plan for informing and advising any small governments that may be significantly or uniquely impacted by the rule. Under section 205(a), the EPA generally must select the "least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule" and is consistent with statutory requirements. The EPA has complied with section 205 of the Unfunded Mandates Act, by promulgating a rule that is the most cost-effective alternative for regulation of these sources that meets the statutory requirements under the Clean Air Act. For Hg and dioxins/furans, the EPA adopted standards that are more stringent than the MACT floor level of control. In the case of dioxins/furans, the EPA concluded that a standard more stringent than the MACT floor can be achieved at little or no cost, and thus represents the most cost-effective control. In the case of Hg, the MACT floor emissions level is equal to current uncontrolled levels. However, the EPA concluded, after considering the requisite factors in section 129(a)(2), that an uncontrolled floor level could not be justified under the Clean Air Act and that a more stringent emissions standard based on the use of carbon injection as an add-on control would be cost-effective. The EPA was unable in this rulemaking to identify any alternatives other than carbon injection for control of Hg emissions. To the extent that section 205(a) of the Unfunded Mandates Reform Act (UMRA) may be read to have the EPA consider a less stringent level of Hg control, the EPA concluded that such an alternative would be "inconsistent with law" within the meaning of section 205(b)(2) of the UMRA. Accordingly, the alternative selected for Hg is the most cost-effective one available under these circumstances.

The unfunded mandates statement under section 202 must include: (1) A citation of the statutory authority under which the rule is proposed, (2) an assessment of the costs and benefits of the rule including the effect of the mandate on health, safety and the environment, and the Federal resources available to defray the costs, (3) where feasible, estimates of future compliance costs and disproportionate impacts upon particular geographic or social segments of the nation or industry, (4) where relevant, an estimate of the effect on the national economy, and (5) a description of the EPA's consultation with State, local, and tribal officials.

Since this rule is estimated to impose costs to the private sector and government entities in excess of $100 million, the EPA has prepared the following statement with respect to these impacts.

1. Statutory Authority

The statutory authority for this rulemaking, sections 111 and 129 of the Clean Air Act, is fully discussed in section II of this preamble. The rule establishes emission guidelines for existing MWC's and standards of performance for new MWC's.

Section 129(a)(2) requires the Administrator to promulgate standards for new solid waste incinerator units and emission guidelines for existing units that "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 * * *" 42 U.S.C §7429(a)(2) (emphasis added). This is commonly referred to as maximum achievable control technology, or MACT. Section 129(a)(2) further defines a minimum level of stringency that can be considered for MACT standards—commonly referred to as the MACT floor—which for new units, is the level of control achieved by the best controlled similar unit, and for existing units, is the level of control achieved by the average of the best performing 12 percent of units in the category. *Id.*

In the final rule, the Administrator determined for new MWC's that MACT for all pollutants was equivalent to the pollutants' MACT floor levels—i.e., the MACT floor levels reflect the maximum achievable, cost-effective reduction in emissions of the air pollutants specified in section 129(a)(4) of the Clean Air Act. The promulgated MACT levels reflect the performance of emission control technology that is in commercial use at the best controlled similar source (i.e., an MWC equipped with an SD/FF system, carbon injection, and SNCR, in combination with GCP's). The September 20, 1994 proposed standards were more stringent than the MACT floor levels because the proposed levels were based on carbon injection technology, which was not in commercial use at the time of proposal. Since proposal, a dozen MWC units equipped with carbon injection technology have initiated operation; thus, the best controlled similar unit in the final rule includes carbon injection (i.e., basis for the MACT floor).

For existing MWC's, some of the emission limits included in the emission guidelines promulgated today are the same as the final MACT floor levels. For several pollutants, however, the Administrator decided, consistent with section 129(a)(2) after considering costs and non-air-quality health and environmental impacts and energy requirements, to set MACT standards more stringent than the MACT floor, since more stringent levels could be achieved at either no additional cost, or minimal costs. The MACT floor levels for acid gases and PM are stringent enough for existing units at both small and large plants that they require an acid gas/PM control system. Since an acid gas/PM control system also controls emissions of all regulated pollutants except Hg and NO_x, establishing emission limits for acid gases and PM effectively establishes emission limits for the other pollutants (except Hg and NO_x). The cost to comply with the selected emission limits relative to the cost of the acid gas/PM control system are minimal.

For example, the same acid gas/PM control system that owners and operators of MWC's need to meet the MACT emissions guideline levels for SO_2 and PM also controls dioxins/furans to levels more stringent than the dioxin/furan MACT floor level. Thus, the Administrator determined that the final dioxin/furan emission guidelines may be achieved at no additional control costs. In the final rule, for MWC's at large plants, the Administrator distinguished between the dioxin/furan emission guidelines for MWC's equipped with ESP-based control systems and MWC's equipped with nonESP-based control systems. In the Administrator's judgment, it would be prohibitively expensive and unreasonable to require existing ESP's that can meet a limit of 60 ng/dscm to retrofit an SD/FF in order to achieve additional reduction in emissions beyond the MACT floor (see the proposal preamble, 50 FR 48228, September 20, 1994, for a more detailed discussion). For the final rule, the Administrator considered several regulatory options more stringent than the MACT floor; however, because of the high cost of pollution control device retrofit, the Administrator determined that MACT for dioxins/furans emitted from MWC's with ESP-based control systems is 60 ng/dscm, and MACT for dioxins/furans emitted from MWC's with SD/FF systems is 30 ng/dscm.

The MACT floor for Hg is 0.36 mg/dscm, and MACT for Hg is more stringent than the MACT floor at a level of 0.080 mg/dscm. To achieve the Hg emission limit in the emission guidelines, carbon injection will be required (this exceeds MACT floor requirements). Because of the toxicity and bioaccumulation potential of Hg, the Administrator considered the small cost of adding Hg control to be cost-effective. The cost of Hg control is about $0.25 to $0.35 per gram Hg removed ($250,000 to $350,000 per Mg), which translates to approximately $0.05 to $0.07 per month for a household served by an MWC.

2. Social Costs and Benefits

This assessment of the cost and benefits to State, local, and tribal governments of the guidelines is based on EPA's "Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Solid Waste Combustors." Measuring the social costs of the guidelines requires identification of the affected entities by ownership (public or private), consideration of regulatory alternatives, calculation of the regulatory compliance costs for each affected entity, and assessment of the market implications of the additional pollution control costs. Calculating the social benefits of the guidelines requires estimating the anticipated reductions in emissions at MWC's due to regulation, identification of the harmful effects of exposure to MWC emissions, and valuing the expected reductions in these damages to society.

a. *Affected Entities.* For 1996, the base year of the analysis, there are 179 MWC's in the population of operational facilities affected by the guidelines. Of this total, 100 are publicly owned and operated (i.e., facilities owned by State or local governments). There are no MWC's currently owned, or expected to be owned in the near future, by tribal governments, so there is no impact on tribal governments. The remaining 79 MWC's are privately owned and operated. The EPA developed 16 model plants to characterize the existing facilities based on the technologies used for combustion and air pollution control at baseline. Table 5 shows the distribution of publicly and privately owned MWC's and the estimated MSW volumes managed by the existing MWC model plants. Of the 100 publicly owned and operated MWC plants, 38 plants are located in communities with a population less than 50,000, 11 plants are located in communities with a population between 50,000 and 100,000, 21 plants are located in communities with a population between 100,000 and 250,000, and 30 plants are located in communities with a population greater than 250,000. A detailed description of the model plants used to characterize operational MWC's is presented in table 3–4 of the "Economic Impact Analysis of Proposed Emissions Standards and Guidelines for Municipal Waste Combustors" (EPA–450/3–91–029, 1994).

TABLE 5.—SUMMARY OF TOTAL MSW THROUGHPUT AT PUBLIC AND PRIVATE MWC'S BY MODEL PLANT

Model plant[a]	Ownership				
	Public throughput (Mg/yr)	Public share (%)	Private throughput (Mg/yr)	Private share (%)	Total throughput (Mg/yr)
1	813,244	100.0	0	0.0	813,244
2	1,158,112	81.9	256,034	18.1	1,414,146
3	1,397,867	100.0	0	0.0	1,397,867
4	1,914,896	19.3	7,995,967	80.7	9,910,863
5	3,956,410	61.1	2,523,329	38.9	6,479,739
6	374,566	56.7	286,119	43.3	[illegible]
7	1,008,603	57.5	746,477	42.5	1,755,080
8	1,547,612	66.5	777,981	33.5	[illegible]
9	400,346	73.3	145,661	26.7	546,007
10	425,552	82.5	90,472	17.5	[illegible]
11	166,082	42.0	228,966	58.0	[illegible]
12	284,596	72.6	107,219	27.4	[illegible]
14	343,596	48.4	366,785	51.6	[illegible]
15	937,280	29.2	2.277,088	70.8	[illegible]

TABLE 5.—SUMMARY OF TOTAL MSW THROUGHPUT AT PUBLIC AND PRIVATE MWC'S BY MODEL PLANT—Continued

Model plant[a]	Ownership				
	Public throughput (Mg/yr)	Public share (%)	Private throughput (Mg/yr)	Private share (%)	Total throughput (Mg/yr)
16	58,462	6.7	819,320	93.3	877,782
17	745,501	52.9	662,673	47.1	1,408,174
Total:	15,078,823	45.9	17,737,993	54.1	32,816,816

[a] There is no model plant that matches model plant #13 in the Economic Impact Analysis (EPA–450/3–91–029, March 1994).

b. *Regulatory Alternatives Considered.* The two broad categories of regulatory standards available include design standards and emission standards. Design standards specify the type of control equipment polluters must install, whereas emission standards specify the maximum quantity of a given pollutant that any one polluter may release.

Design standards offer the least flexible approach considered in this analysis. Municipal waste combustors would have to install the specified control equipment regardless of the additional emission reductions achieved or the relative cost of alternative means of emission reductions.

Emission standards allow greater flexibility in the methods used to reduce emissions. Municipal waste combustors are free to meet the emission limit in the manner that is least costly to them. Consequently, for a given level of emission reductions, emission standards are generally less costly than design standards. Furthermore, emission standards give MWC's an incentive to develop more effective means of controlling emissions. In addition, the Act requires the Administrator to promulgate emission standards unless such standards are not feasible. See 42 U.S.C. §§ 7411(h) and 7429(a)(1). Since emission standards for MWC's are feasible, the EPA is barred from promulgating design standards for MWC's.

Even though emission standards generally result in a more efficient allocation of costs than design standards, uniform emission standards can be more costly than necessary. Uniform emission standards require the same level of emission control of every discharger. Because marginal control costs differ for plants of different sizes, different technologies, different levels of product recovery (i.e., in the chemical industry), and different levels of baseline control, an effective solution can be reached if standards are carefully tailored to the special characteristics of each discharger. This type of standard is referred to as a differentiated standard.

In formulating its MWC regulatory alternatives, EPA selected candidate regulatory alternatives that contain control limits for MWC's differentiated by MWC size classification. Large facilities are defined as MWC plants with aggregate plant capacities over 225 Mg/day. Small facilities are defined as MWC plants with aggregate plant capacities between 35 and 225 Mg/day. Plants with aggregate plant capacities less than 35 Mg/day are not covered by today's rulemaking. The lower size threshold of 35 Mg/day aggregate plant capacity for controlling MWC emissions under today's rulemaking was selected after reviewing the population distributions of MWI's and MWC's. Most incinerators at medical waste facilities are smaller incinerators that fire segregated medical waste with general hospital discards (MSW), and these incinerators would have the potential to be covered by today's rulemaking. To avoid overlap with the upcoming MWI rulemaking, this rulemaking includes the lower size cutoff of 35 Mg/day plant capacity and MWC plants with aggregate capacities less than or equal to 35 Mg/day will be addressed under a separate rulemaking. With a lower size cutoff of 35 Mg/day, today's promulgated MWC rulemaking will cover over 99 percent of the total U.S. MWC combustion capacity but will exclude 97 percent of the total MWI combustion capacity.

The regulatory alternatives for the two selected size classifications did not specify a particular control technology; rather, they specified emission limits that facilities would be required to meet. Current practice indicates that the emission guideline limits for acid gases, PM, and metals will likely be met with one of six different types of control technologies, depending on the applicable emission limits. Table 6 presents acid gas, PM, and metals control technologies listed in order of increasing efficiency.

TABLE 6.—CONTROL TECHNOLOGIES ASSOCIATED WITH ACID GAS, PARTICULATE MATTER, AND METALS CONTROL

GCP + ESP
GCP + DSI/ESP
GCP + DSI/FF
GCP + SD/ESP
GCP + SD/FF

In designing MWC regulatory alternatives, the EPA considered emission limits consistent with the combinations of the acid gas control technologies listed in table 6. Small plants may be required to meet one control limit and large plants another under a given regulatory alternative. Under the final guidelines, more stringent control requirements are in fact applicable to large plants than to small plants. This was done in an attempt to equalize the cost impact on small and large plants. Under the final guidelines the unit cost for air pollution control retrofit for large plants would be about $16 per Mg of waste combusted. For similar small plants the retrofit costs would be about $17 per Mg of waste combusted. Table 7 shows the control technologies evaluated for the guidelines regulatory alternatives under two compliance scenarios for acid gas, PM, and metals control. The control technology bases identified in this table are not intended to imply a design standard. Rather, the technology bases are identified only for the purpose of estimating costs and emission reductions.

TABLE 7.—EMISSION GUIDELINES FOR EXISTING MWC'S: CONTROL TECHNOLOGY BASES USED TO ESTIMATE THE IMPACTS OF THE REGULATORY ALTERNATIVES[a] [b]

Regulatory alternative, and baseline APCD	Size Classification (Mg MSW/day)	
	Small (35 to 225)	Large (over 225)
Reg. Alt. I:		
No control	GCP+ESP	GCP+SD/ FF+CI+SNCR
ESP (low)	GCP+ESP	GCP+SD/ ESP(m)+CI+SNCR
SD/ESP	GCP+SD/ESP	GCP+SD/ ESP(m)+CI+SNCR
SD/FF	GCP+SD/FF	GCP+SD/ FF+CI+SNCR
Reg. Alt. II–A:		
No control	GCP+DSI/FF+CI	GCP+SD/ FF+CI+SNCR
ESP (low)	GCP+DSI/ ESP+CI	GCP+SD/ ESP(m)+CI+SNCR
SD/ESP	GCP+SD/ ESP+CI	GCP+SD/ ESP(m)+CI+SNCR
SD/FF	GCP+SD/FF+CI	GCP+SD/ FF+CI+SNCR
Reg. Alt. II–B:		
No control	GCP+DSI/FF+CI	GCP+SD/ FF+CI+SNCR
ESP (low)	GCP+DSI/ ESP+CI	GCP+SD/ FF+CI+SNCR
SD/ESP	GCP+SD/ ESP+CI	GCP+SD/ ESP(m)+CI+SNCR
SD/FF	GCP+SD/FF+CI	GCP+SD/ FF+CI+SNCR
Reg. Alt. III;		
No control	GCP+SD/FF+CI	GCP+SD/ FF+CI+SNCR
ESP (low)	GCP+SD/FF+CI	GCP+SD/ FF+CI+SNCR
SD/ESP	GCP+SD/FF+CI	GCP+SD/ FF+CI+SNCR
SD/FF	GCP+SD/FF+CI	GCP+SD/ FF+CI+SNCR
MACT Floor:		
No control	GCP+DSI/FF	GCP+SD/FF+SNCR
ESP (low)	GCP+DSI/ESP	GCP+SD/ ESP(M)+SNCR
SD/ESP	GCP+SD/ESP	GCP+SD/ ESP(m)+SNCR
SD/FF	GCP+SD/FF	GCP+SD/FF+SNCR

Source: This table is an extract of table 4–2 of the document entitled "Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Waste Combustors," EPA–450/3–91–029, March 1994. See **SUPPLEMENTARY INFORMATION** for information on obtaining this document.

[a] The MWC regulation does not mandate a specific type of control equipment. The MWC owner/operator may use any control equipment that meets the emission standards. The control technologies are the projected compliance strategies used as the basis for computing costs. If the MWC has equipment that is meeting or exceeding the control requirements, no additional costs are incurred.

[b] CI=carbon injection.

TABLE 7A.—EMISSION GUIDELINES FOR EXISTING MWC'S: EMISSION REDUCTIONS AND ANNUALIZED COSTS OF THE REGULATORY ALTERNATIVES[a]

Pollutant category (Mg/yr)/annualized cost ($1990 10^6/yr)	Regulatory alternative				
	Reg. alt. I	Reg. alt. II–A	Reg. alt. II–B	Reg. alt. III	Mact floor
SO_2	41,200	43,300	43,300	45,000	43,300
HCl	51,600	56,300	56,300	57,300	56,300
PM	3,070	3,070	3,070	3,240	3,070
Pb	74.8	74.8	91.1	102	74.8
Cd	5.24	5.24	5.56	6.02	5.24
Hg	44.7	47.5	47.5	47.5	0
NO_x	8,680	8,680	8,690	8,690	8,680
CO	19,300	19,300	19,300	19,300	19,300
Dioxins/furans (total mass)	0.154	0.156	0.157	0.158	[b] 0.153

TABLE 7A.—EMISSION GUIDELINES FOR EXISTING MWC'S: EMISSION REDUCTIONS AND ANNUALIZED COSTS OF THE REGULATORY ALTERNATIVES [a]—Continued

Pollutant category (Mg/yr)/annualized cost ($1990 10^6/yr)	Regulatory alternative				
	Reg. alt. I	Reg. alt. II–A	Reg. alt. II–B	Reg. alt. III	Mact floor
Annualized cost ($1990 10^6/yr)	412	443	448	487	425

Source: This table is an extract of tables 5–14 and 5–21 of the document entitled "Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Waste Combustors," EPA–450/3–91–029, March 1994. See **SUPPLEMENTARY INFORMATION** for information on obtaining this document.

[a] The MWC regulation does not mandate a specific type of control equipment. The MWC owner/operator may use any control equipment that meets the emission standards. The control technologies are the projected compliance strategies used as the basis for computing costs. If the MWC has equipment that is meeting or exceeding the control requirements, no additional costs are incurred.

[b] The MACT floor is regulatory alternative II–A without carbon injection for mercury and dioxin/furan control. The majority of the dioxin/furan emission control is achieved by acid gas controls included in alternative II–A and the floor. It is assumed that adding mercury control (carbon injection) to acid gas control reduces dioxin/furan emissions by at least an additional 50 percent. The dioxin/furan emission reduction estimate for the MACT floor is not provided in the "Economic Impacts Analysis."

The regulatory alternatives represent alternative levels of control considered by the EPA, whereas the compliance scenarios represent potential alternative responses by the MWC owners and operators to the emission requirements. Generally speaking, the EPA assumed that MWC owners and operators will choose the minimum-cost control technology that will meet the emission requirements. However, where there is uncertainty regarding the actual emission limits that a particular control technology will achieve in practice, owners may choose a more conservative (and potentially more costly) compliance strategy to reduce the risk of noncompliance. A conservative investment decision is particularly likely when the investment decision affects the facility's ability to remain in operation (e.g., noncompliance results in plant shutdown), is a long-term decision, or involves a significant capital outlay. Consequently, we evaluate two compliance scenarios for meeting the acid gas, PM, and metals control requirements for existing plants subject to guidelines.

A more detailed discussion of the regulatory alternatives EPA considered may be found in the "Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Waste Combustors," EPA–450/3–91–029, March 1994 (see **SUPPLEMENTARY INFORMATION** for information on obtaining this document). Control alternatives were also developed for NO_X control and Hg control. Discussion of these alternatives can be found in the following memos that may be obtained from the EPA's Air Docket, as specified in the **SUPPLEMENTARY INFORMATION** section of this preamble: (1) "Update Report on Mercury Control Technologies for Municipal Waste Combustors" prepared by K. Nebel and D. White, Radian Corporation, for W. Stevenson, U.S. Environmental Protection Agency, July 1993; (2) "NO_X Control on Existing MWC's," prepared by E. Soderberg et al., Radian Corporation, for W. Stevenson, U.S. Environmental Protection Agency, August 23, 1991; (3) "Wet Scrubbing Systems Performance and Cost," prepared by K. Nebel, et al., Radian Corporation, for W. Stevenson, U.S. Environmental Protection Agency, June 22, 1994; and (4) "A Summary of Mercury Emissions and Applicable Control Technologies for Municipal Waste Combustors," prepared by K. Nebel and D. White, Radian Corporation, for W. Stevenson, U.S. Environmental Protection Agency, September 1991.

c. *Social Costs.* The regulatory compliance costs of reducing air emissions from MWC's include the total and annualized capital costs; operating and maintenance costs; monitoring, inspection, recordkeeping, and reporting costs; and total annual costs. The annualized capital cost is calculated using a 4-percent discount rate for publicly-owned MWC's and an 8-percent discount rate for privately-owned MWC's. The total annual cost is calculated as the sum of the annualized capital cost; operating and maintenance costs; and the monitoring, inspection, recordkeeping, and reporting costs. There are no Federal funds available to assist State and local governments in meeting these costs.

Table 8 provides the estimated compliance costs for the final regulations and their distribution across public and private MWC's. As shown, the national annual compliance costs for existing MWC's total $405.5 million, with publicly-owned facilities incurring $229.9 million. This total both represents 56.7 percent of the estimated national compliance costs and forms the basis for allocating benefits to publicly-owned MWC's. (The analysis has assumed that benefits are linear with emission reductions). The level of compliance costs depends not only on the absolute number of facilities, but also on the baseline level of pollution control. It is assumed that higher compliance costs are associated with higher emission reductions and are, thus, appropriate for allocating the benefits associated with the reduced emissions.

TABLE 8.—SUMMARY OF REGULATORY COMPLIANCE COSTS FOR EXISTING MWC'S BY OWNERSHIP ($1990, 10^3)

Ownership category	Annual capital costs	Annual operating and maintenance costs	Annual MIRR costs [a]	Total annual costs
Public	67,625	154,163	8,092	229,881
Private	83,936	87,161	4,575	175,672
Total	151,561	241,325	12,667	405,553

[a] MIRR=Monitoring, inspection, reporting, and recordkeeping.

The analysis assumes that the entire increase in costs of combustion services for both public and private entities will be passed through to MWC customers in the form of increases in the tipping fee charged by MWC's. As shown in table 9, the estimated increases in the average tipping fee for publicly-owned MWC's are significant and range from 36 to 59 percent. The range for privately-owned MWC's is 41 to 65 percent.

TABLE 9.—AVERAGE TIPPING FEE INCREASES FOR EXISTING MWC'S BY OWNERSHIP

Ownership	Small MWC plants (35 to 225 Mg/day MSW) (percent change)	Large MWC plants[a] (over 225 Mg/day MSW) (percent change)
Public	59	36
Private	65	41

[a] Fee increases are computed using the average cost per megagram of MSW reported in tables 5–10 and 5–11 of the EPA's "Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Solid Waste Combustors," (EPA–450/3–91–029) and an average tipping fee of $57/Mg of MSW. The average tipping fee is based on the 1993 average tipping fee for MWC's reported in *Waste Age* (Berenyi & Gould, 1993) converted to 1990 dollars.

Section 7.3.1 of the EPA's economic impact analysis (EPA–450/3–91–029) provides a distributional analysis of the impacts on governmental entities with respect to their ability to finance the regulatory compliance capital through revenue bonds. A community's ability to finance the regulatory compliance capital through revenue bonds is estimated by comparing the estimated average annual cost per household to the average annual household income for the community. If the cost per household exceeds one percent of average annual household income, then the community is assumed to have potential difficulty issuing revenue bonds. Of the estimated 100 governmental entities subject to the guidelines, no governmental entities with a population above 50,000 are projected to have difficulty issuing revenue bonds as a result of the regulation on existing sources. Overall, 3 of the 100 governmental entities (all 3 of which have population below 50,000) are projected to have difficulty issuing such bonds.

Without market adjustments, the social costs of the guidelines should be equivalent to the national compliance costs shown in table 8. However, in this analysis, the social costs differ, both because the total capital costs for both public and private MWC's were discounted at the social rate equal to 7 percent, and because of tax differences. Table 10 shows the estimated social cost of the regulations and the distribution across public and private MWC's. The estimated annual social cost of the guidelines is $443 million of which 56.7 percent, or $251.1 million, is attributed to publicly-owned MWC's. This estimate of social cost is greater than the national compliance costs because the total capital costs for publicly-owned MWC's is discounted at the social rate of 7 percent, as opposed to the 4 percent rate used to compute the national compliance costs.

TABLE 10.—SUMMARY OF ESTIMATED ANNUAL SOCIAL COST BY OWNERSHIP ($1990)

Ownership category	Total social costs ($10³ per year)	Share (percent)
Public	251,107	56.7
Private	191,893	43.3
Total	443,000	100.0

Table 10A provides typical costs of air pollution control retrofits for existing MWC's. The costs shown in table 10A are for 17 model existing plants.

TABLE 10A.—Typical Cost of Air Pollution Control Retrofit for Existing MWC'S

Plant size (Mg/day)	MWC type	Costs ($1990×10⁶)		Model plant number
		Capital	Annual	
45	MOD/SA	2	0.5	10
136	MOD/SA	3	10.5	9
181	MOD/EA	3	0.4	11
181	MB/WW	5	0.9	6
454	MB/RWW	13	1.6	12
980	MB/WW	25	3.2	5
2,041	MB/WW	46	5.0	4
181	MB/WW	[a]5	0.8	14
454	MB/RWW	[a]13	1.6	17
544	RDF	28	2.3	8
1,814	RDF	64	4.8	7
1,814	RDF	[a]33	4.4	15
544	RDF	[a]17	2.0	16
218	MB/REF	8	0.9	2
680	MB/REF	39	2.3	1
816	MB/REF	35	4.1	3

Note: See table 5–1 of the "Economic Impacts Analysis for Proposed Emission Standards and Guidelines for Municipal Waste Combustors" (EPA–450/3–91–029) for more information.

[a] These model plants are assumed to be relatively new units that originally incorporated good combustion in their design and, therefore, do not need to retrofit good combustion to comply with the guidelines.

Social Benefits. Society will benefit from the proposed guidelines through the reduction of emissions of dioxins/furans, Cd, Pb, Hg, PM, HCl, SO_2, and NO_X. These pollutant categories are emitted by various types of sources, including MWC's. The level of pollutant emissions and health effects vary among types of sources, and total national emissions of these pollutants has been shown to have the health effects listed in table 11.

TABLE 11.—HEALTH AND OTHER EFFECTS

Pollutant category	Health and other effects
Organics	• Mortality, morbidity. • Carcinogenicity.
Metals	• Retardation and brain damage. • Hypertension. • Central nervous system injury. • Renal dysfunction.
Acid gases	• Materials damage. • Dental erosion. • Acid rain. • Mortality, morbidity. • Respiratory tract problems, permanent harm to lung. • Soiling and materials damage. • Reduced agricultural yield. • Ozone formation.
Particulate matter.	• Mortality, morbidity. • Eye and throat irritation, bronchitis, lung damage. • Impaired visibility. • Soiling and materials damage.

Because of limitations on data on the concentration-response function and valuation of these functions, benefits have not been quantified for all pollutants. Benefits have been quantified only for emissions of SO_2 and PM. Benefits have not been quantified for dioxins/furans, Cd, Pb, Hg, HCl or NO_X emission control. Benefits to the public and environment will result from the control of these hazardous air pollutants (HAP's) and criteria pollutants. For the HAP's, dioxin/furan compounds have been associated with chloracne, reproductive/developmental effects, immune system toxicity, and cancer (probable human carcinogen). Particulate-associated metals including Pb and Cd are toxic and can cause effects such as mucous membrane irritation, gastrointestinal effects, nervous system disorders, skin irritation, and reproductive and developmental disorders. In regard to volatile metals, Hg in all forms may be characterized as quite toxic with each form exhibiting different health effects, including gastrointestinal and respiratory tract disturbances, central nervous system effects, and developmental effects. Additionally, HCl is corrosive and effects the eyes, skin, and mucus membranes, and dermatitis has been reported from long-term exposure.

Table 12 provides the estimated social benefits associated with reductions in PM and SO_2 emissions from MWC's and their distribution across public and private MWC's. The estimated social benefit of reduced PM and SO_2 emissions is $106 million with $60.3 million being attributed to reductions at publicly-owned MWC facilities. These benefits would be experienced annually by the residents of these municipalities. Proper allocation of these benefits would be based on the expected emission reductions at public and private MWC's. However, due to lack of data at the model plant level, these benefits are allocated across public and private MWC's in the same proportion as the estimated national compliance costs (i.e., 56.7 percent for public and 43.3 percent for private).

TABLE 12.—SOCIAL BENEFIT ESTIMATES FOR SO_2 and PM Emission Reductions by Ownership ($1990)

Ownership category	Social benefits ($10³ per year) [a] [b]		
	PM	SO_2	Total
Public	30,779	29,475	60,254
Private	23,521	22,525	46,046
Total	54,300	52,000	106,300

[a] Benefit estimates are $1,200 per Mg of SO_2 reduced and $17,700 per Mg of PM reduced. (This estimate is derived valuing all mortalities at $4.4 million per life saved. This approach does not consider the length of the changes in longevity resulting from PM exposure). Social benefits attributable to public and private MWC's are proportionate to their share of the total annual costs.

[b] Does not include benefit credits for dioxins/furans, Cd, and Hg control.

Table 13 presents a comparison of the estimated social costs and benefits of the guidelines. Unfortunately, because benefit estimates are not computed for all pollutants, the social benefit provided in table 13 is a partial estimate. Because of this fact, the net benefits (i.e., benefits minus costs) shown in table 13 cannot be used to reach conclusions regarding the total net benefits of the rule for existing sources.

TABLE 13.—SOCIAL COSTS AND PARTIAL SOCIAL BENEFITS FROM REDUCING EMISSIONS AT MWC'S BY OWNERSHIP ($1990, 10³ PER YEAR)

Ownership category	Total social costs	Partial social benefits
Public	251,107	60,254
Private	191,893	46,046
Total	443,000	106,300

3. Effects on the National Economy

The Unfunded Mandates Act requires that the EPA estimate "the effect" of this rule

> "on the national economy, such as the effect on productivity, economic growth, full employment, creation of productive jobs, and international competitiveness of the U.S. goods and services, if and to the extent that the EPA in its sole discretion determines that

accurate estimates are reasonably feasible and that such effect is relevant and material."

As stated in the Unfunded Mandates Act, such macroeconomic effects tend to be measurable, in nationwide econometric models, only if the economic impact of the regulation reaches 0.25 to 0.5 percent of gross domestic product (in the range of $1.5 billion to $3 billion). A regulation with a smaller aggregate effect is highly unlikely to have any measurable impact in macroeconomic terms unless it is highly focused on a particular geographic region or economic sector. For this reason, no estimate of this rule's effect on the national economy has been conducted.

4. Consultation with Government Officials

The Unfunded Mandates Act requires that the EPA describe the extent of the EPA's consultation with affected State, local, and tribal officials, summarize the officials' comments or concerns, and summarize the EPA's response to those comments or concerns. In addition, section 203 of the Clean Air Act requires that the EPA develop a plan for informing and advising small governments that may be significantly or uniquely impacted by a proposal. Throughout the development of these rules (pre-proposal through pre-promulgation phases), the EPA consulted with representatives of affected State and local governments, including the U.S. Conference of Mayors, the National League of Cities, the National Association of Counties, the Solid Waste Association of North America, and the Municipal Waste Management Association, to inform them of the proposed rule and determine their concerns. (The EPA also consulted with representatives from other entities affected by the proposed rule, such as the Integrated Waste Services Association, the Sierra Club, and the Natural Resources Defense Council.)

As part of EPA's consultation efforts in this rulemaking, the EPA mailed a copy of the regulatory summary (FACT SHEET) for the September 20, 1994 proposed MWC standards and guidelines to every elected official in an area with either an operating MWC, an MWC under construction, or a planned MWC. (The EPA also mailed copies of the summary to all owners and operators of these MWC's.) This mailout exceeded 400 informational packages. Since approximately half of the MWC's are owned and/or operated by municipalities, with this effort, the EPA was able to ensure that every affected State and local government was made aware of the proposed rule and had the necessary information to provide comment.

In addition, over a 3-month period, EPA staff consulted with State and local government representatives to discuss their comments regarding the final draft package. Letters were received during this time period from the U.S. Conference Mayors and the Integrated Waste Services Association (see docket A–90–45, items IV–D–44 and IV-D–85, respectively), which raised various concerns; however, in subsequent meetings, the EPA learned that State and local officials, as well as industry representatives, were mainly concerned with the following sections of the final draft emission guidelines: (1) The achievability for some MWC's of the final draft NO_X emission limit included in the emission guidelines; (2) the fact that because the EPA had not subcategorized by combustor type for purposes of determining the NO_X emission limit as it had when it determined the CO emission limit, some MWC's would be forced to install retrofit technology in order to meet the more stringent NO_X limit, (3) the achievability for MWC's with large new ESP's of the final draft dioxin/furan emission limit included in the emission guidelines; and (4) the inconsistency between some of the definitions in the draft rules with the definitions given in 40 CFR part 60, subpart Ea, which establishes emission limits for MWC's that commence construction after December 20, 1989, but on or before September 20, 1994.

As a result of these consultations, the EPA decided to modify the final regulatory package to address these concerns. The final emission guidelines promulgated today:

(1) Subcategorize MWC's by combustor type for the purpose of establishing different NO_x emission guidelines; and

(2) Establish separate dioxin/furan emission guidelines for MWC's with ESP-based systems and MWC's with nonESP-based systems. In addition, in order to address the fourth concern identified by State and local governments, the EPA is publishing today under a separate **Federal Register** notice, a direct final rule that modifies the applicability and definitions sections of 40 CFR part 60, subpart Ea to improve clarity and make them consistent with those provided in the standards and emission guidelines promulgated in this notice.

Documentation of the EPA's consideration of comments on the proposed standards and guidelines is provided in the BID's for the proposed and final standards and guidelines. Refer to the **SUPPLEMENTARY INFORMATION** and **ADDRESSES** sections of this preamble for information on how to acquire copies of these documents.

As discussed in section IV.F, the number of affected small entities is not expected to be substantial. The full analysis of potential regulatory impacts on households, small governments, and small businesses is included in the economic impact analysis in the docket and listed under **SUPPLEMENTARY INFORMATION.** Because the number of affected small entities is expected to be insubstantial (i.e., the EPA considers that the regulation is likely to affect less than 20 percent of small entities with MWC's—see section IV.F for a more detailed explanation), no plan to inform and advise small governments is required under section 203 of the Unfunded Mandates Act. However, as described above, the EPA has communicated and consulted with small governments and businesses that will be affected by the standards and guidelines, keeping them informed about the content of this promulgation. Refer to section III.C. for a description of these communications.

E. Executive Order 12875

To reduce the burden of Federal regulations on States and small governments, the President issued Executive Order 12875 on October 26, 1993, entitled "Enhancing the Intergovernmental Partnership." Under Executive Order 12875, the EPA is required to consult with representatives of affected State, local, and tribal governments, and keep these affected parties informed about the content and effect of the promulgated standards and emission guidelines. Section III.A of this notice provides a brief summary of the need for the final standards and guidelines. Sections IV.C and V.C provide brief summaries of the cost of the final guidelines and standards. Section III.C provides a brief account of the actions that the EPA has taken to communicate and consult with the affected parties. The discussion provided below provides a brief summary of the content of the final standards and guidelines. For more information on the content of the final standards and guidelines, refer to sections IV.A and V.A of this notice.

The promulgated standards and guidelines establish emission limitations for new and existing MWC units located at MWC plants with plant capacities to combust greater than 35 Mg/day of MSW. The standards and guidelines do not specify which type of air pollution control equipment must be d at MWC's to meet the promulgated emission limitations. The EPA expects, however, that, as a result of the promulgated standards and guidelines, most new and existing MWC's at large MWC plants (plants with greater than 225 Mg/day capacity) will use SD/FF systems with activated carbon injection (new plants) or retrofit SD/FF or SD/ESP systems with activated carbon injection (existing plants) for dioxins/furans, metals, and acid gas control, and will use SNCR for NO_X control. New MWC's at small MWC plants (plants with 35 to 225 Mg/day capacity) are expected to install SD/FF systems with activated carbon injection, and existing MWC's at small plants are expected to install DSI/ESP systems with activated carbon injection. Selective noncatalytic reduction technology would not be necessary for either new or existing MWC's at small MWC plants.

F. Regulatory Flexibility Act

Section 605 of the RFA (5 U.S.C. 601 *et seq.*) requires Federal agencies to give special consideration to the impacts of regulations on small entities, which are small businesses, small organizations, and small governments. The major purpose of the RFA is to keep paperwork and regulatory requirements from getting out of proportion to the scale of the entities being regulated without compromising the objectives of, in this case, the Clean Air Act.

If a regulation is likely to have a significant economic impact on a substantial number of small entities, the EPA may give special consideration to those small entities when analyzing regulatory alternatives and drafting the regulation. In the case at hand, the EPA considers that a regulation that is likely to affect 20 percent or more of small entities with MWC's is a regulation that will affect a substantial number of small entities.

Definitions of small entities are flexible. For analysis of the regulations being proposed today, the EPA considers a small business in this industry to be one with gross annual revenue less than $6 million, and a small government to be one that serves a population less than 50,000. (A typical city of 50,000 generates about 90 Mg/day of MSW.) Most small governments dispose of their MSW by landfilling and, therefore, will not be affected by regulation of MWC emissions. In regard to small organizations such as independent not-for-profit enterprises, the EPA finds that they have no more than a very minor involvement with MWC's, and for that reason the EPA has not found it necessary to study potential direct impacts on small organizations.

The final regulations do not apply to MWC plants with capacity less than 35 Mg/day. The EPA estimates that few if any small-entity MWC's would be affected by today's promulgated standards and guidelines.

Thus, the number of affected small entities is not expected to be substantial, and a regulatory flexibility analysis is not required. Nevertheless, the EPA has conducted an extensive analysis of potential regulatory impacts on households, small governments, and small businesses. The analysis is summarized in the preambles to the proposed standards (59 FR 48198) and guidelines (59 FR 48228.) The full analysis is included in the economic impact assessment in the docket and is listed at the beginning of today's notice under **SUPPLEMENTARY INFORMATION.**

On December 20, 1989, the EPA proposed standards and guidelines for MWC's that applied to all sizes of MWC's. The 1989 proposal had no lower size cutoff. Small businesses, small governments, and groups representing small-entity interests commented extensively on the need to lighten the potential regulatory burden on small entities. Most commenters suggested a small size cutoff considerably smaller than the one now being proposed. The most frequently suggested levels were 5 to 11 Mg/day, 18 Mg/day, 23 Mg/day, and 45 Mg/day. The EPA has used these suggestions and the information submitted by these commenters, as well as information from other sources, to fulfill the intent of the RFA. The EPA has incorporated into the standards and guidelines being promulgated today several features that will mitigate and, in most cases eliminate, any potential, adverse economic impacts on small entities. These features are as follows:

(1) The standards and guidelines will apply only to MWC's with a plant capacity of greater than 35 Mg/day. This cutoff eliminates from the purview of the regulation and guidelines the overwhelming majority of projected new and existing very small MWC's;

(2) The standards and guidelines are "tiered" so that the stringency (and therefore potential economic burden) of the emission standards and guidelines increases as the size of the MWC plant increases. Plants with capacities less than or equal to 35 Mg/day are not covered under the final standards and guidelines. Plants with capacities of 35 to 225 Mg/day are not required to control NO_x. Only plants with capacities larger than 225 Mg/day—plants not often associated with small entities—are subject to a full complement of rigorous standards;

(3) As opposed to design, equipment, work practice, or operational standards, the standards for new sources and the guidelines for existing sources consist predominantly of emission limits. Emission limits give MWC owners and operators of new and existing MWC's the freedom to select the most economical means of compliance.

(4) The guidelines are not the usual type of regulation governed by the RFA. The guidelines will not apply directly to any MWC's, but will be used as a guide by individual State air pollution control agencies in developing site-specific regulations for MWC's. States are allowed some flexibility in implementing the guidelines.

Pursuant to the provisions of 5 U.S.C. 605(b), the EPA certifies that the standards and guidelines will not have a significant economic impact on a substantial number of small entities because the number of small entities affected is not substantial.

G. Clean Air Act Procedural Requirements

The following procedural requirements of the Clean Air Act are addressed: Administrative listing, periodic review, external participation, and economic impact assessment.

1. Administrator Listing—Sections 111 and 129 of the Clean Air Act

As prescribed by section 111 of the Clean Air Act, establishment of standards of performance and emission guidelines for MWC's is based on the Administrator's determination (52 FR 25399, July 7, 1987) that these sources contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare. Additionally, section 129 of the 1990 Amendments to the Clean Air Act directs the Administrator to promulgate revised standards for new MWC's and guidelines for existing MWC's.

2. Periodic Review—Sections 111 and 129 of the Clean Air Act

Sections 111 and 129 of the Clean Air Act require that the standards and guidelines be reviewed not later than 5 years following the initial promulgation. At that time and at 5-year intervals thereafter, the Administrator shall review the standards and guidelines and revise them if necessary. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology, and reporting requirements.

3. External Participation

In accordance with section 117 of the Clean Air Act, publication of this promulgation was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies.

4. Economic Impact Assessment

Section 317A of the Clean Air Act requires the EPA to prepare an economic impact assessment for any standards or guidelines promulgated under section 111(b) of the Clean Air Act. An economic impact assessment was prepared for the promulgated standards and guidelines. In the manner described in the sections of this preamble regarding the impacts of and rationale for the promulgated standards and guidelines, the EPA considered all aspects of the economic impact assessment in promulgating the standards and guidelines. The economic impact assessment is included in the list of key technical documents at the beginning of today's notice under SUPPLEMENTARY INFORMATION.

List of Subjects in 40 CFR Part 60

Environmental Protection, Air pollution control, Intergovernmental relations, Incorporation by reference, Reporting and recordkeeping requirements.

Dated: October 31, 1995.

Carol M. Browner,

Administrator.

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 continues 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, 60.54b(a) and 60.54b(b).

(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, 60.58a(h)(6)(ii), and 60.58b(i)(6)(ii).

(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)(6)(ii) 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) introductory text 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

Subpart Ca—[Removed and Reserved]

5a. Part 60 is amended by removing and reserving subpart Ca.

Subpart Cb—[Redesignated as Subpart Cd]

Subpart Cc—[Reserved]

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 follows:

Subpart Cb—Emissions Guidelines and Compliance Times for Municipal Waste Combustors That Are Constructed on or Before December 19, 1995

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.

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 the weight of plastics, rubber, and/or rubber tires processed on a calendar quarter basis; the weight of chemical plant feedstocks and petroleum refinery feedstocks produced and marketed on a calendar quarter basis; and 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.

$$NO_{X_{24\text{-hr}}} = \frac{\sum_{i=1}^{h}\left(NO_{X_i}\right)\left(S_i\right)}{\sum_{i=1}^{h}\left(S_i\right)} \qquad (1)$$

where:

$NO_{X_{24\text{-hr}}}$=24-hr daily average nitrogen oxides emission concentration level for the emissions averaging plan (parts per million by volume corrected to 7 percent oxygen).

$NO_{X_{i\text{-hr}}}$=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 (hrs)
Mass burn waterwall	100	4
Mass burn refractory	100	4
Mass burn rotary refractory	100	24
Mass burn rotary waterwall	250	24
Modular starved air	50	4
Modular excess air	50	4
Refuse-derived fuel stoker	200	24
Buddling fluidized bed combustor	100	4
Circulating fluidized bed combustor	100	4
Pulverized coal/refuse-derived fuel mixed fuel-fired combustor	150	4
Spreader stoker coal/refuse-derived fuel mixed fuel-fired combustor	200	24

[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 December 19, 1996, 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 December 19, 2000.

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

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 June 19, 1996.

(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(l), 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 the weight of plastics, rubber, and/or rubber tires processed on a calendar quarter basis; the weight of chemical plant feedstocks and petroleum refinery feedstocks produced and marketed on a calendar quarter basis; and 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 June 19, 1996.

§ 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 June 19, 1996 if 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 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* or *MSW* means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, 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, MWC, or *municipal waste combustor unit:* (1) 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.

(2) 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:

(i) 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,

(ii) 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

(iii) The combustor water system, which starts at the feed water pump and ends at the piping exiting the steam drum or superheater.

(3) 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 June 19, 1996, 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 (hours)
Mass burn waterwall	100	4
Mass burn refractory	100	4
Mass burn rotary waterwall	100	24
Modular starved air	50	4
Modular excess air	50	4
Refuse-derived fuel stoker	150	24
Bubbling fluidized bed combustor	100	4
Circulating fluidized bed combustor	100	4
Pulverized coal/refuse-derived fuel mixed fuel-fired combustor	150	4
Spreader stoker coal/refuse-derived fuel mixed fuel-fired combustor	150	24

[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 December 19, 1996, 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 December 19, 1996, 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 December 19, 1996, 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 December 19, 1996, 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) of this section 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) December 19, 1996.

(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 December 19, 1995, 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 December 19, 1995 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 (%PHg) is computed using equation 1:

$$\left(\%P_{Hg}\right) = \left(\frac{E_i - E_o}{E_i}\right) \times 100 \qquad (1)$$

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 a 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:

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

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.

(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.

(l) The procedures specified in paragraphs (l)(1) through (l)(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(l) 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.

[FR Doc. 95–30257 Filed 12–18–95; 8:45 am]

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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

Dated: October 26, 1995.

Approved: ______________

R. R. Pixa,

CAPT, JAGC, U.S. Navy, Deputy Assistant Judge Advocate General (Admiralty).

[FR Doc. 95–28799 Filed 11–24–95; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60 NSPS;

[AD–FRL–5333–4]

RIN 2060–AA35, RIN 2060–AB55

Standards of Performance for New Stationary Sources: Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations and Reactor Processes; Amendment

AGENCY: Environmental Protection Agency (EPA).

ACTION: Correcting amendment.

SUMMARY: This document contains amendments to the standards of performance for new, modified, and reconstructed distillation operations in the synthetic organic chemical manufacturing industry (SOCMI) (Subpart NNN) published on June 29, 1990, and for new, modified, and reconstructed reactor processes in the synthetic organic chemical manufacturing industry (SOCMI) (Subpart RRR) published on August 31, 1993. Amendments are made to the spelling of certain chemical names, the CAS numbers for certain chemicals, and some cross-reference drafting errors. A clarifying sentence is also being added to certain paragraphs to avoid inadvertent duplication of report requirements.

EFFECTIVE DATE: November 27, 1995.

FOR FURTHER INFORMATION CONTACT: For further information about this correction contact Mr. Warren Johnson, (919) 541–5124, Organic Chemicals Group, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION:

Background

This document amends §§ 60.665 and 60.667 of Subpart NNN, and §§ 60.700, 60.704, 60.705 and 60.707 of Subpart RRR of 40 CFR Part 60. These sections deal with the applicability, test methods and procedures, recordkeeping and reporting requirements for the standards of performance for new, modified, and reconstructed distillation operations (Subpart NNN) and reactor processes (Subpart RRR) in the SOCMI industry.

As published, the final regulations contain spelling and CAS number errors for certain chemicals listed in § 60.667 Chemicals affected by Subpart NNN, and in § 60.667 Chemicals affected by Subpart RRR, respectively. This document serves to amend these errors.

As published, Subpart RRR, § 60.700 Applicability and designation of affected facility, contains some inadvertent cross-referencing errors which cause confusion in determining what is to be reported semiannually regarding exemptions for total resource effectiveness (TRE) greater than 8, production units with total design capacity of less than 1,100 tons per year, and facilities with low vent stream flow rates (0.011 scm/min). This document serves to amend these errors to language and meaning originally intended by the regulation.

As published on August 31, 1993 (58 FR 45948), Subpart RRR, § 60.704 Test methods and procedures, contains a calculation error in the TRE equation and some inadvertent cross-referencing errors which cause confusion in determining TRE and compliance procedures. The calculation error occurs in § 60.704(e)(1), which provides the equation for calculating the TRE index value. In this equation the first "0.88" is intended to be superscript, as it correctly appeared in the proposed rulemaking in the **Federal Register**, June 29, 1990 (55 FR 26945). The cross-referencing errors occur in § 60.704(f)(1) where notification is required for a recalculated TRE index value and § 60.704(h)(3) where method 18 is used to qualify for the total organic compound (TOC) low concentration exclusion. This document serves to amend these errors to language and meaning originally intended by the regulation.

As published, the reporting and recordkeeping requirements of Subparts NNN and RRR, in §§ 60.665 and 60.705, contain language that unintentionally infers duplication of process change reporting requirements. To eliminate this duplication, a sentence is being added to each of the §§ 60.665(l) (5) and (6) in Subpart NNN, and §§ 60.705(l) (4), (5), and (8) in Subpart RRR to clarify that these reports may be submitted either in conjunction with semiannual reports or as a single separate report. In addition, § 60.705(l)(1), which is a missing cross-reference causing confusion in determining appropriate reporting requirements for monitored exceedances, is also being amended to be consistent with the proposed rulemaking in the **Federal Register**, June 29, 1990 (55 FR 26978). This document serves to amend the text to language and meaning originally intended by the regulation.

List of Subjects in 40 CFR Part 60

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Metallic minerals, Nonmetallic minerals, Reporting and recordkeeping requirements.

Dated: November 8, 1995.

Mary D. Nichols,

Assistant Administrator for Air and Radiation.

For the reasons set out in the preamble, part 60 of chapter I of title 40 of the Code of Federal Regulations is amended as follows.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401–7601.

Subpart NNN—Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations

2. In § 60.665 paragraphs (l)(5) and (l)(6) are both amended by adding a new sentence after the second sentence in each paragraph to read as follows:

§ 60.665 Reporting and recordkeeping requirements.

* * * * *

(l) * * *

(5) * * * These reports may be submitted either in conjunction with semiannual reports or as a single separate report. * * *

(6) * * * These reports may be submitted either in conjunction with semiannual reports or as a single separate report. * * *

* * * * *

§ 60.667 [Amended]

3. Section 60.667 is amended in the table as follows:

a. By removing "6-Ethyl-1,2,3,4-tetrahydro-9,10-antracenedione" from the first column and by adding "6-Ethyl-1,2,3,4-tetrahydro-9,10-anthracenedione" in its place.

b. By removing "Isobytyraldehyde" from the first column and by adding "Isobutyraldehyde" in its place.

c. By revising the CAS number in the second column for Nonyl alcohol to read "143–08–8".

Subpart RRR—Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes

§ 60.700 [Amended]

4. Section 60.700 is amended as follows:

a. In paragraph (c)(2) by revising "§ 60.705 (g), (l) and (t)" to read "§ 60.705 (g), (l)(1), (l)(6) and (t)".

b. In paragraph (c)(3) by revising "paragraphs (i), (l)(6) and (n) of § 60.705" to read "§ 60.705 (i), (l)(5) and (n)".

c. In paragraph (c)(4) by revising "paragraphs (h), (l)(5), and (o) of § 60.705" to read "§ 60.705 (h), (l)(4) and (o)".

5. Section 60.704 is amended as follows:

a. In paragraph (e)(1) introductory text by revising the equation to read as follows:

§ 60.704 Test methods and procedures.

* * * * *

(e) * * *

(1) * * *

$$TRE = \frac{1}{E_{TOC}}\left[a + b(Q_s)^{0.88} + c(Q_s) + d(Q_s)(H_T) + e(Q_s)^{0.88}(H_T)^{0.88} + f(Y_s)^{0.5}\right]$$

* * * * *

b. In paragraph (f)(1) by revising "§ 60.702(a)" to read "§ 60.702 (a) or (b)".

c. In paragraph (h)(3) by revising "§ 60.704(b)(4) (i) and (vii)" to read "§ 60.704(b)(4) (i) and (iv)".

§ 60.705 [Amended]

6. Section 60.705 is amended in paragraph (l)(1) by revising "§ 60.705 (c) and (g)" to read "§ 60.705 (c), (f) and (g)".

7. In Section 60.705 paragraphs (l)(4), (l)(5) and (l)(8) are all amended by adding a new sentence after the second sentence in each paragraph to read as follows:

§ 60.705 Reporting and recordkeeping requirements.

* * * * *

(l) * * *

(4) * * * These reports may be submitted either in conjunction with semiannual reports or as a single separate report. * * *

(5) * * * These reports may be submitted either in conjunction with semiannual reports or as a single separate report. * * *

* * * * *

(8) * * * These reports may be submitted either in conjunction with semiannual reports or as a single separate report. * * *

* * * * *

§ 60.707 [Amended]

8. Section 60.707 is amended in the table as follows:

a. By removing "6-Ethyl-1,2,3,4-tetrahydro-9,10-antracenedione" from the first column and by adding "6-Ethyl-1,2,3,4-tetrahydro-9,10-anthracenedione" in its place.

b. By removing "Isobytyraldehyde" from the first column and by adding "Isobutyraldehyde" in its place.

c. By revising the CAS number in the second column for Butylbenzyl phthalate to read "85–68–7".

d. By revising the CAS number in the second column for Nonyl alcohol to read "143–08–8".

[FR Doc. 95–28381 Filed 11–24–95; 8:45 am]

BILLING CODE 6560-50-P

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40 CFR Part 300

[FRL–5333–6]

National Oil and Hazardous Substances Pollution Contingency Plan; National Priorities List

AGENCY: Environmental Protection Agency.

ACTION: Notice of deletion of Woodbury Chemical Site from the National Priorities List.

SUMMARY: The Environmental Protection Agency (EPA) Region IV announces the deletion of the Woodbury Chemical Site, Princeton, Florida, from the National Priorities List (NPL). The NPL constitutes Appendix B which is 40 CFR part 300 the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), which EPA promulgated pursuant to Section 105 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended. EPA and the State of Florida Department of Environmental Protection (FDEP) have determined that the Site poses no significant threat to public health or the environment and therefore, further response measures pursuant to CERCLA are not appropriate.

EFFECTIVE DATE: November 27, 1995.

ADDRESSES: Joe Franzmathes, Director, Waste Management Division, U.S. Environmental Protection Agency, 345 Courtland Street NE, Atlanta, Georgia 30365. Comprehensive information on this Site is available through the Region IV public docket, which is available for viewing at the Woodbury Chemical information repositories at two locations. Locations and phone numbers are: U.S EPA Record Center, 345 Courtland Street N.E., Atlanta, Georgia 30365, (404) 347–0506, and South Dade Regional Library, 10750 SW 211th Street, Cutler Ridge, Florida 33189, (305) 233–8140.

FOR FURTHER INFORMATION CONTACT: Joe Franzmathes, (404) 347–3454.

SUPPLEMENTARY INFORMATION: The Woodbury Chemical Site in Princeton, Florida, is being deleted from the NPL.

A Notice of Intent to Delete for this site was published on August 21, 1995 (60 FR 43424). The closing date for comments on the Notice of Intent to Delete was September 20, 1995. EPA received no comments and therefore did not prepare a Responsiveness Summary.

The EPA identifies sites which appear to present a significant risk to public health welfare, or the environment and it maintains the NPL as the list of those sites. Sites on the NPL may be subject of Hazardous Substance Response Trust Fund (Fund-) financed remedial actions. Any site deleted from the NPL remains eligible for Fund-financed remedial actions in the unlikely event that conditions at the site warrant such action. Section 301.425(e)(3) of the NCP states that Fund-financed actions may be taken at sites deleted from the NPL in the unlikely event that conditions at the site warrant such action. Deletion of a site from the NPL does not affect responsible party liability or impede agency efforts to recover costs associated with response efforts.

List of Subjects in 40 CFR Part 300

Environmental protection, Air pollution control, Chemicals, Hazardous substances, Hazardous waste, Intergovernmental relations, Penalties, without visible emissions provisions in the Texas SIP, certain NAAQS (e.g. particulate, sulfur oxides, lead, ozone, and nitrogen dioxide) could be threatened. Clearly, the presence of the visible emissions provisions has resulted in particulate matter controls across the State of Texas. For the important visible emissions provisions to be eliminated from the Texas SIP, the State of Texas would have to submit a modeling demonstration to the EPA showing that the NAAQS could be attained and maintained in the State without the visible emissions provisions in Regulation I. Also, the EPA believes that the opacity provisions in Texas Regulation I provide visibility protection (visibility is an air quality related value). In addition, opacity limitations can be used as an indicator (or in some cases, as a determinator) in judging compliance or noncompliance with particulate matter (PM10) and other pollutant standards in the Texas SIP. Finally, the EPA believes that the visible emissions provisions, along with the Federal title V and the State permitting programs, allow for reasonable flexibility in meeting monitoring, recordkeeping, reporting, and compliance certification requirements so that an undue burden does not fall upon subject sources. It is important to note that the original enhanced monitoring proposal package, which provided for certain monitoring, recordkeeping, reporting, and compliance certification requirements, was withdrawn from the Office of Management and Budget on April 3, 1995, was revised significantly, and is planned to be reproposed in the Spring of 1996. The concerns about potentially burdensome monitoring, recordkeeping, reporting, and compliance certification requirements should be resolved under the new proposal that the EPA, in conjunction with the States, local agencies, and the regulated community, will produce.

It is the intent of section 110 of the CAA for States to develop an effective SIP control strategy to ensure attainment and maintenance of the NAAQS. One principle that must be adhered to is that the measures contained in the SIP be federally enforceable. To be enforceable, a legal means to ensure that sources remain in compliance with any measures or rules contained in the SIP must be provided. Federal and State suits are the legal means by which EPA ensures compliance with SIP requirements.

2. A letter was received from Neil Carman representing the Sierra Club (Lone Star Chapter). The Sierra Club supported the proposed action to make federally enforceable the visible emissions provisions of Texas Regulation I with one exception. The Sierra Club believed that the Midlothian cement plants burning hazardous waste, or any cement plant in Texas burning hazardous waste, should be subject to a more stringent visible emissions standard than the grandfathered level of 30 percent opacity. The Sierra Club also stated that the grandfathered status for Texas Industries Inc. and North Texas Cement Company in Midlothian should have been terminated when they were allowed to burn hazardous waste.

3. A letter was received from Sue Pope representing Downwinders At Risk (DAR). The DAR also believed that the Midlothian cement plants burning hazardous waste should be subject to a more stringent visible emissions standard than the grandfathered level of 30 percent opacity.

EPA's response to letters #2 and #3: The EPA will approve the current provisions in order to strengthen the Texas SIP. There are currently 4 PM10 monitors operating in the city of Midlothian, Texas. The data collected from these monitors indicate levels far below the annual and 24-hour PM10 NAAQS of 50 micrograms per cubic meter and 150 micrograms per cubic meter, respectively. EPA believes that these more stringent visible emissions regulations will ensure protection of the PM10 NAAQS in Midlothian. It is important to note that EPA continues to participate in meetings with the Sierra Club and DAR concerning Midlothian air quality concerns.

Final Rulemaking Action

In this final action EPA is promulgating a revision to Texas Regulation I addressing visible emissions. This revision updates the Texas SIP and strengthens the provisions of Texas Regulation I. This revision was submitted by the Governor to the EPA by letters dated August 21, 1989, January 29, 1991, October 15, 1992 and August 4, 1993.

Nothing in this action should be construed as permitting or allowing or establishing a precedent for any future request for revision to any SIP. Each request for revision to the SIP shall be considered separately in light of specific technical, economic, and environmental factors, and in relation to relevant statutory and regulatory requirements.

Miscellaneous

Under the Regulatory Flexibility Act, 5 U.S.C. 600 *et seq.*, the EPA must prepare a regulatory flexibility analysis assessing the impact of any proposed or final rule on small entities (5 U.S.C. 603 and 604). Alternatively, the EPA may certify that the rule will not have a significant impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and government entities with jurisdiction over populations of less than 50,000.

SIP approvals under section 110 and subchapter I, part D, of the CAA do not create any new requirements, but simply approve requirements that the State is already imposing. Therefore, because the Federal SIP-approval does not impose any new requirements, I certify that it does not have a significant impact on any small entities affected. Moreover, due to the nature of the Federal-State relationship under the CAA, preparation of a regulatory flexibility analysis would constitute Federal inquiry into the economic reasonableness of State action. The CAA forbids the EPA to base its actions concerning SIPs on such grounds (*Union Electric Co.* v. *U.S. E.P.A.*, 427 U.S. 246, 256–66 (1976); 42 U.S.C. section 7410(a)(2)).

Under sections 202, 203, and 205 of the Unfunded Mandates Reform Act of 1995 (Unfunded Mandates Act), signed into law on March 22, 1995, the EPA must undertake various actions in association with proposed or final rules that include a Federal mandate that may result in estimated costs of $100 million or more to the private sector, or to state, local, or tribal governments in the aggregate.

Through submission of this SIP or plan revision, the State and any affected local or tribal governments have elected to adopt the program provided for under section 110 of the CAA. These rules may bind the State, local and tribal governments to perform certain actions and also require the private sector to perform certain duties. To the extent that the rules being approved by this action will impose no new requirements, such sources are already subject to these regulations under the State law. Accordingly, no additional costs to the State, local, or tribal governments, or to the private sector, result from this action. The EPA has also determined that this final action does not include a mandate that may result in estimated costs of $100 million or more to the State, local, or tribal governments in the aggregate or to the private sector.

Under section 307(b)(1) of the CAA, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by July 8, 1996. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements (see section 307(b)(2)).

Executive Order

The Office of Management and Budget has exempted this action from review under Executive Order 12866.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Carbon monoxide, Incorporation by reference, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

Note: Incorporation by reference of the SIP for the State of Texas was approved by the Director of the Federal Register on July 1, 1982.

Dated: April 17, 1996.

Allyn M. Davis,

Acting Regional Administrator.

40 CFR part 52 is amended as follows:

PART 52—[AMENDED]

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart SS—Texas

2. Section 52.2270 is amended by adding paragraph (c)(94) to read as follows:

§ 52.2270 Identification of plan.

* * * * *

(c) * * *

(94) Revisions to the Texas SIP addressing visible emissions requirements were submitted by the Governor of Texas by letters dated August 21, 1989, January 29, 1991, October 15, 1992 and August 4, 1993.

(i) Incorporation by reference.

(A) Revisions to Texas Air Control Board (TACB), Regulation I, Section 111.111, "Requirements for Specified Sources;" Subsection 111.111(a) (first paragraph) under "Visible Emissions;" Subsections 111.111(a)(1) (first paragraph), 111.111(a)(1)(A), 111.111(a)(1)(B) and 111.111(a)(1)(E) under "Stationary Vents;" Subsection 111.111(b) (first paragraph) under "Compliance Determination Exclusions;" and Subsections 111.113 (first paragraph), 111.113(1), 111.113(2), and 111.113(3) under "Alternate Opacity Limitations," as adopted by the TACB on June 16, 1989.

(B) TACB Board Order No. 89–03, as adopted by the TACB on June 16, 1989.

(C) Revisions to Texas Air Control Board (TACB), Regulation I, Section 111.111, "Requirements for Specified Sources;" Subsections 111.111(a)(4)(A) and 111.111(a)(4)(B)(i) under "Railroad Locomotives or Ships;" Subsections 111.111(a)(5)(A) and 111.111(a)(5)(B)(i) under "Structures;" and Subsections 111.111(a)(6)(A) and 111.111(a)(6)(B)(i) under "Other Sources," as adopted by the TACB on October 12, 1990.

(D) TACB Board Order No. 90–12, as adopted by the TACB on October 12, 1990.

(E) Revisions to Texas Air Control Board (TACB), Regulation I, Section 111.111, "Requirements for Specified Sources;" Subsections 111.111(a)(1)(C), 111.111(a)(1)(D), 111.111(a)(1)(F) (first paragraph), 111.111(a)(1)(F)(i), 111.111(a)(1)(F)(ii), 111.111(a)(1)(F)(iii), 111.111(a)(1)(F)(iv), and 111.111(a)(1)(G) under "Stationary Vents;" Subsections 111.111(a)(2) (first paragraph), 111.111(a)(2)(A), 111.111(a)(2)(B), and 111.111(a)(2)(C) under "Sources Requiring Continuous Emissions Monitoring;" Subsection 111.111(a)(3) (first paragraph) under "Exemptions from Continuous Emissions Monitoring Requirements;" Subsection 111.111(a)(4), "Gas Flares," title only; Subsection 111.111(a)(5) (first paragraph) under "Motor Vehicles;" Subsections 111.111(a)(6)(A), 111.111(a)(6)(B) (first paragraph), 111.111(a)(6)(B)(i) and 111.111(a)(6)(B)(ii) under "Railroad Locomotives or Ships" (Important note, the language for 111.111(a)(6)(A) and 111.111(a)(6)(B)(i) was formerly adopted as 111.111(a)(4)(A) and 111.111(a)(4)(B)(i) on October 12, 1990); Subsections 111.111(a)(7)(A), 111.111(a)(7)(B) (first paragraph), 111.111(a)(7)(B)(i) and 111.111(a)(7)(B)(ii) under "Structures" (Important note, the language for 111.111(a)(7)(A) and 111.111(a)(7)(B)(i) was formerly adopted as 111.111(a)(5)(A) and 111.111(a)(5)(B)(i) on October 12, 1990); and Subsections 111.111(a)(8)(A), 111.111(a)(8)(B) (first paragraph), 111.111(a)(8)(B)(i) and 111.111(a)(8)(B)(ii) under "Other Sources" (Important note, the language for 111.111(a)(8)(A) and 111.111(a)(8)(B)(i) was formerly adopted as 111.111(a)(6)(A) and 111.111(a)(6)(B)(i) on October 12, 1990), as adopted by the TACB on September 18, 1992.

(F) TACB Board Order No. 92–19, as adopted by the TACB on September 18, 1992.

(G) Revisions to Texas Air Control Board (TACB), Regulation I, Section 111.111, "Requirements for Specified Sources;" Subsections 111.111(a)(4)(A) (first paragraph), 111.111(a)(4)(A)(i), 111.111(a)(4)(A)(ii), and 111.111(a)(4)(B) under "Gas Flares," as adopted by the TACB on June 18, 1993.

(H) TACB Board Order No. 93–06, as adopted by the TACB on June 18, 1993.

(ii) Additional material.

(A) TACB certification letter dated July 27, 1989, and signed by Allen Eli Bell, Executive Director, TACB.

(B) TACB certification letter dated January 9, 1991, and signed by Steve Spaw, Executive Director, TACB.

(C) TACB certification letter dated October 1, 1992, and signed by William Campbell, Executive Director, TACB.

(D) TACB certification letter dated July 13, 1993, and signed by William Campbell, Executive Director, TACB.

[FR Doc. 96–11399 Filed 5–7–96; 8:45 am]

BILLING CODE 6560–50–P

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40 CFR Part 60

[FRL–5467–8] NSPS

Amendment to Standards of Performance for New Stationary Sources; Small Industrial-Commercial-Institutional Steam Generating Units

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final action.

SUMMARY: Today's action promulgates revisions to the new source performance standards (NSPS) for new, modified, and reconstructed small industrial-commercial-institutional steam generating units (40 CFR part 60, Subpart Dc) that were proposed on November 15, 1995. The revisions exclude certain small steam generating units, when conducting combustion research, from the category of small steam generating units subject to NSPS control requirements for sulfur dioxide (SO_2) and particulate matter (PM). The NSPS are issued under the authority of section 111 of the Clean Air Act (CAA).

Following promulgation of the NSPS, litigation was filed by Babcock and Wilcox, who repeated a concern they had expressed during the public comment period following proposal of the NSPS. That is, they had requested an exemption from the NSPS for steam generating units of 14.6 MW (50 million Btu/hr) heat input capacity or less used for combustion research based on intermittent and infrequent operation.

Discussions with Babcock and Wilcox made it clear that there is a legitimate concern regarding the ability of experimental, and sometimes unpredictable, air pollution control technology to consistently meet the NSPS. This, coupled with the fact that these steam generating units provide valuable data on both the combustion process and methods of air pollution control which result in improved fuel efficiency, improved air pollution control efficiency, and less expensive air pollution control, led the EPA to provide the exemption in an effort to encourage combustion research.

EFFECTIVE DATE: May 8, 1996.

ADDRESSES: *Docket.* Docket No. A–86–02, containing information used in developing the original NSPS and the revisions, and the comments received during the public comment period, is available for public inspection and copying between 8 a.m. and 4 p.m., Monday through Friday, at the U.S. Environmental Protection Agency, Air and Radiation Docket and Information Center (6102), 401 M Street, S.W., Washington, D.C. 20460. The docket is located at the above address in room M–1500, Waterside Mall (ground floor). The materials are available for review in the docket center or copies may be mailed on request from the Air and Radiation Docket and Information Center by calling (202) 260–7548 or –7549. The FAX number for the Center is (202) 260–4000. A reasonable fee may be charged for copying docket materials.

FOR FURTHER INFORMATION CONTACT: For information concerning specific aspects of this action, contact Mr. Rick Copland, (919) 541–5265 , or Mr. Fred Porter (919) 541–5251 Combustion Group, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION: Today's rule resolves litigation in the case of *Babcock and Wilcox Company* v. *U.S. EPA*, No. 90–1509 (D.C. Cir.) (See 60 FR 57373, November 15, 1995). The rule applies to any small steam generating unit used for combustion research as long as the heat generated during the conduct of such combustion research is not used for any purpose other than preheating the combustion air for the steam generating unit (i.e., the heat generated is released to the atmosphere without being used for space heating, process heating, driving pumps, preheating combustion air for other units, generating electricity, or any other purpose).

Five comment letters were received during the public comment period on the November 15, 1995 proposal. All five commentors supported the proposal. One commentor suggested that the EPA extend today's rule to large steam generating units regulated under 40 CFR Part 60, Subpart Db and that the EPA allow the heat generated during the research activity to be used productively. One commentor suggested that all natural gas-fired steam generating units be exempt from the provisions of Subpart Dc, including notification requirements. The comments did not reveal any facilities that conduct combustion research with small steam generating units and that also use the heat generated during periods of combustion research for purposes other than preheating the combustion air for the steam generating unit.

The EPA believes that today's rule already represents a significant exercise of regulatory flexibility which does not warrant further expansion at this time. Accordingly, the EPA believes that the prohibition on the use of the heat generated during the conduct of combustion research is appropriate in that it allows for the conduct of such research without compromising the EPA's ability to enforce the NSPS for small steam generating units (See 60 FR at 57374). Indeed, this limitation merely reflects the existing operating practice of the Babcock and Wilcox steam generating unit at issue (described below). The EPA believes that this provision is also appropriate for any other steam generating unit that conducts combustion research.

As discussed in the November 15, 1995 proposal, the EPA agreed to revise the applicability of the SO_2 and PM emission control requirements of 40 CFR Part 60, Subpart Dc because of the limited potential impact of combustion research on the environment: Babcock & Wilcox Company, the petitioner which requested the revision of the applicability of the standards of performance, operates a single small steam generating unit occasionally (less than five percent of the unit's operating time) to evaluate the performance of, and to develop, unproven combustion technologies. Significantly, Babcock and Wilcox Company also does not use the heat that the steam generating unit produces during periods of combustion research for any purpose (such as space heating, process heating, electric generation, etc.) other than preheating the combustion air for the steam generating unit. Accordingly, in order to minimize the potential for inappropriate claims of combustion research (potentially undermining EPA's ability to enforce the standards of performance for small steam generating units), the EPA has conditioned the exclusion of certain limited combustion research activities from the standards of performance on the requirement that a steam generating unit not use the heat produced during combustion research for purposes other than preheating the combustion air for the steam generating unit.

The comments that recommend expanding today's rule to include large steam generating units regulated under Subpart Db or all natural gas-fired units are not appropriate for consideration within the scope of this limited action. The EPA will consider these comments as well as the comment concerning the definition of combustion research as a part of the ongoing activity to develop and/or revise standards of performance for industrial steam generating units under CAA sections 111 and 112.

Economic and Regulatory Impacts

Today's rule will impose no additional costs on the regulated community or the national economy. It would reduce the costs of compliance for some small steam generating units when conducting combustion research by not requiring them to comply with the NSPS for new, modified, and reconstructed small industrial-commercial-institutional steam generating units. Accordingly, the EPA has determined that today's rule: (1) does not constitute a "significant rule" under Executive Order 12286 (the promulgation would not result in any increase in costs or prices and would not disrupt market competition), (2) does not constitute a substantial revision that would require an economic impact assessment pursuant to CAA section 317, (3) does not constitute a Federal mandate under Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), P.L. 104–4, for State, local, or tribal governments or the private sector, (4) does not contain regulatory requirements that might significantly or uniquely affect small governments under Title II of UMRA, and (5) would not affect the public reporting burden for the collection of information required, in compliance with the Paperwork Reduction Act of 1980, under the NSPS for small steam generating units.

Pursuant to 5 U.S.C. 605(b), the Administrator certifies that these revisions would not have a significant impact on a substantial number of small entities. Not only would today's rule reduce the regulatory burden on the small steam generating units source category, but it has previously been determined that, even without today's promulgated revisions, the standards would not affect a substantial number of small entities (See 55 FR 37682, September 12, 1990).

List of Subjects in 40 CFR Part 60

Environmental protection, Air pollution control, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: April 30, 1996.

Carol M. Browner,
Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as set forth below.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7414, 7416, 7429, and 7601.

2. Section 60.40c is amended by revising paragraph (a) and adding paragraphs (c) and (d) to read as follows:

§ 60.40c Applicability and delegation of authority.

* * * * *

(a) Except as provided in paragraph (d) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million Btu per hour (Btu/hr)) or less, but greater than or equal to 2.9 MW (10 million Btu/hr).

* * * * *

(c) Steam generating units which meet the applicability requirements in paragraph (a) of this section are not subject to the sulfur dioxide (SO_2) or particulate matter (PM) emission limits, performance testing requirements, or monitoring requirements under this subpart (§§ 60.42c, 60.43c, 60.44c, 60.45c, 60.46c, or 60.47c) during periods of combustion research, as defined in § 60.41c.

(d) Any temporary change to an existing steam generating unit for the purpose of conducting combustion research is not considered a modification under § 60.14.

3. Section 60.41c is amended by adding a new definition for "Combustion research" in alphabetical order to read as follows:

§ 60.41c Definitions.

* * * * *

Combustion research means the experimental firing of any fuel or combination of fuels in a steam generating unit for the purpose of conducting research and development of more efficient combustion or more effective prevention or control of air pollutant emissions from combustion, provided that, during these periods of research and development, the heat generated is not used for any purpose other than preheating combustion air for use by that steam generating unit (i.e., the heat generated is released to the atmosphere without being used for space heating, process heating, driving pumps, preheating combustion air for other units, generating electricity, or any other purpose).

* * * * *

[FR Doc. 96–11329 Filed 5–7–96; 8:45 am]

BILLING CODE 6560–50–P

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40 CFR Part 80

[FRL–5501–3]

Adjustment of Reid Vapor Pressure Lower Limit for Reformulated Gasoline Sold in the State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule.

SUMMARY: EPA is amending the lower limit of the valid range for Reid Vapor Pressure (RVP) for reformulated gasoline certified under the simple model and sold in the State of California. The lower limit is being changed from 6.6 pounds per square inch (psi) to 6.4 psi. EPA is taking this action because the Agency believes that it will result in no negative environmental impact and, for reasons discussed below, the Agency believes it is proper in the limited case of California gasoline.

In the proposed rules section of today's **Federal Register**, EPA is proposing the same action covered by this direct final rule (i.e., to amend the lower limit of the valid range for RVP for reformulated gasoline certified under the simple model and sold in the State of California from 6.6 to 6.4 psi). If adverse comment or a request for a public hearing is received on this direct final rule, EPA will withdraw the direct final rule and address the comments received in a subsequent final rule on the related proposed rule. No additional opportunity for public comment on this change to the lower limit of the simple model's valid range for RVP will be provided.

DATES: This action will become effective on July 8, 1996, unless notice is received by June 7, 1996 from someone who wishes to submit adverse comment or requests an opportunity for a public hearing. If such notice is received, EPA will withdraw this direct final rule, and a timely notice will be published in the **Federal Register** to indicate the withdrawal.

ADDRESSES: All documents relevant to this direct final rulemaking have been placed in public docket number A–96–14. The public docket may be inspected at U.S. Environmental Protection Agency, Air Docket Section, 401 M Street, SW, Room M–1500, Washington, D.C. 20460. Documents may be inspected between the hours of 8:00 a.m. and 5:30 p.m., Monday through Friday. A reasonable fee may be charged for copying docket materials.

FOR FURTHER INFORMATION CONTACT: Anne-Marie C. Pastorkovich, U.S. Environmental Protection Agency, Office of Air and Radiation, (202) 233–9013.

SUPPLEMENTARY INFORMATION:

I. Regulated Entities

Regulated categories and entities potentially affected by this action include:

Category	Examples of regulated entities
Industry	Refiners of California gasoline.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could be potentially regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your entity is regulated by this action, you should carefully examine section 80.42 (c)(1), note (1), of today's regulatory action. You should also carefully examine the existing provisions at 40 CFR section 80.81, dealing specifically with California gasoline.

II. Introduction

A. Reformulated Gasoline Standards and California Covered Areas

Section 211(k) of the Clean Air Act (the Act) requires EPA to establish standards for reformulated gasoline to be used in specified ozone nonattainment areas (covered areas), as well as standards for non-reformulated, or conventional, gasoline used in the rest of the country, beginning in January, 1995. The reformulated gasoline covered areas in California are Los Angeles and San Diego, and, beginning June 1, 1996, Sacramento, as a result of its redesignation as a Severe ozone nonattainment area. The Act requires that reformulated gasoline reduce VOC and toxics emissions from motor vehicles, not increase NO_x

* * * * *

[FR Doc. 95–22156 Filed 9–8–95; 8:45 am]
BILLING CODE 6560–50–P

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40 CFR Part 60

[AD–FRL–5287–7]

Standards of Performance for New Stationary Sources Appendix A—Reference Methods; Amendments to Method 24 for the Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This rule establishes procedures for the determination of volatile matter content, density, volume solids, and water content for non thin film ultraviolet radiation-cured coatings. Method 24 refers to the American Society for Testing and Materials (ASTM) procedures for the determination of volatile matter content, density, volume solids, weight solids, and water content of surface coatings. This ASTM method excluded ultraviolet radiation-cured coatings which was not EPA's intent. Therefore, EPA is revising Method 24 to apply to non thin film ultraviolet radiation-cured coatings.

EFFECTIVE DATE: September 11, 1995. The incorporation by reference of certain publications listed in the regulation is approved by the Director of the Federal Register as of September 11, 1995.

ADDRESSES: *Docket.* Docket No. A–94–37, containing material relevant to this rulemaking, is available for public inspection and copying between 8:30 a.m. and Noon, and 1:30 and 3:30 p.m., Monday through Friday, at EPA's Air Docket Section, Room M1500, First Floor, Waterside Mall, Gallery 1, 401 M Street, SW., Washington, DC 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Candace Sorrell at (919) 541–1064, Source Characterization Group A (MD–19), Emissions, Monitoring, and Analysis Division, US Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION:

I. The Rulemaking

Method 24 was intended to be used for measuring volatile organic compounds content of all coatings that are intended for either ambient or baking film foundation. When Method 24 was published in 1980 it referenced the American Society for Testing and Materials (ASTM) Method D 2369–81, which the Environmental Protection Agency believed would apply to all coatings. However, that method was not applicable to ultraviolet (UV) radiation-cured coatings and this amendment to Method 24 will incorporate ASTM Method D 5403–93, which does contain those procedures.

This rulemaking does not impose emission measurement requirements beyond those specified in the current regulation, nor does it change any emission standard. Rather, the rulemaking would simply amend an existing test method associated with emission measurement requirements that would apply irrespective of this rulemaking.

II. Public Participation

The opportunity to hold a public hearing on February 8, 1995 at 10 a.m. was present in the proposal notice, but no one desired to make an oral presentation. The public comment period was from January 9, 1995 to March 7, 1995.

III. Significant Comments and Changes to the Proposed Rulemaking

Seven comment letters were received from the proposal rulemaking. The major comments and responses are summarized in this preamble.

Three comments believe that ASTM D 5403–93 is not applicable to thin film UV cured coatings and inks. They noted that to meet the minimum sample size requirement of 0.2 grams, at the coatings recommended thickness, the substrate would be too large to weigh on normal laboratory balances. They requested that the method be modified to state this limitation.

The EPA agrees that the method should be modified to state that ASTM D 5403–93 is not applicable to thin film UV cured coatings and inks. For this method a thin film UV cured coating or ink is one which will not allow the tester to apply at least 0.2 g of coating to the substrate at the supplier recommended film thickness. Revisions have been made to add the equation used to determine if ASTM D 5403–93 is applicable. The revisions also include the requirement of a minimum size substrate before a coating can be classified thin film for this method.

One commenter requested that the cure test at 50 percent exposure and the oven drying portion of ASTM D 5403–93 be deleted from the proposed Method 24 amendments for UV cured coatings. The commenter believes that these steps should be deleted because they expose the cured coatings to conditions to which they would not normally be exposed and over estimate potential emissions.

The EPA does not agree with the commenter's argument that these steps over estimate potential emissions. The purpose of the cure test is to ensure that the coating is properly cured before being placed in the oven. If the coating is not properly cured before being placed in the oven, the emissions will be biased high. The purpose of placing the cured coating in the oven is to determine the VOC emissions that will be emitted over time. Even after a coating is cured under normal procedures, VOC are released during the life time of the coating.

Two commenters were concerned that EPA looks at this modification to Method 24 as a complete "fix it" for the test method. They both noted section 1.4 of ASTM D 5403–93 which states that the method may not be applicable to radiation curable materials wherein the volatile material is water.

The EPA is not trying to imply that this modification makes Method 24 perfect. The EPA recognizes the limitations of ASTM D 5403–93 as stated in Section 1 of the method and also its limitations with respect to thin film radiation cured coating as previously discussed in this preamble. However, Method 24 is the best method currently available for determining the VOC content of coatings and inks. The EPA is always investigating new ways to improve its current test methods including Method 24.

IV. Administrative Requirements

A. Docket

The docket is an organized and complete file for all information submitted or otherwise considered by EPA in the development of this proposed rulemaking. The principle purposes of the docket are: (1) To allow interested parties to identify and locate documents so that they can effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review (except for interagency review materials).

[Section 307(d)(7)(A)].

B. Executive Order 12866

Under Executive Order 12866 (58 FR 51735 (October 4, 1993)), the Agency must determine whether a regulatory action is "significant" and therefore subject to Office of Management and Budget (OMB) review and the requirements of this Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligation of recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is not "significant" because none of the listed criteria apply to this action. Consequently, this action was not submitted to OMB for review under Executive Order 12866.

C. Unfunded Mandates Act

Section 202 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act") (signed into law on March 22, 1995) requires that the Agency prepare a budgetary impact statement before promulgating a rule that includes a Federal mandate that may result in expenditure by State, local, and tribal governments, in aggregate, or by the private sector of $100 million or more in any one year. Section 204 requires the Agency to establish a plan for obtaining input from and informing, educating, and advising any small governments that may be significantly or uniquely affected by the rule.

Under section 205 of the Unfunded Mandates Act, the Agency must identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a budgetary impact statement must be prepared. The Agency must select form those alternatives the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule, unless the Agency explains why this alternative is not selected or the selection of this alternative is inconsistent with law.

Because this proposed rule is estimated to result in the expenditure by State, local, and tribal governments or the private sector of less than $100 million in any one year, the Agency has not prepared a budgetary impact statement or specifically addressed the selection of the least costly, most cost-effective, or least burdensome alternative. Because small governments will not be significantly or uniquely affected by this rule, the Agency is not required to develop a plan with regard to small governments.

D. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980 requires the identification of potentially adverse impacts of Federal regulations upon small business entities. The Act specifically requires the completion of an RFA analysis in those instances where small business impacts are possible. Because this rulemaking imposes no adverse economic impacts, an analysis has not been conducted. Pursuant to the provision of 5 U.S.C. 605(b), I hereby certify that the promulgated rule will not have an impact on small entities because no additional costs will be incurred.

E. Paperwork Reduction Act

This rule does not change any information collection requirements subject to Office of Management and Budget under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

List of Subjects in 40 CFR Part 60

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Surface coating of metal furniture, Automotive and light duty truck surface coating operations, Graphic arts industry publications rotogravure printing, Pressure sensitive tape and label surface coating, Industrial surface coating, Large appliances, Metal coil surface coating, Beverage can surface coating.industry, Flexible vinyl and urethane coating and printing, Plastic parts for business machine coatings industry, Incorporation by reference, Reporting and recordkeeping requirements.

Dated: August 23, 1995.

Carol M. Browner,

Administrator.

40 CFR part 60 is amended as follows:

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401–7601.

2. In § 60.17 of Subpart A, by adding a paragraph (a)(63) to read as follows:

§ 60.17 Incorporation by reference.

* * * * *

(a) * * *

(63) ASTM D 5403–93 Standard Test Methods for Volatile Content of Radiation Curable Materials. IBR approved September 11, 1995 for Method 24 of Appendix A.

* * * * *

3. In Method 24 of Appendix A, Section 3.1 is amended by removing the words "For all other coatings analyzed as follows":

4. In Method 24 of Appendix A, Sections 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 are redesignated as Sections 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, respectively.

5. In Method 24 of Appendix A, Equations 24–1 through 24–4 are redesignated as Equations 24–2 through 24–5, respectively.

6. In Method 24 of Appendix A, newly redesignated Section 3.8.1, last sentence, "Section 3.4" is revised to read "Section 3.5".

7. In Method 24 of Appendix A, newly redesignated Section 3.8.2, second sentence, "Section 3.3" is revised to read "Section 3.4".

8. In Method 24 of Appendix A, newly redesignated Section 3.8.2, third sentence, "Section 3.4" is revised to read "Section 3.5".

9. In Method 24 of Appendix A, newly redesignated Section 3.8.2.4, last sentence, "Equation 24–1" is revised to read "Equation 24–2".

10. In Method 24 of Appendix A, Sections 2.6, 3.2 and 3.9 are added to read as follows:

* * * * *

2\. * * *

2.6 ASTM D 5403–93 Standard Test Methods for Volatile Content of Radiation Curable Materials (incorporated by reference—see § 60.17).

* * * * *

3.2 Non Thin-film Ultraviolet Radiation-cured Coating. To determine volatile content of non thin-film ultraviolet radiation-cured (UV radiation-cured) coatings, follow the procedures in Section 3.9. Determine water content, density and solids content of the UV-cured coatings according to Sections 3.4, 3.5, and 3.6, respectively. The UV-cured coatings are coatings which contain unreacted monomers that are polymerized by exposure to ultraviolet light. To determine if a coating or ink can be classified as a thin-film UV cured coating or ink, use the following equation:

$C=F\ A\ D$ Eq. 24–1

Where:

A=Area of substrate, in^2, cm^2.
C=Amount of coating or ink added to the substrate, g.
D=Density of coating or ink, g/in^3 (g/cm^3)
F=Manufacturer's recommended film thickness, in (cm).

If C is less than 0.2 g and A is greater than or equal to 35 in^2 (225 cm^2) then the coating or ink is considered a thin-film UV radiation-cured coating for determining applicability of ASTM D 5403–93.

Note: As noted in Section 1.4 of ASTM D 5403–93, this method may not be applicable to radiation curable materials wherein the volatile material is water. For all other coatings not covered by Sections 3.1 or 3.2 analyze as follows:

* * * * *

3.9 UV-cured Coating's Volatile Matter Content. Use the procedure in ASTM D 5403–93 (incorporated by reference—see § 60.17) to determine the volatile matter content of the coating except the curing test described in NOTE 2 of ASTM D 5403–93 is required.

* * * * *

[FR Doc. 95–21527 Filed 9–8–95; 8:45 am]

BILLING CODE 6560–50–P

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40 CFR Part 81

[CT–22–1–7078a; A–1–FRL–5271–5]

Clean Air Act Promulgation of Reclassification of PM$_{10}$ Nonattainment Areas—Connecticut; Approval of 1-Year Extension of Attainment Date for New Haven

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule.

SUMMARY: EPA is fully approving Connecticut's request for a 1-year extension of the attainment date for the New Haven PM10 nonattainment area. This action is based on monitored air quality data for the national ambient air quality standard for PM10 during the years 1992–94. This action is being taken under the Clean Air Act.

DATES: This final rule is effective November 13, 1995, unless notice is received by October 11, 1995 that adverse or critical comments will be submitted. If the effective date is delayed, timely notice will be published in the **Federal Register**.

ADDRESSES: Comments may be mailed to Susan Studlien, Acting Director, Air, Pesticides and Toxics Management Division, EPA-New England, JFK Federal Building (AAA), Boston, MA 02203–2211. Copies of the documents relevant to this action are available for public inspection by appointment during normal business hours at the Air, Pesticides and Toxics Management Division, EPA-New England, One Congress Street, 10th floor, Boston, MA; Air and Radiation Docket and Information Center, US Environmental Protection Agency, 401 M Street, SW., (LE–131), Washington, DC 20460; and the Bureau of Air Management, Department of Environmental Protection, State Office Building, 79 Elm Street, Hartford, CT 06106–1630.

FOR FURTHER INFORMATION CONTACT: Matthew B. Cairns, (617) 565–4982.

SUPPLEMENTARY INFORMATION:

Background

Clean Air Act Requirements and EPA Actions Concerning Designation and Classification

On the date of enactment of the Clean Air Act Amendments of 1990 (herein after referred to as "the Act"), PM10 areas meeting the qualifications of § 107(d)(4)(B) of the Act were designated nonattainment by operation of law. [See generally, 42 USC section 7407(d)(4)(B).] These areas included all former Group I areas and any other areas violating the PM10 standards prior to January 1, 1989. On October 31, 1990 (55 FR 45799), EPA redefined a Group I area for Connecticut as the City of New Haven; the remainder of the state was designated as Group III. Subsequently, after enactment of the Act on November 15, 1990, New Haven was designated moderate nonattainment for PM10 in 56 FR 11101 (March 15, 1991). All other areas not designated nonattainment at enactment were designated unclassifiable.

States containing areas which were designated as moderate nonattainment by operation of law under § 107(d)(4)(B) were required to develop and submit SIPs to provide for the attainment of the PM10 NAAQS. Under § 189(a)(2), those SIP revisions were to be submitted within 1 year of enactment of the Act (November 15, 1991). The SIP revisions were to provide for implementation of reasonable available control measures/technology (RACM/RACT) by December 10, 1993 and attainment of the PM10 NAAQS by December 31, 1994.

Reclassification as Serious Nonattainment

EPA has the responsibility, under §§ 179(c) and 188(b)(2) of the Act, of determining within 6 months after December 31, 1994 whether initial moderate PM10 nonattainment areas have attained the NAAQS. Section 179(c)(1) of the Act provides that these determinations are to be based upon an area's "air quality as of the attainment date," and § 188(b)(2) is consistent with this requirement. EPA will make the determinations of whether an area's air quality is meeting the PM10 NAAQS based upon air quality data gathered at monitoring sites in the nonattainment area and entered into the Aerometric Information Retrieval System (AIRS). This data will be reviewed to determine the area's air quality status in accordance with EPA guidance at 40 CFR Part 50, Appendix K.

According to Appendix K, attainment of the annual PM10 standard is achieved when the annual arithmetic mean PM10 concentration is equal to or less than 50 μg/m^3. Attainment of the 24-hour standard is determined by calculating the expected number of exceedances of the 150 μg/m^3 limit per year. The 24-hour standard is attained when the expected number of exceedances is 1.0 or less. A total of 3 consecutive years of clean air quality data is generally necessary to show attainment of the 24-hour and annual standards for PM10. A complete year of air quality data, as referred to in 40 CFR Part 50, Appendix K, is comprised of all 4 calendar quarters with each quarter containing data from at least 75 percent of the scheduled sampling days.

Under § 188(b)(2) a moderate area shall be reclassified as serious by operation of law after the statutory attainment date if the Administrator determines that the area has failed to attain the NAAQS. Under § 188(b)(2)(B) of the Act, the EPA must publish a notice in the **Federal Register** identifying those areas which failed to attain the standard and must be reclassified as serious by operation of law.

Application for a 1-year Extension of the Attainment Date

If the State does not have the necessary number of consecutive clean years of data to show attainment of the NAAQS, a State may apply for an extension of the attainment date. Pursuant to § 188(d) of the Act, a State may apply for and EPA may grant a 1-year extension of the attainment date if the State has: (1) complied with the requirements and commitments pertaining to the applicable implementation plan for the area, and (2) the area has measured no more than 1 exceedance of the 24-hour PM10 standard in the year preceding the extension year, and the annual mean concentration of PM10 in the area for such year is less than or equal to the standard. If the State does not have the requisite number of years of clean air quality data to show attainment and does not apply or does not qualify for an attainment date extension, the area will be reclassified as serious by operation of law.

Section 188(d) of the Act provides that the Administrator "may" extend

§ 706.2 Certifications of the Secretary of the Navy under Executive Order 11964 and 33 U.S.C. 1605.

* * * * *

TABLE FIVE

Vessel	No.	Masthead lights not over all other lights and obstructions. annex I, sec. 2(f)	Forward masthead light not in forward quarter of ship. annex I, sec. 3(a)	After masthead light less than ½ ship's length aft of forward masthead light. annex I, sec. 3(a)	Percentage horizontal separation attained
* * *	*	*	*		*
USS PAUL HAMILTON	DDG 60	X	X	X	20.4
* * *	*	*	*		*

Dated: February 25, 1996.

R. R. Pixa,

Captain, JAGC, U.S. Navy, Deputy Assistant Judge Advocate General (Admiralty).

[FR Doc. 96–5837 Filed 3–11–96; 8:45 am]

BILLING CODE 3810–FF–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51, 52, and 60

[AD–FRL–5437–8]

RIN 2060–AC42

NSPS

Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule and guideline.

SUMMARY: This action adds subparts WWW and Cc to 40 CFR part 60 by promulgating standards of performance for new municipal solid waste landfills and emission guidelines for existing municipal solid waste landfills. This action also adds the source category "municipal solid waste landfills" to the priority list in 40 CFR Part 60, § 60.16, for regulation under section 111 of the Clean Air Act. These standards and emission guidelines implement section 111 of the Clean Air Act and are based on the Administrator's determination that municipal solid waste landfills cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare. The emissions of concern are non-methane organic compounds (NMOC) and methane. NMOC include volatile organic compounds (VOC), hazardous air pollutants (HAPs), and odorous compounds. VOC emissions contribute to ozone formation which can result in adverse effects to human health and vegetation. Ozone can penetrate into different regions of the respiratory tract and be absorbed through the respiratory system. The health effects of exposure to HAPs can include cancer, respiratory irritation, and damage to the nervous system. Methane emissions contribute to global climate change and can result in fires or explosions when they accumulate in structures on or off the landfill site. The intended effect of the standards and guidelines is to require certain municipal solid waste landfills to control emissions to the level achievable by the best demonstrated system of continuous emission reduction, considering costs, nonair quality health, and environmental and energy impacts.

EFFECTIVE DATE: Effective on March 12, 1996.

ADDRESSES: Background Information Document. The background information document for the promulgated standards may be obtained from the U.S. EPA Library (MD–35), Research Triangle Park, North Carolina 27711, telephone number (919) 541–2777. Please refer to "Air Emissions from Municipal Solid Waste Landfills—Background Information for Final Standards and Emission Guidelines," EPA–453/R–94–021. The Background Information Document contains: (1) A summary of all the public comments made on the proposed standards and the Notice of Data Availability as well as the Administrator's response to these comments, (2) a summary of the changes made to the standards since proposal, and (3) the final Environmental Impact Statement, which summarizes the impacts of the standards.

Docket. Docket No. A–88–09, containing supporting information used in developing the promulgated standards, is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, except for Federal holidays at the following address: U.S. Environmental Protection Agency, Air and Radiation Docket and Information Center (MC–6102), 401 M Street SW., Washington, DC 20460 [phone: (202) 260–7548]. The docket is located at the above address in Room M–1500, Waterside Mall (ground floor). A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: For information on the regulation of municipal solid waste landfills, contact Ms. Martha Smith, Waste and Chemical Processes Group, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541–2421.

SUPPLEMENTARY INFORMATION:

Judicial Review

Under section 307(b)(1) of the Clean Air Act, judicial review of the actions taken by this notice is available *only* by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by the EPA to enforce these requirements.

The following outline is provided to aid in locating information in the introductory text (preamble) to the final standards.

I. Acronyms, Abbreviations, and Measurement Units

The following definitions, acronyms, and measurement units are provided to clarify the preamble to the final rule.

A. Acronyms

BDT—best demonstrated technology
BID—background information document
CAA—Clean Air Act
CERCLA—Comprehensive Environmental Response, Compensation, and Liability Act
EG—emission guideline(s)
EPA—Environmental Protection Agency
FR—Federal Register
HAP—hazardous air pollutant
LFG—landfill gas
MSW—municipal solid waste
NMOC—nonmethane organic compounds
NPV—net present value
NSPS—new source performance standards
NSR—new source review
OMB—Office of Management and Budget
PSD—prevention of significant deterioration
RCRA—Resource Conservation and Recovery Act
VOC—volatile organic compound(s)

B. Abbreviations and Measurement Units

J/scm—joules per standard cubic meter
m—meter
Mg—megagram
mm—millimeter
ppm—parts per million
ppmv—parts per million by volume
tpy—tons per year
yr—year

C. Conversion Factors and Commonly Used Units

1 meter = 3.2808 feet
1 megagram = 1.1023 tons = 2204.6 pounds
1 cubic meter = 35.288 cubic feet = 1.3069 cubic yards
1 cubic meter = 0.0008101 acre-feet
Degrees Celsius = (degrees Fahrenheit − 32)/1.8

II. Background

The United States Environmental Protection Agency (EPA) originally considered regulating MSW landfill emissions under a RCRA subtitle D rulemaking. However, the Administrator decided to regulate MSW landfill emissions under the authority of the CAA, and announced the decision in the **Federal Register** on August 30, 1988 (53 FR 33314). The EPA decided to propose regulation of new MSW landfills under section 111(b) of the CAA and to propose EG for existing MSW landfills under section 111(d).

The EPA published a proposal of this NSPS and EG in the **Federal Register** on May 30, 1991 (56 FR 24468).

Following the receipt of new data and changes in the modeling techniques, the EPA published a Notice of Data Availability in the **Federal Register** on June 21, 1993 (56 FR 33790).

Under the authority of section 111(b)(1)(A) of the CAA, today's notice adds the source category MSW landfills to the priority list in 40 CFR 60.16 because, in the judgement of the Administrator, it contributes significantly to air pollution which may reasonably be anticipated to endanger public health and welfare. Further rationale for this finding is contained in section 1.1.1 of the promulgation BID (EPA–453/R–94–021).

Today's notice promulgates the final NSPS and EG for MSW landfills. The promulgation BID "Air Emissions from Municipal Solid Waste Landfills—Background Information for Final Standards and Guidelines" (EPA 453/R–94–021) summarizes all public comments on the proposed NSPS and EG and the EPA responses. For further discussion of stakeholder and public involvement in the development of the rules see section III.C. of this preamble.

Recent information suggests that mercury might be emitted from landfills. The EPA is still looking at the possibility and will take action as appropriate in the future under the landfill national emission standards for hazardous air pollutants.

III. Summary of Considerations in Developing the Standards and Emission Guidelines

A. Purpose of the Regulation

Landfill gas emissions contain methane, carbon dioxide, and more than 100 different NMOC, such as vinyl chloride, toluene, and benzene. Studies indicate that MSW landfill gas emissions can at certain levels have adverse effects on both public health and welfare. The EPA presented concerns with the health and welfare effects of landfill gases in the preamble to the proposed regulations (56 FR 24468).

Briefly, specific health and welfare effects from LFG emissions are as follows: NMOC contribute to ozone formation; some NMOC are known or suspected carcinogens, or cause other noncancer health effects; NMOC can cause an odor nuisance; methane emissions present a well-documented danger of fire and explosion on-site and off-site, and contribute to global climate change as a major greenhouse gas. Today's rules will serve to significantly reduce these potential problems associated with LFG emissions.

B. Technical Basis of the Regulation

Today's regulations are based on extensive data analysis and consideration of several alternatives. Prior to proposal, the EPA developed an extensive data base, using survey information from approximately 1,200 landfills, along with emissions information from literature, State and local agencies, and industry test reports. The preamble to the proposed regulations presented a detailed discussion of the data used to develop the rule and the regulatory alternatives considered (56 FR 24476).

After proposal, the EPA continued to gather new information and received new data through public comments. The EPA published this new information in a Notice of Data Availability on June 21, 1993 (56 FR 33790). In addition to public comments, the EPA held consultations with industry under the authority of Executive Order 12875 (See section VIII of this document for a detailed discussion of the Executive Order).

Based on the new information, the EPA re-assessed the impacts of the alternatives and made changes to the final regulation. The most significant changes to the regulation are summarized in section VI of this preamble. Detailed rationales for these changes as well as more minor changes are provided in the final BID (EPA 453/R–94–021).

In keeping with the EPA's common sense initiative, several of the changes were made to streamline the rule and to provide flexibility. Examples of this streamlining and increased flexibility include focusing control on the largest landfills, removing the gas collection system prescriptive design specifications, and more reasonable timing for the installation of collection wells. All of these changes are discussed further in section VI of this preamble.

C. Stakeholders and Public Involvement

Prior to proposal, in accordance with section 117 of the CAA, the EPA had consultations with appropriate advisory committees, independent experts, Federal departments and agencies. In addition, numerous discussions were held with industry representatives and trade associations.

After proposal, the EPA provided interested persons the opportunity to comment at a public hearing and through a written comment period. Comment letters were received from 60 commenters including industry representatives, governmental entities, environmental groups, and private citizens. A public hearing was held in Research Triangle Park, North Carolina, on July 2, 1991. This hearing was open to the public and five persons presented oral testimony on the proposed NSPS and EG.

On June 21, 1993, a supplemental notice of data availability to the May 30, 1991 proposal appeared in the **Federal Register** (58 FR 33790). The notice announced the availability of additional data and information on changes in the EPA's modelling methodology being used in the development of the final NSPS and EG for MSW landfills. Public comments were requested on the new data and comment letters were received from seven commenters.

Since the Notice of Data Availability, the EPA has held several consultations with State, local, and industry representatives in accordance with the October 26, 1993 Executive Order 12875 on *Enhancing the Intergovernmental Partnership.*

Major concerns expressed by participants in the consultations were identified by the EPA. These concerns included: the design capacity exemption level, collection system design and monitoring flexibility, and timing of well placement. These concerns and others raised at proposal and clarified in the consultations were addressed by revising the rule as described in section VI of this preamble.

IV. Summary of the Standards, Emission Guidelines, and Methods

The affected facility under the NSPS is each new MSW landfill. MSW landfills are also subject to the requirements of RCRA (40 CFR 257 and 258). A new MSW landfill is a landfill for which construction, modification, or reconstruction commences on or after the proposal date of May 30, 1991 or that began accepting waste on or after that date.

The EG require control for certain existing MSW landfills. An existing MSW landfill is a landfill for which construction commenced prior to May 30, 1991. An existing MSW landfill may be active, i.e., currently accepting waste, or have additional capacity available to accept waste, or may be closed, i.e., no longer accepting waste nor having available capacity for future waste deposition. The designated facility under the EG is each existing MSW landfill that has accepted waste since November 8, 1987.

The final rules (both the NSPS and EG) require affected and designated MSW landfills having design capacities below 2.5 million Mg or 2.5 million cubic meters to file a design capacity report. Affected and designated MSW landfills having design capacities greater than or equal to 2.5 million Mg or 2.5 million cubic meters are subject to the additional provisions of the standards or EG.

The final standards and EG for MSW landfill emissions require the periodic calculation of the annual NMOC emission rate at each affected or designated facility with a maximum design capacity greater than or equal to 2.5 million Mg or 2.5 million cubic meters. Those that emit more than 50 Mg/yr are required to install controls.

The final rules provide a tier system for calculating whether the NMOC emission rate is less than or greater than 50 Mg/yr, using a first order decomposition rate equation. The tier system does not need to be used to model the emission rate if an owner or operator has or intends to install controls that would achieve compliance. Chapter 1 of the promulgation BID (EPA 453/R–94–021) presents a complete discussion of the components of the tier system.

The BDT for both the NSPS and the EG requires the reduction of MSW landfill emissions from new and existing MSW landfills emitting 50 Mg/yr of NMOC or more with: (1) A well-designed and well-operated gas collection system and (2) a control device capable of reducing NMOC in the collected gas by 98 weight-percent.

A well-designed and well-operated collection system would, at a minimum: (1) Be capable of handling the maximum expected gas generation rate; (2) have a design capable of monitoring and adjusting the operation of the system; and (3) be able to collect gas effectively from all areas of the landfill that warrant control. Over time, new areas of the landfill will require control, so collection systems should be designed to allow expansion by the addition of further collection system components to collect gas, or separate collections systems will need to be installed as the new areas require control.

The BDT control device is a combustion device capable of reducing NMOC emissions by 98 weight-percent. While energy recovery is strongly recommended, the cost analysis is based on open flares because they are applicable to all affected and designated facilities regulated by the standards and EG. If an owner or operator uses an enclosed combustor, the device must demonstrate either 98-percent NMOC reduction or an outlet NMOC concentration of 20 ppmv or less. Alternatively, the collected gas may be treated for subsequent sale or use, provided that all emissions from any atmospheric vent from the treatment system are routed to a control device meeting either specification above.

The standards and EG require that three conditions be met prior to capping or removal of the collection and control system: (1) The landfill must be permanently closed under the requirements of 40 CFR 258.60; (2) the collection and control system must have been in continuous operation a minimum of 15 years; and (3) the annual NMOC emission rate routed to the control device must be less than the emission rate cutoff on three successive dates, between 90 and 180 days apart, based upon the site-specific landfill gas flow rate and average NMOC concentration.

Section VI.E. of this preamble describes a new section of the NSPS, § 60.753, "Operational Standards for Collection and Control Systems." The EG also refer to this section. The provisions in this section include: (1) Collection of gas from each area, cell or group of cells in which non-asbestos degradable solid waste has been placed for a period of 5 years or more for active areas or 2 years or more for closed areas; (2) operation of the collection system with each wellhead under negative pressure, with a nitrogen level less than or equal to 20 percent (revised from 1 percent in the proposal, based on public comments) or an oxygen level less than or equal to 5 percent (a new provision); (3) operation with a landfill gas temperature less than 55 °C (a new provision) at each well transporting the collected gases to a treatment or control device designed and operated in compliance with § 60.752(b)(2)(iii) of the NSPS and operated at all times when the collected gas is vented to it; and (4) a requirement that the collection system be operated to limit the surface methane concentration to 500 ppm or less over the landfill as determined according to a specified monitoring pattern.

Owners and operators must determine compliance with the standards for the collection systems and control devices according to § 60.755. Changes made to the final compliance determination and monitoring procedures as a result of comments are discussed in detail in the BID (EPA 453/R–94–021). The §§ 60.757 and 60.758 of the NSPS and § 60.35(c) of the EG contain recordkeeping and reporting requirements. Changes have been made to the recordkeeping and reporting requirements to allow for consistency with the final compliance requirements.

V. Impacts of the Standards and Emission Guidelines

A. Environmental Impacts of Promulgated Action

The estimated environmental impacts have changed somewhat from those presented in the preamble to the proposed regulations as a result of changes in the final rules and changes in the estimation methodology. These changes were made in response to public comments. Additional data were also incorporated and are described in the supplemental Notice of Data Availability (56 FR 33790). The analysis of environmental impacts presented in this document, along with the proposal and promulgation BID's, and memoranda in the docket constitute the Environmental Impact Statement for the final standards and guidelines.

For most NSPS, emission reductions and costs are expressed in annual terms. In the case of the NSPS and EG for landfills, the final regulations require controls at a given landfill only after the increasing NMOC emission rate reaches the level of the regulatory cutoff. The controls are applied when the emissions exceed the threshold, and they must remain in place until the emissions drop below the cutoff. However, this process could take as long as 50 to 100 hundred years for some landfills. During the control period, costs and emission reductions will vary from year to year. Therefore, the annualized numbers for any impact will change from year to year. Because of the variability of emission reductions and costs of the final standards and EG over time, the EPA judged that the NPV of an impact is a more valuable tool in the decision process for landfills and has used NPV in the development of both the proposal and final nationwide impacts. The NPV is computed by discounting the capital and operating costs and emission reductions that will be incurred throughout the control periods to arrive at a measure of their current value. In this way, the NPV accounts for the unique emission patterns of landfills when evaluating nationwide costs and benefits over different discrete time periods for individual sources. Thus, the impacts presented include both annualized estimates and estimates expressed in terms of NPV in 1992.

1. Air Emissions

The methodology for estimating the impacts of the NSPS and EG is discussed in the proposal BID and in memoranda in the docket. The analysis of impacts for the NSPS is based on new landfills (beginning construction after May 30, 1991) that are projected to begin accepting waste over the first 5 years of the standards. The NPV of the emission reduction achieved by the final standards is estimated to be 79,300 Mg, which reflects a 50 percent reduction from the NPV of the baseline emissions of 160,000 Mg. Substantial reduction of methane emissions is also achieved. Table 1 presents the emission reductions of the final NSPS in annualized values as well as NPV.

TABLE 1.—SUMMARY OF EMISSION REDUCTION AND COST IMPACTS FOR THE NSPS

	NPV	Annualized
Baseline NMOC Emissions[a] (Mg)	160,000	13,400
NMOC Emission Reductions (Mg)	79,300	4,860
% NMOC Emission Reduction	50%	36%
Baseline Methane Emissions[a] (Mg)	10,600,000	899,000
Methane Emission Reduction[b] (Mg)	3,890,000	193,000
% Methane Emission Reduction	37%	21%
Cost (Million $)	97	4

[a] In the absence of an NSPS. This does not include landfills closed prior to November 8, 1987.

[b] This does not enclude landfills expected to undertake profitable energy recovery.

For existing landfills, the NPV of the NMOC emission reduction achieved by the final EG is estimated to be 1.1 million Mg, or a 53 percent reduction from a baseline of 2.07 million Mg (NPV). The NPV of the methane reduction is estimated to be 47 million Mg. Table 2 presents the emission reductions of the final EG in annualized values as well as NPV. Note that the baseline methane emissions do not include landfills closed prior to November 8, 1987, and that methane reductions shown in Tables 1 and 2 do not include landfills expected to undertake profitable energy recovery. Total methane reductions are anticipated to be on the order of 7 million megagrams in the year 2000.

TABLE 2.—SUMMARY OF EMISSION REDUCTION AND COST IMPACTS FOR THE EMISSION GUIDELINES

	NPV	Annualized
Baseline NMOC Emissions[a] (Mg)	2,070,000	145,000
NMOC Emission Reductions (Mg)	1,100,000	77,600
% NMOC Emission Reduction	53%	54%
Baseline Methane Emissions[b] (Mg)	120,000,000	8,440,000
Methane Emission Reduction (Mg)	47,000,000	3,370,000
% Methane Emission Reduction	39%	40%
Cost (Million $)	1,278	90

[a] In the absence of EG. This does not include landfills closed prior to November 8, 1987.
[b] This does not enclude landfills expected to undertake profitable energy recovery.

As existing landfills are filled, closed, and replaced by new landfills, the actual annual emissions reductions achieved by the guidelines will decrease, while the reductions achieved by the standards will increase.

Certain by-product emissions, such as NO_X, CO, SO_X, and particulates, may be generated by the combustion devices used to reduce air emissions from MSW landfills. The types and quantities of these by-product emissions vary depending on the control device. However, by-product emissions are very low compared to the achievable NMOC and methane emission reductions. Chapters 4 and 6 of the proposal BID (EPA–450/3–90–011a) present additional information about the magnitude of potential secondary air impacts.

2. Water

Landfill leachate is the primary potential source of water pollution from a landfill. Although there is no data on the effect of gas collection on leachate composition, the amount of water pollution present as NMOC in the leachate may be reduced under these standards and guidelines.

When LFG is collected, organics and water are condensed inside the header pipes of the gas collection system. This waste also contains NMOC and various toxic substances present in the LFG. The pH of this condensate is normally adjusted by adding caustic at the landfill and then routing it to a public treatment works where it would be treated and discharged. At this time, there is insufficient data available to quantify the effects of the rule on leachate.

3. Solid Waste

The final NSPS and EG will likely have little impact on the quantity of solid waste generated nationwide. Aside from the disposal of the collection and control system equipment once it can be removed from the landfill, no other solid wastes are expected to be generated by the required controls. The increased cost of landfill operation resulting from the control requirements may cause greater use of waste recycling and other alternatives to landfill disposal, leading to a decrease in landfill use. However, quantification of such an impact is not possible at this time.

4. Superfund Sites

Municipal solid waste landfill sites comprise approximately 20 percent of the sites placed by the EPA on the national priorities list. Often, remedial actions selected at these sites include venting methane and volatile organic contaminants, which would be controlled as necessary to protect human health and the environment.

The final NSPS and EG may affect remedial actions under Superfund for MSW landfills. Section 121(d)(2) of CERCLA requires compliance with the substantive standards of applicable or relevant and appropriate requirements (ARAR) of certain provisions in other environmental laws when selecting and implementing on-site remedial actions. "Applicable" requirements specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a Superfund site. "Relevant and appropriate" requirements are not legally applicable, but may address problems or situations sufficiently similar to those encountered so that their use is well suited to a particular site. See 40 CFR 300.5 (55 FR 8814, 8817, March 8, 1990).

These air emission rules will apply to new MSW landfills, as well as to those facilities that have accepted waste since November 8, 1987, or that have capacity available for future use. For CERCLA municipal landfill remediations, these requirements would be potential ARAR for all Records of Decision signed after the date of promulgation. These NSPS and EG will be applicable for those MSW landfill sites on the national priorities list that accepted waste on or after November 8, 1987, or that are operating and have capacity for future use. These standards may also be determined relevant and appropriate for sites that accepted wastes prior to November 8, 1987. The determination of relevance and appropriateness is made on a site-specific basis pursuant to 40 CFR 300.400(g) (55 FR 8841, March 8, 1990). Because the NSPS and EG apply only to landfills with design capacities greater than or equal to 2.5 million Mg or 2.5 million cubic meters, the collection and control requirements may not be relevant and appropriate for smaller landfills.

Given the significant public policy benefits that result from the collection and processing of landfill gas, Congress, as part of the 1986 SARA Amendments, enacted CERCLA Section 124 to provide broad liability protection for companies engaged in landfill gas recovery or processing. Landfill gas emissions, in addition to being a significant source of air pollution, can leach underground and cause explosions in nearby residences. If recovered, landfill gas could supply as much as 1 percent of the U.S. energy requirements.

CERCLA Section 124 states that owners or operators of equipment installed "for the recovery or processing (including recirculation of condensate) of methane" shall not be liable as a CERCLA "owner or operator" under CERCLA Section 101 (20) nor shall they be deemed "to have arranged for disposal or treatment of any hazardous substance* * *" pursuant to CERCLA Section 107. Exceptions are provided (1) where a release is primarily caused by activities of the landfill gas owner/operator or (2) where such owner/operator would be otherwise liable due to activities unrelated to methane recovery.

Since passage of CERCLA section 124, methane emissions have been targeted by the EPA as a large contributor to global warming (18 percent) and landfills are one of the largest source of methane emissions (36 percent). Because of this, the EPA's Atmospheric Pollution Prevention Division has initiated the Landfill Methane Outreach Program to promote landfill gas collection projects at the 750 landfills where methane could profitably be recovered. Methane recovery, as compared with collection and flaring of landfill gas without recovery, results in significantly less emissions. It also can greatly reduce the financial burden on local governments (as well as taxpayers) since the energy recovered can be sold to utilities or other consumers and thereby create a revenue stream that may cover the costs of collection and recovery.

The EPA is aware that the standards and guidelines promulgated today for control of emissions at municipal solid waste landfills may change the focus of the landfill gas collection and processing for methane recovery. The landfill gas owner/operator will now need to consider how the collection and recovery of methane will impact on controlling the MSW landfill emissions. It is also likely that the landfill gas owner/operator will be asked to advise and in some cases help implement the MSW landfill's compliance obligations. These related objectives, the control of emissions at municipal solid waste landfills in order to comply with the Clean Air Act Amendments and the reduction of methane emissions in order to mitigate global warming, will need to be coordinated in carrying out common activities such as laying a system of collection piping at a given landfill.

In promulgating today's standards and guidelines, the EPA wants to promote the policy incorporated in CERCLA Section 124. Recognizing the chilling effect that potential CERCLA liability might otherwise have on landfill gas collection or processing activities, the EPA interprets CERCLA Section 124 in a manner that will encourage the beneficial recovery of methane. Specifically, EPA believes that Congress intended Section 124 to provide liability protection to owners and operators of equipment for the recovery or processing of methane with respect to all phases involved in landfill gas collection and methane processing. This includes any assistance (related to recovery or processing of methane) provided by the landfill gas equipment owner or operator to the landfill owner/operator for achieving compliance with the emission standards promulgated today or similar Federal, State, or local controls on landfill emissions. In general, Section 124 will be interpreted in a manner to provide owners and operators of equipment for the recovery or processing of methane with comprehensive protection from CERCLA liability, unless the release or threatened release was primarily caused by activities of the owners and operators of the equipment, or unless such owners or operators would be otherwise liable under CERCLA.

B. Energy and Economic Impacts of Promulgated Action

The energy and economic impacts are summarized in chapter 1 and fully discussed in chapter 3 and appendix A of the promulgation BID (EPA–453/R–94–021). The estimated impacts have changed somewhat as a result of changes in the final rules and changes in the impacts estimation methodology made in response to public comments.

1. Energy Impacts

Affected and designated landfills with NMOC emission rates of 50 Mg/yr or more are required to install a gas collection system and control device. The gas collection system would require a relatively small amount of energy to run the blowers and the pumps. If a flare is used for control, auxiliary fuel should not be necessary because of the high heat content of LFG, commonly 1.86×10^7 J/scm or more. If a recovery device such as an internal combustion (I.C.) engine or a gas turbine is used, an energy savings would result.

The EPA evaluated the overall energy impacts resulting from the use of flares, I.C. engines, or gas turbines for control of collected emissions at all affected landfills. The least cost control option was identified by taking the NPV costs of the three control options (flares, I.C. engines, and turbines), including any cost savings from the use of recovered landfill gas, and determining the option that costs the least. If landfills use the least cost control device, it is estimated that the NSPS will produce $170 million of energy revenue as NPV in 1992. The EG are estimated to generated $1.5 billion of energy revenue as NPV in 1992, if the least cost control device is used.

2. Control Costs and Economic Impacts

Nationwide annualized costs for collection and control of air emissions from new MSW landfills are estimated to be $4 million. The nationwide cost of the EG would be approximately $90 million. These values are annualized costs. Tables 1 and 2 present costs in both annualized and NPV values. In comparison to other solid waste-related rules, the nationwide costs of the recently promulgated RCRA Subtitle D (40 CFR 257 and 258) rule are estimated to be $300 million per year and the estimated nationwide costs of the MWC rules promulgated in 1991 are estimated to be $170 million per year for new combustors and $302 million per year for existing combustors (56 FR 5488 and 5514).

The incremental costs and benefits of the different options are presented in tables 3, 4, 5, and 6 in section VIII.E. For NMOC, the average cost effectiveness is approximately $1,200/Mg for both the NSPS and the EG. Preliminary economic analysis indicates that the annual cost of waste disposal may increase by an average of approximately $0.60 per Mg for the NSPS and $1.30 per Mg for the EG. Costs per household would increase approximately $2.50 to $5.00 per year, when the household is served by a new or existing landfill, respectively. Additionally, less than 10 percent of the households would face annual increases of $15 or more per household as a result of the final EG. However, the EPA anticipates that many landfills will elect to use energy recovery systems, and costs per household for those areas would be less. The EPA has concluded that households would not incur severe economic impacts. For additional information, please refer to the regulatory impact analysis (Docket No. A–88–09, Item No. IV–A–7) and chapter 3 of the promulgation BID (EPA–453/R–94–021).

VI. Significant Changes to the Proposed Standards and Emission Guidelines

All of the significant public comments received on the proposed standards and EG and the Notice of Data Availability are addressed in the promulgation BID (EPA–453/R–94–021). This section of the preamble reviews the major changes to the standards and EG resulting from public comments. A more detailed rationale for these changes is provided in chapters 1 and 2 of the promulgation BID (EPA–453/R–94–021).

A. Design Capacity Exemption

A design capacity exemption of 100,000 Mg was included in the proposed NSPS and EG to relieve owners and operators of small landfills that the EPA considered unlikely to emit NMOC above the emission rate cutoff requiring control from undue recordkeeping and reporting responsibilities. Commenters indicated that the exemption level was too low, and would still impact many small businesses and municipalities. In response to these comments and as a result of changes to the nationwide impacts analysis, the design capacity exemption in the final NSPS was revised to 2.5 million Mg. The 2.5 million Mg exemption level would exempt 90 percent of the existing landfills while only losing 15 percent of the total NMOC emission reduction. Most of the exempt landfills are owned by municipalities. The 2.5 million Mg level was chosen to relieve as many small businesses and municipalities as possible from the regulatory requirements while still maintaining significant emission reduction.

This cutoff excludes those landfills who would be least able to afford the costs of a landfill gas collection and control system and are less likely to have successful energy recovery projects. However, depending on site-specific factors including landfill gas characteristics and local markets, some landfills smaller than the design capacity exemption level may be able to make a profit by installing collection and control systems that recover energy. While the rule does not require control of landfills smaller than 2.5 million Mg, the EPA encourages energy recovery in cases where it is profitable. The EPA has developed a Landfill Methane Outreach Program to encourage more widespread utilization of landfill gas as an energy source. Information can be obtained by calling the Landfill Methane Outreach Program Hotline at (202) 233–9042. Available publications are identified in section 1.2.1 of the promulgation BID.

Since some landfills record waste by volume and have their design capacities calculated in volume, the EPA also established an equivalent design capacity exemption of 2.5 million m^3 of waste. The density of solid waste within different landfills varies depending on several factors, including the compaction practices. Any landfill that reports waste by volume and wishes to establish a mass design capacity must document the basis for their density calculation.

B. Emission Rate Cutoff

Some commenters asserted that the proposed emission rate cutoff of 150 Mg/yr should be made more stringent, while others favored the proposal cutoff or higher. The commenters favoring the more stringent level indicated that the EPA's data on NMOC concentration, the benefits of energy recovery and reduced global warming, and the reduced health risks all supported an increased stringency level.

The Climate Change Action Plan, signed by the President in October, 1993, calls for EPA to promulgate a "tough" landfill gas rule as soon as possible. This initiative also supports a more stringent emission rate cutoff that will achieve greater emission reduction.

Due to the small-size exemption, only landfills with design capacities greater than 2.5 million Mg of waste or 2.5 million cubic meters of waste will be affected by this rule. It is estimated that a landfill of 2.5 million Mg design capacity corresponds to cities greater than about 125,000 people. On the whole, large landfills service areas with large population. A reasonable assumption is that many of these large landfills are in the 400 counties that have been designated as urban ozone nonattainment areas and are developing plans to address ozone nonattainment.

Finally, the new data and modeling methodologies, which were published in the Notice of Data Availability on June 21, 1993, significantly reduced the emission reduction and corresponding effectiveness of the rule. Therefore, a more stringent emission rate cutoff would achieve similar emission reductions at similar cost effectiveness to the proposed rule.

Based on all of these reasons, the EPA reevaluated the stringency level and chose an emission rate cutoff of 50 Mg/yr of NMOC for the final rules. This revision would affect more landfills than the proposal value of 150 Mg/yr of NMOC; however, the 50 Mg/yr of NMOC will only affect less than 5 percent of all landfills and is estimated to reduce NMOC emissions by approximately 53 percent and methane emissions by 39 percent. The 150 Mg/yr emission rate cutoff would have reduced NMOC emissions by 45 percent and methane emissions by 24 percent. The incremental cost effectiveness of control of going from a 150 Mg/yr cutoff level to a 50 Mg/yr cutoff level is $2,900/Mg NMOC reduction for new landfills and $3,300/Mg for existing landfills.

The values for NMOC cost effectiveness do not include any credit for the benefits for toxics, odor, explosion control, or the indirect benefit of methane control. A revised cost effectiveness could be calculated with an assumed credit value for one or more of the other benefits. As an example, assuming a $30/Mg credit for the methane emission reduction, the incremental cost effectiveness from the proposal cutoff of 150 Mg/yr to the final cutoff of 50 Mg/yr would be reduced to $660/Mg NMOC.

C. Collection System Design Specifications

Commenters indicated that the proposed design specifications for the collection system were overly prescriptive, discouraged innovation, and did not prevent off-site migration of LFG. In the new § 60.759 for design specifications, certain criteria still require proper landfill gas collection; however, the proposed design specifications for the LFG collection system were removed from the final regulations. Instead, the final rule allows sources to design their own collection systems. Design plans must meet certain requirements and be signed by a registered professional engineer, and are subject to agency approval. These changes were made to provide flexibility and encourage technological innovation.

D. Timing for Well Placement

The proposed regulations required the installation of collection wells at applicable landfills within 2 years of initial waste placement. Commenters indicated that the installation of wells within 2 years was not practiced at many landfills, because many cells were still active (receiving waste) 2 years after initial placement. Collection wells installed at these cells would have to be covered over, which would decrease the operational life of the well and be costly and inefficient.

The proposed timing for the placement of collection wells has been revised to reduce costs and better coincide with common operational practices at MSW landfills. The final regulation allows for well installation up to 5 years from initial waste placement for active cells. An area that reaches final grade or closure must install collection wells within 2 years of initial waste placement.

E. Operational Standards

In response to commenters concerns about the operation of collection systems, the final NSPS contains a new section, § 60.753, "Operational Standards for Collection and Control Equipment." Various operational provisions that had previously been located throughout the proposed rule have been organized under this one section, and new provisions on collection and control systems have been added. The new section addresses the following areas: (1) Collection of gas from active areas containing solid waste older than 5 years (changed from 2 years at proposal); (2) operation of the collection system with negative pressure at each wellhead (except as noted in the rule); (3) operation of the collection system with a landfill temperature less than 55° (or a higher established temperature) and either an N_2 level less than or equal to 20 percent or an O_2 level less than or equal to 5 percent; (4) operation of the collection system with a surface concentration less than 500 ppm methane; (5) venting all collected gases to a treatment or control device; and (6) operation of the treatment or control device at all times when the collected gas is routed to the control device. The numerical requirements (for the N_2 or O_2 levels, landfill temperature, and surface concentration) are new requirements that will verify that the system is being adequately operated and maintained. In conjunction with the new operational provisions, the compliance, testing and monitoring sections were revised to reference and support these new or relocated provisions.

F. Surface Emission Monitoring

Numerous commenters asserted that the proposed rules did not address surface methane emissions resulting from insufficient well spacing or from breaks in the cover material. The commenters recommended that monitoring of surface emissions be required to ensure the proper operation of collection system equipment. Upon further analysis, the EPA decided to require surface emission monitoring and the maintenance of negative pressure at all wells, except under specified conditions, to ensure proper collection system design and operation. Based on information submitted by commenters, a maximum surface concentration of 500 ppm methane should be demonstrated to indicate proper operation of the collection system. Monitoring is to be done quarterly, with provisions for increasing monitoring and corrective procedures if readings above 500 ppm are detected. Instrumentation specifications, monitoring frequencies, and monitoring patterns have been structured to provide clear and straightforward procedures that are the minimum necessary to assure compliance.

G. Model Default Values

The EPA received additional data after proposal on the model defaults that were included in the tier system calculations. These default values are used to calculate whether the NMOC concentration is above the cutoff level for control requirements of 50 Mg/yr. The new information received lead the EPA to revise the default values for the site-specific methane generation rate constant (k), the methane generation potential (L_o), and the NMOC concentration (C_{NMOC}). In the absence of site-specific data, the landfill owner or operator would use the default values for k, L_o, and C_{NMOC} in order to estimate the annual NMOC emission rate. More information on the model defaults may be found in the final BID (EPA–453/R–94–021) and the memorandum "Documentation of Small-Size Exemption Cutoff Level and Tier 1 Default Values (Revised)," October 21, 1993, (Docket No. A–88–09, Item No. IV–B–5).

The Tier 1 default values of k, Lo, and C_{NMOC} tend to overstate NMOC emission rates for most landfills, and are intended to be used to indicate the need to install a collection and control system or perform a more detailed Tier 2 analysis. It is recommended that these default values not be used for estimating landfill emissions for purposes other than the NSPS and EG. The EPA document "Compilation of Air Pollution Emission Factors" (AP–42) provides emission estimation procedures and default values that can be used for emissions inventories and other purposes.

VII. Permitting

A. New Source Review Permits

Today's rulemaking under section 111(b) establishes a new classification of pollutants subject to regulation under the CAA: "MSW landfill emissions." Therefore, PSD rules now apply to all subject stationary sources which have increases in landfill gas above the significance level, 50 tpy or more of NMOC. Landfills below the 2.5 million Mg design capacity exemption, which are not required by the regulations to install controls, may exceed this significance level. In this case, the State will need to determine if controls should be installed for purposes of PSD or NSR compliance.

The proposed significance level for MSW landfill emissions of 40 tpy of NMOC was changed to 50 tpy after consideration of public comments. The PSD significance level for VOC emissions is 40 tpy. At proposal, the landfill gas emission level was set at 40 tpy of NMOC to be consistent with the 40 tpy level for VOC. However, NMOC contains organic compounds that are not VOC. An NMOC emission rate of roughly 50 tpy corresponds to a VOC emission rate of 40 tpy.

The components of MSW landfill emissions that are regulated as pollutants or precursors of an air pollutant listed under section 108 of the CAA are also regulated by other provisions of CAA as applicable. For example, the components of MSW landfill emissions that are emitted as photochemically reactive VOCs are regulated, as applicable, under the nonattainment provisions for ozone contained in part D of title I of the CAA.

B. Operating Permits

Title V

Section 502 of the CAA and § 70.3(a) require any source subject to standards or regulations under section 111 of the CAA to obtain part 70 operating permits. However, landfills below 2.5 million Mg design capacity are not subject to standards under section 111 because they are not required to put on controls and are not subject to emission limits. These landfills are subject to a reporting requirement under the section 111 rule; however, this requirement determines applicability of the standard and does not make them "subject" for the purposes of part 70. Consequently, landfills below 2.5 million Mg design capacity are not subject to part 70, provided they are not major sources; and this is stated in § 60.752(a) of the rule. If landfills below 2.5 million Mg design capacity are major sources, they must obtain a part 70 permit under the same deadlines and requirements that apply to any other major source. States may request additional information to verify whether landfills have the potential to emit at major source levels.

For landfills above the 2.5 million Mg design capacity exemption, part 70 operating permits are required. These landfills are subject to emission limits and will most often be major sources. Since landfill emissions increase over time, a landfill over 2.5 million Mg may not be major in the beginning; however, as the landfill progresses to capacity, it may become major. Many of the landfills above the 2.5 million Mg exemption will be required to collect and control the gas under the regulation. The issuance of a permit will also help enforce and implement the standard. Therefore, the EPA has decided to require permits for all landfills with design capacities above 2.5 million Mg, whether or not the landfill will be required to install a collection and control system.

The regulation also provides for termination of operating permits. Landfill emissions, unlike emissions from other source categories, decrease over time after the landfill is closed. If a landfill has closed and a control system was never required or the conditions for control system removal specified in the regulation have been met, an operating permit is no longer necessary.

VIII. Administrative Requirements

A. Docket

The docket (Docket No. A–88–09) is an organized and complete file of all the information considered by the EPA in the development of this rulemaking. The docket is a dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and industries involved to readily identify and locate documents so that they can effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and promulgated standards and the EPA responses to significant comments, the contents of the docket, except for interagency review materials, will serve as the record in case of judicial review [section 307(d)(7)(A)].

B. Paperwork Reduction Act

The information collection requirements in this rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. An Information Collection Request (ICR) document has been prepared by the EPA (ICR No. 1557.03) and a copy may be obtained from Sandy Farmer, OPPE Regulatory Information Division; U.S. Environmental Protection Agency (2137); 401 M St., S.W.; Washington, DC 20460, or by calling (202) 260–2740. The information requirements are not effective until OMB approves them.

The information required to be collected by this rule is necessary to identify the regulated entities who are subject to the rule and to ensure their compliance with the rule. The recordkeeping and reporting requirements are mandatory and are being established under authority of section 114 of the Act. All information submitted as part of a report to the Agency for which a claim of confidentiality is made will be safeguarded according to the Agency policies set forth in title 40, chapter 1, part 2, subpart B—Confidentiality of Business Information (see 40 CFR 2; 41 FR 36902, September 1, 1976, amended by 43 FR 39999, September 28, 1978; 43 FR 42251, September 28, 1978; 44 FR 17674, March 23, 1979).

The total annual reporting and recordkeeping burden for this collection, averaged over the first 3 years of the NSPS applicability to new MSW landfills, is estimated to be 3,379 person hours per year. This is the estimated burden for 299 respondents (e.g., MSW landfill owners/operators) per year, at an estimated annual reporting and recordkeeping burden averaging 11.3 hours per respondent. The rule requires an initial one-time notification of landfill design capacity. If the landfill is larger than the design capacity cutoff, annual reports are required. The capital cost to purchase required monitoring equipment is $8,100 per monitor. The total annualized capital and startup costs for purchase of monitoring equipment are $80,250. The total national annual cost burden including all labor costs and annualized capital costs for recordkeeping and reporting is $188,850.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

C. Executive Order 12866

Under Executive Order 12866, (58 FR 51735 (October 4, 1993)) the EPA must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely effect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations are documented in the public record.

D. Executive Order 12875

To reduce the burden of Federal regulations on States and small governments, the President issued E.O. 12875 on October 26, 1993. Under E.O. 12875, the EPA is required to consult with representatives of affected State, local, and tribal governments. Because this regulatory action imposes costs to the private sector and government entities in excess of $100 million per year, the EPA pursued the preparation of an unfunded mandates statement, consultations, and other requirements of the Unfunded Mandates Reform Act. The requirements are met as presented under the following unfunded mandates section (section VIII.E of this notice).

E. Unfunded Mandate Reform Act

Under section 202 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act"), signed into law on March 22, 1995, the EPA must prepare a statement to accompany any rule where the estimated costs to State, local, or tribal governments, or to the private sector, will be $100 million or more per year. Section 203 requires the Agency to establish a plan for informing and advising any small governments that may be significantly or uniquely affected by the rule. Section 204 requires that the Agency "to the extent permitted in law, develop an effective process to permit elected officers of State, local, and tribal governments * * * to provide meaningful and timely input in the development of regulatory proposals containing significant Federal intergovernmental mandates". Under section 205(a), the EPA must select the "least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule" and is consistent with statutory requirements.

The unfunded mandates statement under section 202 must include: (1) A citation of the statutory authority under which the rule is proposed, (2) an assessment of the costs and benefits of the rule including the effect of the mandate on health, safety and the environment, and the Federal resources available to defray the costs, (3) where feasible, estimates of future compliance costs and disproportionate impacts upon particular geographic or social segments of the nation or industry, (4) where relevant, an estimate of the effect on the national economy, and (5) a description of the EPA's consultation with State, local, and tribal officials.

Because this rule is estimated to impose costs to the private sector and governments entities in excess of $100 million per year (based on tenth or fifteenth year annualized values), it is considered a significant regulatory action.

The EPA has thus prepared the following statement with respect to sections 202 through 205 of the Unfunded Mandates Act.

1. Statutory Authority

As discussed in section II of this preamble, the statutory authority for this rulemaking is section 111 of the CAA. The rule establishes emission guidelines for existing MSW landfills and standards of performance for new MSW landfills. Section 111(a)(1) of the requires that standards of performance for new sources reflect the—

> * * * degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

Section 111(d) requires emission guidelines for existing sources to reflect a similar degree of emission reduction.

These systems are referred to as BDT for new and existing sources.

Properly operated gas collection and control systems achieving 98 percent emission reduction have been demonstrated on landfills of the size affected by the standards and EG, and represent BDT. Control technologies and their performance are discussed in the preamble to the proposed rules (56 FR 24476, May 30, 1991).

In selecting BDT, the EPA also considered which landfills should be required to apply collection and control systems. A range of landfill design capacity and emission rate cutoffs were evaluated, as described below in section 2.b "Regulatory Alternatives Considered." The promulgated standards contain a design capacity exemption of 2.5 million Mg or 2.5 million cubic meters and an emission rate cutoff of 50 Mg NMOC/yr.

The EPA considered emission reduction, costs, and energy requirements, as required by the statutory language of section 111 of the CAA, in selecting the promulgated standards and EG. The promulgated standards represent BDT. They achieve significant reductions in landfill gas emissions—a 53 percent reduction in NMOC emissions, and a 39 percent reduction in methane reduction emissions nationwide. The cost impacts of the standards are presented in section V.B and in section VII.E.2 (below). The public entities and affected industries who were consulted, as required by the Unfunded Mandates Reform Act, understand the cost impacts and support the final rules (see Section 4, "Consultation with Government Officials" below). The energy impacts are discussed in section V.B of this notice. To the extent energy recovery devices are used to comply with the rules, the rules will result in a net energy savings (production of energy).

Compliance with section 205(a): Regarding the EPA's compliance with section 205(a), the EPA did identify and consider a reasonable number of alternatives, and presents a summary of these below. The EPA has chosen to adopt the alternative with a size cutoff of 2.5 million Mg capacity, and 50 Mg/yr emissions. The incremental cost effectiveness of this 50 Mg/yr option is $6,250 per ton of NMOC reduced (versus the less stringent 75 Mg/yr option). This cost effectiveness is much higher than is typical for NMOC (or VOC) controls in NSPSs. However, the EPA also considers the reductions in methane achieved by this 50 Mg/yr option as necessary to "achieve the objectives" of section 111. The additional methane reductions achieved by this option are also an important part of the total carbon reductions identified under the Administration's 1993 Climate Change Action Plan. The EPA thus concludes that the chosen alternative is the most cost-effective to achieve the objectives of section 111, as called for in section 205(a).

2. Social Costs and Benefits

This assessment of the cost and benefits to State, local, and tribal governments of the guidelines is based on EPA's "Economic Impact Analysis for Proposed Emission Standards and Guidelines for Municipal Solid Waste Landfills" and updates to the analysis contained in "Air Emissions from Municipal Solid Waste Landfills—Background Information for Final Standards and Guidelines" (EPA–453/R–94–021). Measuring the social costs of the guidelines requires identification of the affected entities by ownership (public or private), consideration of regulatory alternatives, calculation of the regulatory compliance costs for each affected entity, and assessment of the market implications of the additional pollution control costs. Considering the social benefits of the guidelines requires estimating the anticipated reductions in emissions at MSW landfills due to regulation and identifying the harmful effects of exposure to MSW landfill emissions. Quantitative valuation of the expected benefits to society was not done for this rule.

a. *Affected Entities.* The standards of performance for new sources will require control of approximately 43 new landfills constructed in the first 5 years the standards are in effect. The EG will require control of approximately 312 existing landfills. This represents less than 5 percent of the total number of landfills in the U.S.

Of the landfills required to install controls, about 30 percent of the existing landfills and 20 percent of the new landfills are privately owned. The remainder are publicly owned. (These percentages are taken from section 3.2.1 of the promulgation BID (EPA–453/R–94–021). While that analysis used a design capacity exemption level of 1 million Mg rather than the 2.5 million Mg exemption level contained in the final rule, the percentage of private versus publicly owned landfills would be similar.

b. *Regulatory Alternatives Considered.* Under section 205 of the Unfunded Mandates Act, the Agency must identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a budgetary impact statement must be prepared. The Agency must select from those alternatives the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule, unless the Agency explains why this alternative is not selected or the selection of this alternative is inconsistent with the law.

A number of alternatives were considered. These included design capacity exemption levels of 1, 2.5, and 3 million Mg and emission rate cutoffs of 50, 75, 100, and 150 Mg/year. Table 3 presents the impacts of alternative design capacity exemption levels for existing landfills. Table 4 presents the impacts of alternative emission rate cutoffs for existing landfills. Tables 5 and 6 present alternative design capacity exemption levels and emission rate cutoffs for new landfills.

TABLE 3.—ALTERNATIVE DESIGN CAPACITY EXEMPTION LEVEL OPTIONS FOR THE EMISSION GUIDELINES[a,b]

Small size cutoff (millions Mg)	Number landfills affected	Annual[c] NMOC emission reduction (Mg/yr)	Annual[d] methane emission reduction (Mg/yr)	Annual cost (million $/yr)	NMOC average cost eff. ($/Mg)	NMOC incremental cost eff. ($/Mg)
Baseline[e] 3,000,000	273	73,356	3,220,000	84	1,145	1,145

TABLE 3.—ALTERNATIVE DESIGN CAPACITY EXEMPTION LEVEL OPTIONS FOR THE EMISSION GUIDELINES[a,b]—Continued

Small size cutoff (millions Mg)	Number landfills affected	Annual[c] NMOC emission reduction (Mg/yr)	Annual[d] methane emission reduction (Mg/yr)	Annual cost (million $/yr)	NMOC average cost eff. ($/Mg)	NMOC incremental cost eff. ($/Mg)
2,500,000	312	77,600	3,370,000	89	1,147	1,178
1,000,000	572	97,600	3,990,000	119	1,219	1,500
No cutoff[f]	7,299	142,000	8,270,000	719	5,063	13,514

[a] Emission rate cutoff level of 50 Mg NMOC/yr.
[b] All values are fifth year annualized.
[c] NMOC emission reductions are from a baseline of 145,000 Mg NMOC/yr.
[d] Methane emission reductions are from a baseline of 8,400,000 Mg methane/yr.
[e] In the absence of an emission guidelines.
[f] No emission rate cutoff and no design capacity exemption level.

TABLE 4.—ALTERNATIVE NMOC EMISSION RATE STRINGENCY LEVEL OPTIONS FOR THE EMISSION GUIDELINES[a,b]

Emission rate cutoff (Mg NMOC/yr)	Number landfills affected	Annual[c] NMOC emission reduction (Mg/yr)	Annual[d] methane emission reduction (Mg/yr)	Annual cost (million $/yr)	NMOC average cost eff. ($/Mg)	NMOC incremental cost eff. ($/Mg)
Baseline[e].						
150	142	66,600	2,210,000	51	766	766
100	201	72,700	2,720,000	66	908	2,459
75	250	76,000	3,080,000	79	1,039	3,939
50	312	77,600	3,370,000	89	1,147	6,250
No cutoff[f]	7,299	142,000	8,270,000	719	5,063	9,783

[a] Design capacity exemption level of 2,500,000 Mg of refuse.
[b] All values are fifth year annualized.
[c] NMOC emission reductions are from a baseline of 145,000 Mg NMOC/yr.
[d] Methane emission reductions are from a baseline of 8,400,000 Mg methane/yr.
[e] In the absence of an emission guidelines.
[f] No emission rate cutoff and no design capacity exemption level.

TABLE 5.—ALTERNATIVE DESIGN CAPACITY EXEMPTION LEVEL OPTIONS FOR THE NEW SOURCE PERFORMANCE STANDARDS[a,b]

Small size cutoff (millions Mgr)	Number landfills affected	Annual[c] NMOC emission reduction (Mg/yr)	Annual[d] methane emission reduction (Mg/yr)	Annual[e] cost (million $/yr)	NMOC average cost eff. ($/Mg)	NMOC[f] incremental cost eff. ($/Mg)
Baseline[g].						
3,000,000	41	4,900	193,000	4	816	N/A
2,500,000	43	4,900	193,000	4	816	N/A
1,000,000	89	4,900	193,000	4	816	N/A
No cutoff[h]	872	13,115	881,000	81	6,176	N/A

[a] Emission rate cutoff level of 50 Mg NMOC/yr.
[b] All values are fifth year annualized.
[c] NMOC emission reductions are from a baseline of 13,400 Mg NMOC/yr.
[d] Methane emission reductions are from a baseline of 899,000 Mg methane/yr.
[e] Due to rounding off to the nearest million dollar, cost values do not appear to change for each option. However, actual costs are slightly less for a less stringent option.
[f] Because the annual cost does not change enough to show a different cost from one option to the next, incremental cost effectiveness values are not applicable.
[g] In the absence of a standard.
[h] No emission rate cutoff and no design capacity exemption level.

TABLE 6.—ALTERNATIVE NMOC EMISSION RATE STRINGENCY LEVEL OPTIONS FOR THE NEW SOURCE PERFORMANCE STANDARDS[a,b]

Emission rate cutoff (Mg NMOC/yr)	Number landfills affected	Annual[c,d] NMOC emission reduction (Mg/yr)	Annual[c,e] methane emission reduction (Mg/yr)	Annual[f] cost (million $/yr)	NMOC average cost eff. ($/Mg)	NMOC[g] incremental cost eff. ($/Mg)
Baseline[h].						
150	14	5,200	187,000	4	769	NA
100	25	5,100	203,000	4	784	NA
75	33	5,000	194,000	4	800	NA

TABLE 6.—ALTERNATIVE NMOC EMISSION RATE STRINGENCY LEVEL OPTIONS FOR THE NEW SOURCE PERFORMANCE STANDARDS [a,b]—Continued

Emission rate cutoff (Mg NMOC/yr)	Number landfills affected	Annual [c,d] NMOC emission reduction (Mg/yr)	Annual [c,e] methane emission reduction (Mg/yr)	Annual [f] cost (million $/yr)	NMOC average cost eff. ($/Mg)	NMOC [g] incremental cost eff. ($/Mg)
50	43	4,900	193,000	4	816	NA
No Cutoff [i]	872	13,115	881,000	81	6,176	NA

[a] Design capacity exemption level of 2,500,000 Mg of refuse.

[b] All values are fifth year annualized.

[c] Because of the small number of landfills and the longer time period of control for a given landfill at a more stringent option, the average annual emission reduction appears to decrease for a more stringent option. However, the emission reduction for a given year increase for more stringent options.

[d] NMOC emission reductions are from a baseline of 13,400 Mg NMOC/yr.

[e] Methane emission reductions are from a baseline of 899,000 Mg NMOC/yr.

[f] Due to rounding off to the nearest million dollar, cost values do not appear to change for each option. However, actual costs are slightly less for a less stringent option.

[g] Because the annual cost does not change enough to show a different cost from one option to the next, incremental cost effectiveness values are not applicable.

[h] In the absence of a standard.

[i] No emission rate cutoff and no design capacity exemption level.

The design capacity cutoff of 2.5 million Mg or 2.5 million cubic meters was chosen as a result of changes to the nationwide impacts analysis and to relieve as many small businesses and municipalities as possible from the regulatory requirements while still maintaining significant emission reduction. The 2.5 million Mg cutoff level exempts landfills that serve populations of less than about 125,000 people from periodic reporting and control requirements. This cutoff excludes those landfills who would be least able to afford the costs of a landfill gas collection and control system. A less stringent design capacity exemption level (e.g., 3 million Mg) was not selected because it would result in less emissions reductions. A more stringent design capacity exemption level (e.g., 1 million Mg) was not selected because it would increase the number of landfills required to apply control by over 80 percent (572 vs. 312 existing landfills) while only achieving an additional 25 percent NMOC emission reduction (see table 3). It would also increase national costs and subject smaller government entities to the regulatory requirements, since smaller governments typically operate smaller landfills.

The emission rate cutoff of 50 Mg/yr of NMOC was chosen because, in conjunction with the 2.5 million Mg design capacity cutoff, it will require control of less than 5 percent of all landfills, yet is estimated to reduce NMOC emissions by approximately 53 percent and methane emissions by 39 percent. The Climate Change Action Plan, signed by the President in October 1993, calls for the EPA to promulgate a "tough" landfill gas rule as soon as possible.

The average cost effectiveness is about $1,150/Mg NMOC (see table 4). While the incremental cost effectiveness for NMOC control of going from a cutoff of 75 Mg/yr to a 50 Mg/yr cutoff is high ($6,250/Mg NMOC), this value does not include any credit for the benefits of toxics, odor, explosion control, or the indirect benefit of methane control. The economic analysis indicated that the final rule (including the 50 Mg/yr cutoff level) would cause a relatively small increase in waste disposal costs compared to the current costs and would not result in severe economic impacts on households (see section C. "Social Costs" below).

A more stringent option (e.g., no cutoff) was not chosen because the average and incremental cost and cost effectiveness was not reasonable (see table 4). Less stringent emission rate cutoff levels were not chosen because they result in less NMOC and methane reduction, and would not be consistent with the section 111 statutory requirement to base emission standards on BDT.

The public entities with whom the EPA consulted understood the EPA's concerns regarding the loss of emission reductions by changing the proposed capacity exemption level from 100,000 Mg to 5 million Mg and agreed that 2.5 million relieved 90 percent of the landfills from the burden of regulation and was reasonable.

c. *Social Costs.* The regulatory compliance costs of reducing air emissions from MSW landfills include the total and annualized capital costs; operating and maintenance costs; monitoring, inspection, recordkeeping, and reporting costs; and total annual costs. The annualized capital cost is calculated using a 7 percent discount rate. The total annual cost is calculated as the sum of the annualized capital cost; operating and maintenance costs; and the monitoring, inspection, recordkeeping, and reporting costs.

The total nationwide annualized cost for collection and control of air emissions from new MSW landfills are estimated to be $4 million. The nationwide costs of the EG for existing landfills is estimated to be about $90 million. The annual cost of waste disposal is estimated to increase by an average of $0.60/Mg for the NSPS and $1.30/Mg for the EG. Costs per household would increase by approximately $2.50 to $5.00 per year for households served by a new or existing landfill, respectively, that is required to install a collection and control system. Because the rule requires control of only about 5 percent of the landfills in the U.S. many households would experience no increase in disposal costs. Furthermore, if affected landfills choose to use energy recovery systems, the cost per household in those areas would be less. The EPA has concluded that households would not incur severe economic impacts. For additional information, please refer to the regulatory impacts analysis (Docket No. A–88–09, Item IV-A–7) and chapter 3 of the promulgation BID (EPA–453/R–94–021). There are no Federal funds available to assist State and local governments in meeting these costs.

d. *Social Benefits.* Society will benefit from the NSPS and EG through the reduction of landfill gas emissions, including NMOC and methane reductions. The total nationwide annualized emission reduction of the EG is estimated to be 77,600 Mg/yr of NMOC and 3,370,000 Mg/yr of methane.

The total nationwide annualized emission reduction for the NSPS is about 4,900 Mg/yr of NMOC and 881,000 Mg/yr of methane.

The NMOC's present several hazards to human health. The NMOC's participate in chemical reactions leading to the formation of ozone, which causes health effects. Also, certain NMOC's have cancer risks and cause noncancer health effects.

Ozone is created by sunlight acting on NO_X and NMOC's in ambient air. Ozone leads to alterations in pulmonary function, aggravation of pre-existing respiratory disease, damage to lung structure, and adverse effects on blood enzymes, the central nervous system, and endocrine systems. Ozone also warrants control due to its welfare effects, specifically, reduced plant growth, decreased crop yield, necrosis of plant tissue, and deterioration of certain synthetic materials such as rubber (Docket No. A–88–09, Item Nos. II-A-26, II-I-16, etc.).

There is also concern about cancer risks from landfill NMOC emissions. In reviewing limited emissions data from MSW landfills, EPA identified both known and suspected carcinogens such as benzene, carbon tetrachloride, chloroform, ethylene dichloride, methylene dichloride, perchloroethylene, trichloroethylene, vinyl chloride, and vinylidene chloride. Prior to proposal, the EPA attempted to apply statistical methods to the limited data to generate the average annual increased cancer incidence and the maximum individual risk (MIR). In evaluating the result of the calculations for annual incidence and MIR, the EPA could not determine reasonable estimates of either an annual incidence or the MIR. The EPA concluded, at proposal, that the uncertainties in the database are too great to calculate credible estimates of the cancer risks associated with MSW landfills.

Another benefit of the NSPS and EG is reduced fire explosion hazard through reduction of methane emissions. The EPA has documented many cases of acute injury and death caused by explosions and fires related to municipal landfill gas emissions. In addition to these health effects, the associated property damage is a welfare effect. Furthermore, when the migration of methane and the ensuring hazard are identified, adjacent property values can be adversely affected (Docket No. A–88–09, Item Nos. II–I–6, II–I–7, etc.)

Another aspect of MSW landfill emissions is the offensive odor associated with landfills. While the nature of the wastes themselves contribute to the problem of odor, the gaseous decomposition products are often characteristically malodorous and unpleasant. Various welfare effects may be associated with odors, but due to the subjective nature of the impact and perception of odor, it is difficult to quantify these effects. Studies indicate that unpleasant odors can discourage capital investment and lower the socioeconomic status of an area. Odors have been shown to interfere with daily activities, discourage facility use, and lead to a decline in property values, tax revenues, and payroll (Docket No. A–88–09, Item Nos. II–I–6, II–I–7, etc.)

An ancillary benefit from regulating air emissions from MSW landfills is a reduction in the contribution of MSW landfill emissions to global emissions of methane. Methane is a major greenhouse gas, and is 20 to 30 times more potent than CO_2 on a molecule-per-molecule basis. This is due to the radiative characteristics of methane and other effects methane has on atmospheric chemistry. There is a general concern within the scientific community that the increasing emissions of greenhouse gases could lead to climate change, although the rate and magnitude of these changes are uncertain.

In conclusion, while the social benefits of the rule have not been quantified, significant health and welfare benefits are expected to result from the reduction in landfill gas emissions caused by the rule.

3. Effects on the National Economy

The Unfunded Mandates Act requires that the EPA estimate "the effect" of this rule—

> "on the national economy, such as the effect on productivity, economic growth, full employment, creation of productive jobs, and international competitiveness of the U.S. goods and services, if and to the extent that the EPA in its sole discretion determines that accurate estimates are reasonably feasible and that such effect is relevant and material."

As stated in the Unfunded Mandates Act, such macroeconomic effects tend to be measurable, in nationwide econometric models, only if the economic impact of the regulation reaches 0.25 to 0.5 percent of gross domestic product (in the range of $1.5 billion to $3 billion). A regulation with a smaller aggregate effect is highly unlikely to have any measurable impact in macroeconomic terms unless it is highly focused on a particular geographic region or economic sector. For this reason, no estimate of this rule's effect on the national economy has been conducted.

4. Consultation with Government Officials

The Unfunded Mandates Act requires that the EPA describe the extent of the EPA's consultation with affected State, local, and tribal officials, summarize the officials' comments or concerns, and summarize the EPA's response to those comments or concerns. These goals were addressed through meetings held with a number of public entities over the course of six months. Those entities included the US Conference of Mayors, the National League of Cities, the National Governor's Association, the National Association of Counties, and the Solid Waste Association of North America (SWANA). Through these meetings, these entities were informed of the rule, educated about it, and advised as to whether or not they would be impacted by it. These initial education and information sharing meetings were followed by meetings in which consultations and analysis of various alternatives took place. Documentation of all meetings and public comments can be found in Docket A–88–09.

Various concerns were discussed during the meetings. These concerns included: (1) The design capacity cutoff; (2) collection wells, their costing and installation requirements; (3) design specifications for collection systems; (4) well head nitrogen measurement of 20 percent; and (5) the surface monitoring requirements.

As a result of these consultations, the EPA decided to modify the final regulatory package to address these concerns. In the final regulatory package promulgated today: (1) The design capacity cutoff has been raised from the proposed level of 100,000 to 2.5 million Mg; (2) Changes were made to the way the costing algorithm calculates the number of vertical collection wells. The rule was also changed to require active areas to install wells 5 years from initial waste placement instead of 2 years. Closed areas or areas at final grade must install a collection system within 2 years; (3) Prescriptive design specifications have been removed from the rule and replaced with general criteria. The EPA is developing an Enabling Document to assist State and local permitting agencies in their review of designs; (4) Well head pressure monitoring can meet either 20 percent nitrogen or 5 percent oxygen; (5) Surface monitoring is to be done quarterly instead of monthly, not to exceed 500 ppm methane above background.

These changes were made in response to consultations held regarding burden of the regulation and as a result of new data presented by the entities with whom the EPA met. A letter from the Solid Waste Management of North America and SWAC to the EPA demonstrates their support of this decision. Detailed summaries of the meetings and the letter can be obtained from the Docket A–88–09.

Documentation of the EPA's consideration of comments on the proposed standards and guidelines is provided in the BID's for the proposed and final standards and guidelines. Refer to the ADDRESSES section of this preamble for information on how to acquire copies of these documents.

The final rule reflects a minimization of burden on small landfills and does not create an unreasonable burden for large public entities. The EPA has considered the purpose and intent of the Unfunded Mandate Act and has determined the landfill NSPS and EG are needed.

F. Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.) requires the EPA to give special consideration to the impact of regulation on small businesses, small organizations, and small governmental units. The Regulatory Flexibility Act specifies that EPA must prepare an initial regulatory flexibility analysis if a regulation will have a significant economic impact on a substantial number of small entities.

Pursuant to section 605(b) of the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Administrator certifies that this rule will not have a significant economic impact on a substantial number of small entities.

The final NSPS and Eg exempt small landfills that have a design capacity below 2.5 million Mg of MSW. This design capacity exemption will exempt landfills that serve communities of 125,000 people or less, assuming the typical waste generation rate of 5 lb of waste per person per day and an average landfill age of 20 years. Section 601 of the Regulatory Flexibility Act defines a "small governmental jurisdiction" as governments of cities, counties, towns, or other districts with a population less than 50,000. The design capacity exemption will exempt landfills that serve small governmental jurisdictions. Therefore, the landfills NSPS and EG will have no impact on small entities.

The NSPS and EG will require periodic emissions calculations or control of emissions from only the largest 10 percent of landfills in the U.S. By controlling these large landfills, the rules will significantly reduce landfill gas emissions, which have adverse effects on human health and welfare, contribute to global warming, and can create odors and explosion hazards. In consideration of the potential regulatory burden on small entities and in response to public comment, the landfill design capacity in the proposed rule was raised to 2.5 million Mg/yr, thereby exempting small entities.

G. Miscellaneous

The effective date of this regulation is March 12, 1996. Section 111(b)(1)(B) of the CAA provides that standards of performance or revisions thereof become effective upon promulgation and apply to affected facilities of which the construction or modification was commenced after the date of proposal, May 31, 1991.

As prescribed by section 111, the promulgation of these standards was preceded by the Administrator's determination that MSW landfills contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare. In accordance with section 117 of the CAA, publication of these promulgated standards was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies.

This regulation will be reviewed 4 years from the date of promulgation as required by the CAA. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology, and reporting requirements.

Section 317 of the CAA requires the Administrator to prepare an economic impact assessment for any NSPS promulgated under section 111(b) of the CAA. An economic impact assessment was prepared for this regulation and for other regulatory alternatives. All aspects of the assessment were considered in the formulation of the standards to ensure that cost was carefully considered in determining the BDT. The economic impact assessment is included in the BID for the proposed standards and in Chapter 3 of the promulgation BID.

List of Subjects

40 CFR Part 51

Environmental protection, Air pollution control.

40 CFR Part 52

Air pollution control.

40 CFR Part 60

Environmental protection, Air pollution control, Intergovernmental relations, reporting and recordkeeping requirements, Municipal solid waste landfills, Municipal solid waste.

Dated: March 1, 1996.

Carol M. Browner,
Administrator.

For the reasons set out in the preamble, title 40, chapter 1, parts 51, 52 and 60 of the Code of Federal Regulations are amended as follows:

PART 51—REQUIREMENTS FOR PREPARATION, ADOPTION AND SUBMITTAL OF IMPLEMENTATION PLANS

1. The authority citation for part 51 continues to read as follows:

Authority: 7401–7671q.

2. Section 51.166(b)(23)(i) is amended by adding an entry to the end of the *Pollutant and Emission Rate* list to read as follows:

§ 51.166 Prevention of significant deterioration of air quality.

* * * * *

(b) * * *

(23) * * *

(i) * * * Municipal solid waste landfill emissions (measured as nonmethane organic compounds): 45 megagrams per year (50 tons per year)

* * * * *

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

3. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

4. Section 52.21(b)(23)(i) is amended by adding an entry to the end of the *Pollutant and Emission Rate* list to read as follows:

§ 52.21 Prevention of significant deterioration of air quality.

* * * * *

(b) * * *

(23) * * *

(i) * * * Municipal solid waste landfills emissions (measured as nonmethane organic compounds): 45 megagrams per year (50 tons per year)

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PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

5. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7414, 7416, and 7601.

6. Section 60.16 of subpart A is amended by adding an entry to the end to read under *Other Source Categories* as follows:

§ 60.16 Priority list.

* * * * *

Other Source Categories

* * * * *

Municipal solid waste landfills.[4]

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7. Section 60.30 is amended by adding a new paragraph (c) to read as follows:

§ 60.30 Scope.

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(c) Subpart Cc—Municipal Solid Waste Landfills.

8. Part 60 is further amended by adding the Subpart Cc to read as follows:

Subpart Cc—Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

Subpart Cc—Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

§ 60.30c Scope.

This subpart contains emission guidelines and compliance times for the control of certain designated pollutants from certain designated municipal solid waste landfills in accordance with section 111(d) of the Act and subpart B.

§ 60.31c Definitions.

Terms used but not defined in this subpart have the meaning given them in the Act and in subparts A, B, and WWW of this part.

Municipal solid waste landfill or *MSW landfill* means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. An MSW landfill may also receive other types of RCRA Subtitle D wastes such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Portions of an MSW landfill may be separated by access roads. An MSW landfill may be publicly or privately owned. An MSW landfill may be a new MSW landfill, an existing MSW landfill or a lateral expansion.

§ 60.32c Designated facilities.

(a) The designated facility to which the guidelines apply is each existing MSW landfill for which construction, reconstruction or modification was commenced before May 30, 1991.

(b) Physical or operational changes made to an existing MSW landfill solely to comply with an emission guideline are not considered a modification or reconstruction and would not subject an existing MSW landfill to the requirements of subpart WWW [see § 60.750 of Subpart WWW].

§ 60.33c Emission guidelines for municipal solid waste landfill emissions.

(a) For approval, a State plan shall include control of MSW landfill emissions at each MSW landfill meeting the following three conditions:

(1) The landfill has accepted waste at any time since November 8, 1987, or has additional design capacity available for future waste deposition;

(2) The landfill has a design capacity greater than or equal to 2.5 million megagrams or 2.5 million cubic meters. The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. Any density conversions shall be documented and submitted with the report; and

(3) The landfill has a nonmethane organic compound emission rate of 50 megagrams per year or more.

(b) For approval, a State plan shall include the installation of a collection and control system meeting the conditions provided in § 60.752(b)(2)(ii) of this part at each MSW landfill meeting the conditions in paragraph (a) of this section. The State plan shall include a process for State review and approval of the site-specific design plans for the gas collection and control system(s).

(c) For approval, a State plan shall include provisions for the control of collected MSW landfill emissions through the use of control devices meeting the requirements of paragraph (c)(1), (2), or (3) of this section, except as provided in § 60.24.

(1) An open flare designed and operated in accordance with the parameters established in § 60.18; or

(2) A control system designed and operated to reduce NMOC by 98 weight percent; or

(3) An enclosed combustor designed and operated to reduce the outlet NMOC concentration to 20 parts per million as hexane by volume, dry basis at 3 percent oxygen, or less.

§ 60.34c Test methods and procedures.

For approval, a State plan shall include provisions for: the calculation of the landfill NMOC emission rate listed in § 60.754, as applicable, to determine whether the landfill meets the condition in § 60.33c(a)(3); the operational standards in § 60.753; the compliance provisions in § 60.755; and the monitoring provisions in § 60.756.

§ 60.35c Reporting and recordkeeping guidelines.

For approval, a State plan shall include the recordkeeping and reporting provisions listed in §§ 60.757 and 60.758, as applicable, except as provided under § 60.24.

§ 60.36c Compliance times.

(a) Except as provided for under paragraph (b) of this section, planning, awarding of contracts, and installation of MSW landfill air emission collection and control equipment capable of meeting the emission guidelines established under § 60.33c shall be accomplished within 30 months after the effective date of a State emission standard for MSW landfills.

(b) For each existing MSW landfill meeting the conditions in § 60.33c(a)(1) and § 60.33c(a)(2) whose NMOC emission rate is less than 50 megagrams per year on the effective date of the State emission standard, installation of collection and control systems capable of meeting emission guidelines in § 60.33c shall be accomplished within 30 months of the date when the condition in § 60.33c(a)(3) is met (i.e., the date of the first annual nonmethane organic compounds emission rate which equals or exceeds 50 megagrams per year).

9. Part 60 is amended by adding a new subpart WWW to read as follows:

Subpart WWW—Standards of Performance for Municipal Solid Waste Landfills

Subpart WWW—Standards of Performance for Municipal Solid Waste Landfills

§ 60.750 Applicability, designation of affected facility, and delegation of authority.

(a) The provisions of this subpart apply to each municipal solid waste

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[4] Not prioritized, since an NSPS for this major source category has already been promulgated.

landfill that commenced construction, reconstruction or modification or began accepting waste on or after May 30, 1991. Physical or operational changes made to an existing MSW landfill solely to comply with Subpart Cc of this part are not considered construction, reconstruction, or modification for the purposes of this section.

(b) The following authorities shall be retained by the Administrator and not transferred to the State: None.

§ 60.751 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act or in subpart A of this part.

Active collection system means a gas collection system that uses gas mover equipment.

Active landfill means a landfill in which solid waste is being placed or a landfill that is planned to accept waste in the future.

Closed landfill means a landfill in which solid waste is no longer being placed, and in which no additional solid wastes will be placed without first filing a notification of modification as prescribed under § 60.7(a)(4). Once a notification of modification has been filed, and additional solid waste is placed in the landfill, the landfill is no longer closed. A landfill is considered closed after meeting the criteria of § 258.60 of this title.

Closure means that point in time when a landfill becomes a closed landfill.

Commercial solid waste means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.

Controlled landfill means any landfill at which collection and control systems are required under this subpart as a result of the nonmethane organic compounds emission rate. The landfill is considered controlled at the time either

(1) A notification of intent to install a collection and control system or

(2) A collection and control system design plan is submitted in compliance with § 60.752(b)(2)(i).

Design capacity means the maximum amount of solid waste a landfill can accept, as specified in the construction or operating permit issued by the State, local, or Tribal agency responsible for regulating the landfill.

Disposal facility means all contiguous land and structures, other appurtenances, and improvements on the land used for the disposal of solid waste.

Emission rate cutoff means the threshold annual emission rate to which a landfill compares its estimated emission rate to determine if control under the regulation is required.

Enclosed combustor means an enclosed firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor.

Flare means an open combustor without enclosure or shroud.

Gas mover equipment means the equipment (i.e., fan, blower, compressor) used to transport landfill gas through the header system.

Household waste means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including, but not limited to, single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas).

Industrial solid waste means solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under Subtitle C of the Resource Conservation and Recovery Act, parts 264 and 265 of this title. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste.

Interior well means any well or similar collection component located inside the perimeter of the landfill. A perimeter well located outside the landfilled waste is not an interior well.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile as those terms are defined under § 257.2 of this title.

Lateral expansion means a horizontal expansion of the waste boundaries of an existing MSW landfill. A lateral expansion is not a modification unless it results in an increase in the design capacity of the landfill.

Municipal solid waste landfill or *MSW landfill* means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. An MSW landfill may also receive other types of RCRA Subtitle D wastes (§ 257.2 of this title) such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Portions of an MSW landfill may be separated by access roads. An MSW landfill may be publicly or privately owned. An MSW landfill may be a new MSW landfill, an existing MSW landfill, or a lateral expansion.

Municipal solid waste landfill emissions or *MSW landfill emissions* means gas generated by the decomposition of organic waste deposited in an MSW landfill or derived from the evolution of organic compounds in the waste.

NMOC means nonmethane organic compounds, as measured according to the provisions of § 60.754.

Nondegradable waste means any waste that does not decompose through chemical breakdown or microbiological activity. Examples are, but are not limited to, concrete, municipal waste combustor ash, and metals.

Passive collection system means a gas collection system that solely uses positive pressure within the landfill to move the gas rather than using gas mover equipment.

Sludge means any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility, exclusive of the treated effluent from a wastewater treatment plant.

Solid waste means any garbage, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permits under 33 U.S.C. 1342, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (42 U.S.C 2011 et seq.).

Sufficient density means any number, spacing, and combination of collection system components, including vertical wells, horizontal collectors, and surface collectors, necessary to maintain emission and migration control as determined by measures of performance set forth in this part.

Sufficient extraction rate means a rate sufficient to maintain a negative pressure at all wellheads in the collection system without causing air infiltration, including any wellheads connected to the system as a result of expansion or excess surface emissions, for the life of the blower.

§ 60.752 Standards for air emissions from municipal solid waste landfills.

(a) Each owner or operator of an MSW landfill having a design capacity less than 2.5 million megagrams by mass or 2.5 million cubic meters by volume shall submit an initial design capacity report to the Administrator as provided in § 60.757(a). The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. Any density conversions shall be documented and submitted with the report. For purposes of part 70 permitting, a landfill with a design capacity less than 2.5 million megagrams or 2.5 million cubic meters does not require an operating permit under part 70 of this chapter. Submittal of the initial design capacity report shall fulfill the requirements of this subpart except as provided for in paragraphs (a)(1) and (a)(2) of this section.

(1) The owner or operator shall submit to the Administrator an amended design capacity report, as provided for in § 60.757(a)(3), when there is any increase in the design capacity of a landfill subject to the provisions of this subpart, whether the increase results from an increase in the area or depth of the landfill, a change in the operating procedures of the landfill, or any other means.

(2) If any increase in the maximum design capacity of a landfill exempted from the provisions of § 60.752(b) through § 60.759 of this subpart on the basis of the design capacity exemption in paragraph (a) of this section results in a revised maximum design capacity equal to or greater than 2.5 million megagrams or 2.5 million cubic meters, the owner or operator shall comply with the provision of paragraph (b) of this section.

(b) Each owner or operator of an MSW landfill having a design capacity equal to or greater than 2.5 million megagrams or 2.5 million cubic meters, shall either comply with paragraph (b)(2) of this section or calculate an NMOC emission rate for the landfill using the procedures specified in § 60.754. The NMOC emission rate shall be recalculated annually, except as provided in § 60.757(b)(1)(ii) of this subpart. The owner or operator of an MSW landfill subject to this subpart with a design capacity greater than or equal to 2.5 million megagrams or 2.5 million cubic meters is subject to part 70 permitting requirements. When a landfill is closed, and either never needed control or meets the conditions for control system removal specified in § 60.752(b)(2)(v) of this subpart, a part 70 operating permit is no longer required.

(1) If the calculated NMOC emission rate is less than 50 megagrams per year, the owner or operator shall:

(i) Submit an annual emission report to the Administrator, except as provided for in § 60.757(b)(1)(ii); and

(ii) Recalculate the NMOC emission rate annually using the procedures specified in § 60.754(a)(1) until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, or the landfill is closed.

(A) If the NMOC emission rate, upon recalculation required in paragraph (b)(1)(ii) of this section, is equal to or greater than 50 megagrams per year, the owner or operator shall install a collection and control system in compliance with paragraph (b)(2) of this section.

(B) If the landfill is permanently closed, a closure notification shall be submitted to the Administrator as provided for in § 60.757(d).

(2) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the owner or operator shall:

(i) Submit a collection and control system design plan prepared by a professional engineer to the Administrator within 1 year:

(A) The collection and control system as described in the plan shall meet the design requirements of paragraph (b)(2)(ii) of this section.

(B) The collection and control system design plan shall include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions of §§ 60.753 through 60.758 proposed by the owner or operator.

(C) The collection and control system design plan shall either conform with specifications for active collection systems in § 60.759 or include a demonstration to the Administrator's satisfaction of the sufficiency of the alternative provisions to § 60.759.

(D) The Administrator shall review the information submitted under paragraphs (b)(2)(i) (A),(B) and (C) of this section and either approve it, disapprove it, or request that additional information be submitted. Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, or horizontal trenches only, leachate collection components, and passive systems.

(ii) Install a collection and control system within 18 months of the submittal of the design plan under paragraph (b)(2)(i) of this section that effectively captures the gas generated within the landfill.

(A) An active collection system shall:

(*1*) Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment;

(*2*) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of:

(*i*) 5 years or more if active; or

(*ii*) 2 years or more if closed or at final grade;

(*3*) Collect gas at a sufficient extraction rate;

(*4*) Be designed to minimize off-site migration of subsurface gas.

(B) A passive collection system shall:

(*1*) Comply with the provisions specified in paragraphs (b)(2)(ii), (A) (*1*), (*2*), and (*4*) of this section.

(*2*) Be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners shall be installed as required under § 258.40 of this title.

(iii) Route all the collected gas to a control system that complies with the requirements in either paragraph (b)(2)(iii) (A), (B) or (C) of this section.

(A) An open flare designed and operated in accordance with § 60.18;

(B) A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test, required under § 60.8 using the test methods specified in § 60.754(d).

(*1*) If a boiler or process heater is used as the control device, the landfill gas stream shall be introduced into the flame zone.

(2) The control device shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in § 60.756;

(C) Route the collected gas to a treatment system that processes the collected gas for subsequent sale or use. All emissions from any atmospheric vent from the gas treatment system shall be subject to the requirements of paragraph (b)(2)(iii) (A) or (B) of this section.

(iv) Operate the collection and control device installed to comply with this subpart in accordance with the provisions of §§ 60.753, 60.755 and 60.756.

(v) The collection and control system may be capped or removed provided that all the conditions of paragraphs (b)(2)(v) (A), (B), and (C) of this section are met:

(A) The landfill shall be no longer accepting solid waste and be permanently closed under the requirements of § 258.60 of this title. A closure report shall be submitted to the Administrator as provided in § 60.757(d);

(B) The collection and control system shall have been in operation a minimum of 15 years; and

(C) Following the procedures specified in § 60.754(b) of this subpart, the calculated NMOC gas produced by the landfill shall be less than 50 megagrams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart.

§ 60.753 Operational standards for collection and control systems.

Each owner or operator of an MSW landfill gas collection and control system used to comply with the provisions of § 60.752(b)(2)(ii) of this subpart shall:

(a) Operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:

(1) 5 years or more if active; or

(2) 2 years or more if closed or at final grade;

(b) Operate the collection system with negative pressure at each wellhead except under the following conditions:

(1) A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided in § 60.757(f)(1);

(2) Use of a geomembrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan;

(3) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the Administrator;

(c) Operate each interior wellhead in the collection system with a landfill gas temperature less than 55 °C and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.

(1) The nitrogen level shall be determined using Method 3C, unless an alternative test method is established as allowed by § 60.752(b)(2)(i) of this subpart.

(2) Unless an alternative test method is established as allowed by § 60.752(b)(2)(i) of this subpart, the oxygen shall be determined by an oxygen meter using Method 3A except that:

(i) The span shall be set so that the regulatory limit is between 20 and 50 percent of the span;

(ii) A data recorder is not required;

(iii) Only two calibration gases are required, a zero and span, and ambient air may be used as the span;

(iv) A calibration error check is not required;

(v) The allowable sample bias, zero drift, and calibration drift are ±10 percent.

(d) Operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the owner or operator shall conduct surface testing around the perimeter of the collection area along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.

(e) Operate the system such that all collected gases are vented to a control system designed and operated in compliance with § 60.752(b)(2)(iii). In the event the collection or control system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within 1 hour; and

(f) Operate the control or treatment system at all times when the collected gas is routed to the system.

(g) If monitoring demonstrates that the operational requirement in paragraphs (b), (c), or (d) of this section are not met, corrective action shall be taken as specified in § 60.752(a) (3) through (5) or § 60.755(c) of this subpart. If corrective actions are taken as specified in § 60.755, the monitored exceedance is not a violation of the operational requirements in this section.

§ 60.754 Test methods and procedures.

(a)(1) The landfill owner or operator shall calculate the NMOC emission rate using either the equation provided in paragraph (a)(1)(i) of this section or the equation provided in paragraph (a)(1)(ii) of this section. The values to be used in both equations are 0.05 per year for k, 170 cubic meters per megagram for Lo, and 4,000 parts per million by volume as hexane for the C_{NMOC}.

(i) The following equation shall be used if the actual year-to-year solid waste acceptance rate is known.

$$M_{NMOC} = \sum_{i=1}^{n} 2\,k\,L_o M_i \left(e^{-kt}i\right)\left(C_{NM}OC\right)\left(3.6\times10^{-9}\right)$$

where,

M_{NMOC}=Total NMOC emission rate from the landfill, megagrams per year

k=methane generation rate constant, $year^{-1}$

L_o=methane generation potential, cubic meters per megagram solid waste

M_i=mass of solid waste in the i^{th} section, megagrams

t_i=age of the i^{th} section, years

C_{NMOC}=concentration of NMOC, parts per million by volume as hexane

3.6×10^{-9}=conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if the documentation provisions of § 60.758(d)(2) are followed.

(ii) The following equation shall be used if the actual year-to-year solid waste acceptance rate is unknown.

$$M_{NMOC}=2L_o R (e^{-kc} - e^{-kt}) (C_{NMOC}) (3.6 \times 10^{-9})$$

where,

M_{NMOC}=mass emission rate of NMOC, megagrams per year

L_o=methane generation potential, cubic meters per megagram solid waste

R=average annual acceptance rate, megagrams per year

k=methane generation rate constant, $year^{-1}$

t=age of landfill, years

C_{NMOC}=concentration of NMOC, parts per million by volume as hexane

c=time since closure, years. For active landfill c = O and e^{-kc}=1

3.6×10^{-9}=conversion factor

The mass of nondegradable solid waste may be subtracted from the average annual acceptance rate when calculating a value for R, if the documentation provisions of § 60.758(d)(2) are followed.

(2) *Tier 1.* The owner or operator shall compare the calculated NMOC mass emission rate to the standard of 50 megagrams per year.

(i) If the NMOC emission rate calculated in paragraph (a)(1) of this section is less than 50 megagrams per year, then the landfill owner shall submit an emission rate report as provided in § 60.757(b)(1), and shall recalculate the NMOC mass emission rate annually as required under § 60.752(b)(1).

(ii) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, then the landfill owner shall either comply with § 60.752(b)(2), or determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in paragraph (a)(3) of this section.

(3) *Tier 2.* The landfill owner or operator shall determine the NMOC concentration using the following sampling procedure. The landfill owner or operator shall install at least two sample probes per hectare of landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The sample probes should be located to avoid known areas of nondegradable solid waste. The owner or operator shall collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using Method 25C of appendix A of this part or Method 18 of appendix A of this part. If using Method 18 of appendix A of this part, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42). If composite sampling is used, equal volumes shall be taken from each sample probe. If more than the required number of samples are taken, all samples shall be used in the analysis. The landfill owner or operator shall divide the NMOC concentration from Method 25C of appendix A of this part by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

(i) The landfill owner or operator shall recalculate the NMOC mass emission rate using the equations provided in paragraph (a)(1)(i) or (a)(1)(ii) of this section and using the average NMOC concentration from the collected samples instead of the default value in the equation provided in paragraph (a)(1) of this section.

(ii) If the resulting mass emission rate calculated using the site-specific NMOC concentration is equal to or greater than 50 megagrams per year, then the landfill owner or operator shall either comply with § 60.752(b)(2), or determine the site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the procedure specified in paragraph (a)(4) of this section.

(iii) If the resulting NMOC mass emission rate is less than 50 megagrams per year, the owner or operator shall submit a periodic estimate of the emission rate report as provided in § 60.757(b)(1) and retest the site-specific NMOC concentration every 5 years using the methods specified in this section.

(4) *Tier 3.* The site-specific methane generation rate constant shall be determined using the procedures provided in Method 2E of appendix A of this part. The landfill owner or operator shall estimate the NMOC mass emission rate using equations in paragraph (a)(1)(i) or (a)(1)(ii) of this section and using a site-specific methane generation rate constant k, and the site-specific NMOC concentration as determined in paragraph (a)(3) of this section instead of the default values provided in paragraph (a)(1) of this section. The landfill owner or operator shall compare the resulting NMOC mass emission rate to the standard of 50 megagrams per year.

(i) If the NMOC mass emission rate as calculated using the site-specific methane generation rate and concentration of NMOC is equal to or greater than 50 megagrams per year, the owner or operator shall comply with § 60.752(b)(2).

(ii) If the NMOC mass emission rate is less than 50 megagrams per year, then the owner or operator shall submit a periodic emission rate report as provided in § 60.757(b)(1) and shall recalculate the NMOC mass emission rate annually, as provided in § 60.757(b)(1) using the equations in paragraph (a)(1) of this section and using the site-specific methane generation rate constant and NMOC concentration obtained in paragraph (a)(3) of this section. The calculation of the methane generation rate constant is performed only once, and the value obtained is used in all subsequent annual NMOC emission rate calculations.

(5) The owner or operator may use other methods to determine the NMOC concentration or a site-specific k as an alternative to the methods required in paragraphs (a)(3) and (a)(4) of this section if the method has been approved by the Administrator as provided in § 60.752(b)(2)(i)(B).

(b) After the installation of a collection and control system in compliance with § 60.755, the owner or operator shall calculate the NMOC emission rate for purposes of determining when the system can be removed as provided in § 60.752(b)(2)(v), using the following equation:

$$M_{NMOC} = 1.89 \times 10^{-3} Q_{LFG} C_{NMOC}$$

where,

M_{NMOC} = mass emission rate of NMOC, megagrams per year

Q_{LFG} = flow rate of landfill gas, cubic meters per minute

C_{NMOC} = NMOC concentration, parts per million by volume as hexane

(1) The flow rate of landfill gas, Q_{LFG}, shall be determined by measuring the total landfill gas flow rate at the common header pipe that leads to the control device using a gas flow measuring device calibrated according to the provisions of section 4 of Method 2E of appendix A of this part.

(2) The average NMOC concentration, C_{NMOC}, shall be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or condensate

removal equipment using the procedures in Method 25C or Method 18 of appendix A of this part. If using Method 18 of appendix A of this part, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP–42). The sample location on the common header pipe shall be before any condensate removal or other gas refining units. The landfill owner or operator shall divide the NMOC concentration from Method 25C of appendix A of this part by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

(3) The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the Administrator as provided in § 60.752(b)(2)(i)(B).

(c) The owner or operator of each MSW landfill subject to the provisions of this subpart shall estimate the NMOC emission rate for comparison to the PSD major source and significance levels in §§ 51.166 or 52.21 of this chapter using AP–42 or other approved measurement procedures. If a collection system, which complies with the provisions in § 60.752(b)(2) is already installed, the owner or operator shall estimate the NMOC emission rate using the procedures provided in paragraph (b) of this section.

(d) For the performance test required in § 60.752(b)(2)(iii)(B), Method 25 or Method 18 of appendix A of this part shall be used to determine compliance with 98 weight-percent efficiency or the 20 ppmv outlet concentration level, unless another method to demonstrate compliance has been approved by the Administrator as provided by § 60.752(b)(2)(i)(B). If using Method 18 of appendix A of this part, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP–42). The following equation shall be used to calculate efficiency:

$$\text{Control Efficiency} = (NMOC_{in} - NMOC_{out})/(NMOC_{in})$$

where,

$NMOC_{in}$ = mass of NMOC entering control device

$NMOC_{out}$ = mass of NMOC exiting control device

§ 60.755 Compliance provisions.

(a) Except as provided in § 60.752(b)(2)(i)(B), the specified methods in paragraphs (a)(1) through (a)(6) of this section shall be used to determine whether the gas collection system is in compliance with § 60.752(b)(2)(ii).

(1) For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with § 60.752(b)(2)(ii)(A)(*1*), one of the following equations shall be used. The k and L_o kinetic factors should be those published in the most recent Compilation of Air Pollutant Emission Factors (AP–42) or other site specific values demonstrated to be appropriate and approved by the Administrator. If k has been determined as specified in § 60.754(a)(4), the value of k determined from the test shall be used. A value of no more than 15 years shall be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.

(i) For sites with unknown year-to-year solid waste acceptance rate:

$$Q_m = 2L_o R\,(e^{-kc} - e^{-kt})$$

where,

Q_m = maximum expected gas generation flow rate, cubic meters per year

L_o = methane generation potential, cubic meters per megagram solid waste

R = average annual acceptance rate, megagrams per year

k = methane generation rate constant, year^{-1}

t = age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years

c = time since closure, years (for an active landfill c = O and $e^{-kc} = 1$)

(ii) For sites with known year-to-year solid waste acceptance rate:

$$Q_M = \sum_{i=1}^{n} 2\,k\,L_o\,M_i\left(e^{-kt_i}\right)$$

where,

Q_M=maximum expected gas generation flow rate, cubic meters per year

k=methane generation rate constant, year^{-1}

L_o=methane generation potential, cubic meters per megagram solid waste

M_i=mass of solid waste in the i^{th} section, megagrams

t_i=age of the i^{th} section, years

(iii) If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, the equations in paragraphs (a)(1) (i) and (ii) of this section. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using the equations in paragraphs (a)(1) (i) or (ii) or other methods shall be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment.

(2) For the purposes of determining sufficient density of gas collectors for compliance with § 60.752(b)(2)(ii)(A)(*2*), the owner or operator shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the Administrator, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.

(3) For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with § 60.752(b)(2)(ii)(A)(*3*), the owner or operator shall measure gauge pressure in the gas collection header at each individual well, monthly. If a positive pressure exists, action shall be initiated to correct the exceedance within 5 calendar days, except for the three conditions allowed under § 60.753(b). If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial measurement of positive pressure. Any attempted corrective measure shall not cause exceedances of other operational or performance standards.

(4) Owners or operators are not required to install additional wells as required in paragraph (a)(3) of this section during the first 180 days after gas collection system start-up.

(5) For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator shall monitor each well monthly for temperature and nitrogen or oxygen as provided in § 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within 5 calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards.

(6) An owner or operator seeking to demonstrate compliance with § 60.752(b)(2)(ii)(A)(*4*) through the use of a collection system not conforming to the specifications provided in § 60.759 shall provide information satisfactory to the Administrator as specified in § 60.752(b)(2)(i)(C) demonstrating that off-site migration is being controlled.

(b) For purposes of compliance with § 60.753(a), each owner or operator of a controlled landfill shall place each well or design component as specified in the approved design plan as provided in § 60.752(b)(2)(i). Each well shall be installed within 60 days of the date in which the initial solid waste has been in place for a period of:

(1) 5 years or more if active; or

(2) 2 years or more if closed or at final grade.

(c) The following procedures shall be used for compliance with the surface methane operational standard as provided in § 60.753(d).

(1) After installation of the collection system, the owner or operator shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a serpentine pattern spaced 30 meters apart (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in paragraph (d) of this section.

(2) The background concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.

(3) Surface emission monitoring shall be performed in accordance with section 4.3.1 of Method 21 of appendix A of this part, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.

(4) Any reading of 500 parts per million or more above background at any location shall be recorded as a monitored exceedance and the actions specified in paragraphs (c)(4) (i) through (v) of this section shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of § 60.753(d).

(i) The location of each monitored exceedance shall be marked and the location recorded.

(ii) Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of detecting the exceedance.

(iii) If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in paragraph (c)(4)(v) of this section shall be taken, and no further monitoring of that location is required until the action specified in paragraph (c)(4)(v) has been taken.

(iv) Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in paragraph (c)(4) (ii) or (iii) of this section shall be re-monitored 1 month from the initial exceedance. If the 1-month remonitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month remonitoring shows an exceedance, the actions specified in paragraph (c)(4) (iii) or (v) shall be taken.

(v) For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Administrator for approval.

(5) The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

(d) Each owner or operator seeking to comply with the provisions in paragraph (c) of this section shall comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

(1) The portable analyzer shall meet the instrument specifications provided in section 3 of Method 21 of appendix A of this part, except that "methane" shall replace all references to VOC.

(2) The calibration gas shall be methane, diluted to a nominal concentration of 500 parts per million in air.

(3) To meet the performance evaluation requirements in section 3.1.3 of Method 21 of appendix A of this part, the instrument evaluation procedures of section 4.4 of Method 21 of appendix A of this part shall be used.

(4) The calibration procedures provided in section 4.2 of Method 21 of appendix A of this part shall be followed immediately before commencing a surface monitoring survey.

(e) The provisions of this subpart apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices.

§ 60.756 Monitoring of operations.

Except as provided in § 60.752(b)(2)(i)(B),

(a) Each owner or operator seeking to comply with § 60.752(b)(2)(ii)(A) for an active gas collection system shall install a sampling port and a thermometer or other temperature measuring device at each wellhead and:

(1) Measure the gauge pressure in the gas collection header on a monthly basis as provided in § 60.755(a)(3); and

(2) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in § 60.755(a)(5); and

(3) Monitor temperature of the landfill gas on a monthly basis as provided in § 60.755(a)(5).

(b) Each owner or operator seeking to comply with § 60.752(b)(2)(iii) using an enclosed combustor shall calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment.

(1) A temperature monitoring device equipped with a continuous recorder and having an accuracy of ±1 percent of the temperature being measured expressed in degrees Celsius or ±0.5 °C, whichever is greater. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity greater than 44 megawatts.

(2) A gas flow rate measuring device that provides a measurement of gas flow to or bypass of the control device. The owner or operator shall either:

(i) Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(c) Each owner or operator seeking to comply with § 60.752(b)(2)(iii) using an open flare shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

(1) A heat sensing device, such as an ultraviolet beam sensor or

thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.

(2) A device that records flow to or bypass of the flare. The owner or operator shall either:

(i) Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(d) Each owner or operator seeking to demonstrate compliance with § 60.752(b)(2)(iii) using a device other than an open flare or an enclosed combustor shall provide information satisfactory to the Administrator as provided in § 60.752(b)(2)(i)(B) describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator shall review the information and either approve it, or request that additional information be submitted. The Administrator may specify additional appropriate monitoring procedures.

(e) Each owner or operator seeking to install a collection system that does not meet the specifications in § 60.759 or seeking to monitor alternative parameters to those required by § 60.753 through § 60.756 shall provide information satisfactory to the Administrator as provided in § 60.752(b)(2)(i) (B) and (C) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator may specify additional appropriate monitoring procedures.

(f) Each owner or operator seeking to demonstrate compliance with § 60.755(c), shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in § 60.755(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

§ 60.757 Reporting requirements.

Except as provided in § 60.752(b)(2)(i)(B),

(a) Each owner or operator subject to the requirements of this subpart shall submit an initial design capacity report to the Administrator.

(1) The initial design capacity report shall fulfill the requirements of the notification of the date construction is commenced as required under § 60.7(a)(1) and shall be submitted no later than the earliest day from the following:

(i) 90 days of the issuance of the State, Local, Tribal, or RCRA construction or operating permit; or

(ii) 30 days of the date of construction or reconstruction as defined under § 60.15; or

(iii) 30 days of the initial acceptance of solid waste.

(2) The initial design capacity report shall contain the following information:

(i) A map or plot of the landfill, providing the size and location of the landfill, and identifying all areas where solid waste may be landfilled according to the provisions of the State, local, Tribal, or RCRA construction or operating permit;

(ii) The maximum design capacity of the landfill. Where the maximum design capacity is specified in the State or local construction or RCRA permit, a copy of the permit specifying the maximum design capacity may be submitted as part of the report. If the maximum design capacity of the landfill is not specified in the permit, the maximum design capacity shall be calculated using good engineering practices. The calculations shall be provided, along with such parameters as depth of solid waste, solid waste acceptance rate, and compaction practices as part of the report. The State, Tribal, local agency or Administrator may request other reasonable information as may be necessary to verify the maximum design capacity of the landfill.

(3) An amended design capacity report shall be submitted to the Administrator providing notification of any increase in the design capacity of the landfill, whether the increase results from an increase in the permitted area or depth of the landfill, a change in the operating procedures, or any other means which results in an increase in the maximum design capacity of the landfill above 2.5 million megagrams or 2.5 million cubic meters. The amended design capacity report shall be submitted within 90 days of the issuance of an amended construction or operating permit, or the placement of waste in additional land, or the change in operating procedures which will result in an increase in maximum design capacity, whichever occurs first.

(b) Each owner or operator subject to the requirements of this subpart shall submit an NMOC emission rate report to the Administrator initially and annually thereafter, except as provided for in paragraphs (b)(1)(ii) or (b)(3) of this section. The Administrator may request such additional information as may be necessary to verify the reported NMOC emission rate.

(1) The NMOC emission rate report shall contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in § 60.754(a) or (b), as applicable.

(i) The initial NMOC emission rate report shall be submitted within 90 days of the date waste acceptance commences and may be combined with the initial design capacity report required in paragraph (a) of this section. Subsequent NMOC emission rate reports shall be submitted annually thereafter, except as provided for in paragraphs (b)(1)(ii) and (b)(3) of this section.

(ii) If the estimated NMOC emission rate as reported in the annual report to the Administrator is less than 50 megagrams per year in each of the next 5 consecutive years, the owner or operator may elect to submit an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate shall include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based shall be provided to the Administrator. This estimate shall be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate shall be submitted to the Administrator. The revised estimate shall cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

(2) The NMOC emission rate report shall include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

(3) Each owner or operator subject to the requirements of this subpart is exempted from the requirements of paragraphs (b)(1) and (2) of this section, after the installation of a collection and control system in compliance with § 60.752(b)(2), during such time as the collection and control system is in

operation and in compliance with §§ 60.753 and 60.755.

(c) Each owner or operator subject to the provisions of § 60.752(b)(2)(i) shall submit a collection and control system design plan to the Administrator within 1 year of the first report, required under paragraph (b) of this section, in which the emission rate exceeds 50 megagrams per year, except as follows:

(1) If the owner or operator elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in § 60.754(a)(3) and the resulting rate is less than 50 megagrams per year, annual periodic reporting shall be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated emission rate is equal to or greater than 50 megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated emission rate based on NMOC sampling and analysis, shall be submitted within 180 days of the first calculated exceedance of 50 megagrams per year.

(2) If the owner or operator elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant (k), as provided in Tier 3 in § 60.754(a)(4), and the resulting NMOC emission rate is less than 50 Mg/yr, annual periodic reporting shall be resumed. The resulting site-specific methane generation rate constant (k) shall be used in the emission rate calculation until such time as the emissions rate calculation results in an exceedance. The revised NMOC emission rate report based on the provisions of § 60.754(a)(4) and the resulting site-specific methane generation rate constant (k) shall be submitted to the Administrator within 1 year of the first calculated emission rate exceeding 50 megagrams per year.

(d) Each owner or operator of a controlled landfill shall submit a closure report to the Administrator within 30 days of waste acceptance cessation. The Administrator may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under § 60.7(a)(4).

(e) Each owner or operator of a controlled landfill shall submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment.

(1) The equipment removal report shall contain all of the following items:

(i) A copy of the closure report submitted in accordance with paragraph (d) of this section;

(ii) A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired; and

(iii) Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year.

(2) The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in § 60.752(b)(2)(v) have been met.

(f) Each owner or operator of a landfill seeking to comply with § 60.752(b)(2) using an active collection system designed in accordance with § 60.752(b)(2)(ii) shall submit to the Administrator annual reports of the recorded information in (f)(1) through (f)(6) of this paragraph. The initial annual report shall be submitted within 180 days of installation and start-up of the collection and control system, and shall include the initial performance test report required under § 60.8. For enclosed combustion devices and flares, reportable exceedances are defined under § 60.758(c).

(1) Value and length of time for exceedance of applicable parameters monitored under § 60.756(a), (b), (c), and (d).

(2) Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified under § 60.756.

(3) Description and duration of all periods when the control device was not operating for a period exceeding 1 hour and length of time the control device was not operating.

(4) All periods when the collection system was not operating in excess of 5 days.

(5) The location of each exceedance of the 500 parts per million methane concentration as provided in § 60.753(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month.

(6) The date of installation and the location of each well or collection system expansion added pursuant to paragraphs (a)(3), (b), and (c)(4) of § 60.755.

(g) Each owner or operator seeking to comply with § 60.752(b)(2)(i) shall include the following information with the initial performance test report required under § 60.8:

(1) A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

(2) The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;

(3) The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;

(4) The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area; and

(5) The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and

(6) The provisions for the control of off-site migration.

§ 60.758 Recordkeeping requirements.

Except as provided in § 60.752(b)(2)(i)(B),

(a) Each owner or operator of an MSW landfill subject to the provisions of § 60.752(b) shall keep for at least 5 years up-to-date, readily accessible, on-site records of the maximum design capacity, the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(b) Each owner or operator of a controlled landfill shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in paragraphs (b)(1) through (b)(4) of this section as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. Records of the control device vendor specifications shall be maintained until removal.

(1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 60.752(b)(2)(ii):

(i) The maximum expected gas generation flow rate as calculated in § 60.755(a)(1). The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the Administrator.

(ii) The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in § 60.759(a)(1).

(2) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 60.752(b)(2)(iii) through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity greater than 44 megawatts:

(i) The average combustion temperature measured at least every 15 minutes and averaged over the same time period of the performance test.

(ii) The percent reduction of NMOC determined as specified in § 60.752(b)(2)(iii)(B) achieved by the control device.

(3) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 60.752(b)(2)(iii)(B)(*1*) through use of a boiler or process heater of any size: a description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.

(4) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with § 60.752(b)(2)(iii)(A) through use of an open flare, the flare type (i.e., steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in § 60.18; continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent.

(c) Each owner or operator of a controlled landfill subject to the provisions of this subpart shall keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in § 60.756 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

(1) The following constitute exceedances that shall be recorded and reported under § 60.757(f):

(i) For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million British thermal unit per hour) or greater, all 3-hour periods of operation during which the average combustion temperature was more than 28 oC below the average combustion temperature during the most recent performance test at which compliance with § 60.752(b)(2)(iii) was determined.

(ii) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under paragraph (b)(3)(i) of this section.

(2) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under § 60.756.

(3) Each owner or operator subject to the provisions of this subpart who uses a boiler or process heater with a design heat input capacity of 44 megawatts or greater to comply with § 60.752(b)(2)(iii) shall keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other State, local, Tribal, or Federal regulatory requirements.)

(4) Each owner or operator seeking to comply with the provisions of this subpart by use of an open flare shall keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under § 60.756(c), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.

(d) Each owner or operator subject to the provisions of this subpart shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.

(1) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under § 60.755(b).

(2) Each owner or operator subject to the provisions of this subpart shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in § 60.759(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in § 60.759(a)(3)(ii).

(e) Each owner or operator subject to the provisions of this subpart shall keep for at least 5 years up-to-date, readily accessible records of all collection and control system exceedances of the operational standards in § 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

§ 60.759 Specifications for active collection systems.

(a) Each owner or operator seeking to comply with § 60.752(b)(2)(i) shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the Administrator as provided in § 60.752(b)(2)(i)(C) and (D):

(1) The collection devices within the interior and along the perimeter areas shall be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandibility, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat.

(2) The sufficient density of gas collection devices determined in paragraph (a)(1) of this section shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

(3) The placement of gas collection devices determined in paragraph (a)(1) of this section shall control all gas producing areas, except as provided by paragraphs (a)(3)(i) and (a)(3)(ii) of this section.

(i) Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under § 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the Administrator upon request.

(ii) Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the Administrator upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the following equation:

$$Q_i = 2\,k\,L_o\,M_i\,(e^{-kt_i})\,(C_{NM}OC)\,(3.6 \times 10^{-9})$$

where,

Q_i = NMOC emission rate from the i^{th} section, megagrams per year
k = methane generation rate constant, $year^{-1}$
L_o = methane generation potential, cubic meters per megagram solid waste
M_i = mass of the degradable solid waste in the i^{th} section, megagram
t_i = age of the solid waste in the i^{th} section, years
C_{NMOC} = concentration of nonmethane organic compounds, parts per million by volume
3.6×10^{-9} = conversion factor

(iii) The values for k, L_o, and $C_{NM}OC$ determined in field testing shall be used, if field testing has been performed in determining the NMOC emission rate or the radii of influence. If field testing has not been performed, the default values for k, L_o and $C_{NM}OC$ provided in § 60.754(a)(1) shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in paragraph (a)(3)(i) of this section.

(b) Each owner or operator seeking to comply with § 60.752(b)(2)(i)(A) shall construct the gas collection devices using the following equipment or procedures:

(1) The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration.

(2) Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

(3) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

(c) Each owner or operator seeking to comply with § 60.752(b)(2)(i)(A) shall convey the landfill gas to a control system in compliance with § 60.752(b)(2)(iii) through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

(1) For existing collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in paragraph (c)(2) of this section shall be used.

(2) For new collection systems, the maximum flow rate shall be in accordance with § 60.755(a)(1).

10. Part 60 is further amended by adding Methods 2E, 3C and 25C to appendix A as follows:

Appendix A—Reference Methods

* * * * *

Method 2E—Determination of Landfill Gas; Gas Production Flow Rate

1. Applicability and Principle

1.1 Applicability. This method applies to the measurement of landfill gas (LFG) production flow rate from municipal solid waste (MSW) landfills and is used to calculate the flow rate of nonmethane organic compounds (NMOC) from landfills. This method also applies to calculating a site-specific k value as provided in § 60.754(a)(4). It is unlikely that a site-specific k value obtained through Method 2E testing will lower the annual emission estimate below 50 Mg/yr NMOC unless the Tier 2 emission estimate is only slightly higher than 50 Mg/yr NMOC. Dry, arid regions may show a more significant difference between the default and calculated k values than wet regions.

1.2 Principle. Extraction wells are installed either in a cluster of three or at five locations dispersed throughout the landfill. A blower is used to extract LFG from the landfill. LFG composition, landfill pressures near the extraction well, and volumetric flow rate of LFG extracted from the wells are measured and the landfill gas production flow rate is calculated.

2. Apparatus

2.1 Well Drilling Rig. Capable of boring a 0.6 meters diameter hole into the landfill to a minimum of 75 percent of the landfill depth. The depth of the well shall not exceed the bottom of the landfill or the liquid level.

2.2 Gravel. No fines. Gravel diameter should be appreciably larger than perforations stated in sections 2.10 and 3.2 of this method.

2.3 Bentonite.

2.4 Backfill Material. Clay, soil, and sandy loam have been found to be acceptable.

2.5 Extraction Well Pipe. Polyvinyl chloride (PVC), high density polyethylene (HDPE), fiberglass, stainless steel, or other suitable nonporous material capable of transporting landfill gas with a minimum diameter of 0.075 meters and suitable wall-thickness.

2.6 Wellhead Assembly. Valve capable of adjusting gas flow at the wellhead and outlet, and a flow measuring device, such as an in-line orifice meter or pitot tube. A schematic of the wellhead assembly is shown in figure 1.

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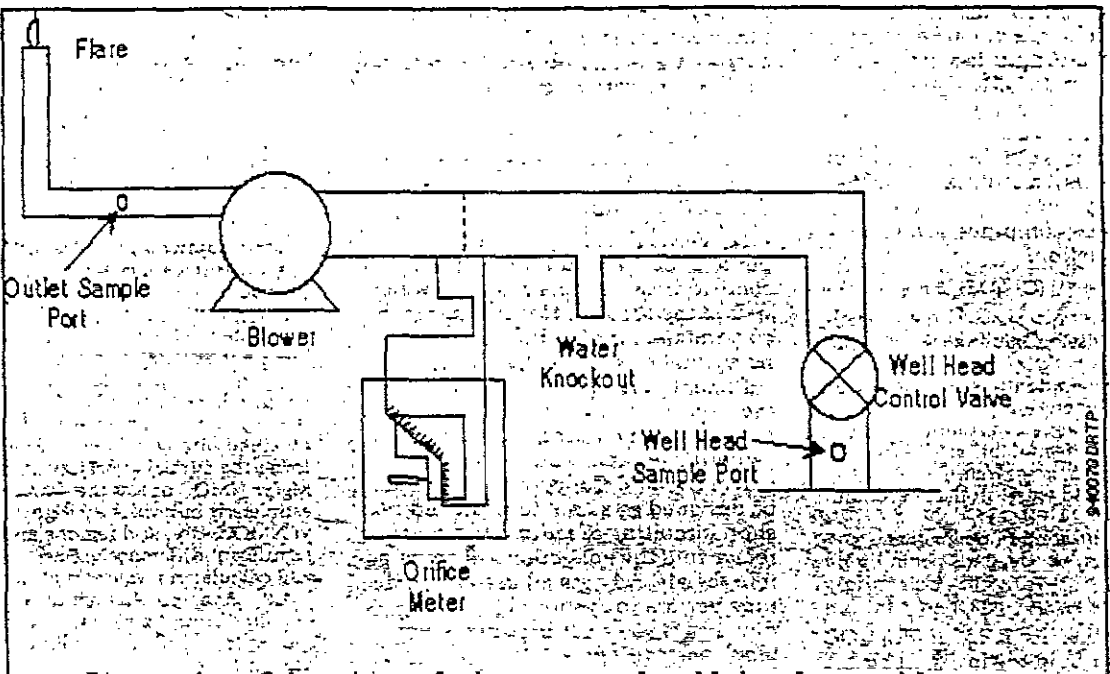

Figure 1. Schematic of above ground well head assembly.

2.7 Cap. PVC, HDPE, fiberglass, stainless steel, or other suitable nonporous material capable of transporting landfill gas with a suitable wall-thickness.

2.8 Header Piping. PVC, HDPE, fiberglass, stainless steel, or other suitable nonporous material capable of transporting landfill gas with a suitable wall-thickness.

2.9 Auger. Capable of boring a 0.15 to 0.23 meters diameter hole to a depth equal to the top of the perforated section of the extraction well, for pressure probe installation.

2.10 Pressure Probe. PVC or stainless steel (316), 0.025 meters. Schedule 40 pipe. Perforate the bottom two thirds. A minimum requirement for perforations is slots or holes with an open area equivalent to four 6.0 millimeter diameter holes spaced 90° apart every 0.15 meters.

2.11 Blower and Flare Assembly. A water knockout, flare or incinerator, and an explosion-proof blower, capable of extracting LFG at a flow rate of at least 8.5 cubic meters per minute.

2.12 Standard Pitot Tube and Differential Pressure Gauge for Flow Rate Calibration with Standard Pitot. Same as Method 2, sections 2.1 and 2.8.

2.13 Gas flow measuring device. Permanently mounted Type S pitot tube or an orifice meter.

2.14 Barometer. Same as Method 4, section 2.1.5.

2.15 Differential Pressure Gauge. Water-filled U-tube manometer or equivalent, capable of measuring within 0.02 mm Hg, for measuring the pressure of the pressure probes.

3. Procedure

3.1 Placement of Extraction Wells. The landfill owner or operator shall either install a single cluster of three extraction wells in a test area or space five wells over the landfill. The cluster wells are recommended but may be used only if the composition, age of the solid waste, and the landfill depth of the test area can be determined. CAUTION: Since this method is complex, only experienced personnel should conduct the test. Landfill gas contains methane, therefore explosive mixtures may exist at or near the landfill. It is advisable to take appropriate safety precautions when testing landfills, such as installing explosion-proof equipment and refraining from smoking.

3.1.1 Cluster Wells. Consult landfill site records for the age of the solid waste, depth, and composition of various sections of the landfill. Select an area near the perimeter of the landfill with a depth equal to or greater than the average depth of the landfill and with the average age of the solid waste between 2 and 10 years old. Avoid areas known to contain nondecomposable materials, such as concrete and asbestos. Locate wells as shown in figure 2.

Because the age of the solid waste in a test area will not be uniform, calculate a weighted average to determine the average age of the solid waste as follows.

$$A_{avg} = \sum_{i=1}^{n} f_i A_i$$

where,

A_{avg}=average age of the solid waste tested, year

f_i=fraction of the solid waste in the i^{th} section

A_i=age of the i^{th} fraction, year

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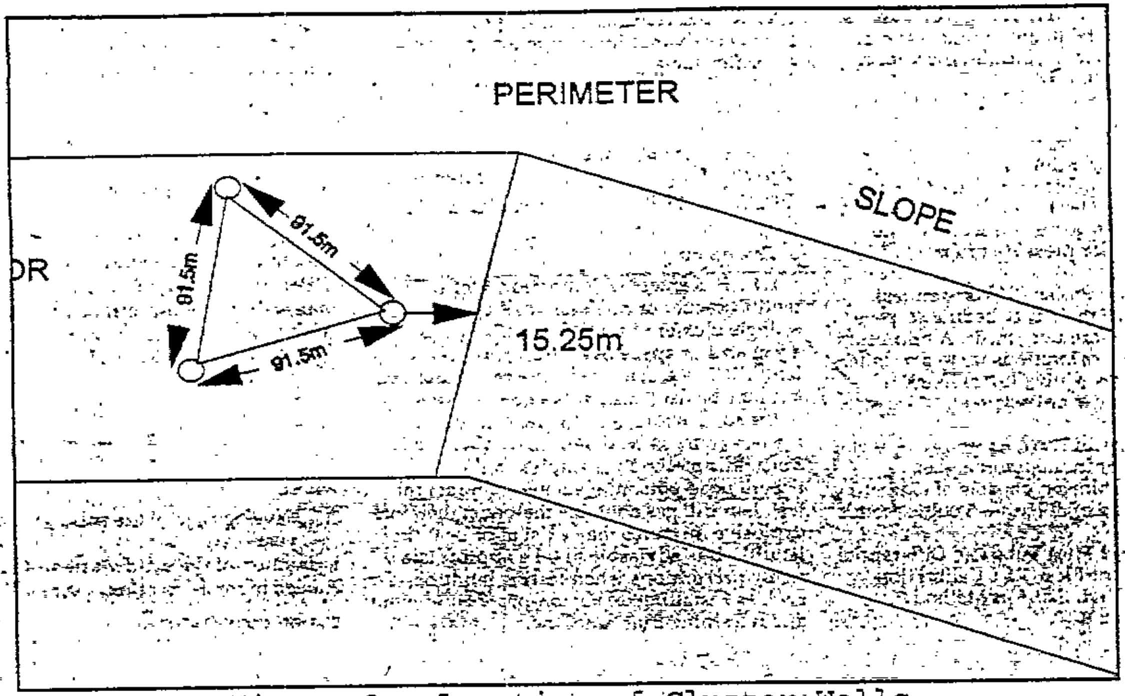

Figure 2. Location of Cluster Wells

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3.1.2 Equal Volume Wells. This procedure is used when the composition, age of solid waste, and landfill depth are not well known. Divide the portion of the landfill that has had waste for at least 2 years into five areas representing equal volumes. Locate an extraction well near the center of each area. Avoid areas known to contain nondecomposable materials, such as concrete and asbestos.

3.2 Installation of Extraction Wells. Use a well drilling rig to dig a 0.6 meters diameter hole in the landfill to a minimum of 75 percent of the landfill depth, not to exceed the bottom of the landfill or the water table. Perforate the bottom two thirds of the extraction well pipe. Perforations shall not be closer than 6 meters from the cover. Perforations shall be holes or slots with an open area equivalent to 1.0 centimeter diameter holes spaced 90 degrees apart every 0.1 to 0.2 meters. Place the extraction well in the center of the hole and backfill with 2.0 to 7.5 centimeters gravel to a level 0.3 meters above the perforated section. Add a layer of backfill material 1.2 meters thick. Add a layer of bentonite 1.0 meter thick, and backfill the remainder of the hole with cover material or material equal in permeability to the existing cover material. The specifications for extraction well installation are shown in figure 3.

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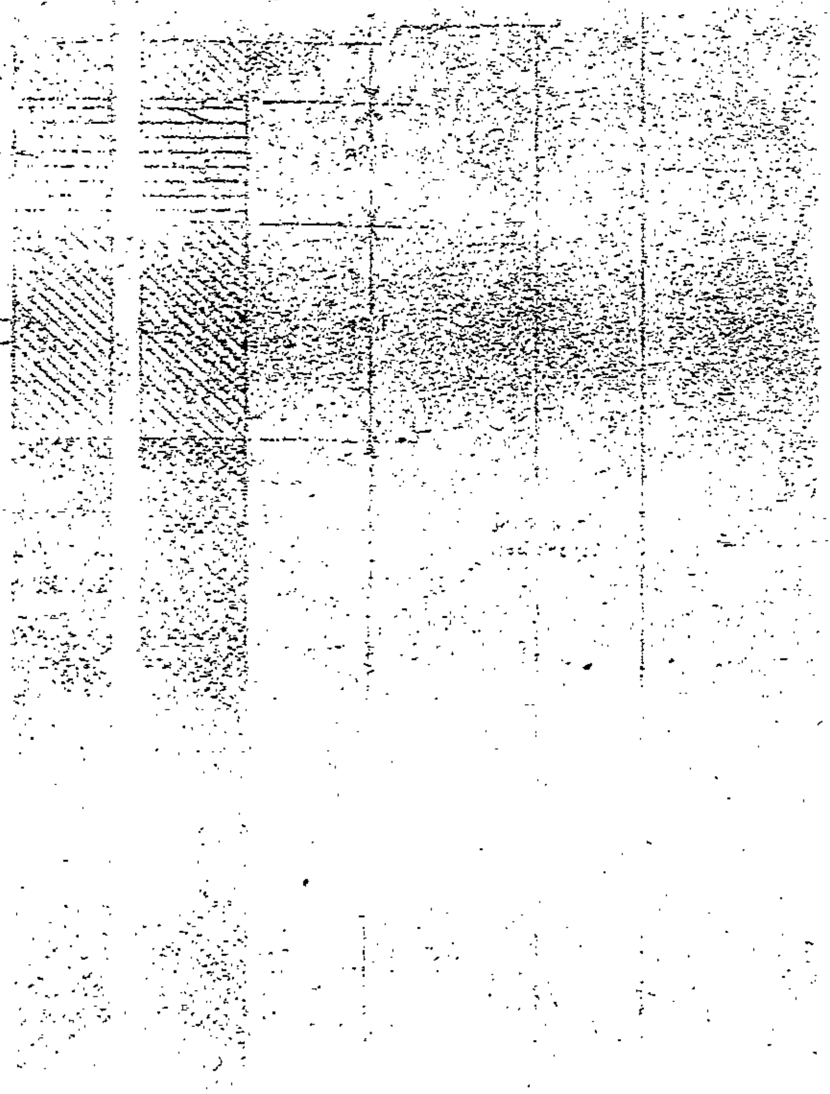

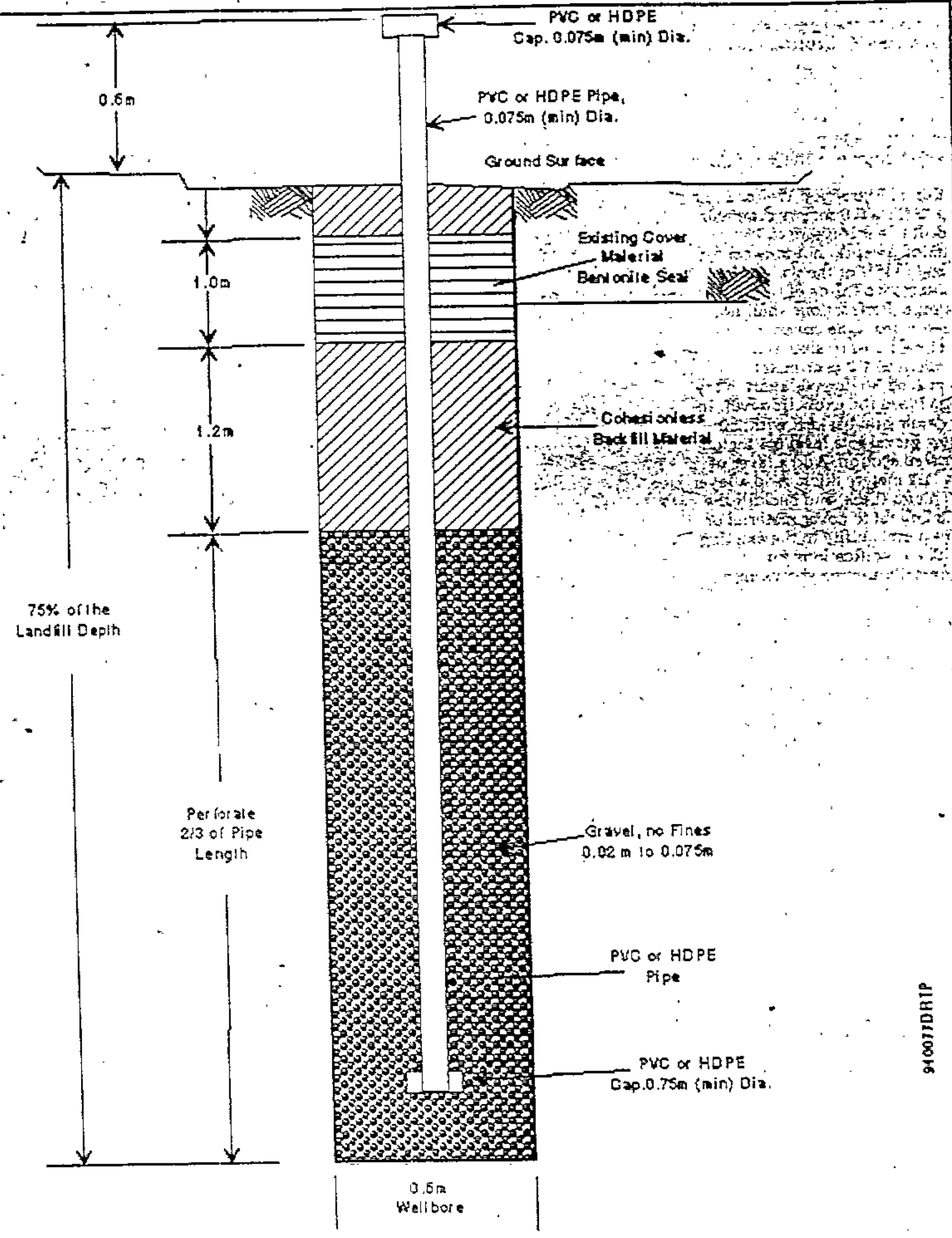

Figure 3. Gas extraction well.

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3.3 Pressure Probes. Shallow pressure probes are used in the check for infiltration of air into the landfill, and deep pressure probes are used to determine the radius of influence. Locate the deep pressure probes along three radial arms approximately 120 degrees apart at distances of 3, 15, 30, and 45 meters from the extraction well. The tester has the option of locating additional pressure probes at distances every 15 meters beyond 45 meters. Example placements of probes are shown in figure 4.

The probes located 15, 30, and 45 meters from each well, and any additional probes located along the three radial arms (deep probes), shall extend to a depth equal to the top of the perforated section of the extraction wells. Locate three shallow probes at a distance of 3 m from the extraction well. Shallow probes shall extend to a depth equal to half the depth of the deep probes.

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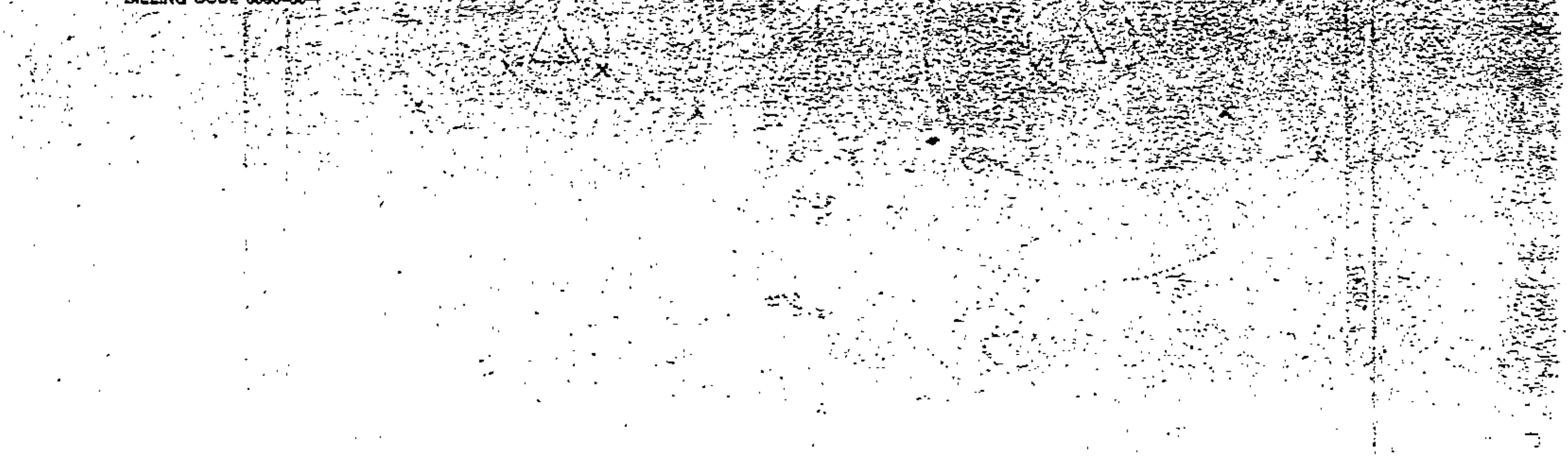

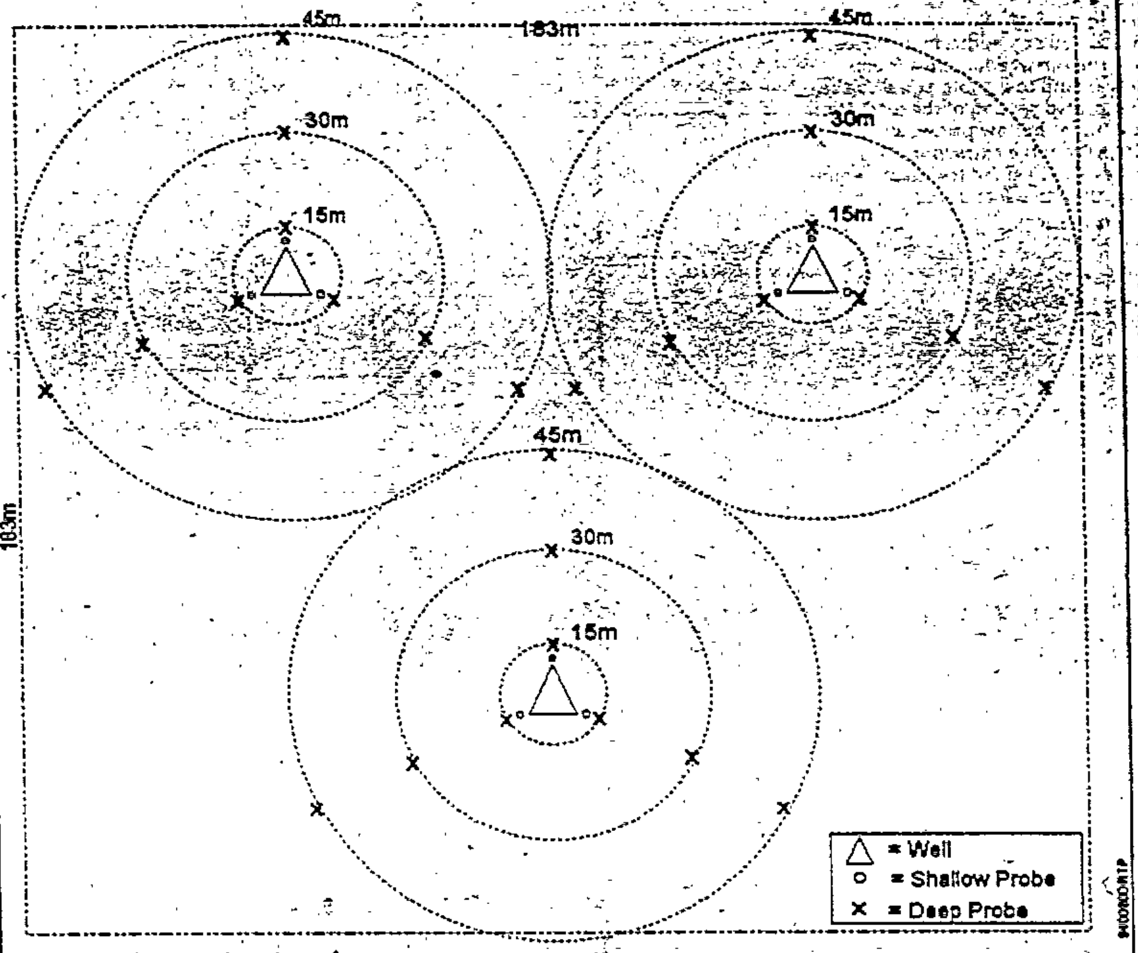

Figure 4. Cluster well configuration.

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Use an auger to dig a hole, approximately 0.15 to 0.23 meters in diameter, for each pressure probe. Perforate the bottom two thirds of the pressure probe. Perforations shall be holes or slots with an open area equivalent to four 6.0 millimeter diameter holes spaced 90 degrees apart every 0.15 meters. Place the pressure probe in the center of the hole and backfill with gravel to a level 0.30 meters above the perforated section. Add a layer of backfill material at least 1.2 meters thick. Add a layer of bentonite at least 0.3 meters thick, and backfill the remainder of the hole with cover material or material equal in permeability to the existing cover material. The specifications for pressure probe installation are shown in figure 5.

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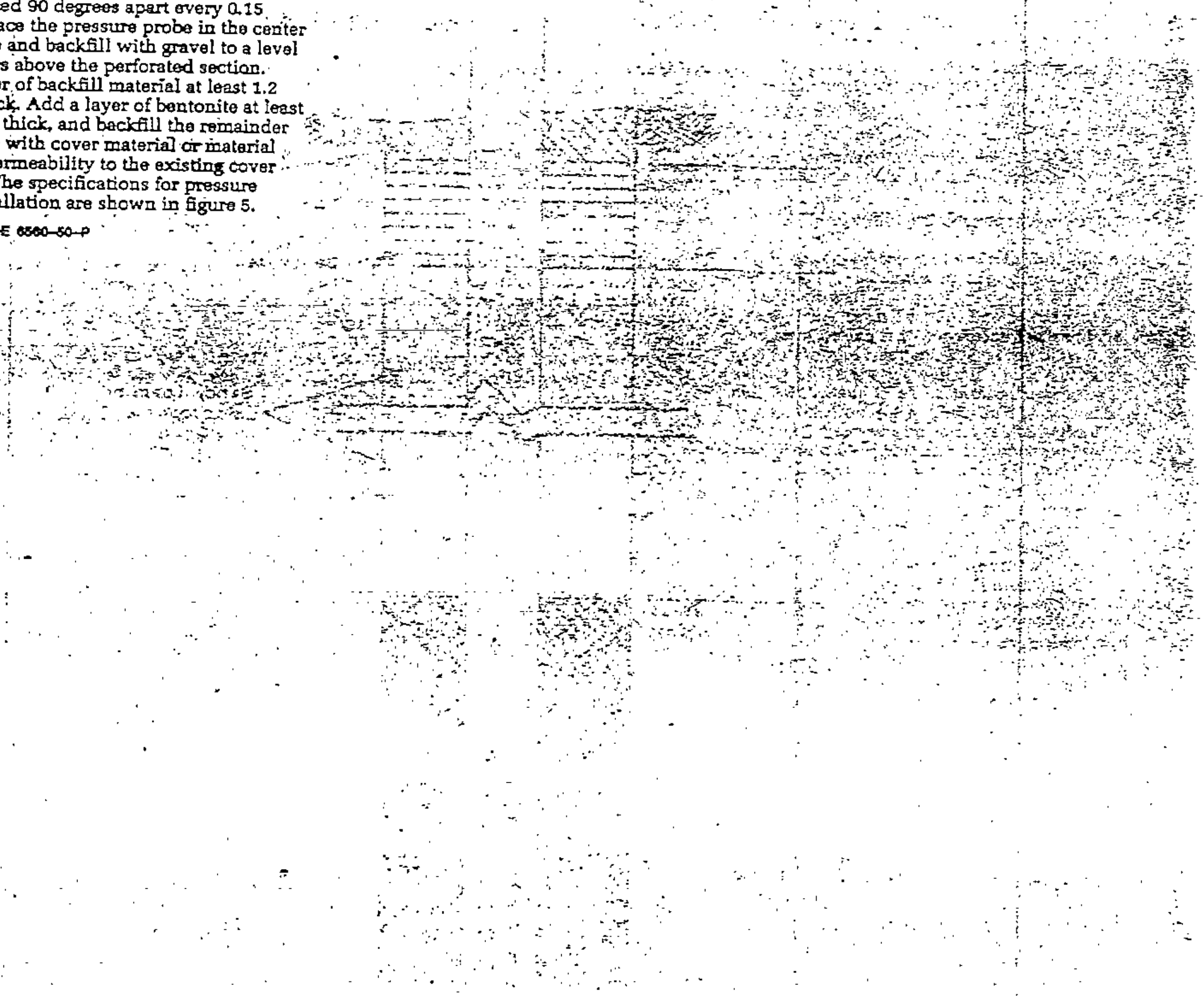

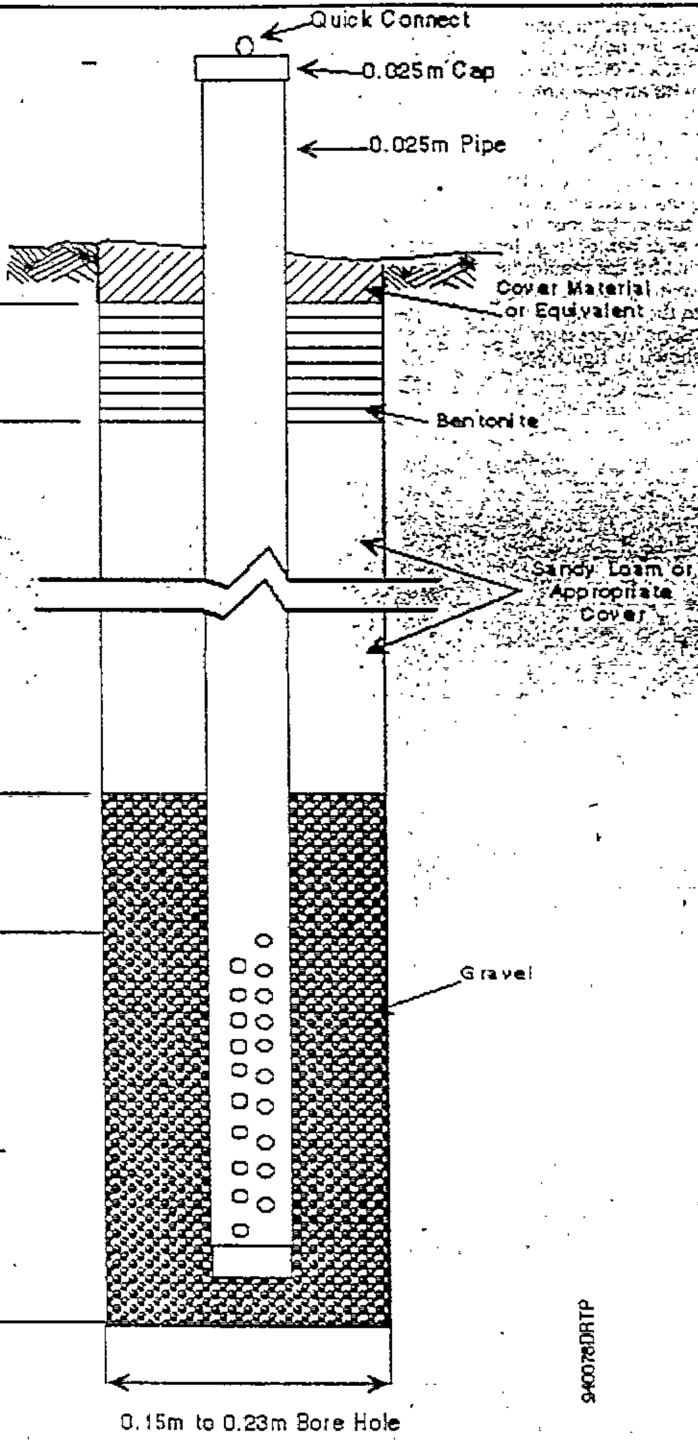

Figure 5. Pressure probe.

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3.4 LFG Flow Rate Measurement. Determine the flow rate of LFG from the test wells continuously during testing with an orifice meter. Alternative methods to measure the LFG flow rate may be used with approval of the Administrator. Locate the orifice meter as shown in figure 1. Attach the wells to the blower and flare assembly. The individual wells may be ducted to a common header so that a single blower and flare assembly and flow meter may be used. Use the procedures in section 4.1 to calibrate the flow meter.

3.5 Leak Check. A leak check of the above ground system is required for accurate flow rate measurements and for safety. Sample LFG at the wellhead sample port and at a point downstream of the flow measuring device. Use Method 3C to determine nitrogen (N_2) concentrations. Determine the difference by using the formula below.

$\text{Difference} = C_o - C_w$

where,

C_o=concentration of N_2 at the outlet, ppmv
C_w=concentration of N_2 at the wellhead, ppmv

The system passes the leak check if the difference is less than 10,000 ppmv. If the system fails the leak check, make the appropriate adjustments to the above ground system and repeat the leak check.

3.6 Static Testing. The purpose of the static testing is to determine the initial conditions of the landfill. Close the control valves on the wells so that there is no flow of landfill gas from the well. Measure the gauge pressure (P_g) at each deep pressure probe and the barometric pressure (P_{bar}) every 8 hours for 3 days. Convert the gauge pressure of each deep pressure probe to absolute pressure by using the following equation. Record as P_i.

$P_i = P_{bar} + P_g$

where,

P_{bar}=Atmospheric pressure, mm Hg
P_g=Gauge pressure of the deep probes, mm Hg
P_i=Initial absolute pressure of the deep probes during static testing, mm Hg

3.6.1 For each probe, average all of the 8 hr deep pressure probe readings and record as P_{ia}. The P_{ia} is used in section 3.7.6 to determine the maximum radius of influence.

3.6.2 Measure the LFG temperature and the static flow rate of each well once during static testing using a flow measurement device, such as a Type S pitot tube and measure the temperature of the landfill gas. The flow measurements should be made either just before or just after the measurements of the probe pressures and are used in determining the initial flow from the extraction well during the short term testing. The temperature measurement is used in the check for infiltration.

3.7 Short Term Testing. The purpose of short term testing is to determine the maximum vacuum that can be applied to the wells without infiltration of air into the landfill. The short term testing is done on one well at a time. During the short term testing, burn LFG with a flare or incinerator.

3.7.1 Use the blower to extract LFG from a single well at a rate at least twice the static flow rate of the respective well measured in section 3.6.2. If using a single blower and flare assembly and a common header system, close the control valve on the wells not being measured. Allow 24 hours for the system to stabilize at this flow rate.

3.7.2 Check for infiltration of air into the landfill by measuring the temperature of the LFG at the wellhead, the gauge pressures of the shallow pressure probes, and the LFG N_2 concentration by using Method 3C.
CAUTION: Increased vacuum at the wellhead may cause infiltration of air into the landfill, which increases the possibility of a landfill fire. Infiltration of air into the landfill may occur if any of the following conditions are met: the LFG N_2 concentration is more than 20 percent, any of the shallow probes have a negative gauge pressure, or the temperature has increased above 55°C or the maximum established temperature during static testing. If infiltration has not occurred, increase the blower vacuum by 4 mm Hg, wait 24 hours, and repeat the infiltration check. If at any time, the temperature change exceeds the limit, stop the test until it is safe to proceed. Continue the above steps of increasing blower vacuum by 4 mm Hg, waiting 24 hours, and checking for infiltration until the concentration of N_2 exceeds 20 percent or any of the shallow probes have a negative gauge pressure, at which time reduce the vacuum at the wellhead so that the N_2 concentration is less than 20 percent and the gauge pressures of the shallow probes are positive. This is the maximum vacuum at which infiltration does not occur.

3.7.3 At this maximum vacuum, measure P_{bar} every 8 hours for 24 hours and record the LFG flow rate as Q_s and the probe gauge pressures for all of the probes as P_f. Convert the gauge pressures of the deep probes to absolute pressures for each 8-hour reading at Q_s as follows:

$P = P_{bar} + P_f$

where,

P_{bar}=Atmospheric pressure, mm Hg
P_f=Final absolute pressure of the deep probes during short term testing, mm Hg
P=Pressure of the deep probes, mm Hg

3.7.4 For each probe, average the 8-hr deep pressure probe readings and record as P_{fa}.

3.7.5 For each probe, compare the initial average pressure (P_{ia}) from section 3.6.1 to the final average pressure (P_{fa}). Determine the furthermost point from the wellhead along each radial arm where $P_{fa} \leq P_{ia}$. This distance is the maximum radius of influence (ROI), which is the distance from the well affected by the vacuum. Average these values to determine the average maximum radius of influence (R_{ma}).

The average R_{ma} may also be determined by plotting on semi-log paper the pressure differentials (P_{fa}-P_{ia}) on the y-axis (abscissa) versus the distances (3, 15, 30 and 45 meters) from the wellhead on the x-axis (ordinate). Use a linear regression analysis to determine the distance when the pressure differential is zero. Additional pressure probes may be used to obtain more points on the semi-long plot of pressure differentials versus distances.

3.7.6 Calculate the depth (D_{st}) affected by the extraction well during the short term test as follows. If the computed value of D_{st} exceeds the depth of the landfill, set D_{st} equal to the landfill depth.

$D_{st} = WD + R_{ma}^2$

where,

D_{st}=depth, m
WD=well depth, m
R_{ma}=maximum radius of influence, m

3.7.7 Calculate the void volume for the extraction well (V) as follows.

$V = 0.40\,\pi\,R_{ma}^2\,D_{st}$

where,

V=void volume of test well; m^3
R_{ma}=maximum radius of influence, m
D_{st}=depth, m

3.7.8 Repeat the procedures in section 3.7 for each well.

3.8 Calculate the total void volume of the test wells (V_v) by summing the void volumes (V) of each well.

3.9 Long Term Testing. The purpose of long term testing is to determine the methane generation rate constant, k. Use the blower to extract LFG from the wells. If a single blower and flare assembly and common header system are used, open all control valves and set the blower vacuum equal to the highest stabilized blower vacuum demonstrated by any individual well in section 3.7. Every 8 hours, sample the LFG from the wellhead sample port, measure the gauge pressures of the shallow pressure probes, the blower vacuum, the LFG flow rate, and use the criteria for infiltration in section 3.7.2 and Method 3C to check for infiltration. If infiltration is detected, do not reduce the blower vacuum, but reduce the LFG flow rate from the well by adjusting the control valve on the wellhead. Adjust each affected well individually. Continue until the equivalent of two total void volumes (V_v) have been extracted, or until $V_t = 2\,V_v$.

3.9.1 Calculate V_t, the total volume of LFG extracted from the wells, as follows.

$$V_t = \sum_{i=1}^{n} 60\,Q_i\,t_{vi}$$

where,

V_t=total volume of LFG extracted from wells, m^3
Q_i=LFG flow rate measured at orifice meter at the i^{th} interval, cubic meters per minute
t_{vi}=time of the i^{th} interval, hour (usually 8)

3.9.2 Record the final stabilized flow rate as Q_f. If, during the long term testing, the flow rate does not stabilize, calculate Q_f by averaging the last 10 recorded flow rates.

3.9.3 For each deep probe, convert each gauge pressure to absolute pressure as in section 3.7.4. Average these values and record as P_{sa}. For each probe, compare P_{ia} to P_{sa}. Determine the furthermost point from the wellhead along each radial arm where $P_{sa} \leq P_{ia}$. This distance is the stabilized radius of influence. Average these values to determine the average stabilized radius of influence (R_{sa}).

3.10 Determine the NMOC mass emission rate using the procedures in section 5.

3.11 Deactivation of pressure probe holes Upon completion of measurements, if pressure probes are removed, restore the integrity of the landfill cover by backfilling and sealing to prevent venting of LFG to the atmosphere or air infiltration.

4. Calibrations

Gas Flow Measuring Device Calibration Procedure. Locate a standard pitot tube in line with a gas flow measuring device. Use the procedures in Method 2D, section 4, to calibrate the orifice meter. Method 3C may be used to determine the dry molecular weight. It may be necessary to calibrate more than one gas flow measuring device to bracket the landfill gas flow rates. Construct a calibration curve by plotting the pressure drops across the gas flow measuring device for each flow rate versus the average dry gas volumetric flow rate in cubic meters per minute of the gas. Use this calibration curve to determine the volumetric flow from the wells during testing.

5. Calculations

5.1 Nomenclature.

A_{avg}=average age of the solid waste tested, year
A_i=age of solid waste in the ith fraction, year
A=age of landfill, year
A_r=acceptance rate, megagrams per year
C_{NMOC}=NMOC concentration, ppmv as hexane ($C_{NMOC}=C_t/6$)
C_t=NMOC concentration, ppmv (carbon equivalent) from Method 25C
D = depth affected by the test wells, m
D_{st}=depth affected by the test wells in the short term test, m
D_{LF}=landfill depth, m
f = fraction of decomposable solid waste in the landfill
f_i=fraction of the solid waste in the ith section
k=methane generation rate constant, $year^{-1}$
L_o=methane generation potential, cubic meters per megagram
L_o=revised methane generation potential to account for the amount of nondecomposable material in the landfill, cubic meters per megagram
M_i=mass of solid waste of the ith section, megagrams
M_r=mass of decomposable solid waste affected by the test well, megagrams
M_w=number of wells
P_{bar}=atmospheric pressure, mm Hg
P_g=gauge pressure of the deep pressure probes, mm Hg
P_i=initial absolute pressure of the deep pressure probes during static testing, mm Hg
P_{ia}=average initial absolute pressure of the deep pressure probes during static testing, mm Hg
P_f=final absolute pressure of the deep pressure probes during short term testing, mm Hg
P_{fa}=average final absolute pressure of the deep pressure probes during short term testing, mm Hg
P_s=final absolute pressure of the deep pressure probes during long term testing, mm Hg
P_{sa}=average final absolute pressure of the deep pressure probes during long term testing, mm Hg
Q_B=required blow flow rate, cubic meters per minute
Q_f=final stabilized flow rate, cubic meters per minute
Q_i=LFG flow rate measured at orifice meter during the ith interval, cubic meters per minute
Q_s=maximum LFG flow rate at each well determined by short term test, cubic meters per minute
Q_t=NMOC mass emission rate, cubic meters per minute
R_m=maximum radius of influence, m
R_{ma}=average maximum radius of influence, m
R_s=stabilized radius of influence for an individual well, m
R_{sa}=average stabilized radius of influence, m
t_i=age of section i, year
t_t=total time of long term testing, year
V=void volume of test well, m^3
V_r=volume of solid waste affected by the test well, m^3
V_t=total volume of solid waste affected by the long term testing, m^3
V_v=total void volume affected by test wells, m^3
WD=well depth, m
ρ=solid waste density, m^3 (Assume 0.64 megagrams per cubic meter if data are unavailable)

5.2 Use the following equation to calculate the depth affected by the test well. If using cluster wells, use the average depth of the wells for WD. If the value of D is greater than the depth of the landfill, set D equal to the landfill depth.

$D=WD+R_{sa}$

5.3 Use the following equation to calculate the volume of solid waste affected by the test well.

$V_r=R_{sa}^2 \pi D$

5.4 Use the following equation to calculate the mass affected by the test well.

$M_r=V_r\rho$

5.5 Modify L_o to account for the nondecomposable solid waste in the landfill.

$L_o'=f\,L_o$

5.6 In the following equation, solve for k by iteration. A suggested procedure is to select a value for k, calculate the left side of the equation, and if not equal to zero, select another value for k. Continue this process until the left hand side of the equation equals zero, #0.001.

$$ke^{-k}A_{avg}-\left(5.256\times10^5\right)\frac{Q_f}{2\,L_o'\,M_r}=0$$

5.7 Use the following equation to determine landfill NMOC mass emission rate if the yearly acceptance rate of solid waste has been consistent (±10 percent) over the life of the landfill.

$Q_t = 2\,L_o'\,A_r\,(1 - e^{-k}A)\,C_{NMOC} / (5.256 \times 10^{11})$

5.8 Use the following equation to determine landfill NMOC mass emission rate if the acceptance rate has not been consistent over the life of the landfill.

$$Q_t=\frac{2\,kL_o'\,C_{NMOC}}{\left(5.256\times10^{11}\right)}\sum_{i=1}^{n}M_ie^{-kt}i$$

6. Bibliography

1. Same as Method 2, appendix A, 40 CFR part 60.

2. Emcon Associates, Methane Generation and Recovery from Landfills. Ann Arbor Science, 1982.

3. The Johns Hopkins University, Brown Station Road Testing and Gas Recovery Projections. Laurel, Maryland: October 1982.

4. Mandeville and Associates, Procedure Manual for Landfill Gases Emission Testing.

5. Letter and attachments from Briggum, S., Waste Management of North America, to Thorneloe, S., EPA. Response to July 28, 1988 request for additional information. August 18,1988.

6. Letter and attachments from Briggum, S., Waste Management of North America, to Wyatt, S., EPA. Response to December 7, 1988 request for additional information. January 16, 1989.

* * * * *

Method 3C—Determination of Carbon Dioxide, Methane, Nitrogen, and Oxygen From Stationary Sources

1. Applicability and Principle

1.1 Applicability. This method applies to the analysis of carbon dioxide (CO_2), methane (CH_4), nitrogen (N_2), and oxygen (O_2) in samples from municipal solid waste landfills and other sources when specified in an applicable subpart.

1.2 Principle. A portion of the sample is injected into a gas chromatograph (GC) and the CO_2, CH_4, N_2, and O_2 concentrations are determined by using a thermal conductivity detector (TCD) and integrator.

2. Range and Sensitivity

2.1 Range. The range of this method depends upon the concentration of samples. The analytical range of TCD's is generally between approximately 10 ppmv and the upper percent range.

2.2 Sensitivity. The sensitivity limit for a compound is defined as the minimum detectable concentration of that compound, or the concentration that produces a signal-to-noise ratio of three to one. For CO_2, CH_4, N_2, and O_2, the sensitivity limit is in the low ppmv range.

3. Interferences

Since the TCD exhibits universal response and detects all gas components except the carrier, interferences may occur. Choosing the appropriate GC or shifting the retention times by changing the column flow rate may help to eliminate resolution interferences.

To assure consistent detector response, helium is used to prepare calibration gases. Frequent exposure to samples or carrier gas containing oxygen may gradually destroy filaments.

4. Apparatus

4.1 Gas Chromatograph. GC having at least the following components:

4.1.1 Separation Column. Appropriate column(s) to resolve CO_2, CH_4, N_2, O_2, and other gas components that may be present in the sample.

4.1.2 Sample Loop. Teflon or stainless steel tubing of the appropriate diameter.

Note: Mention of trade names or specific products does not constitute endorsement or recommendation by the U. S. Environmental Protection Agency.

4.1.3 Conditioning System. To maintain the column and sample loop at constant temperature.

4.1.4 Thermal Conductivity Detector.

4.2 Recorder. Recorder with linear strip chart. Electronic integrator (optional) is recommended.

4.3 Teflon Tubing. Diameter and length determined by connection requirements of cylinder regulators and the GC.

4.4 Regulators. To control gas cylinder pressures and flow rates.

4.5 Adsorption Tubes. Applicable traps to remove any O_2 from the carrier gas.

5. Reagents

5.1 Calibration and Linearity Gases. Standard cylinder gas mixtures for each compound of interest with at least three concentration levels spanning the range of suspected sample concentrations. The calibration gases shall be prepared in helium.

5.2 Carrier Gas. Helium, high-purity.

6. Analysis

6.1 Sample Collection. Use the sample collection procedures described in Methods 3 or 25C to collect a sample of landfill gas (LFG).

6.2 Preparation of GC. Before putting the GC analyzer into routine operation, optimize the operational conditions according to the manufacturer's specifications to provide good resolution and minimum analysis time. Establish the appropriate carrier gas flow and set the detector sample and reference cell flow rates at exactly the same levels. Adjust the column and detector temperatures to the recommended levels. Allow sufficient time for temperature stabilization. This may typically require 1 hour for each change in temperature.

6.3 Analyzer Linearity Check and Calibration. Perform this test before sample analysis. Using the gas mixtures in section 5.1, verify the detector linearity over the range of suspected sample concentrations with at least three points per compound of interest. This initial check may also serve as the initial instrument calibration. All subsequent calibrations may be performed using a single-point standard gas provided the calibration point is within 20 percent of the sample component concentration. For each instrument calibration, record the carrier and detector flow rates, detector filament and block temperatures, attenuation factor, injection time, chart speed, sample loop volume, and component concentrations. Plot a linear regression of the standard concentrations versus area values to obtain the response factor of each compound. Alternatively, response factors of uncorrected component concentrations (wet basis) may be generated using instrumental integration.

Note: Peak height may be used instead of peak area throughout this method.

6.4 Sample Analysis. Purge the sample loop with sample, and allow to come to atmospheric pressure before each injection. Analyze each sample in duplicate, and calculate the average sample area (A). The results are acceptable when the peak areas for two consecutive injections agree within 5 percent of their average. If they do not agree, run additional samples until consistent area data are obtained. Determine the tank sample concentrations according to section 7.2.

7. Calculations

Carry out calculations retaining at least one extra decimal figure beyond that of the acquired data. Round off results only after the final calculation.

7.1 Nomenclature.

A = average sample area
B_w = moisture content in the sample, fraction
C = component concentration in the sample, dry basis, ppmv
C_t = calculated NMOC concentration, ppmv C equivalent
C_{tm} = measured NMOC concentration, ppmv C equivalent
P_{bar} = barometric pressure, mm Hg
P_{ti} = gas sample tank pressure after evacuation, mm Hg absolute
P_t = gas sample tank pressure after sampling, but before pressurizing, mm Hg absolute
P_{tf} = final gas sample tank pressure after pressurizing, mm Hg absolute
P_w = vapor pressure of H_2O (from table 3C–1), mm Hg
T_{ti} = sample tank temperature before sampling, °K
T_t = sample tank temperature at completion of sampling, °K
T_{tf} = sample tank temperature after pressurizing, °K
r = total number of analyzer injections of sample tank during analysis (where j = injection number, 1 . . . r)
R = Mean calibration response factor for specific sample component, area/ppmv

TABLE 3C–1.—MOISTURE CORRECTION

Temperature °C	Vapor Pressure of H_2O, mm Hg
4	6.1
6	7.0
8	8.0
10	9.2
12	10.5
14	12.0
16	13.6
18	15.5
20	17.5
22	19.8
24	22.4
26	25.2
28	28.3
30	31.8

7.2 Concentration of Sample Components. Calculate C for each compound using Equations 3C–1 and 3C–2. Use the temperature and barometric pressure at the sampling site to calculate Bw. If the sample was diluted with helium using the procedures in Method 25C, use Equation 3C–3 to calculate the concentration.

$$B_w = \frac{P_w}{P_{bar}}$$

$$C = \frac{A}{R(1 - B_w)} \qquad 3C\text{-}2$$

$$C = \frac{\dfrac{P_{tf}}{T_{tf}}}{\dfrac{P_t}{T_t} - \dfrac{P_{ti}}{T_{ti}}} \quad \frac{A}{R(1 - B_w)} \qquad 3C\text{-}3$$

8. Bibliography

1. McNair, H.M., and E.J. Bonnelli. Basic Gas Chromatography. Consolidated Printers, Berkeley, CA. 1969.

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Method 25C—Determination of Nonmethane Organic Compounds (NMOC) in MSW Landfill Gases

1. Applicability and Principle

1.1 Applicability. This method is applicable to the sampling and measurement of nonmethane organic compounds (NMOC) as carbon in MSW landfill gases.

1.2 Principle. A sample probe that has been perforated at one end is driven or augered to a depth of 1.0 meter below the bottom of the landfill cover. A sample of the landfill gas is extracted with an evacuated cylinder. The NMOC content of the gas is determined by injecting a portion of the gas into a gas chromatographic column to separate the NMOC from carbon monoxide (CO), carbon dioxide (CO_2), and methane (CH_4); the NMOC are oxidized to CO_2, reduced to CH_4, and measured by a flame ionization detector (FID). In this manner, the variable response of the FID associated with different types of organics is eliminated.

2. Apparatus

2.1 Sample Probe. Stainless steel, with the bottom third perforated. The sample probe shall be capped at the bottom and shall have a threaded cap with a sampling attachment at the top. The sample probe shall be long enough to go through and extend no less than 1.0 meter below the landfill cover. If the sample probe is to be driven into the landfill, the bottom cap should be designed to facilitate driving the probe into the landfill.

2.2 Sampling Train.

2.2.1 Rotameter with Flow Control Valve. Capable of measuring a sample flow rate of 500 ml/min or less (30.5±3.1 m^3/min). The control valve shall be made of stainless steel.

2.2.2 Sampling Valve. Stainless steel.

2.2.3 Pressure Gauge. U-tube mercury manometer, or equivalent, capable of measuring pressure to within 1 mm Hg in the range of 0 to 1,100 mm Hg.

2.2.4 Sample Tank. Stainless steel or aluminum cylinder, with a minimum volume of 4 liters and equipped with a stainless steel sample tank valve.

2.3 Vacuum Pump. Capable of evacuating to an absolute pressure of 10 mm Hg.

2.4 Purging Pump. Portable, explosion proof, and suitable for sampling NMOC.

2.5 Pilot Probe Procedure. The following are needed only if the tester chooses to use the procedure described in section 4.2.1.

2.5.1 Pilot Probe. Tubing of sufficient strength to withstand being driven into the landfill by a post driver and an outside diameter of at least 6.0 millimeters smaller than the sample probe. The pilot probe shall be capped on both ends and long enough to go through the landfill cover and extend no less than 1.0 meter into the landfill.

2.5.2 Post Driver and Compressor. Capable of driving the pilot probe and the sampling probe into the landfill.

2.6 Auger Procedure. The following are needed only if the tester chooses to use the procedure described in section 4.2.2.

2.6.1 Auger. Capable of drilling through the landfill cover and to a depth of no less than 0.9 meters into the landfill.

2.6.2 Pea Gravel.

2.6.3 Bentonite.

2.7 NMOC Analyzer, Barometer, Thermometer, and Syringes. Same as in sections 2.3, 2.4.1, 2.4.2, 2.4.4, respectively, of Method 25.

3. Reagents

3.1 NMOC Analysis. Same as in Method 25, section 3.2.

3.2 Calibration. Same as in Method 25, section 3.4, except omit section 3.4.3.

4. Procedure

4.1 Sample Tank Evacuation and Leak Check. Conduct the sample tank evacuation and leak check either in the laboratory or the field. Connect the pressure gauge and sampling valve to the sample tank. Evacuate the sample tank to 10 mm Hg absolute pressure or less. Close the sampling valve, and allow the tank to sit for 60 minutes. The tank is acceptable if no change is noted. Include the results of the leak check in the test report.

4.2 Sample Probe Installation. The tester may use the procedure in sections 4.2.1 or 4.2.2. CAUTION: Since this method is complex, only experienced personnel should perform this test. LFG contains methane, therefore explosive mixtures may exist on or near the landfill. It is advisable to take appropriate safety precautions when testing landfills, such as refraining from smoking and installing explosion-proof equipment.

4.2.1 Pilot Probe Procedure. Use the post driver to drive the pilot probe at least 1.0 meter below the landfill cover. Alternative procedures to drive the probe into the landfill may be used subject to the approval of the Administrator.

Remove the pilot probe and drive the sample probe into the hole left by the pilot probe. The sample probe shall extend not less than 1.0 meter below the landfill cover and shall protrude about 0.3 meters above the landfill cover. Seal around the sampling probe with bentonite and cap the sampling probe with the sampling probe cap.

4.2.2 Auger Procedure. Use an auger to drill a hole through the landfill cover and to at least 1.0 meter below the landfill cover. Place the sample probe in the hole and backfill with pea gravel to a level 0.6 meters from the surface. The sample probe shall protrude at least 0.3 meters above the landfill cover. Seal the remaining area around the probe with bentonite. Allow 24 hours for the landfill gases to equilibrate inside the augered probe before sampling.

4.3 Sample Train Assembly. Prepare the sample by evacuating and filling the sample tank with helium three times. After the third evacuation, charge the sample tank with helium to a pressure of approximately 325 mm Hg. Record the pressure, the ambient temperature, and the barometric pressure. Assemble the sampling probe purging system as shown in figure 1.

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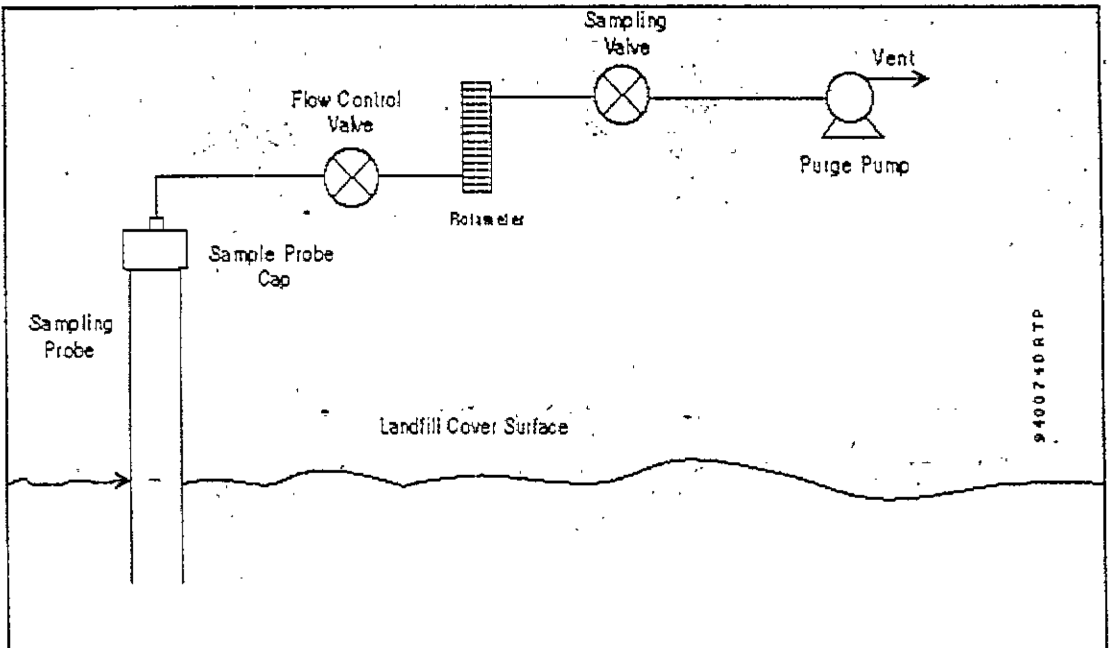

Figure 1. Schematic of sampling probe purging system.

4.4 Sampling Procedure. Open the sampling valve and use the purge pump and the flow control valve to evacuate at least two sample probe volumes from the system at a flow rate of 500 ml/min or less (30.5±3.1 m^3/min). Close the sampling valve and replace the purge pump with the sample tank apparatus as shown in figure 2. Open the sampling valve and the sample tank valves and, using the flow control valve, sample at a flow rate of 500 ml/min or less (30.5±3.1 m^3/min) until the sample tank gauge pressure is zero. Disconnect the sampling tank apparatus and use the carrier gas bypass valve to pressurize the sample cylinder to approximately 1,060 mm Hg absolute pressure with helium and record the final pressure. Alternatively, the sample tank may be pressurized in the lab. If not analyzing for N_2, the sample cylinder may be pressurized with zero air. Use Method 3C to determine the percent N_2 in the sample. Presence of N_2 indicates infiltration of ambient air into the gas sample. The landfill sample is acceptable if the concentration of N_2 is less than 20 percent.

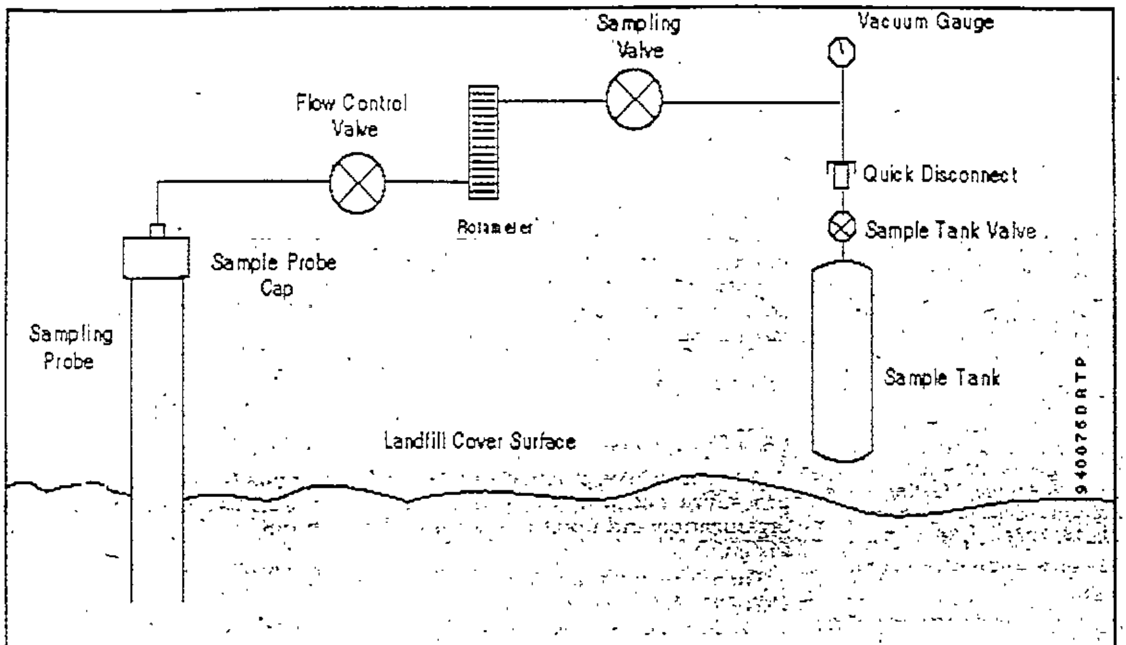

Figure 2. Schematic of sampling train.

4.5 Analysis. The oxidation, reduction, and measurement of NMOC is similar to Method 25. Before putting the NMOC analyzer into routine operation, conduct an initial performance test. Start the analyzer, and perform all the necessary functions to put the analyzer into proper working order. Conduct the performance test according to the procedures established in section 5.1. Once the performance test has been successfully completed and the NMOC calibration response factor has been determined, proceed with sample analysis as follows:

4.5.1 Daily Operations and Calibration Checks. Before and immediately after the analysis of each set of samples or on a daily basis (whichever occurs first), conduct a calibration test according to the procedures established in section 5.2. If the criteria of the daily calibration test cannot be met, repeat the NMOC analyzer performance test (section 5.1) before proceeding.

4.5.2 Operating Conditions. Same as in Method 25, section 4.4.2.

4.5.3 Analysis of Sample Tank. Purge the sample loop with sample, and then inject the sample. Under the specified operating conditions, the CO_2 in the sample will elute in approximately 100 seconds. As soon as the detector response returns to baseline following the CO_2 peak, switch the carrier gas flow to backflush, and raise the column oven temperature to 195 °C as rapidly as possible. A rate of 30 °C/min has been shown to be adequate. Record the value obtained for any measured NMOC. Return the column oven temperature to 85 °C in preparation for the next analysis. Analyze each sample in triplicate, and report the average as C_{tm}.

4.6 Audit Samples. Same as in Method 25, section 4.5.

4.7 Deactivation of Sample Probe Holes. Once sampling has taken place, either plug the sampling probes with a cap or remove the probes and refill the hole with cover material.

5. Calibration and Operational Checks

Maintain a record of performance of each item.

5.1 Initial NMOC Analyzer Performance Test. Same as in Method 25, section 5.2, except omit the linearity checks for CO_2 standards.

5.2 NMOC Analyzer Daily Calibration. NMOC response factors, same as in Method 25, section 5.3.2.

6. Calculations

All equations are written using absolute pressure; absolute pressures are determined by adding the measured barometric pressure to the measured gauge of manometer pressure.

6.1 Nomenclature.

B_w=moisture content in the sample, fraction
C_{N2}=measured N_2 concentration, fraction
C_t=calculated NMOC concentration, ppmv C equivalent
C_{tm}=measured NMOC concentration, ppmv C equivalent
P_b=barometric pressure, mm Hg
P_{ti}=gas sample tank pressure before sampling, mm Hg absolute
P_t=gas sample tank pressure at completion of sampling, but before pressurizing, mm Hg absolute
P_{tf}=final gas sample tank pressure after pressurizing, mm Hg absolute
P_w=vapor pressure of H_2O (from table 25C–1), mm Hg
T_{ti}=sample tank temperature before sampling, °K
T_t=sample tank temperature at completion of sampling, but before pressuring, °K
T_{tf}=sample tank temperature after pressurizing, °K
r=total number of analyzer injections of sample tank during analysis (where j=injection number, 1. . .r)

6.2 Water Correction. Use table 25C–1, the LFG temperature, and barometric pressure at the sampling site to calculate B_w.

$$B_w = \frac{P_w}{P_b}$$

TABLE 25C–1.—MOISTURE CORRECTION

Temperature, °C	Vapor Pressure of H_2O, mm Hg
4	6.1
6	7.0
8	8.0
1	9.2
12	10.5
14	12.0
16	13.6
18	15.5
20	17.5
22	19.8
24	22.4
26	25.2
28	28.3
30	31.8

6.3 NMOC Concentration. Use the following equation to calculate the concentration of NMOC for each sample tank.

$$C_t = \frac{\frac{P_{tf}}{T_{tf}}}{\frac{P_t}{T_t} - \frac{P_{ti}}{T_{ti}}} \frac{1}{\left(1 - B_w - C_{N2}\right) r} \sum_{j=1}^{r} C_{tm}{}^{(j)}$$

7. Bibliography

1. Salon, Albert E., Samuel Witz, and Robert D. MacPhee. Determination of Solvent Vapor Concentrations by Total Combustion Analysis: A Comparison of Infrared with Flame Ionization Detectors. Paper No. 75-33.2. (Presented at the 68th Annual Meeting of the Air Pollution Control Association. Boston, Massachusetts. June 15–20, 1975.) p. 14.

2. Salon, Albert E., William L. Oaks, and Robert D. MacPhee. Measuring the Organic Carbon Content of Source Emissions for Air Pollution Control. Paper No. 74-190. (Presented at the 67th Annual Meeting of the Air Pollution Control Association. Denver, Colorado. June 9–13, 1974.) p. 25.

[FR Doc. 96–5529 Filed 3–11–96; 8:45 am]

BILLING CODE 6560–50–P

FEDERAL MARITIME COMMISSION

46 CFR Part 501

The Federal Maritime Commission—General

AGENCY: Federal Maritime Commission.

ACTION: Final rule.

SUMMARY: The Federal Maritime Commission is revising its statement of delegations of authorities to include new authority delegated to the Director of the Bureau of Economics and Agreement Analysis to grant or deny applications for waivers of certain regulations.

EFFECTIVE DATE: March 12, 1996.

FOR FURTHER INFORMATION CONTACT: Austin L. Schmitt, Director, Bureau of Economics and Agreement Analysis, Federal Maritime Commission, 800 North Capitol Street, NW., Washington, DC 20573–0001, (202) 523–5787.

SUPPLEMENTARY INFORMATION: In Docket No. 94–31, *Information Form and Post-Effective Reporting Requirements for Agreements Among Ocean Common Carriers Subject to the Shipping Act of 1984*, the Federal Maritime Commission ("Commission") has amended its regulations set forth in 46 CFR Part 572 governing the filing, processing and review of agreements among ocean common carriers subject to the Shipping Act of 1984. The amended regulations provide that, upon a showing of good cause, the Commission may waive any part of their requirements, and set forth procedures and standards governing applications for a waiver.

This rule amends the Commission's statement of delegations of authorities in 46 CFR Part 501 to include a new delegation to the Director of the Commission's Bureau of Economics and Agreement Analysis to grant or deny applications for waivers of the agreement regulations. Review of the Director's grant or denial of a waiver is available under the procedures already in effect pursuant to 46 CFR 501.21(f).

Notice and opportunity for public comment were not necessary prior to issuance of this rule and because it deals solely with matters of agency organization and procedure. 5 U.S.C. 553.

List of Subjects in 46 CFR Part 501

Administrative practice and procedure; authority delegations; organization and functions; seals and insignia.

Therefore, pursuant to 5 U.S.C. 551–557, 701–706, 2903 and 6304; 31 U.S.C. 3721; 41 U.S.C. 414 and 418; 44 U.S.C. 501–520 and 3501–3520; 46 U.S.C. app. 801–848, 876, 1111 and 1701–1720; Reorganization Plan No. 7 of 1961, 26 FR 7315, August 12, 1961; Pub. L. 89–56, 79 Stat. 195; and 5 CFR Part 2638, Part 501 of Title 46, Code of Federal Regulations, is amended to read as follows:

PART 501—THE FEDERAL MARITIME COMMISSION—GENERAL

1. The authority citation for Part 501 continues to read as follows:

Authority: 5 U.S.C. 551–557, 701–706, 2903 and 6304; 31 U.S.C. 3721; 41 U.S.C. 414 and 418; 44 U.S.C. 501–520 and 3501–3520; 46 U.S.C. app. 801–848, 876, 1111 and 1701–1720; Reorganization Plan No. 7 of 1961, 26 FR 7315, August 12, 1961; Pub. L. 89–56, 79 Stat. 195; 5 CFR Part 2638.

2. In section 501.26, paragraph (f) is amended by changing the reference to "572.404" to "572.406," and by changing the references to "572.501 and 572.502" to "572.404 and 572.405;" paragraphs (g) through (m) are redesignated (i) through (o); newly redesignated (i) (6) is removed; and new paragraphs (g) and (h) are added, as follows:

§ 501.26 Delegation to the Director, Bureau of Economics and Agreement Analysis.

* * * * *

(g) Authority to grant or deny applications filed under § 572.505 of this chapter for waiver of the information form requirements of §§ 572.503 and 572.504 of this chapter.

By the Commission.

(h) Authority to grant or deny applications filed under § 572.709 of this chapter for waiver of the reporting and record retention requirements of §§ 572.701, 572.702, 572.703, 572.704, 572.705, 572.706, 572.707 and 572.708 of this chapter.

* * * * *

By the Commission.

Ronald D. Murphy,

Assistant Secretary.

[FR Doc. 96–5807 Filed 3–11–96; 8:45 am]

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR PART 25

[CC Docket No. 92–166; FCC 96–54]

Mobile Satellite Service in the 1610–1626.5/2483.5–2500 MHz Frequency Band

AGENCY: Federal Communications Commission.

ACTION: Final rule: petition for reconsideration.

SUMMARY: The Commission has adopted, upon reconsideration, changes to the rules and policies establishing service and licensing rules for the Mobile Satellite Service in the 1610–1626.5/2483.5–2500 MHz Frequency Band. Specifically, we conclude that the "interim plan," designed to avoid interference between the Big LEO systems and the Russian Global Navigation Satellite System ("GLONASS"), is unnecessary at this time. We also clarify our views concerning position determination capabilities in Big LEO earth terminals, and modifications to feeder link proposals. In order to ensure that United States licensees do not engage in practices that are contrary to the goal of competitive markets world-wide, we also adopt a rule concerning exclusive arrangements for provision of Big LEO service. We also clarify our "two-tiered" processing scheme for financial qualifications. In addition, we make a number of minor editorial and clarifying changes to our technical rules.

EFFECTIVE DATE: April 11, 1996.

FOR FURTHER INFORMATION CONTACT: Karl Kensinger, International Bureau, Satellite and Radiocommunication Division, Satellite Policy Branch, (202) 418–0773.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's *Memorandum Opinion and Order* in CC Docket No. 92–166; FCC 96–54, adopted February 12, 1996 and released February 15, 1996. The complete text of this Memorandum Opinion and Order is

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 63

[AD-FRL-5463-1]

RIN 2060-AD9Y

National Emission Standards for Hazardous Air Pollutants: Petroleum Refineries

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; correcting amendments.

SUMMARY: This action corrects errors and clarifies regulatory text of the "National Emission Standards for Hazardous Air Pollutants: Petroleum Refineries," which was issued as a final rule on August 18, 1995.

EFFECTIVE DATE: June 12, 1996.

FOR FURTHER INFORMATION CONTACT: Mr. James Durham, Waste and Chemical Processes Group, Emission Standards Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711, telephone number (919) 541-5672.

SUPPLEMENTARY INFORMATION: On August 18, 1995 (60 FR 43244), the Environmental Protection Agency (EPA) promulgated in the **Federal Register** national emission standards for hazardous air pollutants (NESHAP) for petroleum refineries. These regulations were promulgated as subpart CC of 40 CFR part 63. The same notice amended standards of performance in 40 CFR part 60, subpart VV. This document contains corrections to typographical and cross referencing errors in these subparts. A few editorial clarifications are also being made to clarify the intent of certain provisions and correct inconsistencies between different sections of the rule.

I. Description of Clarifying Changes

A. Compliance Dates

The compliance dates in § 63.640(h) are being clarified to remove an inconsistency regarding the compliance date for marine tank vessels. Section 63.640(h) stated that refineries have 3 years to comply with the NESHAP unless a case-by-case 1-year extension is granted. However, § 63.651 cross references the marine tank vessel loading rule [40 CFR 63, subpart Y (September 19, 1995; FR 43388)] which allows 4 years to comply without requiring a case-by-case extension. Therefore, it was unclear in the rule published on August 18, whether a compliance extension is required to allow marine tank vessel loading operations at refineries 4 years to comply. The intent was to be consistent with subpart Y, unless marine tank vessels are used to generate credit in an emissions average. Paragraph (h)(3) is being added to § 63.640 to make it clear that marine tank vessel loading operations have 4 years to comply. However, if marine tank vessels loading is used to generate credits for an emissions average, compliance must be achieved in 3 years unless a case-by-case extension is granted by the regulatory authority as provided in § 63.6(i) of subpart A (the NESHAP general provisions). Because the other emission points at a refinery included in such an emissions average are required to comply within 3 years of promulgation, the emissions average would not balance if the marine tank vessel loading was not controlled by the third year. However, regulatory authorities have the discretion to allow an extension of up to 1 year for full implementation of the emissions average. This decision is best made on a site-specific basis.

A clarification is also being made to the wording of § 63.640(h)(4) which allows Group 1 storage vessels with floating roofs to comply at the next degassing and cleaning activity or within 10 years after promulgation of the rule, whichever is first. The clarification will insert the phrase "after August 18, 1998" after the words "cleaning activity". As explained in the promulgation preamble, the intent of this provision was to allow an extension of up to 10 years for floating roof storage vessels to achieve full compliance, not to require compliance prior to the 3-year compliance time allowed for all other emission points at refineries. As originally worded, this paragraph could have been misinterpreted as requiring storage vessels that were degassed prior to the August 18, 1998 compliance date to come into compliance earlier than the rest of the refinery.

A clarification is also being made to § 63.640(l) regarding compliance times and reports for addition of emission points to existing sources. This paragraph of the promulgated rule is clear regarding addition of miscellaneous process vents, storage vessels, gasoline loading racks, and marine tank vessel loading operations, but did not specifically address equipment leaks. Responses to comments in section 9 (general monitoring, recordkeeping, and reporting comments) of the background information document for the promulgated rule (EPA 453/R-95-015b) clarify that it was not intended that the addition of pumps, valves, and other components to an existing source subject to the equipment leaks standard trigger new source reporting requirements. The amended paragraph clarifies that equipment leak component additions remain subject to existing source and not new source requirements.

Paragraph (m)(2) of § 63.640 has also been reworded to clarify the timing for of a compliance schedule submittal existing sources when a Group 2 emission point becomes a Group 1 emission point. The intended 180-day time period for submitting the compliance schedule has not been changed, but the intent of the previous wording "within 180 days after the change is made or the information regarding the change is known to the source" has been clarified by the rewording.

B. Clarification of Exemptions

Paragraph (d)(3) of § 63.640 is being reworded. This paragraph exempts equipment that is in organic hazardous air pollutant (HAP) service less than 300 hours per year. This exemption applies to the types of equipment listed in the definition of "equipment leaks" in § 63.641. In order to improve clarity, the specific types of equipment to which this exemption applies have been listed in § 63.640(d)(3). The list of equipment being added to this paragraph exactly matches the list already included in the definition of equipment leaks in § 63.641.

An exemption for emission points routed to refinery fuel gas systems is being added to § 63.640(d). This exemption is specified in the definition of "miscellaneous process vent" in § 63.641. Putting this exemption in the applicability section (§ 63.640) makes it clearer that all emissions routed to fuel gas systems are exempt from the rule.

C. Definitions

The definitions of "Group 1 gasoline loading rack" and "Group 1 marine tank vessel" are being revised for consistency with 40 CFR part 63 subparts R (the gasoline distribution NESHAP) and Y (the marine tank vessel loading NESHAP). The intent of the refineries NESHAP was to be consistent with subparts R and Y in terms of which loading operations require control. Sections 63.650 and 63.651 of the Refineries NESHAP (subpart CC) cross-reference subparts R and Y for control requirements for loading operations. However, throughput and emissions applicability criteria in subparts R and Y were not correctly incorporated in the Group 1 definitions in § 63.641. The definition of "Group 1 gasoline loading rack" is being revised to mean a gasoline loading rack classified under SIC 2911 that is part of a bulk gasoline terminal with the capacity to load greater than 75,700 liters per year of gasoline. This is consistent with subpart R. The definition of "Group 1 marine tank vessel" is being revised by changing the emission rate criteria for existing sources from 9.1 megagrams per year of any individual HAP and 13.6 megagrams of any combination of HAPs to 9.1 megagrams per year of any individual HAP and 22.7 megagrams of any combination of HAPs. The revised definition also clarifies that these emission rate cutoffs apply only to existing sources, not to new sources. These clarifications remove inconsistencies between the definitions in § 63.641 of subpart CC and the rules cross-referenced in §§ 63.650 and 63.651.

The definition of storage vessel is being clarified by removing the clause "in organic HAP service". This was a drafting error. The definition was intended to cover vessels storing organic liquids. However, the phrase "in organic liquid service" was used without recognizing that it is a defined term used in the equipment leaks section of the rule to indicate equipment leak components containing or contacting fluid that is at least 5 weight percent organic HAP. The preamble to the final rule (60 FR 43252) and the "Group 1 storage vessel" definitions make it clear that storage vessels with lower percent organic HAP were intended to be regulated. The "Group 1 storage vessel" definition contains the correct organic HAP weight percent cutoffs of 4 percent for existing sources and 2 percent for new sources, which are discussed in the preamble for the final rule.

The definition of "Group 1 miscellaneous process vent" is being revised to clarify that the 20 parts per million by volume cutoff applies to organic HAP rather than volatile organic compounds (VOC). This is consistent with the definition of "miscellaneous process vent", which includes vents containing greater than 20 parts per million by volume organic HAP and with the 20 parts per million organic HAP language in § 63.643. The definitions of "miscellaneous process vent" and "equipment leaks" are also being clarified by specifying that they do not include emissions from wastewater collection and conveyance systems. Air emissions from wastewater systems are regulated under the wastewater provisions in § 63.647 of subpart CC.

Definitions of "startup" and "shutdown" are being added for clarification. These definitions are consistent with definitions in the subpart A General Provisions and the hazardous organics NESHAP (40 CFR 60, subpart F). Under the General Provisions, § 63.6(f)(1) states that emission limits do not apply during startup, shutdown, and malfunction. These definitions make it clear that, for purposes of § 63.6(f)(1) and for the startup, shutdown, and malfunction plan, startup and shutdown refer to startup and shutdown of refinery process units or unit operations such as distillation units rather than to individual components such as pumps. To further clarify this point, the second sentence in the definition of "affected source" has been deleted. This sentence had been interpreted to mean that startup, shutdown, and malfunction plans apply to individual components.

Other minor definition changes are being made to correct typographical errors and improve clarity. For example, in the definition of "emission point", the word "gas" is changed to "gasoline", and a definition of leakless valves is being added to clarify which types of valves are excluded from the monitoring requirements of the rule.

D. Equations

The term "R" in the equation in § 63.642(g) represents the fraction of emissions from a Group 1 marine tank vessel loading operation after the required level of control has been applied. The phrase "and 0.05 for new offshore loading terminals" is being deleted because offshore loading terminals are not subject to subpart CC. Therefore, this phrase was not relevant to the refineries NESHAP, and would cause confusion.

The EPA is clarifying that the emissions averaging equations for gasoline loading racks assume that all facilities with Group 1 gasoline loading racks must comply with the requirements of subpart R regarding vapor-tightness of gasoline cargo tanks loaded at the facility, regardless of whether emissions averaging is used. Therefore, the emissions credit and debit calculation equations do not include terms for estimating emissions from leakage from gasoline cargo tanks. (Compliance with subpart R vapor-tightness provisions is not a new requirement. There is no change to the regulation language regarding this point.)

E. Recordkeeping and Reporting

Section 63.642(e) is being revised to state that records shall be maintained in such a manner that they can be readily accessed within 24 hours, rather than be maintained on-site for 2 years. This change is consistent with the discussion on this issue in section 9 (general monitoring, recordkeeping and reporting comments) of the background information document for this rule. This change was not incorporated in the promulgated rule because of a drafting oversight.

In § 63.654(d), recordkeeping requirement for equipment leaks are being added that require owners or operators to keep a list of valves that are designated as "leakless." These valves are exempt from the valve monitoring requirements. This recordkeeping requirement is consistent with requirements in equipment leak rules cross-referenced in this subpart, such as 40 CFR part 60, subpart VV. The requirement was overlooked when drafting the cross-references to subpart VV. Owners or operators are also required to identify equipment in process units that are subject to the rule that are not considered in organic HAP service, and reciprocating compressors and pumps that are exempt from equipment leak control requirements. These requirements are consistent with the hazardous organic NESHAP recordkeeping and reporting requirements which is cross referenced in the rule.

Section 63.654(h)(1) is being clarified to explicitly state that reports of startup, shutdown, and malfunction required by § 63.10(d)(5) do not apply to Group 2 emission points at refineries, unless they are included in an emission average. This is already stated in table 6, which shows which portions of the NESHAP general provisions apply to subpart CC. Table 6 specifies, in footnote b, that § 63.10(d)(5) does not apply to Group 2 emission points that are not included in an emission average, but it would be clearer to the reader to also state this in § 63.654(h)(1).

In table 4 of 40 CFR part 63, subpart CC, the cross-references to § 63.428 (i) and (j) of 40 CFR part 63, subpart R are being deleted. These records and reports pertain to recordkeeping provisions of subpart R that are applicable to facilities that have calculated emissions from bulk terminals and pipeline breakout stations that fall below a deminimis level and are not subject to 40 CFR part 63, subpart CC. In table 6 of subpart CC, the applicability of § 63.6(h) has been clarified. This requirement is referenced in portions of the HON rule (40 CFR part 63, subpart G) and the general provisions (40 CFR part 63, subpart A) relating to flares that are cross-referenced from subpart CC, and it was incorrectly over-ridden in the table. However, paragraphs relating strictly to marine tank vessel", "Group 1 miscellaneous process vent", the first sentence in the introductory text of "Storage vessel", and "Temperature monitoring device", and by adding a definition for "Leakless valve", "Startup", and "Shutdown" and by adding a paragraph (13) to the definition for "Miscellaneous process vent" to read as follows:

§ 63.641 Definitions.

*   *   *   *   *

Affected source means the collection of emission points to which this subpart applies as determined by the criteria in § 63.640.

*   *   *   *   *

Emission point means an individual miscellaneous process vent, storage vessel, wastewater stream, or equipment leak associated with a petroleum refining process unit; an individual storage vessel or equipment leak associated with a bulk gasoline terminal or pipeline breakout station classified under Standard Industrial Classification code 2911; a gasoline loading rack classified under Standard Industrial Classification code 2911; or a marine tank vessel loading operation located at a petroleum refinery.

Equipment leak * * *. Vents from wastewater collection and conveyance systems (including, but not limited to wastewater drains, sewer vents, and sump drains), tank mixers, and sample valves on storage tanks are not equipment leaks.

*   *   *   *   *

Group 1 gasoline-loading rack means any gasoline loading rack classified under Standard Industrial Classification code 2911 that is located within a bulk gasoline terminal that has a gasoline throughput greater than 75,700 liters per day. Gasoline throughput shall be the maximum calculated design throughput for the terminal as may be limited by compliance with enforceable conditions under Federal, State, or local law and discovered by the Administrator and any other person.

Group 1 marine tank vessel means a vessel at an existing source loaded at any land- or sea-based terminal or structure that loads liquid commodities with vapor pressures greater than or equal to 10.3 kilopascals in bulk onto marine tank vessels, that emits greater than 9.1 megagrams of any individual HAP or 22.7 megagrams of any combination of HAP annually after August 18, 1999, or a vessel at a new source loaded at any land- or sea-based terminal or structure that loads liquid commodities with vapor pressures greater than or equal to 10.3 kilopascals onto marine tank vessels.

Group 1 miscellaneous process vent means a miscellaneous process vent for which the total organic HAP concentration is greater than or equal to 20 parts per million by volume, and the total volatile organic compound emissions are greater than or equal to 33 kilograms per day for existing sources and 6.8 kilograms per day for new sources at the outlet of the final recovery device (if any) and prior to any control device and prior to discharge to the atmosphere.

*   *   *   *   *

Leakless valve means a valve that has no external actuating mechanism.

*   *   *   *   *

Miscellaneous process vent * * *

(13) Emissions from wastewater collection and conveyance systems including, but not limited to, wastewater drains, sewer vents, and sump drains.

*   *   *   *   *

Shutdown means the cessation of a petroleum refining process unit or a unit operation (including, but not limited to, a distillation unit or reactor) within a petroleum refining process unit for purposes including, but not limited to, periodic maintenance, replacement of equipment, or repair.

Startup means the setting into operation of a petroleum refining process unit for purposes of production. Startup does not include operation solely for purposes of testing equipment. Startup does not include changes in product for flexible operation units.

Storage vessel means a tank or other vessel that is used to store organic liquids. * * *

Temperature monitoring device means a unit of equipment used to monitor temperature and having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater.

*   *   *   *   *

6. Section 63.642 is amended by revising paragraphs (e) and (g) as follows:

§ 63.642 General standards.

*   *   *   *   *

(e) Each owner or operator of a source subject to this subpart shall keep copies of all applicable reports and records required by this subpart for at least 5 years except as otherwise specified in this subpart. All applicable records shall be maintained in such a manner that they can be readily accessed within 24 hours. Records may be maintained in hard copy or computer-readable form including, but not limited to, on paper, microfilm, computer, floppy disk, magnetic tape, or microfiche.

*   *   *   *   *

(g) The owner or operator of an existing source subject to the requirements of this subpart shall control emissions of organic HAP's to the level represented by the following equation:

$$E_A = 0.02\Sigma EPV_1 + \Sigma EPV_2 + 0.05\Sigma ES_1 + \Sigma ES_2 + \Sigma EGLR_{1C} + \Sigma EGLR_2 + (R)\Sigma EMV_1 + \Sigma EMV_2 + \Sigma EWW_{1C} + \Sigma EWW_2$$

where:

E_A = Emission rate, megagrams per year, allowed for the source.
$0.02\Sigma EPV_1$ = Sum of the residual emissions, megagrams per year, from all Group 1 miscellaneous process vents, as defined in § 63.641.
ΣEPV_2 = Sum of the emissions, megagrams per year, from all Group 2 process vents, as defined in § 63.641.
$0.05\Sigma ES_1$ = Sum of the residual emissions, megagrams per year, from all Group 1 storage vessels, as defined in § 63.641.
ΣES_2 = Sum of the emissions, megagrams per year, from all Group 2 storage vessels, as defined in § 63.641.
$\Sigma EGLR_{1C}$ = Sum of the residual emissions, megagrams per year, from all Group 1 gasoline loading racks, as defined in § 63.641.
$\Sigma EGLR_2$ = Sum of the emissions, megagrams per year, from all Group 2 gasoline loading racks, as defined in § 63.641.
$(R)\Sigma EMV_1$ = Sum of the residual emissions megagrams per year, from all Group 1 marine tank vessels, as defined in § 63.641.
R = 0.03 for existing sources, 0.02 for new sources.
ΣEMV_2 = Sum of the emissions, megagrams per year from all Group 2 marine tank vessels, as defined in § 63.641.
ΣEWW_{1C} = Sum of the residual emissions from all Group 1 wastewater streams, as defined in § 63.641. This term is calculated for each Group 1 stream according to the equation for EWW_{ic} in § 63.652(h)(6).
ΣEWW_2 = Sum of emissions from all Group 2 wastewater streams, as defined in § 63.641.

The emissions level represented by this equation is dependent on the collection of emission points in the source. The level is not fixed and can change as the emissions from each emission

$$\begin{aligned}\text{Credits} = {} & D\sum_{i=1}^{n}\left((0.02)\,\text{EPV1}_{iu} - \text{EPV1}_{i\text{ACTUAL}}\right) + D\sum_{i=1}^{m}\left(\text{EPV2}_{i\text{BASE}} - \text{EPV2}_{i\text{ACTUAL}}\right) + \\ & D\sum_{i=1}^{n}\left((0.05)\,\text{ES1}_{iu} - \text{ES1}_{i\text{ACTUAL}}\right) + D\sum_{i=1}^{m}\left(\text{ES2}_{i\text{BASE}} - \text{ES2}_{i\text{ACTUAL}}\right) + \\ & D\sum_{i=1}^{n}\left(\text{EGLR}_{ic} - \text{EGLR1}_{i\text{ACTUAL}}\right) + D\sum_{i=1}^{m}\left(\text{EGLR2}_{i\text{BASE}} - \text{EGLR2}_{i\text{ACTUAL}}\right) + \\ & D\sum_{i=1}^{n}\left((0.03)\,\text{EMV1}_{iu} - \text{EMV1}_{i\text{ACTUAL}}\right) + D\sum_{i=1}^{m}\left(\text{EMV2}_{i\text{BASE}} - \text{EMV2}_{i\text{ACTUAL}}\right) + \\ & D\sum_{i=1}^{n}\left(\text{EWW1}_{ic} - \text{EWW1}_{i\text{ACTUAL}}\right) + D\sum_{i=1}^{m}\left(\text{EWW2}_{i\text{BASE}} - \text{EWW2}_{i\text{ACTUAL}}\right)\end{aligned}$$

* * *

* * * * *

14. Section 63.653 is amended by revising paragraph (a)(4) as follows:

§ 63.653 Monitoring, recordkeeping, and implementation plan for emission averaging.

(a) * * *

(4) For each gasoline loading rack that is controlled, perform the testing and monitoring procedures specified in §§ 63.425 and 63.427 of subpart R of this part except § 63.425(d) or § 63.427(c).

* * * * *

15. Section 63.654 is amended by revising paragraphs (d) introductory text, (d)(3), adding paragraphs (d)(4), (d)(5), and (d)(6), revising the first sentence of paragraph (g)(6)(iii), and revising paragraphs (g)(8)(ii)(B) and (h)(1), as follows:

§ 63.654 Reporting and recordkeeping requirements.

* * * * *

(d) Each owner or operator subject to the equipment leaks standards in § 63.648 shall comply with the recordkeeping and reporting provisions in paragraphs (d)(1) through (d)(6) of this section.

* * * * *

(3) An owner or operator who determines that a compressor qualifies for the hydrogen service exemption in § 63.648 shall also keep a record of the demonstration required by § 63.648.

(4) An owner or operator must keep a list of identification numbers for valves that are designated as leakless per § 63.648(c)(10).

(5) An owner or operator must identify, either by list or location (area or refining process unit), equipment in organic HAP service less than 300 hours per year within refining process units subject to this subpart.

(6) An owner or operator must keep a list of reciprocating pumps and compressors determined to be exempt from seal requirements as per §§ 63.648 (f) and (i).

* * * * *

(g) * * *

(6) * * *

(iii) Periods of startup and shutdown that meet the definition of § 63.641, and malfunction that meet the definition in § 63.2 and periods of performance testing and monitoring system calibration shall not be considered periods of excess emissions. * * *

(8) * * *

(ii) * * *

(B) The information required to be reported by § 63.428 (h)(1), (h)(2), and (h)(3) for each gasoline loading rack included in an emissions average, unless this information has already been submitted in a separate report;

* * * * *

(h) * * *

(1) Reports of startup, shutdown, and malfunction required by § 63.10(d)(5). Records and reports of startup, shutdown, and malfunction are not required if they pertain solely to Group 2 emission points, as defined in § 63.641, that are not included in an emissions average. For purposes of this paragraph, startup and shutdown shall have the meaning defined in § 63.641, and malfunction shall have the meaning defined in § 63.2; and

* * * * *

16. Table 3 in the appendices to subpart CC is amended by revising entries 63.182(b) and 63.182 (c) to read as follows:

TABLE 3.—EQUIPMENT LEAK RECORDKEEPING AND REPORTING REQUIREMENTS FOR SOURCES COMPLYING WITH § 63.648 OF SUBPART CC BY COMPLIANCE WITH SUBPART H OF THIS PART[a]

Reference (section of subpart H of this part)	Description	Comment
* *	* *	* * *
63.182(b)	Initial notification report requirements	Not required.
63.182(c)	Notification of compliance status report	Except in § 63.182(c); change "within 90 days of the compliance dates" to "within 150 days of the compliance dates"; except in §§ 63.182 (c)(2) and (c)(4).
* *	* *	* * *

[a] This table does not include all the requirements delineated under the referenced sections. See referenced sections for specific requirements.

* * * * *

17. Table 4 in the appendices to subpart CC is revised to read as follows:

TABLE 4.—GASOLINE DISTRIBUTION EMISSION POINT RECORDKEEPING AND REPORTING REQUIREMENTS[a]

Reference (section of subpart R of this part)	Description	Comment
63.428(b)	Records of test results for each gasoline cargo tank loaded at the facility.	
63.428(c)	Continuous monitoring data recordkeeping requirements.	
63.428(g)(1)	Semiannual report loading rack information	Required to be submitted with the periodic report required under 40 CFR part 63 subpart CC.
63.428 (h)(1) through (h)(3)	Excess emissions report loading rack information.	Required to be submitted with the periodic report required under 40 CFR part 63 subpart CC.

[a] This table does not include all the requirements delineated under the referenced sections. See referenced sections for specific requirements.

18. Table 6 in the appendices to subpart CC is amended by revising entries 63.6(h) (1) and (2), 63.6(h) (4) and (5), 63.6(h)(6) and 63.6(h) (7) through (9) to read as follows:

TABLE 6.—GENERAL PROVISIONS APPLICABILITY TO SUBPART CC[a]

Reference	Applies to subpart CC[b]	Comment
* * * * * * *		
63.6(h) (1) and (2)	Yes	
63.6(h) (4) and (5)	No	Visible emission requirements and timing in subpart CC.
63.6(h)(6)	Yes	
63.6(h) (7) through (9)	No	Subpart CC does not require opacity standards.
* * * * * * *		

* * * * *

19. Table 8 in the appendices to subpart CC is amended by revising the heading of the table, as follows:

TABLE 8.—VALVE MONITORING FREQUENCY FOR PHASE III

* * *

* * * * *

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