

6560-50

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51 and 60

[EPA-OAR-2004-0510; FRL-]

RIN 2060-AF83

Methods for Measurement of Visible Emissions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This action finalizes Methods 203A, 203B, and 203C for determining visible emissions using data reduction procedures that are more appropriate for State Implementation Plan (SIP) rules than Method 9, the method currently used. This action was requested by the States and is needed for the special data reduction requirements in their rules. The intended effect is to provide States with an expanded array of data reduction procedures for determining compliance with their SIP opacity regulations.

In addition, this action amends various testing provisions in the New Source Performance Standards (NSPS) to correct inadvertent errors and amend a testing provision.

DATES: This final rule is effective on [insert date of publication in the Federal Register].

ADDRESSES: EPA has established a docket for this action under Docket ID No. OAR-2004-0510. All documents in the docket are listed on the www.regulations.gov web site. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through www.regulations.gov or in hard copy at the Air and Radiation Docket, Docket ID No. OAR-2004-0510, EPA Docket Center (EPA/DC), EPA West, Room B102, 1301 Constitution Ave., NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Air and Radiation Docket is (202) 566-1742.

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SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this action apply to me? Categories and entities potentially regulated by the final rule include the following:

Table 1. Major Entities Potentially Affected by This Action

Examples of Regulated Entities	SIC Codes	NAICS Codes
Fossil Fuel Steam Generators	4931	221112
Industrial, Commercial, Institutional Steam Generating Units	4961	22133
Electric Generating	4911	221119
Portland Cement Plants	3241	327310
Petroleum Refineries	2911	324110
Hot Mix Asphalt Facilities	2951	324121
Kraft Pulp Mills	2611	3221
Municipal Solid Waste	4953	562213
Secondary Lead Smelters	3341	331492

Secondary Brass and Bronze Production Plants	3351	331421
Basic Oxidation Process Furnaces	3312	331111
Sewage Treatment Plants	4952	221320
Coal Preparation Plants	1221	212111
Ferroalloy Production Facilities	3313	331112
Electric Arc Furnaces	3312	331111
Glass Manufacturing Plants	3211	327211
Grain Elevators	0111	111141
Lime Manufacturing Plants	2812	325181
Metallic Mineral Processing Plants	1011	212210
Non-Metallic Mineral Processing Plants	1411	212311
Phosphate Rock Plants	1475	212392
Ammonium Sulfate Manufacturing Facilities	2873	325311

Asphalt Processing	2952	3244122
Asphalt Roofing Manufacturing	2952	324122
Calciners and Dryers in Mineral Industries	1479	212393

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be affected by this action. This table lists examples of the types of entities EPA is now aware could potentially be affected by the final rule. Other types of entities not listed could also be affected. If you have any questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding FOR FURTHER INFORMATION CONTACT section.

B. How can I access electronic copies of this document and other related information? In addition to being available in the docket, an electronic copy of today's final rule will also be available on the Worldwide Web (WWW) through the Technology Transfer Network (TTN). Following the Administrator's signature, a copy of the final rule will be placed on the TTN's policy and guidance page for newly proposed or promulgated rules at <http://www.epa.gov/ttn/oarpg>. The TTN provides information

and technology exchange in various areas of air pollution control.

C. Judicial Review. Under Section 307(b)(1) of the Clean Air Act (CAA), judicial review of the final rule is available only by filing a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit by [INSERT DATE 60 DAYS AFTER PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER]. Under Section 307(d)(7)(B) of the CAA, only an objection to the final rule that was raised with reasonable specificity during the period for public comment can be raised during judicial review. Under CAA section 307(b)(2), the requirements established by the final rule may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

D. Outline. The information presented in this preamble is organized as follows:

- I. General Information
 - A. Does this action apply to me?
 - B. How can I access electronic copies of this document and other related information?
 - C. Judicial review
 - D. Outline
- II. Background and Summary of Proposed Rule
- III. Response to Comments
 - A. Stringency of Current Standards Not Affected
 - B. Four Readings Not a Reliable Data Sample
- IV. Changes to the Proposed Rule
 - A. Performance Results Added to the Methods
 - B. 15-Second Interval Option Removed From Method 203C
- V. Summary of Amendments to the NSPS
 - A. Petroleum Refineries (Subpart J)

- B. Kraft Pulp Mills (Subpart BB)
- C. Municipal Solid Waste Landfills (Subpart WWW)
- D. Performance Specification 2, Appendix B of Part 60
- VI. Statutory and Executive Order Reviews
 - A. Executive Order 12866: Regulatory Planning and Review
 - B. Paperwork Reduction Act
 - C. Regulatory Flexibility Act
 - D. Unfunded Mandates Reform Act
 - E. Executive Order 13132: Federalism
 - F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments
 - G. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks
 - H. Executive Order 13211: Actions that Significantly Affect Energy Supply, Distribution, or Use
 - I. National Technology Transfer Advancement Act
 - J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
 - K. Congressional Review Act

II. Background and Summary of Proposed Rule

In 1974, Method 9 of Appendix A to 40 CFR Part 60 was revised. In the preamble to that rule, we recognized that the Method 9 data reduction techniques were not appropriate for some types of State implementation plan (SIP) opacity regulations. The preamble also stated the Agency's intent to propose procedures to enforce SIP limitations that were not adequately addressed by Method 9. Such SIP limitations included those with time-exception provisions (a specified number of minutes in an hour in which the opacity limit may be exceeded), as well as those that specify averaging times other than the 6 minutes advocated by Method 9. Also, Method 9 did not address data reduction procedures for

instantaneous opacity limitations which are included in some SIP. In order to provide appropriate data reduction procedures for opacity limits that differ from Method 9, we proposed new test procedures for evaluating compliance with opacity standards in 1986.

The 1986 proposal contained field and observer certification procedures identical to those of Method 9, the only difference being the data reduction procedures for determining compliance with SIP regulations that contained time-exception, time-averaged, and instantaneous limitations. The 1986 proposal indicated that we would select the visible emission test method and data reduction procedures that best ensured enforcement of the SIP opacity standard in a manner consistent with the original language in the federally-approved or promulgated SIP. We also proposed procedures for analyzing fugitive dust.

Between this 1986 proposal and the proposal of Methods 203A, B, and C in 1993, technical work continued in several areas. We completed a collaborative study of the effect of shorter observation intervals, and we developed several implementation tools, including a revised sample visible emissions observation (VEO) form to assist States in specifying the appropriate test method for the opacity limit proposed in the SIP or SIP revision.

The proposal of Methods 203A, B, and C divided the procedures proposed in 1986 into three distinct methods, allowing a State to specify the exact data reduction procedures to be used in compliance determinations. The three methods incorporated the certification procedures for observers from Method 9 without change. The only procedural differences between Methods 203A, B, and C and Method 9 are in the provisions for recording observations and data reduction.

Since the 1993 proposal of Methods 203A, B, and C, we are not aware of any new methods or changes to existing methods that would lead to substantial changes in our approach. Therefore, with one exception, we believe it is appropriate to complete this action with the changes noted in the preamble. We are not taking final action at this time with regard to procedures for fugitive dust.

III. Responses to Comments

A. Stringency of Current Standards Not Affected

The most frequent comment concerned the possibility of current regulations being affected by these new methods. Examples of these concerns are: (1) Method 203B would increase the stringency of current time-exception regulations, (2) Methods 203A, B, and C would displace Tennessee's four federally approved visible emission

methods, and (3) decreasing the averaging time demands an increase in the level of the standard.

Methods 203A, B, and C are not retroactive; they do not apply to existing regulations. Methods 203A, 203B, and 203C are example methods for States to use in developing their SIP regulations. The addition of these methods to Appendix M of Part 51 will increase the number of opacity methods available to the State and will not affect the stringency of any existing standard.

A comment regarding the data reduction procedures of Method 203B expressed a similar concern. Some current time-exception methods count the number of 1-minute averages that are over the maximum opacity specified. The sum of 1-minute averages must not exceed the number of exception-minutes specified in the applicable standard. Method 203B contains slightly different data reduction procedures in which the readings are not averaged, but each reading is viewed as a 15-second block of time. The number of readings above the specified opacity limit is multiplied by 0.25 resulting in the total number of minutes during which the maximum opacity level is exceeded. Method 203B is a slightly more stringent procedure than summing 1-minute averages. As mentioned above, Methods 203A, B, and C are not retroactive and the stringency of visible emission procedures need to be taken

into account when the new or revised emission limits are developed.

B. Four Readings not a Reliable Data Sample

We proposed two options when using Method 203C: averaging four 15-second readings or averaging twelve 5-second readings. One commenter stated that four 15-second readings were not sufficient for Method 203C. Upon further review and examination of the data, we agree with the commenter and have eliminated the four 15-second reading option. Only the second option, averaging twelve 5-second readings, is prescribed in Method 203C.

We also received comments on the proposed procedures for fugitive dust. However, because we are not taking final action on these procedures at this time, we are not responding to the comments here.

IV. Changes to Proposed Methods 203A, B, and C

A. Performance Results Added to the Methods

The error associated with each method has been summarized from various field studies and is presented in Section 13 of each method.

B. 15-Second Interval Option Removed From Method 203C

The proposed option to use four 15-second readings for instantaneous limitation regulations has been removed from

Method 203C. Twelve 5-second readings will be used when Method 203C is specified for instantaneous regulations.

V. Summary of Amendments to the NSPS

Technical amendments are being made to 40 CFR Part 60 to correct existing errors in Subparts J, BB, and Appendix B and to amend a testing requirement in Subpart WWW. These technical amendments were proposed in the Federal Register on August 5, 2005 (70 FR 45608). No comments were received from the public concerning these amendments.

A. Petroleum Refineries (Subpart J)

In § 60.106(b)(3) of the petroleum refinery NSPS, the equation for determining the coke burn-off rate is being corrected.

B. Kraft Pulp Mills (Subpart BB)

In § 60.284 of the kraft pulp mills NSPS, an inadvertent paragraph requiring that continuous emission monitors be subject to the quality assurance provisions of Appendix F is being deleted.

C. Municipal Solid Waste Landfills (Subpart WWW)

In § 60.752(b)(2)(iii)(A) of the municipal solid waste landfill NSPS, open flares are required to comply with the general flare provisions of § 60.18. In these provisions, the heat content of the flare gas is determined from an analysis of its organic compound and hydrogen content using

Methods 18 and ASTM D1946, respectively. Methane is the primary organic compound of significance in landfill gas, and hydrogen is not likely to be present. Method 3C is easier to use than Method 18 and has a more appropriate measurement range for the methane levels encountered at landfills. In addition, Method 3C determines oxygen and nitrogen which are needed to determine the flare gas exit velocity. In the past, sources have requested and received permission to use Method 3C in place of Methods 18 and ASTM D1946 under this rule. This amendment makes Method 3C the required test method for methane and removes the requirement to measure hydrogen by ASTM D1946.

D. Performance Specification 2, Appendix B of Part 60

In Performance Specification 2, an inadvertent omission in an October 17, 2000 amendment removed an allowance for low-emitters when conducting relative accuracy tests. This amendment reinstates the allowance.

VI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735 October 4, 1993), the Agency 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 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.

We have determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review. We have determined that this regulation would result in none of the economic effects set forth in Section 1 of the Order because it does not impose emission measurement requirements beyond those specified in the current regulations, nor does it change any emission standard.

B. Paperwork Reduction Act

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. The new test methods do not add information collection requirements beyond what is currently mandated.

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.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR Part 9.

C. Regulatory Flexibility Act

EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with this final rule.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) a small business as defined by the Small Business Administrations' regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. Entities potentially affected by this action include those listed in Table 1 of SUPPLEMENTARY INFORMATION.

After considering the economic impacts of today's final rule on small entities, we have concluded that this action will not have a significant economic impact on a substantial number of small entities. This final rule will not impose any requirements on small entities.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), P.L. 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, Local, and Tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, Local, and Tribal governments, in the aggregate, or to the private sector, of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments,

including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

Today's rule contains no Federal mandates (under the regulatory provisions of Title II of the UMRA) for State, Local, or Tribal governments or the private sector. The rule imposes no enforceable duty on any State, Local, or Tribal governments or the private sector. In any event, EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, Local, and Tribal governments, in the aggregate, or the private sector in any one year. Thus, today's rule is not subject to the requirements of Sections 202 and 205 of the UMRA.

EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. This rule simply makes available

alternative data reduction procedures that States can use at their discretion under their SIP opacity regulations.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and Local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" are defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, Executive Order 13132 does not apply to this rule.

F. Executive Order 13175: Consultation and Coordination with Tribal Governments

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 6, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." This final rule does not have tribal implications as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes, as specified in Executive Order 13175. In this final rule, we are simply adding test methods at the request of the States to increase the flexibility in testing for opacity of emissions. Thus, Executive Order 13175 does not apply to this rule.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 applies to any rule that: (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the

regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5-501 of the Order has the potential to influence the regulation. This rule is not subject to Executive Order 13045 because it is based on technology performance and not on health or safety risks.

H. Executive Order 13211: Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), P.L. 104-113, 12(d) (15

U.S.C. 272), directs EPA to use voluntary consensus standards (VCS) in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, business practices, etc.) that are developed or adopted by VCS bodies. The NTTAA requires EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable VCS. During this rulemaking, we identified no VCS that might be applicable. Specifically, there were none that addressed opacity data reduction provisions differently than what currently exists in Method 9 of 40 CFR Part 60, Appendix A.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12848 (58 FR 7629, February 11, 1994) requires that each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minorities and low-income populations. This rule contains optional test

procedures that do not place disproportionate human health or environmental effects of minority or low-income populations.

K. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the Federal Register. A major rule cannot take effect until 60 days after its publication in the Federal Register. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective.

List of Subjects in 40 CFR Parts 51 and 60

Administrative practice and procedure, Air pollution control, Carbon monoxide, Continuous emission monitors, Environmental protection, Intergovernmental relations, Lead,

New sources, Nitrogen dioxide, Ozone, Particulate matter,
Performance specifications, Reporting and recordkeeping
requirements, Sulfur oxides, Test methods and procedures,
Volatile organic compounds.

Dated:

Stephen L. Johnson,
Administrator.

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

Part 51 - [AMENDED]

1. The authority citation for Part 51 continues to read as follows:

Authority: 23 U.S.C. 101; 42 U.S.C. 7401-7671q.

2. Appendix M is amended by adding the following method titles at the beginning of Appendix M and by adding Methods 203A, 203B, and 203C as follows:

APPENDIX M to Part 51 - RECOMMENDED TEST METHODS FOR STATE
IMPLEMENTATION PLANS

* * * * *

Method 203A--Visual Determination of Opacity of Emissions from Stationary Sources for Time-Averaged Regulations.

Method 203B--Visual Determination of Opacity of Emissions from Stationary Sources for Time-Exception Regulations.

Method 203C--Visual Determination of Opacity of Emissions from Stationary Sources for Instantaneous Regulations.

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**METHOD 203A – VISUAL DETERMINATION OF OPACITY OF EMISSIONS
FROM STATIONARY SOURCES FOR TIME-AVERAGED REGULATIONS**

1.0 Scope and Application

What is Method 203A?

Method 203A is an example test method suitable for State Implementation Plans (SIP) and is applicable to the determination of the opacity of emissions from sources of visible emissions for time-averaged regulations. A time-averaged regulation is any regulation that requires averaging visible emission data to determine the opacity of visible emissions over a specific time period.

Method 203A is virtually identical to EPA's Method 9 of 40 CFR Part 60, Appendix A, except for the data-reduction procedures, which provide for averaging times other than 6 minutes. Therefore, using Method 203A with a 6-minute averaging time would be the same as following EPA Method 9. The certification procedures for this method are identical to those provided in Method 9 and are provided here, in full, for clarity and convenience. An example visible emission observation form and instructions for its use can be found in reference 7 of Section 17 of Method 9.

2.0 Summary of Method

The opacity of emissions from sources of visible emissions is determined visually by an observer certified according to the procedures in Section 10 of this method. Readings taken every 15 seconds are averaged over a time period specified in the applicable regulation ranging from 2 minutes to 6 minutes.

3.0 Definitions [Reserved]

4.0 Interferences [Reserved]

5.0 Safety [Reserved]

6.0 Equipment and Supplies

What equipment and supplies are needed?

6.1 Stop Watch. Two watches are required that provide a continuous display of time to the nearest second.

6.2 Compass (optional). A compass is useful for determining the direction of the emission point from the spot where the visible emissions (VE) observer stands and for determining the wind direction at the source. For accurate readings, the compass should be magnetic with resolution better than 10 degrees. It is suggested that the compass be jewel-mounted and liquid-filled to dampen the needle swing; map reading compasses are excellent.

6.3 Range Finder (optional). Range finders determine distances from the observer to the emission point. The

instrument should measure a distance of 1000 meters with a minimum accuracy of ± 10 percent.

6.4 Abney Level (optional). This device for determining the vertical viewing angle should measure within 5 degrees.

6.5 Sling Psychrometer (optional). In case of the formation of a steam plume, a wet- and dry-bulb thermometer, accurate to 0.5 °C, are mounted on a sturdy assembly and swung rapidly in the air in order to determine the relative humidity.

6.6 Binoculars (optional). Binoculars are recommended to help identify stacks and to characterize the plume. An 8 x 50 or 10 x 50 magnification, color-corrected coated lenses and rectilinear field of view is recommended.

6.7 Camera (optional). A camera is often used to document the emissions before and after the actual opacity determination.

6.8 Safety Equipment. The following safety equipment, which should be approved by the Occupational Safety and Health Association (OSHA), is recommended: orange or yellow hard hat, eye and ear protection, and steel-toed safety boots.

6.9 Clipboard and Accessories (optional). A clipboard, several ball-point pens (black ink recommended), a rubber

band, and several visible emission observation forms facilitate documentation.

7.0 Reagents and Standards (Reserved]

8.0 Sample Collection, Preservation, Storage, and Transport

What is the Test Procedure?

An observer qualified in accordance with Section 10 of this method must use the following procedures to visually determine the opacity of emissions from stationary sources.

8.1 Procedure for Emissions from Stacks. These procedures are applicable for visually determining the opacity of stack emissions by a qualified observer.

8.1.1 Position. You must stand at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140-degree sector to your back. Consistent with maintaining the above requirement as much as possible, you must make opacity observations from a position such that the line of vision is approximately perpendicular to the plume direction, and when observing opacity of emissions from rectangular outlets (e.g., roof monitors, open baghouses, non-circular stacks), approximately perpendicular to the longer axis of the outlet. You should not include more than one plume in the line of sight at a time when multiple plumes are involved and, in any case,

make opacity observations with the line of sight perpendicular to the longer axis of such a set of multiple stacks (e.g., stub stacks on baghouses).

8.1.2 Field Records. You must record the name of the plant, emission location, type of facility, observer's name and affiliation, a sketch of the observer's position relative to the source, and the date on a field data sheet. An example visible emission observation form can be found in reference 7 of Section 17 of this method. You must record the time, estimated distance to the emission location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), and plume background on the field data sheet at the time opacity readings are initiated and completed.

8.1.3 Observations. You must make opacity observations at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. Do not look continuously at the plume but, instead, observe the plume momentarily at 15-second intervals.

8.1.3.1 Attached Steam Plumes. When condensed water vapor is present within the plume as it emerges from the emission outlet, you must make opacity observations beyond the point in the plume at which condensed water vapor is no

longer visible. You must record the approximate distance from the emission outlet to the point in the plume at which the observations are made.

8.1.3.2 Detached Steam Plumes. When water vapor in the plume condenses and becomes visible at a distinct distance from the emission outlet, you must make the opacity observation at the emission outlet prior to the condensation of water vapor and the formation of the steam plume.

8.2 Recording Observations. You must record the opacity observations to the nearest 5 percent every 15 seconds on an observational record sheet such as the example visible emission observation form in reference 7 of Section 17 of this method. Each observation recorded represents the average opacity of emissions for a 15-second period. The overall length of time for which observations are recorded must be appropriate to the averaging time specified in the applicable regulation.

9.0 Quality Control [Reserved]

10.0 Calibration and Standardization

10.1 What are the Certification Requirements? To receive certification as a qualified observer, you must be trained and knowledgeable on the procedures in Section 8.0 of this method, be tested and demonstrate the ability to

assign opacity readings in 5 percent increments to 25 different black plumes and 25 different white plumes, with an error not to exceed 15 percent opacity on any one reading and an average error not to exceed 7.5 percent opacity in each category. You must be tested according to the procedures described in Section 10.2 of this method. Any smoke generator used pursuant to Section 10.2 of this method must be equipped with a smoke meter which meets the requirements of Section 10.3 of this method. Certification tests that do not meet the requirements of Sections 10.2 and 10.3 of this method are not valid.

The certification must be valid for a period of 6 months, and after each 6-month period, the qualification procedures must be repeated by an observer in order to retain certification.

10.2 What is the Certification Procedure? The certification test consists of showing the candidate a complete run of 50 plumes, 25 black plumes and 25 white plumes, generated by a smoke generator. Plumes must be presented in random order within each set of 25 black and 25 white plumes. The candidate assigns an opacity value to each plume and records the observation on a suitable form. At the completion of each run of 50 readings, the score of

the candidate is determined. If a candidate fails to qualify, the complete run of 50 readings must be repeated in any retest. The smoke test may be administered as part of a smoke school or training program, and may be preceded by training or familiarization runs of the smoke generator during which candidates are shown black and white plumes of known opacity.

10.3 Smoke Generator.

10.3.1 What are the Smoke Generator Specifications?

Any smoke generator used for the purpose of Section 10.2 of this method must be equipped with a smoke meter installed to measure opacity across the diameter of the smoke generator stack. The smoke meter output must display in-stack opacity, based upon a path length equal to the stack exit diameter on a full 0 to 100 percent chart recorder scale. The smoke meter optical design and performance must meet the specifications shown in Table 203A-1 of this method. The smoke meter must be calibrated as prescribed in Section 10.3.2 of this method prior to conducting each smoke reading test. At the completion of each test, the zero and span drift must be checked and, if the drift exceeds ± 1 percent opacity, the condition must be corrected prior to conducting any subsequent test runs. The smoke meter must be

demonstrated at the time of installation to meet the specifications listed in Table 203A-1 of this method. This demonstration must be repeated following any subsequent repair or replacement of the photocell or associated electronic circuitry including the chart recorder or output meter, or every 6 months, whichever occurs first.

10.3.2 How is the Smoke Meter Calibrated? The smoke meter is calibrated after allowing a minimum of 30 minutes warm-up by alternately producing simulated opacity of 0 percent and 100 percent. When a stable response at 0 percent or 100 percent is noted, the smoke meter is adjusted to produce an output of 0 percent or 100 percent, as appropriate. This calibration must be repeated until stable 0 percent and 100 percent readings are produced without adjustment. Simulated 0 percent and 100 percent opacity values may be produced by alternately switching the power to the light source on and off while the smoke generator is not producing smoke.

10.3.3 How is the Smoke Meter Evaluated? The smoke meter design and performance are to be evaluated as follows:

10.3.3.1 Light Source. You must verify from manufacturer's data and from voltage measurements made at

the lamp, as installed, that the lamp is operated within 5 percent of the nominal rated voltage.

10.3.3.2 Spectral Response of the Photocell. You must verify from manufacturer's data that the photocell has a photopic response; i.e., the spectral sensitivity of the cell must closely approximate the standard spectral-luminosity curve for photopic vision which is referenced in (b) of Table 203A-1 of this method.

10.3.3.3 Angle of View. You must check construction geometry to ensure that the total angle of view of the smoke plume, as seen by the photocell, does not exceed 15 degrees. Calculate the total angle of view as follows:

$$\phi_v = 2 \tan^{-1} (d/2L)$$

where:

ϕ_v = Total angle of view

d = The photocell diameter + the diameter of the limiting aperture

L = Distance from the photocell to the limiting aperture.

The limiting aperture is the point in the path between the photocell and the smoke plume where the angle of view is most restricted. In smoke generator smoke meters, this is normally an orifice plate.

10.3.3.4 Angle of Projection. You must check construction geometry to ensure that the total angle of projection of the lamp on the smoke plume does not exceed 15 degrees. Calculate the total angle of projection as follows:

$$\Phi_p = 2 \tan^{-1} (d/2L)$$

where:

Φ_p = Total angle of projection

d = The sum of the length of the lamp filament + the diameter of the limiting aperture

L = The distance from the lamp to the limiting aperture.

10.3.3.5 Calibration Error. Using neutral-density filters of known opacity, you must check the error between the actual response and the theoretical linear response of the smoke meter. This check is accomplished by first calibrating the smoke meter according to Section 10.3.2 of this method and then inserting a series of three neutral-density filters of nominal opacity of 20, 50, and 75 percent in the smoke meter path length. Use filters calibrated within 2 percent. Care should be taken when inserting the filters to prevent stray light from affecting the meter. Make a total of five non-consecutive readings for each

filter. The maximum opacity error on any one reading shall be ± 3 percent.

10.3.3.6 Zero and Span Drift. Determine the zero and span drift by calibrating and operating the smoke generator in a normal manner over a 1-hour period. The drift is measured by checking the zero and span at the end of this period.

10.3.3.7 Response Time. Determine the response time by producing the series of five simulated 0 percent and 100 percent opacity values and observing the time required to reach stable response. Opacity values of 0 percent and 100 percent may be simulated by alternately switching the power to the light source off and on while the smoke generator is not operating.

11.0 Analytical Procedures [Reserved]

12.0 Data Analysis and Calculations

12.1 Time-Averaged Regulations. A set of observations is composed of an appropriate number of consecutive observations determined by the averaging time specified (i.e., 8 observations for a two minute average). Divide the recorded observations into sets of appropriate time lengths for the specified averaging time. Sets must consist of consecutive observations; however, observations immediately

preceding and following interrupted observations shall be deemed consecutive. Sets need not be consecutive in time and in no case shall two sets overlap. For each set of observations, calculate the average opacity by summing the opacity readings taken over the appropriate time period and dividing by the number of readings. For example, for a 2-minute average, eight consecutive readings would be averaged by adding the eight readings and dividing by eight.

13.0 Method Performance

13.1 Time-averaging Performances. The accuracy of test procedures for time-averaged regulations was evaluated through field studies that compare the opacity readings to a transmissometer. Analysis of these data shows that, as the time interval for averaging increases, the positive error decreases. For example, over a 2-minute time period, 90 percent of the results underestimated opacity or overestimated opacity by less than 9.5 percent opacity, while over a 6-minute time period, 90 percent of the data have less than a 7.5 percent positive error. Overall, the field studies demonstrated a negative bias. Over a 2-minute time period, 57 percent of the data have zero or negative error, and over a 6-minute time period, 58 percent of the data have zero or negative error. This means that observers

are more likely to assign opacity values that are below, rather than above, the actual opacity value. Consequently, a larger percentage of noncompliance periods will be reported as compliant periods rather than compliant periods reported as violations. Table 203A-2 highlights the precision data results from the June 1985 report: "Opacity Errors for Averaging and Non Averaging Data Reduction and Reporting Techniques."

14.0 Pollution Prevention [Reserved]

15.0 Waste Management [Reserved]

16.0 Alternative Procedures [Reserved]

17.0 References

1. U.S. Environmental Protection Agency. Standards of Performance for New Stationary Sources; Appendix A; Method 9 for Visual Determination of the Opacity of Emissions from Stationary Sources. Final Rule. 39 FR 219. Washington, DC. U.S. Government Printing Office. November 12, 1974.
2. Office of Air and Radiation. "Quality Assurance Guideline for Visible Emission Training Programs." EPA-600/S4-83-011. Quality Assurance Division. Research Triangle Park, N.C. May 1982.
3. Office of Research and Development. "Method 9 - Visible Determination of the Opacity of Emissions from

Stationary Sources." February 1984. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume III, Section 3.1.2. Stationary Source Specific Methods. EPA-600-4-77-027b. August 1977. Office of Research and Development Publications, 26 West Clair Street, Cincinnati, OH.

4. Office of Air Quality Planning and Standards. "Opacity Error for Averaging and Non-averaging Data Reduction and Reporting Techniques." Final Report-SR-1-6-85. Emission Measurement Branch, Research Triangle Park, N.C. June 1985.

5. U.S. Environmental Protection Agency. Preparation, Adoption, and Submittal of State Implementation Plans. Methods for Measurement of PM_{10} Emissions from Stationary Sources. Final Rule. FEDERAL REGISTER. Washington, DC. U. S. Government Printing Office. Volume 55, No. 74. Pages 14246-14279. April 17, 1990.

6. Office of Air Quality Planning and Standards. "Collaborative Study of Opacity Observations of Fugitive Emissions from Unpaved Roads by Certified Observers." Emission Measurement Branch, Research Triangle Park, N.C. October 1986.

7. Office of Air Quality Planning and Standards. "Field Data Forms and Instructions for EPA Methods 203A, 203B, and 203C." EPA 455/R-93-005. Stationary Source Compliance Division, Washington, DC, June 1993.

18.0 Tables, Diagrams, Flowcharts, and Validation Data

TABLE 203A-1

SMOKE METER DESIGN AND PERFORMANCE SPECIFICATIONS

Parameter	Specification
a. Light Source	Incandescent lamp operated at nominal rated voltage
b. Spectral response of photocell	Photopic (daylight spectral response of the human eye - Citation 3)
c. Angle of view	15° maximum total angle
d. Angle of projection	15° maximum total angle
e. Calibration error	±3% opacity, maximum
f. Zero and span drift	±1% opacity, 30 minutes
g. Response time	5 seconds

TABLE 203A-2. PRECISION BETWEEN OBSERVERS: OPACITY AVERAGING

Averaging Period	Number of Observations	Standard Deviation (% Opacity)	Amount with < 7.5% Opacity Difference
15-second	140,250	3.4	87
2 minutes	17,694	2.6	92
3 minutes	11,836	2.4	92
6 minutes	5,954	2.1	93

**Method 203B--Visual Determination of Opacity of Emissions
From Stationary Sources for Time-Exception Regulations**

1.0 Scope and Application

What is Method 203B?

Method 203B is an example test method suitable for State Implementation Plans (SIPs) and is applicable to the determination of the opacity of emissions from sources of visible emissions for time-exception regulations. A time-exception regulation means any regulation that allows predefined periods of opacity above the otherwise applicable opacity limit (e.g., allowing exceedances of 20 percent opacity for 3 minutes in 1 hour.)

Method 203B is virtually identical to EPA's Method 9 of 40 CFR Part 60, Appendix A, except for the data-reduction procedures, which have been modified to apply to time-exception regulations. The certification procedures for this method are identical to those provided in Method 9. An example visible emission observation form and instructions for its use can be found in reference 7 of Section 17 of Method 203A.

2.0 Summary of Method

The opacity of emissions from sources of visible emissions is determined visually by a qualified observer.

3.0 Definitions [Reserved]**4.0 Interferences** [Reserved]**5.0 Safety** [Reserved]**6.0 Equipment and Supplies**

What equipment and supplies are needed?

The same as specified in Section 6.0 of Method 203A.

7.0 Reagents and Standards [Reserved]**8.0 Sample Collection, Preservation, Storage, and Transport**

What is the Test Procedure?

The observer qualified in accordance with Section 10 of Method 203A must use the following procedures for visually determining the opacity of emissions.

8.1 Procedures for Emissions From Stationary Sources. The procedures for emissions from stationary sources are the same as specified in 8.1 of Method 203A.

8.2 Recording Observations. You must record opacity observations to the nearest 5 percent at 15-second intervals on an observational record sheet. Each observation recorded represents the average opacity of emissions for a 15-second period. The overall length of time for which observations are recorded must be appropriate to the applicable regulation.

9.0 Quality Control [Reserved]

10.0 Calibration and Standardization

The Calibration and Standardization requirements are the same as specified in Section 10 of Method 203A.

11.0 Analytical Procedures [Reserved]

12.0 Data Analysis and Calculations

Data Reduction for Time-Exception Regulations. For a time-exception regulation, reduce opacity observations as follows: count the number of observations above the applicable standard and multiply that number by 0.25 to determine the minutes of emissions above the target opacity.

13.0 Method Performance

13.1 Time-Exception Regulations. "Opacity Errors for Averaging and Non-Averaging Data Reduction and Reporting Techniques" analyzed the time errors associated with false compliance or false non-compliance determinations resulting from a sample of 1110 opacity readings with 6-minute observation periods. The study applied a 20 percent opacity standard. Fifty one percent of the data showed zero error in time determinations. The standard deviation was 97.5 seconds for the 6-minute time period.

13.1.1 Overall, the study showed a negative bias. Each reading is associated with a 15-second block of time. The readings were multiplied by 15 seconds and the resulting

time spent above the standard was compared to the transmissometer results. The average amount of time that observations deviated from the transmissometer's determinations was -8.3 seconds. Seventy percent of the time determinations were either correct or underestimated the time of excess emissions. Consequently, a larger percentage of noncompliance periods would be reported as compliant periods rather than compliant periods reported as violations.

13.1.2 Some time-exception regulations reduce the data by averaging over 1-minute periods and then counting those minutes above the standard. This data reduction procedure results in a less stringent standard than determinations resulting from data reduction procedures of Method 203B.

14.0 Pollution Prevention [Reserved]

15.0 Waste Management [Reserved]

16.0 Alternative Procedures [Reserved]

17.0 References

The references are the same as specified in Section 17 of Method 203A.

18.0 Tables, Diagrams, Flowcharts, and Validation Data

[Reserved]

**Method 203C--Visual Determination of Opacity of Emissions
From Stationary Sources for Instantaneous Limitation
Regulations.**

1.0 Scope and Application

What is Method 203C?

Method 203C is an example test method suitable for State Implementation Plans (SIPs) and is applicable to the determination of the opacity of emissions from sources of visible emissions for regulations with an instantaneous opacity limitation. An instantaneous opacity limitation is an opacity limit which is never to be exceeded.

Method 203C is virtually identical to EPA's Method 9 of 40 CFR Part 60, Appendix A, except for 5-second reading intervals and the data-reduction procedures, which have been modified for instantaneous limitation regulations. The certification procedures for this method are virtually identical to Method 9. An example visible emission observation form and instructions for its use can be found in reference 7 of Section 17 of Method 203A.

2.0 Summary of Method

The opacity of emissions from sources of visible emissions is determined visually by an observer certified according to the procedures in Section 10 of Method 203A.

3.0 Definitions [Reserved]**4.0 Interferences** [Reserved]**5.0 Safety** [Reserved]**6.0 Equipment and Supplies**

The equipment and supplies used are the same as Section 6.0 of Method 203A.

7.0 Reagents and Standards [Reserved]**8.0 Sample Collection, Preservation, Storage, and Transport**

What is the Test Procedure?

The qualified observer must use the following procedures for visually determining the opacity of emissions.

8.1 Procedures for Emissions From Stationary Sources. These are the same as Section 8.1 of Method 203A.

8.1.1 Position. Same as Section 8.1.1 of Method 203A.

8.1.2 Field Records. Same as Section 8.1.2 of Method 203A.

8.1.3 Observations. Make opacity observations at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. Do not look continuously at the plume, instead, observe the plume momentarily at 5-second intervals.

8.1.3.1 Attached Steam Plumes. Same as Section 8.1.3.1 of Method 203A.

8.1.3.2 Detached Steam Plumes. Same as Section 8.1.3.2 of Method 203A.

8.2 Recording Observations. You must record opacity observations to the nearest 5 percent at 5-second intervals on an observational record sheet. Each observation recorded represents the average of emissions for the 5-second period. The overall time for which recordings are made must be of a length appropriate to the applicable regulation for which opacity is being measured.

9.0 Quality Control [Reserved]

10.0 Calibration and Standardization

The calibration and standardization procedures are the same as Section 10 of Method 203A.

11.0 Analytical Procedures [Reserved]

12.0 Data Analysis and Calculations

12.1 Data Reduction for Instantaneous Limitation Regulations. For an instantaneous limitation regulation, a 1-minute averaging time will be used. You must divide the observations recorded on the record sheet into sets of consecutive observations. A set is composed of the consecutive observations made in 1 minute. Sets need not be

consecutive in time, and in no case must two sets overlap. You must reduce opacity observations by dividing the sum of all observations recorded in a set by the number of observations recorded in each set.

12.2 Reduce opacity observations by averaging 12 consecutive observations recorded at 5-second intervals. Divide the observations recorded on the record sheet into sets of 12 consecutive observations. For each set of 12 observations, calculate the average by summing the opacity of the 12 observations and dividing this sum by 12.

13.0 Method Performance

The results of the "Collaborative Study of Opacity Observations at Five-second Intervals by Certified Observers" are almost identical to those of previous studies of Method 9 observations taken at 15-second intervals and indicate that observers can make valid observations at 5-second intervals. The average difference of all observations from the transmissometer values was 8.8 percent opacity, which shows a fairly high negative bias. Underestimating the opacity of the visible emissions is more likely than overestimating the opacity of the emissions.

14.0 Pollution Prevention [Reserved]

15.0 Waste Management [Reserved]

16.0 Alternative Procedures [Reserved]**17.0 References**

The references are the same as references 1-7 in Method 203A in addition to the following:

1. Office of Air Quality Planning and Standards.
"Collaborative Study of Opacity Observations at Five-second Intervals by Certified Observers." Docket A-84-22, IV-A-2. Emission Measurement Branch, Research Triangle Park, N.C. September 1990.

18.0 Tables, Diagrams, Flowcharts, and Validation Data

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PART 60 - [Amended]

3. The authority citation for Part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7413, 7414, 7416, 7601, and 7602.

4. Amend §60.106(b)(3) by revising the equation to read as follows:

§ 60.106 Test methods and procedures.

* * * * *
(b) * * *
(3) * * *

$$R_c = K_1 Q_r (\%CO_2 + \%CO) + K_2 Q_a - K_3 Q_r (\%CO/2 + \%CO_2 + \%O_2)$$

* * * * *

5. Revise § 60.284(f) to read as follows:

§ 60.284 Monitoring of emissions and operations.

* * * * *

(f) The procedures under § 60.13 shall be followed for installation, evaluation, and operation of the continuous monitoring systems required under this section. All continuous monitoring systems shall be operated in accordance with the applicable procedures under Performance Specifications 1, 3, and 5 of appendix B of this part.

§ 60.752 [Amended]

6. Revise § 60.752(b)(2)(iii)(A) to read as follows:

§ 60.752 standards for air emissions from municipal solid waste landfills.

* * * * *

(b) * * *

(2) * * *

(iii) * * *

(A) An open flare designed and operated in accordance with § 60.18 except as noted in § 60.754(e);

* * * * *

§ 60.754 [Amended]

7. Amend § 60.754 by adding paragraph (e) to read as follows:

§ 60.754 Test Methods and Procedures.

* * * * *

(e) For the performance test required in § 60.752(b)(2)(iii)(A), the net heating value of the combusted landfill gas as determined in § 60.18(f)(3) is calculated from the concentration of methane in the landfill gas as measured by Method 3C. A minimum of three 30-minute Method 3C samples are determined. The measurement of other organic components, hydrogen, and carbon monoxide is not applicable. Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under § 60.18(f)(4).

8. In Appendix A-7, Method 24 is amended by adding Section 6.7 to read as follows:

Appendix A-7 to Part 60 - Test Methods 19 through 25E

* * * * *

Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings

* * * * *

6.7 ASTM D 6419-00, Test Method for Volatile Content of Sheet-Fed and Coldset Web Offset Printing Inks.

* * * * *

9. In Appendix B, Performance Specification 2 is amended by adding a sentence to the end of Section 13.2 to read as follows:

Appendix B to Part 60 - Performance Specifications

* * * * *

Performance Specification 2 - Specifications and Test Procedures for SO₂ and NO_x Continuous Emission Monitoring Systems in Stationary Sources

* * * * *

13.2 * * * For SO₂ emission standards of 130 to and including 86 ng/J (0.30 and 0.20 lb/million Btu), inclusive, use 15 percent of the applicable standard; below 86 ng/J (0.20 lb/million Btu), use 20 percent of the emission standard.

* * * * *