6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51, 60, and 63

[EPA-HQ-OAR-2020-0556; FRL-8335-02-OAR]

RIN 2060-AV35

Testing Provisions for Air Emission Sources

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This action promulgates corrections and updates to regulations for source testing of emissions under various rules. This final rule includes corrections to typographical and technical errors, updates to outdated procedures, and revisions to add clarity and consistency with other monitoring requirements. The revisions will improve the quality of data but will not impose new substantive requirements on source owners or operators.

DATES: This rule is effective on **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The incorporation by reference of certain material listed in the rule is approved by the Director of the Federal Register on **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The incorporation by reference of certain other material listed in the rule was approved by the Director of the Federal Register as of March 18, 2008, April 16, 2012, and May 15, 2015.

ADDRESSES: The EPA has established a docket for this action under Docket ID No. EPA-HQ-OAR-2020-0556. All documents in the docket are listed on the *www.regulations.gov* website. Although listed in the index, some information is not publicly available, e.g., confidential business information 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. Publicly available docket materials are available electronically through *www.regulations.gov*.

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SUPPLEMENTARY INFORMATION:

The supplementary information in this preamble is organized as follows:

This document is a prepublication version, signed by EPA Administrator, Michael S. Regan on 3/7/2023. We have taken steps to ensure the accuracy of this version, but it is not the official version.

K. Congressional Review Act (CRA)

I. General Information

A. Does this action apply to me?

The amendments promulgated in this final rule apply to industries that are subject to the current provisions of 40 CFR parts 51, 60, and 63. We did not list all the specific affected industries or their North American Industry Classification System (NAICS) codes herein since there are many affected sources in numerous NAICS categories. If you have any questions regarding the applicability of this action to a particular entity, consult either the air permitting authority for the entity or your EPA Regional representative as listed in 40 CFR 63.13.

B. What action is the agency taking?

We are promulgating corrections and revisions to source test methods, performance specifications (PS), and associated regulations. The revisions correct typographical and technical errors, provide updates to testing procedures, and add clarity and consistency among monitoring requirements.

C. Judicial Review

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

II. Background

The EPA catalogs errors and corrections, as well as necessary revisions to test methods, performance specifications, and associated regulations in 40 CFR parts 51, 60, and 63 and periodically updates and revises these provisions. The most recent updates and revisions were proposed on April 26, 2022 (87 FR 24488). The public comment period for the present proposed revisions ended June 27, 2022, and 11 comment letters were received from the public. This final rule was developed based on public comments that the agency received on the proposed rule.

III. Incorporation by Reference

The EPA is incorporating by reference two ASTM International (ASTM) standards. Specifically, the EPA has incorporated ASTM D6216-20, which covers the procedure for certifying continuous opacity monitors and includes design and performance specifications, test procedures, and quality assurance (QA) requirements to ensure that continuous opacity monitors meet minimum design and calibration requirements necessary for accurate opacity monitoring measurements in regulatory environmental opacity monitoring applications subject to 10 percent or higher opacity standards. The EPA also updated the incorporation by reference for ASTM D6784, a test method for elemental, oxidized, particle-bound, and total mercury in emissions from stationary sources, from the 2002 version to the 2016 version. This update applies to incorporations by reference in 40 CFR part 60, appendix B, Performance Specification 12A for continuous monitoring of mercury emissions. The EPA updated the incorporations by reference in 40 CFR part 63 for use of ASTM D6784 under table 5 and appendix A of Subpart UUUUU, for mercury emissions measurement and monitoring. Both the ASTM D6216-20 and ASTM D6784-16 standards were developed and adopted by the ASTM International. The ASTM standards may be obtained from *www.astm.org* or from the ASTM at 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

The EPA also is incorporating by reference the Standard Methods Committee Method 5210 Biochemical Oxygen Demand (BOD) from "Standard Methods for the Examination of Waste and Wastewater." This standard is acceptable as an alternative to method 405.1 and is available from the Standards Method Committee at *www.standardmethods.org* or by telephone at (844) 232-3707.

The EPA also made specific modifications to requirements in an existing incorporation by reference, the ASTM E2515-11 test method. The stipulations modify the post-test leak check procedures as well as add procedures for performing leak checks during a sampling run.

The following standards are already currently incorporated in the location where they appear in the rule: ANSI/ASME PTC 19.10-1981, ASTM-D6348-03. ASTM-D6348-03(R2010), ASTM-D6522-00 (2005).

IV. Summary of Amendments

A. Method 201A of Appendix M of Part 51

In method 201A, the erroneous equation 25 in section 12.5 is corrected.

B. General Provisions (Subpart A) of Part 60

In the General Provisions of part 60, § 60.17(h) is revised to add ASTM D6216-20 and D6784-16 to the list of incorporations by reference and to re-number the remaining consensus standards that are incorporated by reference in alpha-numeric order.

C. Standards of Performance for New Residential Wood Heaters (Subpart AAA) of Part 60

Subpart AAA is amended to add stipulations for use of the ASTM E2515-11 test method. The stipulations modify the post-test leak check procedures as well as add procedures for performing leak checks during a sampling run. The stipulations to ASTM E2515-11 are necessary as we have learned that the quality assurance/quality control (QA/QC) requirements for leak tests required by ASTM E2515-11, section 9.6.5.1 are not sufficient to provide assurance of the sampling system integrity. Additionally, the language of ASTM E2515-11, section 9.6.5.1 currently allows for averaging the particulate matter (PM) results from a non-leaking sampling system with those from a leaking sampling system, which effectively reduces reported PM emissions by as much as half, rendering the test method inappropriate for compliance determination.

We revised the language in § 60.534(c) and developed new language to replace ASTM E2515-11, section 9.6.5.1 by adding § 60.534(c)(1), which specifies appropriate post-test leak check procedures and in § 60.534(c)(2) by adding procedures for performing leak checks during a sampling run. These modifications bring appropriate QA/QC requirements to PM measurements required by the rule and eliminate opportunity for emissions test results to be considered valid when a leaking sampling system allows dilution of the PM sample(s). This language was amended slightly based on comments received to further clarify that sample volume collected during the process of conducting leak checks during a test run is not to be included in the overall sampling volume as it would dilute the collected sample volume were it treated in that manner.

In § 60.534(d), the first hour PM emissions measurements are to be conducted using a separate ASTM E2515-11 sampling train operated concurrently with the paired ASTM E2515-11 sampling trains used in compliance PM sampling. In this manner, the first hour PM emissions will be collected appropriately, and the compliance test measurements will not be impacted by a sampling pause for filter replacement at the 1-hour mark.

The regulatory language in § 60.539b(b) is revised to include General Provisions that were added to § 60.8(f)(2) (81 FR 59801, August 30, 2016) and were inadvertently exempted from inclusion in subpart AAA as that rule, as promulgated in 2015, exempted § 60.8(f) in its entirety. The exemption promulgated in subpart AAA at § 60.539b(b) was intended to exempt those affected sources from § 60.8(f), which, at the time, consisted of what is now currently § 60.8(f)(1) and is specific to compliance testing results consisting of the arithmetic mean of three replicate tests. These modifications will ensure that emissions test reporting includes all data necessary to assess and assure the quality of the reported emissions data and appropriately describes and identifies the specific unit covered by the emissions test report. Since compliance tests in this category consist of a single test, the original regulatory exemption to the General Provisions of § 60.8(f)(1) is retained.

D. Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters, and Forced-Air Furnaces (Subpart QQQQ) of Part 60

The erroneous PM emission limits in g/MJ in § 60.5474(b)(2), (b)(3) and (b)(6) are corrected.

In addition, subpart QQQQ is amended to add stipulations for use of the ASTM E2515-11 test method. The stipulations modify the post-test leak check procedures as well as add procedures for performing leak checks during a sampling run. The stipulations to ASTM E2515-11 are necessary as we have learned that the QA/QC requirements for leak tests required by ASTM E2515-11, section 9.6.5.1 are not sufficient to provide assurance of the sampling system integrity. Additionally, the language of ASTM E2515-11, section 9.6.5.1 currently allows for averaging the PM results from a non-leaking sampling system with those from a leaking sampling system, which effectively reduces reported PM emissions by as much as half, rendering the test method inappropriate for compliance determination. The language in § 60.5476(c)(5) and § 60.5476(c)(6) is replaced with the word “reserved.”

We revised the language in § 60.5476(f) and developed new language to replace ASTM E2515-11, section 9.6.5.1 by adding § 60.5476(f)(1), which specifies appropriate post-test leak check procedures and in § 60.5476(f)(2) by adding procedures for performing leak checks during a sampling run. These modifications bring appropriate QA/QC requirements to PM measurements required by the rule and eliminate opportunity for emissions test results to be considered valid when a leaking sampling system allows dilution of the PM sample(s). This language was amended slightly based on comments received to further clarify that sample volume collected during the process of conducting leak checks during a test run should not be included in the overall sampling volume as it would dilute the collected sample volume were it treated in that manner.

In § 60.5476(f), we are also requiring that first hour PM emissions measurements be conducted using a separate ASTM E2515-11 sampling train operated concurrently with the paired ASTM E2515-11 sampling trains used in compliance PM sampling. In this manner, the first hour PM emissions will be collected appropriately, and the compliance test measurements will not be impacted by a sampling pause for filter replacement at the one-hour mark. In § 60.5476(f), we incorporated language about filter type and size acceptance currently in § 60.5476(c)(5). Additionally, we removed language relating to EN 303-5 currently found in § 60.5476(f).

The regulatory language in § 60.5483(b) is revised to include General Provisions that were added to § 60.8(f)(2) (81 FR 59801, August 30, 2016) and were inadvertently exempted from subpart QQQQ as that rule, as promulgated in 2015, exempted § 60.8(f) in its entirety. The exemption promulgated in subpart QQQQ at § 60.5483(b) was intended for those affected sources subject to § 60.8(f), which, at the time, consisted of what is currently § 60.8(f)(1) and is specific to compliance testing results consisting of the arithmetic mean of three replicate tests. These modifications ensure that emissions test reporting includes all data necessary to assess and assure the quality of the reported emissions data and appropriately describes and identifies the specific unit covered by the emissions test report. Since compliance tests in this category consist of a single test, the original regulatory exemption to the General Provisions of § 60.8(f)(1) is retained.

In subpart QQQQ, in method 28WHH, in section 13.8, the erroneous CO calculation instructions for equation 23 are corrected to include the summation of CO emissions over four test categories instead of three.

E. Method 1 of Appendix A-1 of Part 60

In method 1, the heading in section 11.5.1 is moved to 11.5, and the word “procedure” is moved to the first sentence in section 11.5.1 for clarity. Section 11.5.2 is revised to clearly specify the number of traverse points that must be used for sampling and velocity measurements once a directional flow-sensing probe procedure has been used to demonstrate that an alternative measurement site is acceptable. The last sentence of section 11.5.2, which appears unclear as to what “same traverse point number and locations” it is referring, is revised to instead specify the “same minimum of 40 traverse points for circular ducts and 42 points for rectangular ducts” that are used in the alternative measurement procedure of section 11.5.3.

Also, table 1-2 is revised to correct the erroneous requirement that calls for 99.9 percent of stack diameter from the inside wall to the traverse point to 98.9 percent.

F. Method 4 of Appendix A-3 of Part 60

In method 4, table 4-3 is formatted correctly.

G. Method 7 of Appendix A-4 of Part 60

In method 7, section 10.1.3 is revised to change the word “should” to “shall” in the last sentence because the difference between the calculated concentration values and the actual concentrations are required to be less than 7 percent for all standards.

H. Method 19 of Appendix A-7 of Part 60

In method 19, the erroneous equation 19-5 is corrected.

I. Method 25 of Appendix A-7 of Part 60

In method 25, a record and report section (section 12.9) was added to confirm that the quality control (QC) is successfully performed. Also, the erroneous Figure 25-6 is corrected.

J. Method 25C of Appendix A-7 of Part 60

In method 25C, in response to a comment, the first sentence in section 9.1 is corrected to read, “If the 3-year average annual rainfall is greater than 20 inches, verify that landfill gas sample contains less than 20 percent N_2 or 5 percent O_2.” Also, the nomenclature in section 12.1 for C_{N2} and C_{mN2} is revised to provide clarity. More specifically, C_{N2} is changed from “N_2 concentration in the diluted sample gas” to “N_2 concentration in the landfill gas sample,” and the C_{mN2} is changed from “Measured N_2 concentration, fraction in landfill gas” to “Measured N_2 concentration, diluted landfill gas sample.”

K. Method 26 of Appendix A-8 of Part 60

In method 26, erroneous equations 26-4 and 26-5 in sections 12.4 and 12.5, respectively, are revised to be consistent with the nomenclature in section 12.1.

L. Performance Specification 1 of Appendix B of Part 60

In Performance Specification 1, references to ASTM D6216-12 (in sections 2.1, 3.1, 6.1, 8.1(1), 8.1(2)(iii), 8.1(3)(ii), 8.2(1), 8.2(2), 8.2(3), 9.0, 12.1, 13.1, 13.2, and 16.0 reference 8) are replaced with ASTM D6216-20. Note: If the initial certification of the continuous opacity monitoring system (COMS) has already occurred using D6216-98, D6216-03, D6216-07, or D6216-12, it will not be necessary to recertify using D6216-20.

Also, in Performance Specification 1, section 8.1(2)(iii) is revised by removing the next to the last sentence, which reads, "The opacities of the two locations or paths may be measured at different times but must represent the same process operating conditions," because the statement is confusing and unclear; furthermore, it is unlikely that one would achieve the same conditions at two different times.

M. Performance Specification 2 of Appendix B of Part 60

In Performance Specification 2, in section 8.3.3, a sentence is added to clarify that during a calibration, the reference gas is to be introduced into the sampling system prior to any sample conditioning or filtration equipment and must pass through as much of the probe as is practical. In section 12.5, minor revisions are made to clarify that relative accuracy (RA) test results are expressed as a percent of emission rate or concentration (units of the applicable standard) and the definition of the average reference method (RM) value for Equation 2-6.

N. Performance Specification 4B of Appendix B of Part 60

The entire Performance Specification 4B is updated to the Environmental Monitoring Management Council (EMMC) methods format used for all other performance specifications. In response to comment, some of the references to other sections are replaced with text.

O. Performance Specification 6 of Appendix B of Part 60

In Performance Specification 6, section 13.2 is revised to specifically state the relative accuracy criteria including significant figures. On October 7, 2020 (85 FR 63394), we revised section 13.2 of Performance Specification 6 to make the relative accuracy calculations and criteria consistent with Performance Specification 2 and offer an alternate calculation and criterion for low emission concentration/rate situations; however, we neglected to specifically cite the alternate relative accuracy criterion from Performance Specification 2 for low emission sources and to ensure consistency with Performance Specification 2 with regard to significant figures in the relative accuracy criteria. In response to comment, we are adding “you may elect to” to the last sentence in section 13.2 to clarify that the 10% RA is an option as opposed to a requirement.

P. Performance Specification 12A of Appendix B of Part 60

We are revising the references (in sections 8.4.2, 8.4.4, 8.4.5, 8.4.6.1, and 17.5 and the footnote to Figure 12A-3) to ASTM D6784, Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method), to update them from the 2002 version to the latest version, which was authorized in 2016.

The capabilities of mercury CEMS have improved since initial deployment to support regulations over a decade ago. Therefore, we are revising section 13.3 to modify the alternative relative accuracy criterion such that: (1) it applies only at mercury concentrations less than 2.5 µg/scm and (2) the difference between the average reference method and CEMS values added to the confidence coefficient is now 0.5 µg/scm. This revised criterion is consistent with revisions that we made to the mercury monitoring requirements in 40 CFR 63, subpart UUUUU (81 FR 20172, April 6, 2016).

Q. Performance Specification 16 of Appendix B of Part 60

In Performance Specification 16, several corrections and modifications are made to clarify the intent of the requirements. In section 1.1, the language is revised to make it clear that if a PEMS (predictive emission monitoring system) contains a diluent component, then the diluent component must be tested as well. Also, in section 1.1, the language referring to PS-17 is removed because PS-17 was not promulgated.

In sections 3.11 and 3.12, language is added to define commonly used acronyms, and in section 3.12, the language is corrected to indicate that the relative accuracy test audit (RATA) is to be conducted as specified in section 8.2.

In section 9.1, the QA/QC Summary chart is corrected to reflect the language found in section 2.2, which indicates that the relative accuracy audit (RAA) is required on all PEMS and not just those classified as compliance PEMS. The QA/QC Summary Chart is also modified to align the criteria for a RAA with that found in section 13.5.

In section 9.4, we proposed to correct the language stating a RATA is to be conducted at the normal operating level to indicate the RATA is to be conducted as specified in section 8.2. Also in section 9.4, we proposed to remove the statement that the statistical tests in section 8.3 are not required for the yearly RATA. However, based on public comment, we are not making any revisions to section 9.4 at this time.

In section 12.3.2, we proposed to remove the alternative criteria language because it does not apply to F-factor determinations. However, based on public comment, we have decided not to make changes to section 12.3.2 at this time.

In sections 13.1 and 13.5, the language is modified to add the corresponding alternative criteria in units of lb/mmBtu. Although, we did not propose a change in the criteria for applying the 2 ppm difference in the proposed rule, we agree with a public comment that the 20 ppm criteria in section 13.5 should be the same as the 10 ppm criteria in section 13.1, so section 13.5 is revised to reflect this.

R. Procedure 1 of Appendix F of Part 60

In Procedure 1, in section 4.1, a sentence is added to clarify that during a calibration, the reference gas is to be introduced into the sampling system prior to any sample conditioning or filtration equipment and must pass through as much of the probe as is practical. Section 5.2.3 (2) is modified to refine the alternative cylinder gas audit (CGA) criteria in response to the use of analyzers with lower span values. In section 6.2, to provide clarity and clear up any confusion, the language referring to the relevant performance specification is removed, and the language referring to the use of Equation 1-1 is inserted.

S. Procedure 5 of Appendix F of Part 60

Regulated entities have pointed out that we did not include criteria for the system integrity check required in Procedure 5. In section 2.5, we clarified that ongoing daily calibration of the Hg CEMS must be conducted using elemental mercury reference gas. This is consistent with revisions that we made to the Hg monitoring requirements in 40 CFR 63, subpart UUUUU (81 FR 20172, April 6, 2016). We revised the title of section 4.0 and added section 4.4 to explain more explicitly the procedure for conducting the system integrity check as well as to provide the criteria for passing the check. In response to comment, we changed “calendar” days to “operating” days in the first sentence in section 4.4 to provide harmonization with the Mercury Air Toxics Standards (MATS) Rule (40 CFR Part 63, subpart UUUUU). Also, in response to comment, we revised the acceptance criteria for the system integrity check in section 4.4 to better comport with the MATS Rule. The acceptance criteria for the system integrity check now reads “The absolute value of the difference between the Hg CEMS output response and the reference gas must be less than or equal to 10.0 percent of the reference gas value or 0.8 µg/scm.”

In section 5.1.3, to add clarity, we inserted language referring to Equation 1-1 of Procedure 1 for calculating relative accuracy.

T. General Provisions (Subpart A) of Part 63

In the General Provisions of part 63, § 63.14 is revised to: (1) add ASTM D6784-16 to paragraph (h) and (2) add “Standard Methods for the Examination of Waste and Wastewater” method 5210 to paragraph (u).

U. National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry (Subpart S) of Part 63

In subpart S, the existing reference in 40 CFR 63.457(c)(4) to method 405.1 of part 136 of chapter 40 for the measurement of biochemical oxygen demand (BOD) is no longer valid, as method 405.1 was withdrawn in 2007. It was replaced with Biochemical Oxygen Demand Standard Methods 5210 B (72 FR 11199, March 12, 2007), which has been previously approved in test plans for measuring BOD to demonstrate compliance with the requirements of subpart S. In § 63.457(c)(4), the reference to method 405.1 is replaced with reference to method 5210B. The parent method, method 5210, which includes method 5210B, is also incorporated by reference in 40 CFR 63.14.

V. National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors (Subpart EEE) of Part 63

In the appendix to subpart EEE, the erroneous language regarding an Interference Response Test in the introductory paragraph of section 5 is removed, and section 5.3 in its entirety is removed.

W. National Emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating (Subpart JJJJ) of Part 63

In 2009, revisions were made to § 63.3360(e)(1)(viii) to clarify that the results of method 25 or method 25A were being used to determine "total organic volatile matter" (85 FR 41276). At the time, the use of the terminology "total gaseous non-methane organic volatile organic matter" in § 63.3360(e)(1)(vi) was overlooked. We are revising § 63.3360(e)(1)(vi) by removing the term "non-methane" to be consistent with § 63.3360(e)(1)(viii).

X. National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (Subpart ZZZZ) of Part 63

We have received multiple inquiries regarding the requirements in table 4 of Subpart ZZZZ that are used to measure the exhaust gas moisture when measuring the concentration of carbon monoxide (CO), formaldehyde, or total hydrocarbon (THC) to demonstrate compliance with the rule. It was first pointed out that it is not always necessary to measure that exhaust gas moisture when measuring CO. We are adding language to all three sections of table 4 stating that that the moisture measurement is only necessary when needed to correct the CO, formaldehyde, THC and/or O_2 measurements to a dry basis.

Y. National Emission Standards for Hazardous Air Pollutants: Engine Test Cells/Stands Residual Risk and Technology Review (Subpart PPPPP) of Part 63

In subpart PPPPP, the existing erroneous statement in § 63.9306(d)(2)(iv) is corrected to read, "Using a pressure sensor with measurement sensitivity of 0.002 inches water, check gauge calibration quarterly and transducer calibration monthly." Also, in subpart PPPPP, the existing erroneous statement in § 63.9322(a)(1) is corrected to read, "The capture system meets the criteria in Method 204 of appendix M to 40 CFR part 51 for a permanent total enclosure (PE) and directs all the exhaust gases from the enclosure to an add-on control device."

Z. National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (Subpart UUUUU) of Part 63

We are revising the references in sections 4.1.1.5 and 4.1.1.5.1 in subpart UUUUU, appendix A to ASTM Method D6784, Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method), to update them from the 2002 version to the latest version, which was authorized in 2016. In table 5, we are adding ASTM Method D6784-16 as a mercury testing option as it was inadvertently left out previously.

AA. Method 315 of Appendix A of Part 63

Section 16.2 is mislabeled as section 6.2 and is corrected.

BB. Method 323 of Appendix A of Part 63

In method 323, sections 10.1 and 10.3 are revised to require best laboratory practices. The nomenclature in section 12.1 is revised to include "b," which is the intercept of the calibration curve at zero concentration and revise K_c. These additions are necessary because equation 323-5 in section 12.6 is revised to reflect changes in calibration procedures for calculating the mass of formaldehyde.

V. Public Comments on the Proposed Rule

Eleven comment letters were received from the public on the proposed rule. The public comments and the agency's responses are summarized in the Response to Comments document located in the docket for this rule. See the **ADDRESSES** section of this preamble.

VI. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at https://www.epa.gov/laws-regulations/laws-and-executive-orders.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was, therefore, not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA. The amendments to test methods, performance specifications, and testing regulations only make corrections, updates, and clarifications to existing testing methodology.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. This final rule will not impose emission measurement requirements beyond those specified in the current regulations, nor does it change any emission standard.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

E. Executive Order 13132: Federalism

This action 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.

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

This action does not have tribal implications, as specified in Executive Order 13175. This action corrects and updates existing testing regulations. Thus, Executive Order 13175 does not apply to this action.

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

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

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

This action is not subject to Executive Order 13211 because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act and 1 CFR Part 51

This action involves technical standards. The EPA used ASTM D6216-20 for continuous opacity monitors in Performance Specification 1. The ASTM D6216-20 standard covers the procedure for certifying continuous opacity monitors and includes design and performance specifications, test procedures, and QA requirements to ensure that continuous opacity monitors meet minimum design and calibration requirements, necessary in part, for accurate opacity monitoring measurements in regulatory environmental opacity monitoring applications subject to 10 percent or higher opacity standards. The EPA also updated the version of ASTM D6784, a test method for elemental, oxidized, particle-bound, and total mercury in emissions from stationary sources, from the 2002 to 2016 version in the references contained in 40 CFR part 60, appendix B, Performance Specification 12A for continuous monitoring of mercury emissions. The EPA updated the version of ASTM D6784 referenced in table 5 and appendix A of Subpart UUUUU in 40 CFR part 63, for mercury emissions measurement and monitoring.

The EPA also used the Standard Methods Committee Method 5210 Biochemical Oxygen Demand (BOD) from “Standard Methods for the Examination of Water and Wastewater.” Section B of this standard, 5-day BOD, is acceptable as an alternative to method 405.1.

The EPA added language to correct a portion of the ASTM E2515-11 test method. The stipulations modified the post-test leak check procedures as well as added procedures for performing leak checks during a sampling run. The stipulations to ASTM E2515-11 are necessary as we have learned that the quality assurance/quality control (QA/QC) requirements for leak tests required by ASTM E2515-11, section 9.6.5.1 are not sufficient to provide assurance of the sampling system integrity. Additionally, the language of ASTM E2515-11, section 9.6.5.1 currently allows for averaging the PM results from a non-leaking sampling system with those from a leaking sampling system which effectively reduces reported PM emissions by as much as half, rendering the test method inappropriate for compliance determination.

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

Executive Order 12898 (59 FR 7629, February 16, 1994) directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations (people of color) and low-income populations.

The EPA believes that this type of action does not concern human health or environmental conditions and, therefore, cannot be evaluated with respect to potentially disproportionate and adverse effects on people of color, low-income populations and/or indigenous peoples because it does not establish an environmental health or safety standard. This action corrects, updates, and provides clarity to existing testing regulations.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each house of the Congress and to the Comptroller General of the United States. This action is not a "major rule" as defined by 5 U.S.C. 804(2).

List of Subjects

40 CFR Part 51

Environmental protection, Air pollution control, Performance specifications, Test methods and procedures.

40 CFR Part 60

Environmental protection, Air pollution control, Incorporation by reference, Performance specifications, Test methods and procedures.

40 CFR Part 63

Environmental protection, Air pollution control, Incorporation by reference, Performance specifications, Test methods and procedures.

Dated:

Michael S. Regan,

Administrator.

For the reasons set forth in the preamble, the Environmental Protection Agency amends title 40, chapter I of the Code of Federal Regulations 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: 23 U.S.C. 101; 42 U.S.C. 7401-7671q.

2. Amend section 12.5 in method 201A of appendix M to part 51 by revising equation 25 to read as follows:

Appendix M to Part 51-Recommended Test Methods for State Implementation Plans

* * * * *

Method 201A-Determination of PM_{10} and $PM_{2.5}$ Emissions From Stationary Sources (Constant Sampling Rate Procedure)

* * * * *

12.0 Calculations and Data Analysis

* * * * *

12.5 Equations. Use the following equations to complete the calculations required in this test method.

* * * * *

$$\Delta p_s = \Delta p_m \left[\frac{C_p'}{C_p}\right]^2 \quad \text{(Eq. 25)}$$

* * * * *

PART 60-STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

3. The authority citation of part 60 is revised to read as follows:

Authority: 42 U.S.C. 7401 *et seq*.

Subpart A-General Provisions

4. Amend § 60.17 by:

a. Revising paragraphs (h)(179) and (192);

b. Redesignating paragraphs (h)(193) through (212) as paragraphs (h)(194) through (213) respectively; and

c. Adding new paragraph (h)(193).

The revisions and addition read as follows:

§ 60.17 Incorporations by reference.

* * * * *

(h) * * *

(179) ASTM D6216-20, Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications, approved September 1, 2020; IBR approved for appendix B to part 60.

* * * * *

(192) ASTM D6784-02 (Reapproved 2008), Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method), approved April 1, 2008; IBR approved for §60.56c(b).

(193) ASTM D6784-16, Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method), approved March 1, 2016; IBR approved for appendix B to part 60.

* * * * *

Subpart AAA-Standards of Performance for New Residential Wood Heaters

5. Amend § 60.534 by revising paragraphs (c) and (d) to read as follows:

§ 60.534 What test methods and procedures must I use to determine compliance with the standards and requirements for certification?

* * * * *

(c) For affected wood heaters subject to the 2015 and 2020 particulate matter emission standards specified in § 60.532(a), (b) and (c), particulate matter emission concentrations must be measured with ASTM E2515-11 (IBR, see §60.17) with the following exceptions: eliminate section 9.6.5.1 of ASTM E2515-11 and perform the post-test leak checks as described in § 60.534(c)(1). Additionally, if a component change of either sampling train is needed during sampling, then perform the leak check specified in § 60.534(c)(2). Four-inch filters and Teflon membrane filters or Teflon-coated glass fiber filters may be used in ASTM E2515-11.

(1) Post-Test Leak Check: A leak check of each sampling train is mandatory at the conclusion of each sampling run before sample recovery. The leak check must be performed in accordance with the procedures of ASTM E2515-11, section 9.6.4.1 (IBR, see § 60.17), except that it must be conducted at a vacuum equal to or greater than the maximum value reached during the sampling run. If the leakage rate is found to be no greater than 0.0003 m^3/min (0.01 cfm) or 4% of the average sampling rate (whichever is less), the leak check results are acceptable. If a higher leakage rate is obtained, the sampling run is invalid.

(2) Leak Checks During Sample Run: If, during a sampling run, a component (e.g., filter assembly) change becomes necessary, a leak check must be conducted immediately before the change is made. Record the sample volume before and after the leak test. The sample volume collected during any leak checks must not be included in the total sample volume for the test run. The leak check must be done according to the procedure outlined in ASTM E2515-11, section 9.6.4.1 (IBR, see § 60.17), except that it must be done at a vacuum equal to or greater than the maximum value recorded up to that point in the sampling run. If the leakage rate is found to be no greater than 0.0003 m^3/min (0.01 cfm) or 4% of the average sampling rate (whichever is less), the leak check results are acceptable. If a higher leakage rate is obtained, the sampling run is invalid.

NOTE 1 to paragraph (c): Immediately after component changes, leak checks are optional but highly recommended. If such leak checks are done, the procedure in § 60.534(c)(1) should be used.

(d) For all tests conducted using ASTM E2515-11 (IBR, see § 60.17), with the exceptions described in § 60.534(c)(1) and (c)(2), and pursuant to this section, the manufacturer and approved test laboratory must also measure the first hour of particulate matter emissions for each test run by sampling with a third, identical and independent sampling train operated concurrently for the first hour of PM paired train compliance testing according to § 60.534(c). The manufacturer and approved test laboratory must report the test results from this third train separately as the first hour emissions.

* * * * *

6. Amend § 60.539b by revising paragraph (b) to read as follows:

§ 60.539b What parts of the General Provisions do not apply to me?

* * * * *

(b) Section 60.8 (a), (c), (d), (e), (f) (1), and (g);

* * * * *

Subpart QQQQ-Standards of Performance for New Residential Hydronic Heaters and Forced-Air Furnaces

7. Amend § 60.5474 by revising paragraphs (b)(2), (3) and (6) to read as follows:

§ 60.5474 What standards and requirements must I meet and by when?

* * * * *

(b) * * *

(2) 2020 residential hydronic heater particulate matter emission limit: 0.10 lb/mmBtu (0.043 g/MJ) heat output per individual burn rate as determined by the crib wood test methods and procedures in § 60.5476 or an alternative crib wood test method approved by the Administrator.

(3) 2020 residential hydronic heater cord wood alternative compliance option for particulate matter emission limit: 0.15 lb/mmBtu (0.064 g/MJ) heat output per individual burn rate as

determined by the cord wood test methods and procedures in § 60.5476 or an alternative cord wood test method approved by the Administrator.

* * * * *

(6) 2020 forced-air furnace particulate matter emission limit: 0.15 lb/mmBtu (0.064 g/MJ) heat output per individual burn rate as determined by the cord wood test methods and procedures in § 60.5476 or cord wood test methods approved by the Administrator.

* * * * *

8. Amend § 60.5476 by:

a. Removing and reserving paragraphs (c)(5) and (6); and

b. Revising paragraph (f).

The revision reads as follows:

§ 60.5476 What test methods and procedures must I use to determine compliance with the standards and requirements for certification?

* * * * *

(c) * * *

(5) [Reserved]

(6) [Reserved]

* * * * *

(f) For affected wood heaters subject to the particulate matter emission standards, particulate matter emission concentrations must be measured with ASTM E2515-11 (IBR, see § 60.17) with the following exceptions, eliminate section 9.6.5.1 of ASTM E2515-11 and perform the post-test leak checks as described in § 60.5476(f)(1). Additionally, if a component change of either sampling train is needed during sampling, then perform the leak check specified in §

60.5476(f)(2). Four-inch filters and Teflon membrane filters or Teflon-coated glass fiber filters may be used in ASTM E2515-11. For all tests conducted using ASTM 2515-11, with the exceptions described in § 60.5476(f)(1) and (f)(2), the manufacturer and approved test laboratory must also measure the first hour of particulate matter emissions for each test run by sampling with a third, identical and independent sampling train operated concurrently with the first hour of PM paired train compliance testing. The manufacturer and approved test laboratory must report the test results for this third train separately as the first hour emissions.

(1) Post-Test Leak Check: A leak check of each sampling train is mandatory at the conclusion of each sampling run before sample recovery. The leak check must be performed in accordance with the procedures of ASTM E2515-11, section 9.6.4.1 (IBR, see § 60.17), except that it must be conducted at a vacuum equal to or greater than the maximum value reached during the sampling run. If the leakage rate is found to be no greater than 0.0003 m^3/min (0.01 cfm) or 4% of the average sampling rate (whichever is less), the leak check results are acceptable. If a higher leakage rate is obtained, the sampling run is invalid.

(2) Leak Checks During Sample Run: If, during a sampling run, a component (e.g., filter assembly) change becomes necessary, a leak check must be conducted immediately before the change is made. Record the sample volume before and after the leak test. The sample volume collected during any leak checks must not be included in the total sample volume for the test run. The leak check must be done according to the procedure outlined in ASTM E2515-11, section 9.6.4.1 (IBR, see § 60.17), except that it must be done at a vacuum equal to or greater than the maximum value recorded up to that point in the sampling run. If the leakage rate is found to be no greater than 0.0003 m^3/min (0.01 cfm) or 4% of the average sampling rate

(whichever is less), the leak check results are acceptable. If a higher leakage rate is obtained, the sampling run is invalid.

NOTE 1 to paragraph (f): Immediately after component changes, leak checks are optional but highly recommended. If such leak checks are done, the procedure in § 60.5476(f)(1) should be used.

* * * * *

9. Amend § 60.5483 by revising paragraph (b) to read as follows:

§ 60.5483 What parts of the General Provisions do not apply to me?

* * * * *

(b) Section 60.8 (a), (c), (d), (e), (f)(1), and (g);

* * * * *

10. Amend appendix A-1 to part 60 by revising sections 11.5, 11.5.1, and 11.5.2, and table 1-2 under the heading “17.0 Tables, Diagrams, Flowcharts, and Validation Data” in method 1 to read as follows:

Appendix A-1 to Part 60-Test Methods 1 through 2F

* * * * *

Method 1-Sample and Velocity Traverses For Stationary Sources

* * * * *

11.0 Procedure

* * * * *

11.5 Alternative Measurement Site Selection Procedure. The alternative site selection procedure may be used to determine the rotation angles in lieu of the procedure outlined in section 11.4.

11.5.1 This alternative procedure applies to sources where measurement locations are less than 2 equivalent or duct diameters downstream or less than one-half duct diameter upstream from a flow disturbance. The alternative should be limited to ducts larger than 24 inches in diameter where blockage and wall effects are minimal. A directional flow-sensing probe is used to measure pitch and yaw angles of the gas flow at 40 or more traverse points; the resultant angle is calculated and compared with acceptable criteria for mean and standard deviation.

NOTE: Both the pitch and yaw angles are measured from a line passing through the traverse point and parallel to the stack axis. The pitch angle is the angle of the gas flow component in the plane that INCLUDES the traverse line and is parallel to the stack axis. The yaw angle is the angle of the gas flow component in the plane PERPENDICULAR to the traverse line at the traverse point and is measured from the line passing through the traverse point and parallel to the stack axis.

11.5.2 Traverse Points. Use a minimum of 40 traverse points for circular ducts and 42 points for rectangular ducts for the gas flow angle determinations. Follow the procedure outlined in section 11.3 and table 1-1 or 1-2 of this method for the location and layout of the traverse points. If the alternative measurement location is determined to be acceptable according to the criteria in this alternative procedure, use the same minimum of 40 traverse points for circular ducts and 42 points for rectangular ducts that were used in the alternative measurement procedure for future sampling and velocity measurements.

* * * * *

17.0 Tables, Diagrams, Flowcharts, and Validation Data

* * * * *

TABLE 1-2—LOCATION OF TRAVERSE POINTS IN CIRCULAR STACKS

[Percent of stack diameter from inside wall to traverse point]

Traverse point number on a diameter	**Number of traverse points on a diameter**											
	2	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**
1	14.6	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	85.4	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3		75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4		93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5			85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6			95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7				89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8				96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9					91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10					97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11						93.3	85.4	78.0	70.4	61.2	39.3	32.3
12						97.9	90.1	83.1	76.4	69.4	60.7	39.8
13							94.3	87.5	81.2	75.0	68.5	60.2
14							98.2	91.5	85.4	79.6	73.8	67.7
15								95.1	89.1	83.5	78.2	72.8
16								98.4	92.5	87.1	82.0	77.0
17									95.6	90.3	85.4	80.6
18									98.6	93.3	88.4	83.9
19										96.1	91.3	86.8
20										98.7	94.0	89.5
21											96.5	92.1

22											98.9	94.5
23												96.8
24												98.9

* * * * *

11. Amend appendix A-3 to part 60 by revising figure 4-3 under the heading “18.0 Tables, Diagrams, Flowcharts, and Validation Data” in method 4 to read as follows:

Appendix A-3 to Part 60-Test Methods 4 through 5I

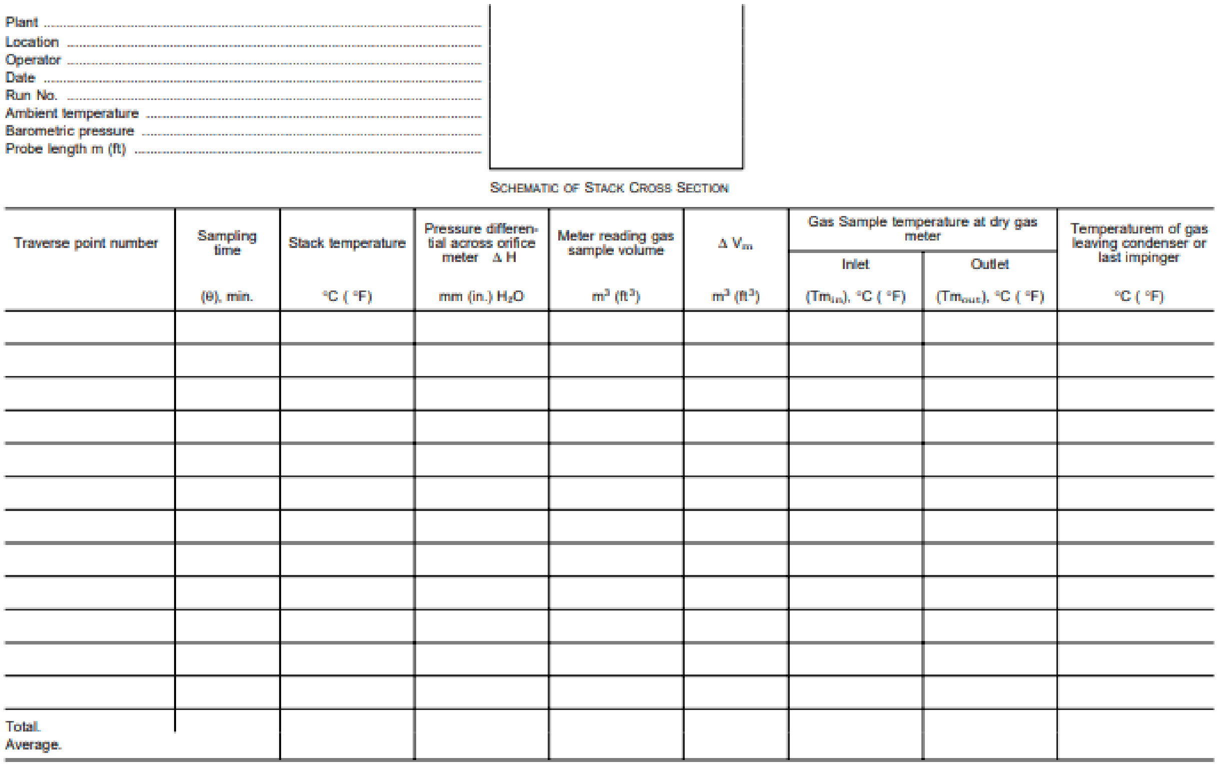
* * * * *

Method 4-Determination of Moisture Content in Stack Gases

* * * * *

18.0 Tables, Diagrams, Flowcharts, and Validation Data

* * * * *



Plant ....
Location ....
Operator ....
Date ....
Run No. ....
Ambient temperature ....
Barometric pressure ....
Probe length m (ft) ....

SCHEMATIC OF STACK CROSS SECTION

Traverse point number	Sampling time	Stack temperature	Pressure differential across orifice meter Δ H	Meter reading gas sample volume	Δ V_m	Gas Sample temperature at dry gas meter		Temperaturem of gas leaving condenser or last impinger
						Inlet	Outlet	
	(θ), min.	°C (°F)	mm (in.) H_2O	m^3 (ft^3)	m^3 (ft^3)	(Tm_{in}), °C (°F)	(Tm_{out}), °C (°F)	°C (°F)
Total. Average.								

Figure 4-3 Moisture Field Data Sheet

* * * * *

12. Amend appendix A-4 to part 60 by revising section 10.1.3 in method 7 to read as follows:

Appendix A-4 to Part 60-Test Methods 6 Through 10B

* * * * *

Method 7-Determination of Nitrogen Oxide Emissions From Stationary Sources

* * * * *

10.0 Calibration and Standardization

* * * * *

10.1.3 Spectrophotometer Calibration Quality Control. Multiply the absorbance value obtained for each standard by the K_c factor (reciprocal of the least squares slope) to determine the distance each calibration point lies from the theoretical calibration line. The difference between the calculated concentration values and the actual concentrations (*i.e.,* 100, 200, 300, and 400 µg NO_2) shall be less than 7 percent for all standards.

* * * * *

13. Amend appendix A-7 to part 60 by:

a. Revising in section 12.2.3.2 equation 19-5 in method 19;

b. Adding sections 12.9 and 12.9.1 through 12.9.16 in method 25;

c. Revising figure 25-6 under the heading “7.0 Tables, Diagrams, Flowcharts, and Validation Data” in method 25;

d. Revising section 9.1 in method 25C; and

e. Revising in section 12.1 the entries “C_{N2}” and “C_{mN2}” in method 25C.

The revisions and additions read as follows:

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

* * * * *

Method 19-Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates

* * * * *

12.0 Data Analysis and Calculations

* * * * *

12.2.3.2 * * *

$$E = C_d F_d \frac{20.9}{20.9 - \frac{\%O_{2w}}{1-B_{ws}}} \qquad \text{Eq. 19-5}$$

* * * * *

Method 25-Determination of Total Gaseous Nonmethane Organic Emissions As Carbon

* * * * *

12.0 Data Analysis and Calculations

* * * * *

12.9 Record and Report Initial Method Checks as follows:

12.9.1 Calibration and Linearity Check Gas Certifications (section 7.2 and 7.4)

12.9.2 Condensate Trap Blank Check (section 8.1.1)

12.9.3 Pretest Leak-Check (section 8.1.4)

12.9.4 Condensate Recovery Apparatus (section 10.1.1)

12.9.5 Carrier Gas and Auxiliary O_2 Blank Check (section 10.1.1.1)

12.9.6 Oxidation Catalyst Efficiency Check (section 10.1.1.2)

12.9.7 System Performance Check (section10.1.1.3)

12.9.8 Oxidation Catalyst Efficiency Check (section 10.1.2.1)

12.9.9 Reduction Catalyst Efficiency Check (section 10.1.2.2)

12.9.10 NMO Analyzer Linearity Check Calibration (section 10.1.2.3)

12.9.11 NMO Analyzer Daily Calibration (section 10.2)

12.9.12 Condensate Recovery (section 11.1)

12.9.13 Daily Performance Checks (section 11.1.1)

12.9.14 Leak-Check (section 11.1.1.1)

12.9.15 System Background Test (section 11.1.1.2)

12.9.16 Oxidation Catalyst Efficiency Check (section 11.1.1.3)

* * * * *

17.0 Tables, Diagrams, Flowcharts, and Validation Data

* * * * *

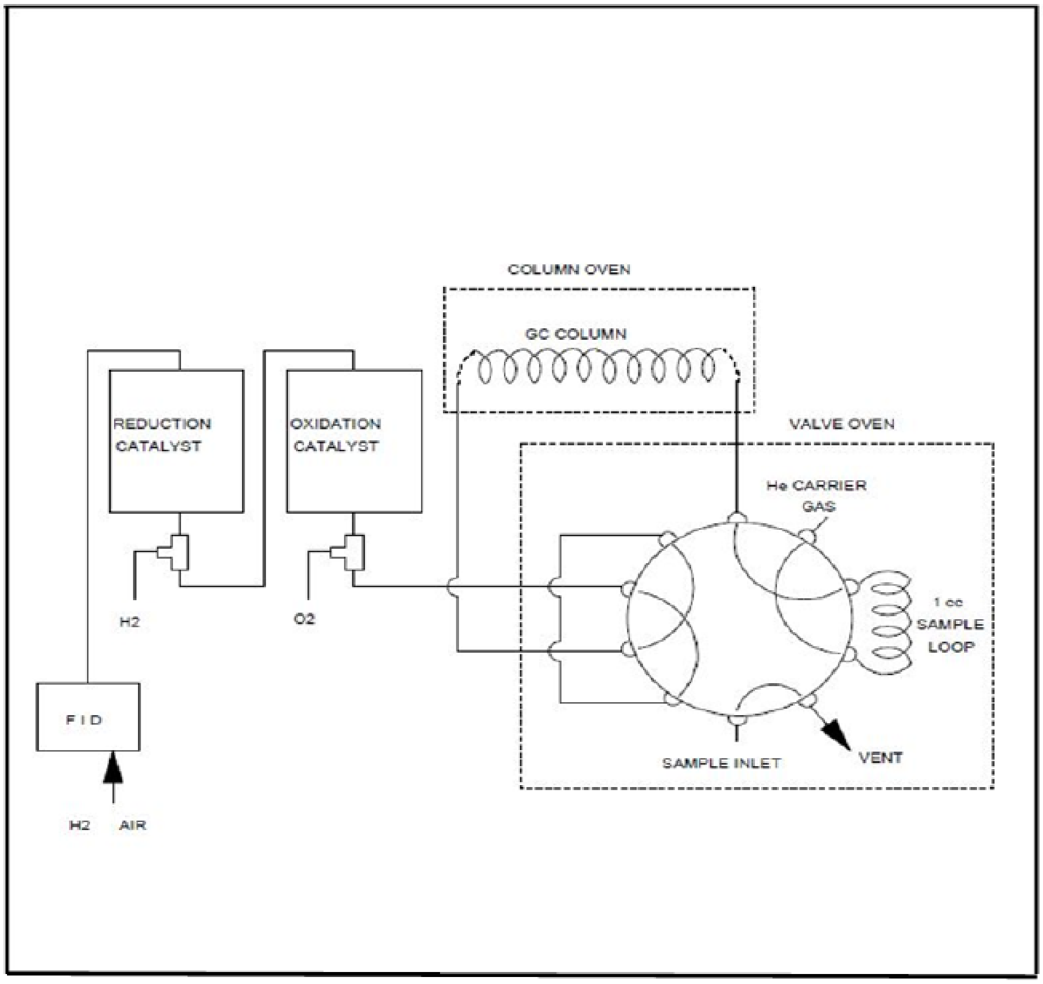


Figure 25-6. Nonmethane Organic Analyzer (NMO)

* * * * *

Method 25C-Determination of Nonmethane Organic Compounds (NMOC) in Landfill Gases

* * * * *

9.0 Quality Control

9.1 Miscellaneous Quality Control Measures.

Section	Quality control measure	Effect
8.4.2	Verify that landfill gas sample contains less than 20 percent N_2 or 5 percent O_2. Landfills with 3-year average annual rainfalls equal to or less than 20 inches annual rainfalls samples are acceptable when the N_2 to O_2 concentration ratio is greater than 3.71.	Ensures that ambient air was not drawn into the landfill gas sample and gas was sampled from an appropriate location.
10.1, 10.2	NMOC analyzer initial and daily performance checks	Ensures precision of analytical results.

* * * * *

12.0 Data Analysis and Calculations

* * * * *

12.1 Nomenclature

* * * * *

C_{N2} = N_2 concentration in the landfill gas sample.

C_{mN2} = Measured N_2 concentration, diluted landfill gas sample.

* * * * *

14. Amend appendix A-8 to part 60 by:

a. Revising sections 12.4 and 12.5 in method 26.

b. Revising section 13.8 in test method 28WHH.

The revisions read as follows:

Appendix A-8 to Part 60-Test Methods 26 Through 30B

* * * * *

Method 26-Determination of Hydrogen Halide and Halogen Emissions From Stationary Sources Non-Isokinetic Method

* * * * *

12.0 Data Analysis and Calculations

* * * * *

12.4 Total µg HCl, HBr, or HF Per Sample.

$m_{HX} = K_{HCl,HBr,HF} V_s (S_{x^-} - B_{x^-})$ Eq. 26-4

12.5 Total µg Cl_2 or Br_2 Per Sample.

$m_{x2} = V_s (S_{x^-} - B_{x^-})$ Eq. 26-5

* * * * *

Test Method 28WHH for Measurement of Particulate Emissions and Heating Efficiency of Wood-Fired Hydronic Heating Appliances

* * * * *

13.0 Calculation of Results

* * * * *

13.8 Carbon Monoxide Emissions

For each minute of the test period, the carbon monoxide emissions rate (g/min) shall be calculated as:

$$CO_{g/min} = Q_{std} \cdot CO_s \cdot 3.30 \mathrm{x} 10^{-5} \qquad \text{Eq. 23}$$

Total CO emissions for each of the four test periods (CO_$_1$, CO_$_2$, CO_$_3$, CO_$_4$) shall be calculated as the sum of the emissions rates for each of the 1-minute intervals.

Total CO emissions for the test run, CO$_T$, shall be calculated as the sum of CO_$_1$, CO_$_2$, CO_$_3$ and CO_$_4$.

* * * * *

15. Amend appendix B to part 60 by:

a. Revising sections 2.1, 3.1, 6.1, 8.1(1), 8.1(2)(iii), 8.1(3)(ii), 8.2(1), 8.2(2), 8.2(3), 9.0, 12.1, 13.1, 13.2, and 16.0 reference 8 in performance specification 1;

b. Revising sections 8.3.3 and 12.5 in performance specification 2;

c. Revising performance specification 4B;

d. Revising section 13.2 in performance specification 6;

e. Revising sections 8.4.2, 8.4.4, 8.4.5, 8.4.6.1, 13.3, 17.5, and footnote to figure 12A-3 in performance specification 12A;

f. Revising sections 1.1, 3.11, 3.12, 9.1, 13.1, and 13.5 in performance specification 16.

The revisions read as follows:

Appendix B to Part 60-Performance Specifications

* * * * *

Performance Specification 1-Specifications and Test Procedures for Continuous Opacity Monitoring Systems in Stationary Sources

* * * * *

2.0 What Are the Basic Requirements of PS-1?

* * * * *

2.1 ASTM D6216-20 (IBR, see § 60.17) is the reference for design specifications, manufacturer's performance specifications, and test procedures. The opacity monitor manufacturer must periodically select and test an opacity monitor, that is representative of a group of monitors produced during a specified period or lot, for conformance with the design specifications in ASTM D6216-20. The opacity monitor manufacturer must test each opacity monitor for conformance with the manufacturer's performance specifications in ASTM D6216-20. Note: If the initial certification of the opacity monitor occurred before [INSERT the effective date of the final rule] using D6216-98, D6216-03, D6216-07, or D6216-12, it is not necessary to recertify using D6216-20.

* * * * *

3.0 What Special Definitions Apply to PS-1?

3.1 All definitions and discussions from section 3 of ASTM D6216-20 are applicable to PS-1.

* * * * *

6.0 What Equipment and Supplies Do I Need?

6.1 *Continuous Opacity Monitoring System.* You, as owner or operator, are responsible for purchasing an opacity monitor that meets the specifications of ASTM D6216-20, including a suitable data recorder or automated data acquisition handling system. Example data recorders include an analog strip chart recorder or more appropriately an electronic data acquisition and reporting system with an input signal range compatible with the analyzer output.

* * * * *

8.0 What Performance Procedures Are Required To Comply With PS-1?

* * * * *

8.1 * * *

(1) You must purchase an opacity monitor that complies with ASTM D6216-20 and obtain a certificate of conformance from the opacity monitor manufacturer.

(2) * * *

(iii) Alternative Locations and Light Beam Paths. You may select locations and light beam paths, other than those cited above, if you demonstrate, to the satisfaction of the Administrator or delegated agent, that the average opacity measured at the alternative location or path is equivalent to the opacity as measured at a location meeting the criteria of sections 8.1(2)(i) and 8.1(2)(ii). The opacity at the alternative location is considered equivalent if (1) the average opacity value measured at the alternative location is within ±10 percent of the average opacity value measured at the location meeting the installation criteria, and (2) the difference between any two average opacity values is less than 2 percent opacity (absolute). You use the following procedure to conduct this demonstration: simultaneously measure the opacities at the two locations or paths for a minimum period of time (*e.g.,* 180-minutes) covering the range of normal operating conditions and compare the results. You may use alternative procedures for determining acceptable locations if those procedures are approved by the Administrator.

(3) * * *

(ii) Calibration Error Check. Conduct a three-point calibration error test using three calibration attenuators that produce outlet pathlength corrected, single-pass opacity values shown in ASTM D6216-20, section 7.5. If your applicable limit is less than 10 percent opacity, use attenuators as described in ASTM D6216-20, section 7.5 for applicable standards of 10 to 19 percent opacity. Confirm the external audit device produces the proper zero value on the COMS data recorder. Separately, insert each calibration attenuators (low, mid, and high-level) into the external audit device. While inserting each attenuator, (1) ensure that the entire light beam passes through the attenuator, (2) minimize interference from reflected light, and (3) leave the attenuator in place for at least two times the shortest recording interval on the COMS data recorder. Make a total of five nonconsecutive readings for each attenuator. At the end of the test, correlate each attenuator insertion to the corresponding value from the data recorder. Subtract the single-pass calibration attenuator values corrected to the stack exit conditions from the COMS responses. Calculate the arithmetic mean difference, standard deviation, and confidence coefficient of the five measurements value using equations 1-3, 1-4, and 1-5. Calculate the calibration error as the sum of the absolute value of the mean difference and the 95 percent confidence coefficient for each of the three test attenuators using equation 1-6. Report the calibration error test results for each of the three attenuators.

* * * * *

8.2 * * *

(1) Conduct the verification procedures for design specifications in section 6 of ASTM D6216-20.

(2) Conduct the verification procedures for performance specifications in section 7 of ASTM D6216-20.

(3) Provide to the owner or operator, a report of the opacity monitor's conformance to the design and performance specifications required in sections 6 and 7 of ASTM D6216-20 in accordance with the reporting requirements of section 9 in ASTM D6216-20.

9.0 What quality control measures are required by PS-1?

Opacity monitor manufacturers must initiate a quality program following the requirements of ASTM D6216-20, section 8. The quality program must include (1) a quality system and (2) a corrective action program.

* * * * *

12.0 What Calculations Are Needed for PS-1?

12.1 Desired Attenuator Values. Calculate the desired attenuator value corrected to the emission outlet pathlength as follows:

$$OP_2 = 1 - (1 - OP_1)^{\frac{L_2}{L_1}} \qquad Eq.\ 1\text{-}1$$

Where:

OP_1 = Nominal opacity value of required low-, mid-, or high-range calibration attenuators.

OP_2 = Desired attenuator opacity value from ASTM D6216-20, section 7.5 at the opacity limit required by the applicable subpart.

L_1 = Monitoring pathlength.

L_2 = Emission outlet pathlength.

* * * * *

13.0 What Specifications Does a COMS Have to Meet for Certification?

* * * * *

13.1 Design Specifications. The opacity monitoring equipment must comply with the design specifications of ASTM D6216-20.

13.2 Manufacturer's Performance Specifications. The opacity monitor must comply with the manufacturer's performance specifications of ASTM D6216-20.

* * * * *

16.0 Which references are relevant to this method?

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8. ASTM D6216-20: Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications. American Society for Testing and Materials (ASTM). September 2020.

* * * * *

Performance Specification 2-Specifications and Test Procedures for SO_2 and NO_x Continuous Emission Monitoring Systems in Stationary Sources

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8.0 Performance Specification Test Procedure

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8.3.3 Conduct the CD test at the two points specified in section 6.1.2. Introduce to the CEMS the reference gases, gas cells, or optical filters (these need not be certified). When using reference gases, introduce the reference gas prior to any sample conditioning or filtration equipment and ensure that it passes through all filters, scrubbers, conditioners, and other monitor components used during normal sampling. The reference gas should pass through as much of the sampling probe as practical. Record the CEMS response and subtract this value from the reference value (see example data sheet in Figure 2-1).

* * * * *

12.0 Calculations and Data Analysis

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12.5 Relative Accuracy. Calculate the RA, expressed as a percentage, of a set of data as follows:

$$RA = \frac{[|\bar{d}| + |CC|]}{\overline{RM}} \times 100 \qquad Eq. 2-6$$

Where:

$|\bar{d}|$ = Absolute value of the mean differences (from Equation 2-3).

$|CC|$ = Absolute value of the confidence coefficient (from Equation 2-3).

$\overline{RM}$ = Average RM value. In cases where the average emissions for the test are less than 50 percent of the applicable emission standard, substitute the applicable emission standard value in the denominator of Eq. 2-6 in place of the average RM value. In all other cases, use $\overline{RM}$.

* * * * *

Performance Specification 4B-Speifications and Test Procedures for Carbon Monoxide and Oxygen Continuous Monitoring Systems in Stationary Sources

1.0 Scope and Application

1.1. Analytes

Analyte	**CAS No.**
Carbon Monoxide (CO)	630-08-0
Oxygen (O_2)	7782-44-7

1.2. Applicability.

1.2.1. This specification is to be used for evaluating the acceptability of carbon monoxide (CO) and oxygen (O_2) continuous emission monitoring systems (CEMS) at the time of or soon after installation and whenever specified in the regulations. The CEMS may include, for certain stationary sources, (a) flow monitoring equipment to allow measurement of the dry volume of stack effluent sampled, and (b) an automatic sampling system

1.2.2. This specification is not designed to evaluate the installed CEMS' performance over an extended period of time, nor does it identify specific calibration techniques and auxiliary procedures to assess the CEMS' performance. The source owner or operator, however, is responsible to properly calibrate, maintain, and operate the CEMS. To evaluate the CEMS' performance, the Administrator may require, under section 114 of the Act, the operator to conduct CEMS performance evaluations at times other than the initial test.

1.2.3. The definitions, installation and measurement location specifications, test procedures, data reduction procedures, reporting requirements, and bibliography are the same as in PS 3 (for O_2) and PS 4A (for CO) except as otherwise noted below.

2.0 Summary of Performance Specification

Installation and measurement location specifications, performance specifications, test procedures, and data reduction procedures are included in this specification. Reference method tests, calibration error tests, calibration drift tests, and interferant tests are conducted to determine conformance of the CEMS with the specification

3.0 Definitions

The definitions are the same as in section 3.0 of PS2 with the following definitions added:

3.1. *Continuous Emission Monitoring System (CEMS).* This definition is the same as PS 2 section 3.0 with the following addition. A continuous monitor is one in which the sample to be analyzed passes the measurement section of the analyzer without interruption.

3.2. *Response Time (RT).* The time interval between the start of a step change in the system input and when the pollutant analyzer output reaches 95 percent of the final value.

3.3. *Calibration Error (CE).* The difference between the concentration indicated by the CEMS and the known concentration generated by a calibration source when the entire CEMS, including the sampling interface is challenged. A CE test procedure is performed to document the accuracy and linearity of the CEMS over the entire measurement range.

4.0 Interferences [Reserved]

5.0 Safety

This performance specification may involve hazardous materials, operations, and equipment. This performance specification may not address all of the safety problems associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicable regulatory limitations prior to performing this performance specification. The CEMS user's manual should be consulted for specific precautions to be taken with regard to the analytical procedures.

6.0 Equipment and Supplies

Same as section 6.0 of PS 2, except for the following:

6.1 Data Recorder Scale. For O_2, same as specified in PS 3, except that the span must be 25 percent. The span of the O_2 may be higher if the O_2 concentration at the sampling point can be greater than 25 percent. For CO, same as specified in PS 4A, except that the low-range span must be 200 ppm and the high range span must be 3000 ppm. In addition, the scale for both CEMS must record all readings within a measurement range with a resolution of 0.5 percent.

7.0 Reagents and Standards

8.0 Sample Collection, Preservation, Storage, and Transport

8.1. Installation and Measurement Location Specifications

8.1.1. The CEMS Installation. This specification is the same as PS 2 section 8.1.1 with the following additions. Both the CO and O_2 monitors should be installed at the same general location. If this is not possible, they may be installed at different locations if the effluent gases at both sample locations are not stratified and there is no in-leakage of air between sampling locations.

8.1.2. Measurement Location. Same as PS 2 section 8.1.2

8.1.2.1. Point CEMS. The measurement point should be within or centrally located over the centroidal area of the stack or duct cross section.

8.1.2.2. Path CEMS. The effective measurement path should: (1) have at least 70 percent of the path within the inner 50 percent of the stack or duct cross sectional area, or (2) be centrally located over any part of the centroidal area.

8.1.3. Reference Method (RM) Measurement Location and Traverse Points

This specification is the same as PS 2 section 8.1.3 with the following additions. When pollutant concentration changes are due solely to diluent leakage and CO and O_2 are simultaneously measured at the same location, one half diameter may be used in place of two equivalent diameters.

8.2 Pretest Preparation. Install the CEMS, prepare the RM test site according to the specifications in section 8.1, and prepare the CEMS for operation according to the manufacturer's written instructions.

8.3 Stratification Test Procedure. Stratification is defined as the difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall. To determine whether effluent stratification exists, a dual probe system should be used to determine the average effluent concentration while measurements at each traverse point are being made. One probe, located at the stack or duct centroid, is used as a stationary reference point to indicate change in the effluent concentration over time. The second probe is used for sampling at the traverse points specified in method 1 (40 CFR part 60, appendix A). The monitoring system samples sequentially at the reference and traverse points throughout the testing period for five minutes at each point.

8.4 Calibration Drift Test Procedure. Same as section 8.3 in PS 2.

Note: The CE and RT tests must be conducted during the CD test period

8.5 Calibration Error Test Procedure. Challenge each monitor (both low and high range CO and O_2) with zero gas and EPA Protocol 1 cylinder gases at three measurement points within the ranges specified in table 4B-1 (in section 18.0).

Operate each monitor in its normal sampling mode as nearly as possible. The calibration gas must be injected into the sample system as close to the sampling probe outlet as practical and should pass through all CEMS components used during normal sampling. Challenge the CEMS three non-consecutive times at each measurement point and record the responses. The duration of each gas injection should be sufficient to ensure that the CEMS surfaces are conditioned.

8.6 Response Time Test Procedure. Same as section 8.3 in PS 4A and must be carried out for both the CO and O_2 monitors.

8.7 Relative Accuracy Test Procedure. Sampling Strategy for Reference Method (RM) Tests, Number of RM Tests, and Correlation of RM and CEMS Data are the same as PS 2, sections 8.4.3, 8.4.4, and 8.4.5, respectively.

9.0 Quality Control [Reserved]

10.0 Calibration and Standardization [Reserved]

11.0 Analytical Procedure

Sample collection and analysis are concurrent for this Performance Specification (see section 8.0). Refer to the RM for specific analytical procedures.

12.0 Calculation and Data Analysis

Summarize the results on a data sheet as shown in Figure 4B-1 (in section 18.0)

Calibration Error (CE) is the average the differences between the instrument response and the certified cylinder gas value for each gas. Calculate the CE results for the CO monitor according to:

$$CE = \left|\frac{d}{FS}\right| \times 100 \qquad \text{Eq.4B-1}$$

Where:

d = mean difference between the CEMS response and the known reference concentration, and

FS = span value.

The CE for the O_2 monitor is the average percent O_2 difference between the O_2 monitor and the certified cylinder gas value for each gas.

13.0 Method Performance

13.1. Calibration Drift Performance Specification. For O_2, same as specified in PS 3. For CO, the same as specified in PS 4A except that the CEMS calibration must not drift from the reference value of the calibration standard by more than 3 percent of the span value on either the high or low range.

13.2. Calibration Error (CE) Performance Specification. The mean difference between the CEMS and reference values at all three test points (see table 4B-1) must be no greater than 5 percent of span value for CO monitors and 0.5 percent for O_2 monitors.

13.3. Response Time Performance Specification. The response time for the CO or O_2 monitor must not exceed 240 seconds.

13.4. Relative Accuracy (RA) Performance Specification. For O_2, same as specified in PS 3. For CO, the same as specified in PS 4A.

14.0 Pollution Prevention [Reserved]

15.0 Waste Management [Reserved]

16.0 Alternative Procedure

Alternative RA Procedure. Under some operating conditions, it may not be possible to obtain meaningful results using the RA test procedure. This includes conditions where consistent, very low CO emission or low CO emissions interrupted periodically by short duration, high level spikes are observed. It may be appropriate in these circumstances to waive the RA test and substitute the following procedure.

Conduct a complete CEMS status check following the manufacturer's written instructions. The check should include operation of the light source, signal receiver, timing mechanism functions, data acquisition and data reduction functions, data recorders, mechanically operated functions, sample filters, sample line heaters, moisture traps, and other related functions of the CEMS, as applicable. All parts of the CEMS must be functioning properly before the RA requirement can be waived. The instrument must also successfully pass the CE and CD specifications. Substitution of the alternate procedure requires approval of the Regional Administrator.

17.0 Reference

1. 40 CFR part 266, appendix IX, section 2, “Performance Specifications for Continuous Emission Monitoring Systems.”

18.0 Tables, Diagrams, Flowcharts, and Validation Data

Measurement point	CO Low range (ppm)	CO High range (ppm)	O2 (%)
1	0 – 40	0 – 600	0 – 2
2	60 – 80	900 – 1200	8 -10
3	140 - 160	2100 - 2400	14 – 16

Table 4B-1. Calibration Error Concentration Range

Run Number	Calibration Value	Monitor Response	Difference		
			Zero	Mid	High
1-Zero					
2-Mid					
3-High					
4-Mid					
5-Zero					
6-High					
7-Zero					
8-Mid					
9-High					
Mean Difference =					
Calibration Error =			%	%	%

Figure 4B-1. Calibration Error Data Sheet

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Performance Specification 6-Specifications and Test Procedures for Continuous Emission Rate Monitoring Systems in Stationary Sources

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13.0 Method Performance

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13.2 CERMS Relative Accuracy. Calculate the CERMS Relative Accuracy (RA) expressed as a percentage using Eq. 2–6 of section 12 of Performance Specification 2. The RA of the CERMS shall be no greater than 20.0 percent in terms of the units of the emission standard. If the average emissions for the test are less than 50 percent of the applicable emission standard, you may elect to substitute the applicable emission standard value in the denominator of Eq. 2–6 in place of the average RM value; in this case, the RA of the CERMS shall be no greater than 10.0 percent consistent with section 13.2 of Performance Specification 2.

* * * * *

Performance Specification 12A-Specifications and Test Procedures for Total Vapor Phase Mercury Continuous Emission Monitoring Systems in Stationary Sources

* * * * *

8.0 Performance Specification Test Procedure

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8.4.2 Reference Methods (RM). Unless otherwise specified in an applicable subpart of the regulations, use method 29, method 30A, or method 30B in appendix A-8 to this part or ASTM Method D6784-16 (IBR, see § 60.17) as the RM for Hg concentration. For method 29 and ASTM Method D6784-16 only, the filterable portion of the sample need not be included when making comparisons to the CEMS results. When method 29, method 30B, or ASTM D6784-16 is used, conduct the RM test runs with paired or duplicate sampling systems and use the average of the vapor phase Hg concentrations measured by the two trains. When method 30A is used, paired sampling systems are not required. If the RM and CEMS measure on a different moisture basis, data derived with method 4 in appendix A-3 to this part must also be obtained during the RA test.

* * * * *

8.4.4 Number and Length of RM Test Runs. Conduct a minimum of nine RM test runs. When method 29, method 30B, or ASTM D6784-16 is used, only test runs for which the paired RM trains meet the relative deviation criteria (RD) of this PS must be used in the RA calculations. In addition, for method 29 and ASTM D6784-16, use a minimum sample time of 2 hours and for methods 30A and 30B use a minimum sample time of 30 minutes.

Note: More than nine sets of RM test runs may be performed. If this option is chosen, RM test run results may be excluded so long as the total number of RM test run results used to determine the CEMS RA is greater than or equal to nine. However, all data must be reported including the excluded test run data.

8.4.5 Correlation of RM and CEMS Data. Correlate the CEMS and the RM test data as to the time and duration by first determining from the CEMS final output (the one used for reporting) the integrated average pollutant concentration for each RM test period. Consider system response time, if important, and confirm that the results are on a consistent moisture basis with the RM test. Then, compare each integrated CEMS value against the corresponding RM value. When method 29, method 30B, or ASTM D6784-16 is used, compare each CEMS value against the corresponding average of the paired RM values.

* * * * *

8.4.6.1 When method 29, method 30B, or ASTM D6784-16 is used, outliers are identified through the determination of relative deviation (RD) of the paired RM tests. Data that do not meet the RD criteria must be flagged as a data quality problem and may not be used in the calculation of RA. The primary reason for performing paired RM sampling is to ensure the quality of the RM data. The percent RD of paired data is the parameter used to quantify data quality. Determine RD for paired data points as follows: Where: Ca and Cb are the Hg concentration values determined from the paired samples.

* * * * *

13.0 Method Performance

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13.3 Relative Accuracy (RA). The RA of the CEMS must be no greater than 20 percent of the mean value of the RM test data in terms of units of µg/scm. Alternatively, if the mean RM is less than 2.5 µg/scm, the results are acceptable if the absolute value of the difference between the mean RM and CEMS values added to the absolute value of the confidence coefficient from Equation 12A-7 does not exceed 0.5 µg/scm.

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17.0 Bibliography

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17.5 ASTM Method D6784-16, “Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method).”

* * * * *

18.0 Tables and Figures

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FIGURE 12A-3—RELATIVE ACCURACY TEST DATA

Run No.	**Date**	**Begin time**	**End time**	**RM value ($\mu g/m^3$)**	**CEMS value ($\mu g/m^3$)**	**Difference ($\mu g/m^3$)**	**Run used? (Yes/No)**	**RD[1]**
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
Average Values								
Arithmetic Mean Difference:								
Standard Deviation:								
Confidence Coefficient:								
T-Value:								
% Relative Accuracy:								
$\mid (RM)_{avg} - (CEMS)_{avg} \mid$:								

[1] Calculate the RD only if paired samples are taken using RM 30B, RM 29, or ASTM D6784-16. Express RD as a percentage or, for very low RM concentrations ($\leq 1.0\ \mu g/m^3$), as the absolute difference between C_a and C_b.

* * * * *

Performance Specification 16-Specifications and Test Procedures for Predictive Emission Monitoring Systems in Stationary Sources

1.0 Scope and Application

1.1 *Does this performance specification apply to me?* If you, the source owner or operator, intend to use (with any necessary approvals) a predictive emission monitoring system (PEMS) to show compliance with your emission limitation under 40 CFR 60, 61, or 63, you must use the procedures in this performance specification (PS) to determine whether your PEMS is acceptable for use in demonstrating compliance with applicable requirements. Use these procedures to certify your PEMS after initial installation and periodically thereafter to ensure the PEMS is operating properly. If your PEMS contains a diluent (O_2 or CO_2) measuring component, the diluent component must be tested as well. These specifications apply to PEMS that are installed under 40 CFR 60, 61, and 63 after the effective date of this performance specification.

* * * * *

3.0 Definitions

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3.11 *Relative Accuracy Audit (RAA)* means a quarterly audit of the PEMS against a portable analyzer meeting the requirements of ASTM D6522-00 or a RM for a specified number of runs. A RM may be used in place of the portable analyzer for the RAA.

3.12 *Relative Accuracy Test Audit* (RATA) means a RA test that is performed at least once every four calendar quarters after the initial certification test. The RATA shall be conducted as described in section 8.2.

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9.0 Quality Control

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9.1 QA/QC Summary. Conduct the applicable ongoing tests listed below.

ONGOING QUALITY ASSURANCE TESTS

Test	**PEMS regulatory purpose**	**Acceptability**	**Frequency**
Sensor Evaluation	All		Daily.
RAA	All	Same as for RA in Sec. 13.5	Each quarter except quarter when RATA performed.
RATA	All	Same as for RA in Sec. 13.1	Yearly in quarter when RAA not performed.
Bias Correction	All	If $d_{avg} \leq \|cc\|$	Bias test passed (no correction factor needed).
PEMS Training	All	If $F_{critical} \geq F$ $r \geq 0.8$	Optional after initial and subsequent RATAs.
Sensor Evaluation Alert Test (optional)	All	See section 6.1.8	After each PEMS training.

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13.0 Method Performance

13.1 PEMS Relative Accuracy. The RA, calculated in units of the emission standard, must not exceed 10 percent if the PEMS measurements are greater than 100 ppm or 0.2 lbs/mm Btu. The RA must not exceed 20 percent if the PEMS measurements are between 100 ppm (or 0.2 lb/mm Btu) and 10 ppm (or 0.02 lb/mm Btu). For measurements below 10 ppm (or 0.02 lb/mm Btu), the absolute mean difference between the PEMS measurements and the RM measurements must not exceed 2 ppm (or 0.01 lb/mm Btu). For diluent only PEMS, an alternative criterion of ±1 percent absolute difference between the PEMS and RM may be used if less stringent.

* * * * *

13.5 Relative Accuracy Audits (RAA). The average of the three portable analyzer or RM determinations must not differ from the simultaneous PEMS average value by more than 10 percent of the analyzer or RM for concentrations greater than 100 ppm (or 0.2 lb/mm Btu) or 20 percent for concentrations between 100 ppm (or 0.2 lb/mm Btu) and 10 ppm (or 0.02 lb/mm Btu), or the test is failed. For measurements at 20 ppm (or 0.04 lb/mm Btu) or less, this difference must not exceed 2 ppm (or 0.01 lb/mm Btu) for a pollutant PEMS. For diluent PEMS, the difference must not exceed 1 percent.

* * * * *

16\. Amend appendix F to part 60 by:

a. Revising sections 4.1, 5.2.3, and 6.2 in procedure 1;

b. Revising section 2.5 in procedure 5;

c. Revising the heading for section 4.0 and adding section 4.4 in procedure 5; and

d. Revising section 5.1.3 in procedure 5.

The revisions and addition read as follows:

Appendix F to Part 60-Quality Assurance Procedures

Procedure 1. Quality Assurance Requirements for Gas Continuous Emission Monitoring Systems Used for Compliance Determination

* * * * *

4. CD Assessment

4.1 CD Requirement. As described in 40 CFR 60.13(d), source owners and operators of CEMS must check, record, and quantify the CD at two concentration values at least once daily (approximately 24 hours) in accordance with the method prescribed by the manufacturer. When using reference gases, introduce the reference gas prior to any sample conditioning or filtration equipment and ensure that it passes through all filters, scrubbers, conditioners, and other monitor components used during normal sampling. The reference gas must pass through as much of the sampling probe as practical. The CEMS calibration must, at a minimum, be adjusted whenever the daily zero (or low-level) CD or the daily high-level CD exceeds two times the limits of the applicable PS's in appendix B of this regulation.

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5. Data Accuracy Assessment

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5.2.3 Criteria for Excessive Audit Inaccuracy. Unless specified otherwise in the applicable subpart, the criteria for excessive inaccuracy are:

(1) For the RATA, the allowable RA in the applicable PS in appendix B.

(2) For the CGA, for pollutant monitors, the audit inaccuracy must be ±15 percent of the average audit value as calculated using Equation 1-1 or the difference between the average CEMS response and the average audit value must be less than one of the following:

Analyzer Span	Alternative CGA Criteria
≥ 50 ppm	± 5 ppm
>20 ppm, but ≤ 50 ppm	± 3 ppm
≤ 20 ppm	+ 2 ppm

For diluent monitors, ±15 percent of the average audit value.

(3) For the RAA, ±15 percent of the three-run average or ±7.5 percent of the applicable standard, whichever is greater.

* * * * *

6. Calculations for CEMS Data Accuracy

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6.2 RAA Accuracy Calculation. Use Equation 1-1 to calculate the accuracy for the RAA. The RAA must be calculated in the units of the applicable emission standard.

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Procedure 5. Quality Assurance Requirements for Vapor Phase Mercury Continuous Emissions Monitoring Systems and Sorbent Trap Monitoring Systems Used for Compliance Determination at Stationary Sources

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2.0 Definitions

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2.5 *Calibration Drift (CD)* means the absolute value of the difference between the CEMS output response and either the upscale elemental Hg reference gas or the zero-level elemental Hg reference gas, expressed as a percentage of the span value, when the entire CEMS, including the sampling interface, is challenged after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

* * * * *

4.0 Calibration Drift (CD) Assessment and Weekly System Integrity Check

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4.4 Weekly System Integrity Check. At least once every 7 operating days, using the procedure described in section 8.3.3 of Performance Specification 12A in appendix B to this part, source owners and operators of Hg CEMS must use a single mid- or high-level oxidized Hg (mercuric chloride, $HgCl_2$) reference gas to assess transport and measurement of oxidized mercury. The absolute value of the difference between the Hg CEMS output response and the reference gas must be less than or equal to 10.0 percent of the reference gas value or 0.8 μg/scm.

* * * * *

5.0 Data Accuracy Assessment

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5.1.3 Relative Accuracy Audit (RAA). As an alternative to the QGA, a RAA may be conducted in three of four calendar quarters, but in no more than three quarters in succession. To conduct a RAA, follow the RATA test procedures in section 8.5 of PS 12A in appendix B to this part, except that only three test runs are required. Calculate the relative accuracy according to Equation 1-1 of Procedure 1 of this appendix.

* * * * *

PART 63-NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

17. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq*.

18. Amend § 63.14 by:

a. Redesignating paragraphs (d) through (t) as paragraphs (e) through (u);

b. Adding new paragraph (d); and

c. Revising newly redesignated paragraphs (i)(103) and (104).

The addition and revisions read as follows:

§ 63.14 Incorporations by reference.

* * * * *

(d) American Public Health Association, 1015 18th Street NW, Washington, DC 20036; phone (844) 232-3707; email: *standardmethods@subscritpionoffice.com;* website: www.standardmethods.org.

(1) Standard Method 5210, Biochemical Oxygen Demand (BOD), revised December 10, 2019; IBR approved for § 63.457(c)

(2) [Reserved]

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(i) * * *

(103) ASTM D6784-02 (Reapproved 2008), Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method), Approved April 1, 2008; IBR approved for §§ 63.2465(d); 63.11646(a); 63.11647(a) and (d); tables 1, 2, 5, 11, 12t, and 13 to subpart DDDDD; tables 4 and 5 to subpart JJJJJ; tables 4 and 6 to subpart KKKKK; table 4 to subpart JJJJJJ.

(104) ASTM D6784-16, Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method), Approved March 1, 2016; IBR approved for table 5 to subpart UUUUU; appendix A to subpart UUUUU.

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Subpart S-National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry

19. Amend § 63.457 by revising paragraph (c)(4) to read as follows:

§ 63.457 Test methods and procedures.

* * * * *

(c) * * *

(4) To determine soluble BOD_5 in the effluent stream from an open biological treatment unit used to comply with §§ 63.446(e)(2) and 63.453(j), the owner or operator shall use section B of method 5210 (IBR, see § 63.14) with the following modifications:

(i) Filter the sample through the filter paper, into an Erlenmeyer flask by applying a vacuum to the flask sidearm. Minimize the time for which vacuum is applied to prevent stripping of volatile organics from the sample. Replace filter paper as often as needed in order to maintain filter times of less than approximately 30 seconds per filter paper. No rinsing of sample container or filter bowl into the Erlenmeyer flask is allowed.

(ii) Perform method 5210B on the filtrate obtained in paragraph (c)(4) of this section. Dilution water shall be seeded with 1 milliliter of final effluent per liter of dilution water. Dilution ratios may require adjustment to reflect the lower oxygen demand of the filtered sample in comparison to the total BOD_5. Three BOD bottles and different dilutions shall be used for each sample.

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Subpart EEE-National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors

20. Amend the appendix to subpart EEE of part 63 by:

a. Revising the appendix heading; and

b. Revising the introductory text and paragraphs 5.1 through 5.3 in section 5; and

c. Removing paragraph 5.4 in section 5.

The revisions read as follows:

Appendix A to Subpart EEE of Part 63-Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors

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5. Performance Evaluation for CO, O_2, and HC CEMS

Carbon Monoxide (CO), Oxygen (O_2), and Hydrocarbon (HC) CEMS. An Absolute Calibration Audit (ACA) must be conducted quarterly, and a Relative Accuracy Test Audit (RATA) (if applicable, see sections 5.1 and 5.2) must be conducted yearly. When a performance test is also required under § 63.1207 to document compliance with emission standards, the RATA must coincide with the performance test. The audits must be conducted as follows.

5.1 *Relative Accuracy Test Audit (RATA)*. This requirement applies to O_2 and CO CEMS. The RATA must be conducted at least yearly. Conduct the RATA as described in the RA test procedure (or alternate procedures section) described in the applicable Performance Specifications. In addition, analyze the appropriate performance audit samples received from the EPA as described in the applicable sampling methods.

5.2 *Absolute Calibration Audit (ACA)*. The ACA must be conducted at least quarterly except in a quarter when a RATA (if applicable, see section 5.1) is conducted instead. Conduct an ACA as described in the calibration error (CE) test procedure described in the applicable Performance Specifications.

5.3 *Excessive Audit Inaccuracy*. If the RA from the RATA or the CE from the ACA exceeds the criteria in the applicable Performance Specifications, hazardous waste burning must cease immediately. Hazardous waste burning cannot resume until the owner or operator takes corrective measures and audit the CEMS with a RATA to document that the CEMS is operating within the specifications.

* * * * *

Subpart JJJJ-National Emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating

21. Amend § 63.3360 by revising paragraph (e)(1)(vi) introductory text to read as follows:

§ 63.3360 What performance tests must I conduct?

(e) * * *

(1) * * *

(vi) Method 25 or 25A of appendix A-7 to 40 CFR part 60 must be used to determine total gaseous organic matter concentration. Use the same test method for both the inlet and outlet measurements which must be conducted simultaneously. You must submit notice of the intended test method to the Administrator for approval along with notification of the performance test required under § 63.7(b). You must use method 25A if any of the conditions described in paragraphs (e)(1)(vi)(A) through (D) of this section apply to the control device.

* * * * *

Subpart ZZZZ-National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

22. Revise table 4 to subpart ZZZZ of part 63 to read as follows:

Table 4 to Subpart ZZZZ of Part 63-Requirements for Performance Tests

As stated in §§ 63.6610, 63.6611, 63.6620, and 63.6640, you must comply with the following requirements for performance tests for stationary RICE:

For each . . .	Complying with the requirement to . . .	You must . . .	Using . . .	According to the following requirements . . .
1. 2SLB, 4SLB, and CI stationary RICE	a. Reduce CO emissions	i. Select the sampling port location and the number/location of traverse points at the inlet and outlet of the control device; and		(a) For CO, O_2, and moisture measurement, ducts ≤6 inches in diameter may be sampled at a single point located at the duct centroid and ducts >6 and ≤12 inches in diameter may be sampled at 3 traverse points located at 16.7, 50.0, and 83.3% of the measurement line ('3-point long line'). If the duct is >12 inches in diameter *and* the sampling port location meets the two and half-diameter criterion of section 11.1.1 of method 1 of 40 CFR part 60, appendix A-1,

				the duct may be sampled at `3-point long line'; otherwise, conduct the stratification testing and select sampling points according to section 8.1.2 of method 7E of 40 CFR part 60, appendix A-4.
		ii. Measure the O_2 at the inlet and outlet of the control device; and	(1) Method 3 or 3A or 3B of 40 CFR part 60, appendix A-2, or ASTM D6522-00 (Reapproved 2005)[a] [c] (heated probe not necessary)	(b) Measurements to determine O_2 must be made at the same time as the measurements for CO concentration.
		iii. Measure the CO at the inlet and the outlet of the control device; and	(2) ASTM D6522-00 (Reapproved 2005)[a b] [c] (heated probe not necessary) or method 10 of 40 CFR part 60, appendix A-4	(c) The CO concentration must be at 15 percent O_2, dry basis.
		iv. Measure moisture content at the inlet and outlet of the control device as needed to	(3) Method 4 of 40 CFR part 60, appendix A-3, or method 320 of 40 CFR part 63,	(d) Measurements to determine moisture content must be made at the same time and location as the

		determine CO and O_2 concentrations on a dry basis	appendix A, or ASTM D6348-03[a c]	measurements for CO concentration.
2. 4SRB stationary RICE	a. Reduce formaldehyde or THC emissions	i. Select the sampling port location and the number/location of traverse points at the inlet and outlet of the control device; and		(a) For formaldehyde, THC, O_2, and moisture measurement, ducts ≤6 inches in diameter may be sampled at a single point located at the duct centroid and ducts >6 and ≤12 inches in diameter may be sampled at 3 traverse points located at 16.7, 50.0, and 83.3% of the measurement line (`3-point long line'). If the duct is >12 inches in diameter *and* the sampling port location meets the two and half-diameter criterion of section 11.1.1 of method 1 of 40 CFR part 60, appendix A, the duct may be sampled at `3-point long line'; otherwise, conduct the stratification testing and

				select sampling points according to section 8.1.2 of method 7E of 40 CFR part 60, appendix A.
		ii. Measure O_2 at the inlet and outlet of the control device; and	(1) Method 3 or 3A or 3B of 40 CFR part 60, appendix A-2, or ASTM D6522-00 (Reapproved 2005)[a] [c] (heated probe not necessary)	(b) Measurements to determine O_2 concentration must be made at the same time as the measurements for formaldehyde or THC concentration.
		iii. Measure moisture content at the inlet and outlet of the control device as needed to determine formaldehyde or THC and O_2 concentrations on a dry basis; and	(2) Method 4 of 40 CFR part 60, appendix A-3, or method 320 of 40 CFR part 63, appendix A, or ASTM D6348-03[a] [c]	(c) Measurements to determine moisture content must be made at the same time and location as the measurements for formaldehyde or THC concentration.
		iv. If demonstrating compliance with the formaldehyde percent reduction requirement, measure formaldehyde at the inlet and the outlet of the control device	(3) Method 320 or 323 of 40 CFR part 63, appendix A; or ASTM D6348-03[a] [c], provided in ASTM D6348-03 Annex A5 (Analyte Spiking Technique),	(d) Formaldehyde concentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.

			the percent R must be greater than or equal to 70 and less than or equal to 130	
		v. If demonstrating compliance with the THC percent reduction requirement, measure THC at the inlet and the outlet of the control device	(4) (1) Method 25A, reported as propane, of 40 CFR part 60, appendix A-7	(e) THC concentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.
3. Stationary RICE	a. Limit the concentration of formaldehyde or CO in the stationary RICE exhaust	i. Select the sampling port location and the number/location of traverse points at the exhaust of the stationary RICE; and		(a) For formaldehyde, CO, O_2, and moisture measurement, ducts ≤6 inches in diameter may be sampled at a single point located at the duct centroid and ducts >6 and ≤12 inches in diameter may be sampled at 3 traverse points located at 16.7, 50.0, and 83.3% of the measurement line (`3-point long line'). If the duct is >12 inches in diameter *and* the sampling port location meets

				the two and half-diameter criterion of section 11.1.1 of method 1 of 40 CFR part 60, appendix A, the duct may be sampled at `3-point long line'; otherwise, conduct the stratification testing and select sampling points according to section 8.1.2 of method 7E of 40 CFR part 60, appendix A. If using a control device, the sampling site must be located at the outlet of the control device.
		ii. Determine the O_2 concentration of the stationary RICE exhaust at the sampling port location; and	(1) Method 3 or 3A or 3B of 40 CFR part 60, appendix A-2, or ASTM D6522-00 (Reapproved 2005)[a] [c] (heated probe not necessary)	(b) Measurements to determine O_2 concentration must be made at the same time and location as the measurements for formaldehyde or CO concentration.
		iii. Measure moisture content of the stationary RICE exhaust at the sampling port	(2) Method 4 of 40 CFR part 60, appendix A-3, or method 320 of 40 CFR	(c) Measurements to determine moisture content must be made at the same time and location as

			location as needed to determine formaldehyde or CO and O_2 concentrations on a dry basis; and		part 63, appendix A, or ASTM D6348-03[a c]		the measurements for formaldehyde or CO concentration.
		iv.	Measure formaldehyde at the exhaust of the stationary RICE; or	(3)	Method 320 or 323 of 40 CFR part 63, appendix A; or ASTM D6348-03[a c], provided in ASTM D6348-03 Annex A5 (Analyte Spiking Technique), the percent R must be greater than or equal to 70 and less than or equal to 130	(d)	Formaldehyde concentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.
		v.	Measure CO at the exhaust of the stationary RICE	(4)	Method 10 of 40 CFR part 60, appendix A-4, ASTM D6522-00 (2005)[a c], method 320 of 40 CFR part 63, appendix A, or ASTM D6348-03[a c]	(e)	CO concentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.

[a] You may also use methods 3A and 10 as options to ASTM-D6522-00 (2005).

[b] You may obtain a copy of ASTM-D6348-03 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

[c] Incorporated by reference, see § 63.14.

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Subpart PPPPP-National Emission Standards for Hazardous Air Pollutants for Engine Test Cells/Stands

23. Amend § 63.9306 by revising paragraph (d)(2)(iv) to read as follows:

§ 63.9306 What are my continuous parameter monitoring system (CPMS) installation, operation, and maintenance requirements?

* * * * *

(d) * * *

(2) * * *

(iv) Using a pressure sensor with measurement sensitivity of 0.002 inch water, check gauge calibration quarterly and transducer calibration monthly.

* * * * *

24. Amend § 63.9322 by revising paragraph (a)(1) to read as follows:

§ 63.9322 How do I determine the emission capture system efficiency?

* * * * *

(a) * * *

(1) The capture system meets the criteria in method 204 of appendix M to 40 CFR part 51 for a permanent total enclosure (PE) and directs all the exhaust gases from the enclosure to an add-on control device.

* * * * *

Subpart UUUUU-National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units

25. Revise table 5 to subpart UUUUU of part 63 to read as follows:

Table 5 to Subpart UUUUU of Part 63 - Performance Testing Requirements

As stated in § 63.10007, you must comply with the following requirements for performance testing for existing, new or reconstructed affected sources:[1]

To conduct a performance test for the following pollutant . . .	Using . . .	You must perform the following activities, as applicable to your input- or output-based emission limit . . .	Using . . .[a]
1. Filterable Particulate matter (PM)	Emissions Testing	a. Select sampling ports location and the number of traverse points	Method 1 at appendix A-1 to part 60 of this chapter.
		b. Determine velocity and volumetric flow-rate of the stack gas	Method 2, 2A, 2C, 2F, 2G or 2H at appendix A-1 or A-2 to part 60 of this chapter.
		c. Determine oxygen and carbon dioxide	Method 3A or 3B at appendix A-2 to part 60 of this chapter, or ANSI/ASME PTC 19.10-1981.[b]

		concentrations of the stack gas	
		d. Measure the moisture content of the stack gas	Method 4 at appendix A-3 to part 60 of this chapter.
		e. Measure the filterable PM concentration	Methods 5 and 5I at appendix A-3 to part 60 of this chapter. For positive pressure fabric filters, method 5D at appendix A-3 to part 60 of this chapter for filterable PM emissions. Note that the method 5 or 5I front half temperature shall be 160° ±14 °C (320° ±25 °F).
		f. Convert emissions concentration to lb/MMBtu or lb/MWh emissions rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).
	OR	OR	
	PM CEMS	a. Install, certify, operate, and maintain the PM CEMS	Performance Specification 11 at appendix B to part 60 of this chapter and Procedure 2 at appendix F to part 60 of this chapter.
		b. Install, certify, operate, and maintain the diluent gas, flow rate, and/or moisture monitoring systems	Part 75 of this chapter and § 63.10010(a), (b), (c), and (d).
		c. Convert hourly emissions concentrations to 30 boiler operating day rolling average lb/MMBtu or lb/MWh emissions rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).
2. Total or individual non-Hg HAP metals	Emissions Testing	a. Select sampling ports location and the number of traverse points	Method 1 at appendix A-1 to part 60 of this chapter.
		b. Determine velocity and volumetric flow-rate of the stack gas	Method 2, 2A, 2C, 2F, 2G or 2H at appendix A-1 or A-2 to part 60 of this chapter.

		c. Determine oxygen and carbon dioxide concentrations of the stack gas	Method 3A or 3B at appendix A-2 to part 60 of this chapter, or ANSI/ASME PTC 19.10-1981.[b]
		d. Measure the moisture content of the stack gas	Method 4 at appendix A-3 to part 60 of this chapter.
		e. Measure the HAP metals emissions concentrations and determine each individual HAP metals emissions concentration, as well as the total filterable HAP metals emissions concentration and total HAP metals emissions concentration	Method 29 at appendix A-8 to part 60 of this chapter. For liquid oil-fired units, Hg is included in HAP metals and you may use method 29, method 30B at appendix A-8 to part 60 of this chapter or ASTM D6784-16[b], for method 29 or ASTM D 6784-16, you must report the front half and back half results separately. When using method 29, report metals matrix spike and recovery levels.
		f. Convert emissions concentrations (individual HAP metals, total filterable HAP metals, and total HAP metals) to lb/MMBtu or lb/MWh emissions rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).
3. Hydrogen chloride (HCl) and hydrogen fluoride (HF)	Emissions Testing	a. Select sampling ports location and the number of traverse points	Method 1 at appendix A-1 to part 60 of this chapter.
		b. Determine velocity and volumetric flow-rate of the stack gas	Method 2, 2A, 2C, 2F, 2G or 2H at appendix A-1 or A-2 to part 60 of this chapter.
		c. Determine oxygen and carbon dioxide concentrations of the stack gas	Method 3A or 3B at appendix A-2 to part 60 of this chapter, or ANSI/ASME PTC 19.10-1981[b].

		d. Measure the moisture content of the stack gas	Method 4 at appendix A-3 to part 60 of this chapter.
		e. Measure the HCl and HF emissions concentrations	Method 26 or method 26A at appendix A-8 to part 60 of this chapter or method 320 at appendix A to part 63 of this chapter or ASTM D6348-03(R2010)[b] with
			(1) the following conditions when using ASTM D6348-03(R2010):
			(A) The test plan preparation and implementation in the Annexes to ASTM D6348-03(R2010), sections A1 through A8 are mandatory;
			(B) For ASTM D6348-03(R2010) Annex A5 (Analyte Spiking Technique), the percent (%) R must be determined for each target analyte (see Equation A5.5);
			(C) For the ASTM D6348-03(R2010) test data to be acceptable for a target analyte, %R must be 70% ≥R ≤130%; and
			(D) The %R value for each compound must be reported in the test report and all field measurements corrected with the calculated %R value for that compound using the following equation: $\text{Reported Result} = \frac{(\text{Measured Concentration in Stack})}{\%R} x\ 100$

To conduct a performance test for the following pollutant . . . (cont'd)	**Using . . . (cont'd)**	**You must perform the following activities, as applicable to your input- or output-based emission limit . . . (cont'd)**	**Using . . .[a] (cont'd)**
			(2) spiking levels nominally no greater than two times the level corresponding to the applicable emission limit.

			Method 26A must be used if there are entrained water droplets in the exhaust stream.
		f. Convert emissions concentration to lb/MMBtu or lb/MWh emissions rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).
	OR	OR	
	HCl and/or HF CEMS	a. Install, certify, operate, and maintain the HCl or HF CEMS	Appendix B of this subpart.
		b. Install, certify, operate, and maintain the diluent gas, flow rate, and/or moisture monitoring systems	Part 75 of this chapter and § 63.10010(a), (b), (c), and (d).
		c. Convert hourly emissions concentrations to 30 boiler operating day rolling average lb/MMBtu or lb/MWh emissions rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).
4. Mercury (Hg)	Emissions Testing	a. Select sampling ports location and the number of traverse points	Method 1 at appendix A-1 to part 60 of this chapter or method 30B at appendix A-8 for method 30B point selection.
		b. Determine velocity and volumetric flow-rate of the stack gas	Method 2, 2A, 2C, 2F, 2G or 2H at appendix A-1 or A-2 to part 60 of this chapter.
		c. Determine oxygen and carbon dioxide concentrations of the stack gas	Method 3A or 3B at appendix A-1 to part 60 of this chapter, or ANSI/ASME PTC 19.10-1981[b].
		d. Measure the moisture content of the stack gas	Method 4 at appendix A-3 to part 60 of this chapter.
		e. Measure the Hg emission concentration	Method 30B at appendix A-8 to part 60 of this chapter, ASTM D6784-16[b], or method 29 at appendix A-8 to part 60

			of this chapter; for method 29 or ASTM D 6784-16, you must report the front half and back half results separately.
		f. Convert emissions concentration to lb/TBtu or lb/GWh emission rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).
	OR	OR	
	Hg CEMS	a. Install, certify, operate, and maintain the CEMS	Sections 3.2.1 and 5.1 of appendix A of this subpart.
		b. Install, certify, operate, and maintain the diluent gas, flow rate, and/or moisture monitoring systems	Part 75 of this chapter and § 63.10010(a), (b), (c), and (d).
		c. Convert hourly emissions concentrations to 30 boiler operating day rolling average lb/TBtu or lb/GWh emissions rates	Section 6 of appendix A to this subpart.
	OR	OR	
	Sorbent trap monitoring system	a. Install, certify, operate, and maintain the sorbent trap monitoring system	Sections 3.2.2 and 5.2 of appendix A to this subpart.
		b. Install, operate, and maintain the diluent gas, flow rate, and/or moisture monitoring systems	Part 75 of this chapter and § 63.10010(a), (b), (c), and (d).
		c. Convert emissions concentrations to 30 boiler operating day rolling average lb/TBtu or lb/GWh emissions rates	Section 6 of appendix A to this subpart.

	OR	OR	
	LEE testing	a. Select sampling ports location and the number of traverse points	Single point located at the 10% centroidal area of the duct at a port location per method 1 at appendix A-1 to part 60 of this chapter or method 30B at Appendix A-8 for method 30B point selection.
		b. Determine velocity and volumetric flow-rate of the stack gas	Method 2, 2A, 2C, 2F, 2G, or 2H at appendix A-1 or A-2 to part 60 of this chapter or flow monitoring system certified per appendix A of this subpart.
		c. Determine oxygen and carbon dioxide concentrations of the stack gas	Method 3A or 3B at appendix A-1 to part 60 of this chapter, or ANSI/ASME PTC 19.10-1981[b], or diluent gas monitoring systems certified according to part 75 of this chapter.
		d. Measure the moisture content of the stack gas	Method 4 at appendix A-3 to part 60 of this chapter, or moisture monitoring systems certified according to part 75 of this chapter.
		e. Measure the Hg emission concentration	Method 30B at appendix A-8 to part 60 of this chapter; perform a 30 operating day test, with a maximum of 10 operating days per run (*i.e.,* per pair of sorbent traps) or sorbent trap monitoring system or Hg CEMS certified per appendix A of this subpart.
		f. Convert emissions concentrations from the LEE test to lb/TBtu or lb/GWh emissions rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).
		g. Convert average lb/TBtu or lb/GWh Hg emission rate to lb/year, if you are attempting to meet the 29.0 lb/year threshold	Potential maximum annual heat input in TBtu or potential maximum electricity generated in GWh.

5. Sulfur dioxide (SO_2)	SO_2 CEMS	a. Install, certify, operate, and maintain the CEMS	Part 75 of this chapter and § 63.10010(a) and (f).
		b. Install, operate, and maintain the diluent gas, flow rate, and/or moisture monitoring systems	Part 75 of this chapter and § 63.10010(a), (b), (c), and (d).
		c. Convert hourly emissions concentrations to 30 boiler operating day rolling average lb/MMBtu or lb/MWh emissions rates	Method 19 F-factor methodology at appendix A-7 to part 60 of this chapter or calculate using mass emissions rate and gross output data (see § 63.10007(e)).

[1] Regarding emissions data collected during periods of startup or shutdown, see §§ 63.10020(b) and (c) and 63.10021(h).

[2] See tables 1 and 2 to this subpart for required sample volumes and/or sampling run times.

[3] Incorporated by reference, see § 63.14.

26. Amend appendix A to subpart UUUUU of part 63 by revising sections 4.1.1.5 and 4.1.1.4.1 to read as follows:

Appendix A to Subpart UUUUU of Part 63-Hg Monitoring Provisions

* * * * *

4. Certification and Recertification Requirements

* * * * *

4.1.1.5 *Relative Accuracy Test Audit (RATA)*. Perform the RATA of the Hg CEMS at normal load. Acceptable Hg reference methods for the RATA include ASTM D6784-16 (IBR, see § 63.14) and methods 29, 30A, and 30B in appendix A-8 to part 60 of this chapter. When method

29 or ASTM D6784-16 is used, paired sampling trains are required, and the filterable portion of the sample need not be included when making comparisons to the Hg CEMS results for purposes of a RATA. To validate a method 29 or ASTM D6784-16 test run, calculate the relative deviation (RD) using Equation A-1 of this section, and assess the results as follows to validate the run. The RD must not exceed 10 percent, when the average Hg concentration is greater than 1.0 µg/dscm. If the RD specification is met, the results of the two samples shall be averaged arithmetically.

$$RD = \frac{|C_a - C_b|}{C_a + C_b} \times 100 \quad (Eq.\ A-1)$$

Where:

RD = Relative Deviation between the Hg concentrations of samples “a” and “b” (percent),

C_a = Hg concentration of Hg sample “a” (µg/dscm), and

C_b = Hg concentration of Hg sample “b” (µg/dscm).

4.1.1.5.1 *Special Considerations*. A minimum of nine valid test runs must be performed, directly comparing the CEMS measurements to the reference method. More than nine test runs may be performed. If this option is chosen, the results from a maximum of three test runs may be rejected so long as the total number of test results used to determine the relative accuracy is greater than or equal to nine; however, all data must be reported including the rejected data. The minimum time per run is 21 minutes if method 30A is used. If method 29, method 30B, or ASTM D6784-16 is used, the time per run must be long enough to collect a sufficient mass of Hg to analyze. Complete the RATA within 168 unit operating hours, except when method 29 or

ASTM D6784-16[2] is used, in which case, up to 336 operating hours may be taken to finish the test.

* * * * *

27. Amend appendix A to part 63 by:

a. Revising the section number “6.2” under the heading “16.0 Alternative Procedures” in method 315 to read “16.2”;

b. Revising sections 10.1 and 10.3 in method 323;

c. Adding in section 12.1 the entry “b” in alphabetical order in method 323;

d. Revising in section 12.1 the entry “K_c” in method 323; and

e. Revising section 12.6 in method 323.

The revisions and addition read as follows:

Appendix A to Part 63-Test Methods

* * * * *

Method 315-Determination of Particulate and Methylene Chloride Extractable Matter (MCEM) From Selected Sources at Primary Aluminum Production Facilities

* * * * *

16.0 Alternative Procedures

* * * * *

16.2 * * *

* * * * *

Method 323-Measurement of Formaldehyde Emissions From Natural Gas-Fired Stationary Sources-Acetyl Acetone Derivatization Method

* * * * *

10.0 Calibration and Standardization

10.1 Spectrophotometer Calibration. Prepare a stock solution of 10 µg/mL formaldehyde. Prepare a series of calibration standards from the stock solution corresponding to 0.0, 0.5, 1.5, 3.5, 5.0, and 7.5 µg/mL formaldehyde. Mix 2.0 ml of each calibration standard with 2.0 mL of acetyl acetone reagent in screw cap vials, thoroughly mix the solution, and place the vials in a water bath (or heating block) at 60 °C for 10 minutes. Remove the vials and allow to cool to room temperature. Transfer each solution to a cuvette and measure the absorbance at 412 nm using the spectrophotometer. Develop a calibration curve (response vs. concentration) from the analytical results of these standards. The acceptance criteria for the spectrophotometer calibration is a correlation coefficient of 0.99 or higher. If this criterion is not met, the calibration procedures should be repeated.

* * * * *

10.3 Calibration Checks. Calibration checks consisting of analyzing a mid-range standard separately prepared with each batch of samples. The calibration check standard must be prepared independent of the calibration stock solution. The result of the check standard must be within 10 percent of the theoretical value to be acceptable. If the acceptance criteria are not met, the standard must be reanalyzed. If still unacceptable, a new calibration curve must be prepared using freshly prepared standards.

* * * * *

12.0 Calculations and Data Analysis

12.1 Nomenclature

* * * * *

b = the intercept of the calibration curve at zero concentration

* * * * *

K_c = spectrophotometer calibration factor, slope of the least square regression line, absorbance/(µg/mL) (Note: Most spreadsheets are capable of calculating a least squares line, including slope, intercept, and correlation coefficient).

* * * * *

12.6 Mass of Formaldehyde in Liquid Sample

$$m = \frac{(A-b)*F}{K_c}(V_t)\left(\frac{1\,mg}{1000\mu g}\right) \quad \text{Eq. 323-5}$$

* * * * *