

Environmental Protection Agency (EPA) Fiscal Year 2021 Agency Report

1. Please provide a summary of your agency's activities undertaken to carry out the provisions of OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities" and the National Technology Transfer and Advance Act (NTTAA). The summary should contain a link to the agency's standards-specific website(s) where information about your agency's standards and conformity assessment related activities are available.

In FY 2021 the United States Environmental Protection Agency (EPA) continued to comprehensively carry out the provisions of OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities" and the National Technology Transfer and Advance Act (NTTAA).

We highlight the following as examples:

- A. Participation in the development of global standard to assess greenhouse gases from transportation

EPA is participating in the International Organization for Standardization (ISO) Working Group 14 under Subcommittee 7 (Greenhouse gas management and related activities) of ISO Technical Committee 207 (Environmental Management), ISO/TC 207/SC 7/WG 14. The objective of this Working Group is to develop a global voluntary consensus protocol to assess greenhouse gases from transportation. The concept draws from the EPA SmartWay partnership (www.epa.gov/smartway) as well as the expertise of the Global Logistics Emissions Council, the World Resource Institute, related prior ISO projects, and related programs and research efforts in other countries including France and Germany.

The standard, when completed, will provide a global framework for rigorous calculation and evaluation of transportation-related climate pollutants. Such transparency will provide market leverage to reduce carbon from goods movement and can inform national and international policy. It can also create a more level playing field for U.S. businesses competing in the global market. These aims advance EPA's mission of environmental protection while incorporating a considered balance of stakeholder perspectives. Toward this end, EPA SmartWay, working through the American National Standards Institute (ANSI) and the U.S. Technical Advisory Group (USTAG) to ISO/TC 207/SC 7/WG 14 conducted outreach to U.S. freight transportation and other stakeholders to seek their input. EPA also hosted the international kick-off meeting of this Working Group in November 2019 at the EPA National Vehicle and Fuel Emissions Laboratory at Ann Arbor, Michigan.

In addition to contributing significantly to the research and development of the main sections and annexes of the standard, EPA was instrumental in advocating for and leading the development of an informative annex on black carbon. EPA has strong interest in reducing this potent short-lived climate forcer, both to reduce climate risk, and because black carbon is a constituent of particulate emitted by the older diesel fueled vehicles often used in goods movement. Particulate emissions are especially concerning for communities— often disadvantaged or underserved - that tend to live in proximity to freight hubs and routes. EPA also led the drafting of an annex on hydrofluorocarbons (HFC's) and devised a methodology to measure HFC emissions within the trip- and hub- based framework of the standard.

Two years into a planned three-year timeline, the project has undergone several Working Group drafts and a committee draft. The next milestone is to prepare, publish and translate the draft international standard (DIS) by April 2022 for review and balloting by June 2022. There will then be an opportunity to review the DIS comments in preparation of the final draft international standard (FDIS) by August 2022. Final publication of the standard is anticipated by November 2022.

B. Promoting International Methods for Lead Paint Analysis in Developing Countries

EPA has been working with international partners through the Global Alliance to Eliminate Lead Paint (Alliance) to promote international standards for lead paint sampling and analysis in developing countries. The Alliance is a cooperative initiative jointly led by the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) to prevent children's exposure to lead from paints containing lead and to minimize occupational exposures to lead paint.

The United States banned lead in household paint in the 1970s, but over 100 countries globally still allow the manufacture, import and sale of lead in household paint. The goal of the Alliance is to promote lead paint laws in all countries.

As a result of the work of the Alliance, many countries are now taking steps to eliminate lead paint through the establishment of laws that set low limits on lead in paint to protect human health and the environment. To help with the development of effective and enforceable national laws around the world, EPA spearheaded the creation of model law guidance that provides suggested legal language that countries can use when drafting their own national laws. The guidance includes a list of internationally accepted standards, including test methods for lead paint analysis, (view the model law here: <https://www.unep.org/resources/publication/model-law-and-guidance-regulating-lead-paint>). This includes test methods developed by the International Organization for Standardization (ISO) and ASTM International (ISO 6503, 1513 and 1514, and ASTM E1645-16, E1979-17, E1613 and D3335-85a).

Since the model law guidance was published, an increasing number of countries are using it to draft and enact their own national lead paint laws, most of which include requirements for internationally accepted methods to test for lead in paint.

2. Please list the government-unique standards (GUS) your agency began using in lieu of voluntary consensus standards during FY 2021. Please note that GUS which are still in effect from previous years should continue to be listed, thus the total number in your agency's report will include all GUS currently in use (previous years and new as of this FY): 39

(1) Government Unique Standard

EPA Method 1 – Traverse Points, Stationary Sources [Incorporated: 2001]

Voluntary Standard

ASTM D3154-00, Standard Method for Average Velocity in a Duct (Pitot Tube Method)

Rationale

1. The standard appears to lack in quality control and quality assurance requirements. It does not include the following: (1) Proof that openings of standard pitot tube have not plugged during the test; (2) if differential pressure gauges other than inclined manometers (e.g., magnehelic gauges) are used, their calibration must be checked after each test series; and (3)

the frequency and validity range for calibration of the temperature sensors. 2. They are too general, too broad, or not sufficiently detailed to assure compliance with EPA regulatory requirements.

Voluntary Standard

ASTM D3154-91 (1995), Standard Method for Average Velocity in a Duct (Pitot Tube Method)

Rationale

Is too general, too broad, or not sufficiently detailed to assure compliance with EPA regulatory requirements.

(2) Government Unique Standard

EPA Method 10 [Incorporated: 2015]

Voluntary Standard

ANSI/ASME PTC 19-10-1981-Part 10

ISO 10396:1993 (2007)

ISO 12039:2001

ASTM D5835-95 (2007)

ASTM D6522-00 (2005)

CAN/CSA Z223.2-M86 (1999)

CAN/CSA Z223.21-M1978

ASTM D3162-94 (2005)

Rationale

The use of these voluntary consensus standards would not be practical with applicable law due to a lack of equivalency, documentation, validation data and other important technical and policy considerations.

(3) Government Unique Standard

EPA Method 101 - Mercury Emissions, Chlor-Alkali Plants (Air) [Incorporated: 2001]

Voluntary Standard

ASTM D6216-98 - Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications.

Rationale

The EPA is incorporating ASTM D6216 (manufacturers certification) by reference into EPA Performance Specification 1, Sect. 5 & 6 in another rulemaking. ASTM D6216 does not address all the requirements specified in PS-1.

(4) Government Unique Standard

EPA Method 101a - Mercury Emissions Sewer/Sludge Incinerator [Incorporated: 2001]

Voluntary Standard

ASTM D6216-98 - Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications.

Rationale

The EPA is incorporating ASTM D6216 (manufacturers certification) by reference into EPA Performance Specification 1, Sect. 5 & 6 in another rulemaking. ASTM D6216 does not address all the requirements specified in PS-1.

(5) Government Unique Standard

EPA Method 10A – Carbon Monoxide for Certifying CEMS [Incorporated: 2001]

Voluntary Standard

CAN/CSA Z223.21-M1978, Method for the Measurement of Carbon Monoxide: 3—Method of Analysis by Non-Dispersive Infrared Spectrometry.

Rationale

1. It is lacking in the following areas: (1) Sampling procedures; (2) procedures to correct for the carbon dioxide concentration; (3) instructions to correct the gas volume if CO₂ traps are used; (4) specifications to certify the calibration gases are within 2 percent of the target concentration; (5) mandatory instrument performance characteristics (e.g., rise time, fall time, zero drift, span drift, precision); (6) quantitative specification of the span value maximum as compared to the measured value: The standard specifies that the instruments should be compatible with the concentration of gases to be measured, whereas EPA Method 10 specifies that the instrument span value should be no more than 1.5 times the source performance standard. 2. Is too general, too broad, or not sufficiently detailed to assure compliance with EPA regulatory requirements.

(6) Government Unique Standard

EPA Method 12 – Inorganic Lead, Stationary Sources [Incorporated: 2000]

Voluntary Standard

ASTM D4358-94 (1999), Standard Test Method for Lead and Chromium in Air Particulate Filter Samples of Lead Chromate Type Pigment Dusts by Atomic Absorption Spectroscopy

Rationale

These ASTM standards do not require the use of glass fiber filters as in EPA Method 12 and require the use of significantly different digestion procedures that appear to be milder than the EPA Method 12 digestion procedure. For these reasons, these ASTM standards cannot be considered equivalent to EPA Method 12. Also, the subject ASTM standards do not require the use of hydrogen fluoride (HF) as in EPA Method 29 and, therefore, they cannot be used for the preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas these three ASTM standards require cellulose filters and other probable nonglass fiber media, which cannot be considered equivalent to EPA Method 29.

Voluntary Standard

ASTM E1741-95 (1995), Standard Practice for Preparation of Airborne Particulate Lead Samples Collected During Abatement and Construction Activities for Subsequent Analysis by Atomic Spectrometry

Rationale

These ASTM standards do not require the use of glass fiber filters as in EPA Method 12 and require the use of significantly different digestion procedures that appear to be milder than the EPA Method 12 digestion procedure. For these reasons, these ASTM standards cannot be considered equivalent to EPA Method 12. Also, the subject ASTM standards do not require the use of hydrogen fluoride (HF) as in EPA Method 29 and, therefore, they cannot be used for the preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas these three ASTM standards require cellulose filters and other probable nonglass fiber media, which cannot be considered equivalent to EPA Method 29.

Voluntary Standard

ASTM E1979-98 (1998), Standard Practice for Ultrasonic Extraction of Paint, Dust, Soil, and Air Samples for Subsequent Determination of Lead

Rationale

These ASTM standards do not require the use of glass fiber filters as in EPA Method 12 and require the use of significantly different digestion procedures that appear to be milder than the EPA Method 12 digestion procedure. For these reasons, these ASTM standards cannot be considered equivalent to EPA Method 12. Also, the subject ASTM standards do not require the use of hydrogen fluoride (HF) as in EPA Method 29 and, therefore, they cannot be used for the preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas these three ASTM standards require cellulose filters and other probable nonglass fiber media, which cannot be considered equivalent to EPA Method 29.

(7) Government Unique Standard

EPA Method 15 – Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions from Stationary Sources [Incorporated: 2018]

Voluntary Standard

ASTM D4323-84 (2009) - Standard Test Method for Hydrogen Sulfide in the Atmosphere by Rate of Change of Reflectance

Rationale

This standard is not acceptable as an alternative to EPA Method 15 since it only applies to concentrations of H₂S from 1 ppb to 3 ppm without dilution, which is likely to be lower than the levels at source conditions. Also, many quality control items are missing in ASTM D4323,

such as checks for calibration drift and sample line losses. The calibration curve is also determined with only one point, as opposed to a multi-point curve of EPA Method 15.

(8) Government Unique Standard

EPA Method 17 - Particle Matter (PM) In Stack Filtration [Incorporated: 2001]

Voluntary Standard

ASME C00049

Rationale

EPA looked at this standard for both Pulp and Paper Hazardous Air Pollutant rules and for the Small Municipal Waste Combustion rule. Contains sampling options beyond which would be considered acceptable for Method 5.

Voluntary Standard

ASTM D3685/3685M-95 - Standard Test method for Sampling and Determination of Particle Matter in Stack Gases

Rationale

EPA looked at this standard for both Pulp and Paper Hazardous Air Pollutant rules and for the Small Municipal Waste Combustion rule. Contains sampling options beyond which would be considered acceptable for Method 5.

(9) Government Unique Standard

EPA Method 18 [Incorporated: 2016]

Voluntary Standard

ASTM D6420-99 (2010)

ASTM D6060-17

Rationale

ASTM D6420-99 (2010) "Test method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography/Mass Spectrometry"

The use of this voluntary consensus standard would not be practical due to a lack of equivalency, documentation, validation data and other important technical and policy considerations. The EPA did not receive comments during the notice and comment period that caused us to alter the standards and methods in the final permits.

ASTM D6060-17 - Practice for Sampling of Process Vents with a Portable Gas Chromatography
This ASTM standard lacks key quality control and assurance requirements included in EPA Method 18. For example, ASTM D6060: 1) lacks the requirement of three reference standards in triplicate; 2) lacks the calibration acceptance criteria that the triplicate calibration standards agree within 5 percent of their average; 3) lacks a post-sampling volume flow rate check and requirement to repeat the test if the pre- and post-test flowrates differ by more than 20 percent; 4) lacks triplicate samples for recovery tests and allows a 15 percent difference between the pre-test and recovery test data vs. 10 percent for Method 18; 4) lacks the

accuracy performance criteria of 10 percent of the preparation value for audit samples; 5) lacks reporting/documentation requirements. Also, ASTM D6060 does not include procedures for sample collection using other media, such as bags and solid sorbents.

(10) Government Unique Standard

EPA Method 2 – Velocity and S-type Pitot [Incorporated: 1999]

Voluntary Standard

ASTM D3464-96 (2001)

ASTM D3154 – 00 (2014)

ASTM D3463-96 (2014)

ASTM D3796-90 (2016)

ASME B133.9-1994 (2001)

Rationale

ASTM D3464-96 (2001), Standard Test Method Average Velocity in a Duct Using a Thermal Anemometer: Applicability specifications are not clearly defined, e.g., range of gas composition, temperature limits. Also, the lack of supporting quality assurance data for the calibration procedures and specifications, and certain variability issues that are not adequately addressed by the standard limit EPA's ability to make a definitive comparison of the method in these areas.

ASTM D3154 – 00 (2014), Standard Method for Average Velocity in a Duct (Pitot Tube Method): (added to Annual Report in FY2018) This standard appears to cover EPA's Part 60 Methods 1, 2, 2C, 3, 3B, 4, but lacks in quality control and quality assurance requirements. Specifically, ASTM D3154 00 does not include the following: 1) proof that openings of standard pitot tube have not plugged during the test; 2) if differential pressure gauges other than inclined manometers (e.g., magnehelic gauges) are used, their calibration must be checked after each test series; and 3) the frequency and validity range for calibration of the temperature sensors. (not for EPA Methods 1, 2, 2C, 3, 3B, 4).

ASTM D3463-96 (2014), Standard Test Method Average Velocity in a Duct Using a Thermal Anemometer: (added to Annual Report in FY2018) The applicability specifications in this ASTM standard are not clearly defined, e.g., range of gas composition, temperature limits. Also, the lack of supporting quality assurance data for the calibration procedures and specifications, and certain variability issues that are not adequately addressed by the standard limit EPA's ability to make a definitive comparison of the method in these areas.

ASTM D3796-90 (2016), Standard Practice for Calibration of Type S Pitot Tubes: (added to Annual Report in FY2018) This ASTM standard is intended to be a calibration procedure for the S-type pitot tube and not a method by which stack gas velocity and/or volumetric flowrates can be measured as in EPA Method 2. In addition, the calibration procedure does not require an inclined manometer and does not specify any additional accuracy verifications for the use of other types of differential pressure gauges.

ASME B133.9-1994 (2001) - Measurement of Exhaust Emissions from Stationary Gas Turbine Engines (this is the latest version, method has been withdrawn with no future updates): (added to Annual Report in FY2018) Not a quantitative method, per se, although a good primer

for this source category that includes technical descriptions of manual and instrumental sampling procedures, as well as performance specifications for instrumental methods. This standard has many good references, including the EPA Methods and Performance Specifications. Only use for engines and turbines. Not a method. (not for EPA Methods 2, 3A, 4, 5).

Voluntary Standard

ISO 10780:1994, Stationary Source Emissions-- Measurement of Velocity and Volume Flowrate of Gas Streams in Ducts

Rationale

The standard recommends the use of an L-shaped pitot, which historically has not been recommended by EPA. The EPA specifies the S-type design, which has large openings that are less likely to plug up with dust.

(11) Government Unique Standard

EPA Method 21 - Volatile Organic Compound (VOC) Leaks [Incorporated: 2003]

Voluntary Standard

ASTM E1211-97 - Standard Practice for Leak Detection and Location Using Surface-Mounted Acoustic Emission Sensors

Rationale

This standard will detect leaks but not classify the leak as VOC, as in EPA Method 21. In addition, in order to detect the VOC concentration of a known VOC leak, the acoustic signal would need to be calibrated against a primary instrument. Background noise interference in some source situations could also make this standard difficult to use effectively.

(12) Government Unique Standard

EPA Method 24 – Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coating [Incorporated: 2018]

Voluntary Standard

ASTM D3960-05, ASTM D6053-14, ISO 11890-1 (2000), ISO 11890-2 (2000) Part 2, ISO 3233:1998

Rationale

ASTM D3960-05 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coating: This standard measures the VOC content whereas EPA Method 24 determines volatile matter content (and water content, density, volume solids, and weight solids). If the regulation allows for the use of VOC content as a surrogate for HAP, then this method is an acceptable alternative to Method 24. If the regulation requires the measurement of volatile matter content, as in Method 24, then this standard is not acceptable;

ASTM D6053-14 - Standard Test Method for Determination of Volatile Organic Compound

(VOC) Content of Electrical Insulating Varnishes: Under a separate action, the EPA is incorporating ASTM D6053-96 by reference into EPA Method 24. This standard will only be applicable for a specific type of coating (electrical insulating varnishes). Specimen size for magnet wire coating must be 2.0 grams +/- 0.1 grams;

ISO 11890-1 (2000) Part 1: Paints and Varnishes Determination of Volatile Organic Compound (VOC) Content Difference Method: This standard has different test conditions than EPA Method 24 and therefore is unacceptable as an alternative to Method 24 because measured nonvolatile matter content can vary with experimental factors such as temperature, length of heating period, size of weighing dish, and size of sample. ISO 11890-1 allows for different dish weights and sample sizes than the one size (58 mm in diameter and sample size of 0.5 g) of EPA Method 24. ISO 11890-1 also allows for different oven temperatures and heating times depending on the type of coating, whereas EPA Method 24 requires 60 minutes heating at 110°C at all times. Nonvolatile matter content is not an absolute quantity but is dependent on temperature and heating period. The size of the weighing dish and the size of the sample may also affect the nonvolatile matter measured. Because the EPA Method 24 test conditions and procedures define volatile matter, ISO 11890 1 is unacceptable as an alternative;

ISO 11890-2 (2000) Part 2: Paints and Varnishes-Determination of Volatile Organic Compound (VOC) Content Gas Chromatographic Method: This standard only measures the VOC added to the coating and would not measure any VOC generated from the curing of the coating. The EPA Method 24 does measure cure VOC, which can be significant in some cases, and, therefore, ISO 11890-2 is not an acceptable alternative to EPA Method 24.

ISO 3233:1998 - Paints and Varnishes-Determination of Percentage Volume of Nonvolatile Matter by Measuring the Density of a Dried Coating: This ISO standard is more applicable as a manufacturing tool than an emissions standard, since it measures the amount of coverage of a coating using a dipping plate.

(13) Government Unique Standard

EPA Method 28 (Section 10.1) – Wood Heaters, Certificate and Auditing [Incorporated: 2003]

Voluntary Standard

ASME Power Test Codes, Supplement on Instruments and Apparatus, part 5, Measurement of Quantity of Materials, Chapter 1, Weighing Scales

Rationale

It does not specify the number of initial calibration weights to be used nor a specific pretest weight procedure.

Voluntary Standard

ASTM E319-85 (Reapproved 1997), Standard Practice for the Evaluation of Single-Pan Mechanical Balances

Rationale

This standard is not a complete weighing procedure because it does not include a pretest procedure.

(14) Government Unique Standard

EPA Method 29 – Metals Emissions from Stationary Sources [Incorporated: 2001]

Voluntary Standard

ASTM D4358-94 (1999), Standard Test Method for Lead and Chromium in Air Particulate Filter Samples of Lead Chromate Type Pigment Dusts by Atomic Absorption Spectroscopy

Rationale

These ASTM standards do not require the use of glass fiber filters as in EPA Method 12 and require the use of significantly different digestion procedures that appear to be milder than the EPA Method 12 digestion procedure. For these reasons, these ASTM standards cannot be considered equivalent to EPA Method 12. Also, the subject ASTM standards do not require the use of hydrogen fluoride (HF) as in EPA Method 29 and, therefore, they cannot be used for the preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas these three ASTM standards require cellulose filters and other probable nonglass fiber media, which cannot be considered equivalent to EPA Method 29.

Voluntary Standard

ASTM E1741-95 (1995), Standard Practice for Preparation of Airborne Particulate Lead Samples Collected During Abatement and Construction Activities for Subsequent Analysis by Atomic Spectrometry

Rationale

These ASTM standards do not require the use of glass fiber filters as in EPA Method 12 and require the use of significantly different digestion procedures that appear to be milder than the EPA Method 12 digestion procedure. For these reasons, these ASTM standards cannot be considered equivalent to EPA Method 12. Also, the subject ASTM standards do not require the use of hydrogen fluoride (HF) as in EPA Method 29 and, therefore, they cannot be used for the preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas these three ASTM standards require cellulose filters and other probable nonglass fiber media, which cannot be considered equivalent to EPA Method 29.

Voluntary Standard

ASTM E1979-98 (1998), Standard Practice for Ultrasonic Extraction of Paint, Dust, Soil, and Air Samples for Subsequent Determination of Lead

Rationale

These ASTM standards do not require the use of glass fiber filters as in EPA Method 12 and require the use of significantly different digestion procedures that appear to be milder than the EPA Method 12 digestion procedure. For these reasons, these ASTM standards cannot be considered equivalent to EPA Method 12. Also, the subject ASTM standards do not require the use of hydrogen fluoride (HF) as in EPA Method 29 and, therefore, they cannot be used for the

preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas these three ASTM standards require cellulose filters and other probable nonglass fiber media, which cannot be considered equivalent to EPA Method 29.

Voluntary Standard

CAN/CSA Z223.26-M1987, Measurement of Total Mercury in Air Cold Vapour Atomic Absorption Spectrophotometric Method

Rationale

It lacks sufficient quality assurance and quality control requirements necessary for EPA compliance assurance requirements.

(15) Government Unique Standard

EPA Method 29 for the determination of the concentration of Hg [Incorporated: 2015]

Voluntary Standard

ASTM D6784-02 (2008), “Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)”

Rationale

The use of this voluntary consensus standard would be more expensive and is inconsistent with the final Hg standard that was determined using EPA Method 29 data.

(16) Government Unique Standard

EPA Method 29, “Metals Emissions from Stationary Sources” [Incorporated: 2017]

Voluntary Standard

ASTM D6784–02 (Reapproved 2008), “Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)”

Rationale

The use of this voluntary consensus standard would be impractical because this standard is only acceptable as an alternative to the portion of EPA Method 29 for mercury, and emissions testing for mercury alone is not required under 40 CFR part 63, subpart MM.

(17) Government Unique Standard

EPA Method 2C - Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts (Standard Pitot Tube) [Incorporated: 2018]

Voluntary Standard

ASTM D3154 – 00 (2014), Standard Method for Average Velocity in a Duct (Pitot Tube Method)

Rationale

This standard appears to cover EPA's Part 60 Methods 1, 2, 2C, 3, 3B, 4, but lacks in quality control and quality assurance requirements. Specifically, ASTM D3154 00 does not include the following: 1) proof that openings of standard pitot tube have not plugged during the test; 2) if differential pressure gauges other than inclined manometers (e.g., magnehelic gauges) are used, their calibration must be checked after each test series; and 3) the frequency and validity range for calibration of the temperature sensors. (not for EPA Methods 1, 2, 2C, 3, 3B, 4)

(18) Government Unique Standard

EPA Method 3 – Gas Analysis for The Determination of Dry Molecular Weight [Incorporated: 2018]

Voluntary Standard

ASTM D3154 – 00 (2014), Standard Method for Average Velocity in a Duct (Pitot Tube Method)

Rationale

This standard appears to cover EPA's Part 60 Methods 1, 2, 2C, 3, 3B, 4, but lacks in quality control and quality assurance requirements. Specifically, ASTM D3154 00 does not include the following: 1) proof that openings of standard pitot tube have not plugged during the test; 2) if differential pressure gauges other than inclined manometers (e.g., magnehelic gauges) are used, their calibration must be checked after each test series; and 3) the frequency and validity range for calibration of the temperature sensors. (not for EPA Methods 1, 2, 2C, 3, 3B, 4)

(19) Government Unique Standard

EPA Method 301- Field Validation of Pollutant Measurement Methods from Various Waste Media [Incorporated: 2018]

Voluntary Standard

ASTM D4855-97 (2002) - Standard Practice for Comparing Test Methods

Rationale

This ASTM standard appears to be equivalent to EPA Method 301 in its statistical design and decision criteria but is less prescriptive than Method 301 for many procedures. For example, the ASTM does not require the use of a t-test explicitly to test the precision of the alternative method, but instead states that a t-test or F-test should be used, as appropriate. The primary difference between ASTM D4855-97 and EPA Method 301, that makes the ASTM standard not acceptable as a complete alternative to the EPA method, is that the ASTM standard addresses the testing of materials rather than environmental samples. Because of this difference, the ASTM standard does not prescribe the use of paired samples as in the EPA method. This feature of EPA Method 301 is critical to its success and the acceptability of an alternate standard.

(20) Government Unique Standard

EPA Method 306 - Chromium Emissions, Electroplating and Anodizing [Incorporated: 2002]

Voluntary Standard

ASTM D4358-94 (1999) - Standard Test Method for Lead and Chromium in Air Particulate Filter Samples of Lead Chromate Type Pigment Dusts by Atomic Absorption Spectroscopy

Rationale

This MACT standard (Petroleum Refineries) only cites Method 29. Therefore, the following EPA comment is only applicable for Method 29 not Method 12 and 306: Method 29 requires the use of hydrofluoric acid (HF) in its process of digestion of the sample. ASTM D4358-94 (1999) does not require the use of HF; therefore, it cannot be used in the preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas the subject ASTM standard requires cellulose filters and other probable non-glass fiber media, and this further negates their use as Method 29 equivalent methods. (Same comment as provided for ASTM E1741 and ASTM E1979).

(21) Government Unique Standard

EPA Method 306a - Chromium Emissions, Electroplating -- Mason Jar [Incorporated: 2002]

Voluntary Standard

ASTM D4358-94 (1999) - Standard Test Method for Lead and Chromium in Air Particulate Filter Samples of Lead Chromate Type Pigment Dusts by Atomic Absorption Spectroscopy

Rationale

This MACT standard (Petroleum Refineries) only cites Method 29. Therefore, the following EPA comment is only applicable for Method 29 not Method 12 and 306: Method 29 requires the use of hydrofluoric acid (HF) in its process of digestion of the sample. ASTM D4358-94 (1999) does not require the use of HF; therefore, it cannot be used in the preparation, digestion, and analysis of Method 29 samples. Additionally, Method 29 requires the use of a glass fiber filter, whereas the subject ASTM standard requires cellulose filters and other probable non-glass fiber media, and this further negates their use as Method 29 equivalent methods. (Same comment as provided for ASTM E1741 and ASTM E1979).

(22) Government Unique Standard

EPA Method 311 "Analysis of Hazardous Air Pollutant Compounds in Paints and Coatings by Direct Injection Into a Gas Chromatograph" [Incorporated: 2015]

Voluntary Standard

ASTM D6438 (1999)—Standard Test Method for Acetone, Methyl Acetate, and Parachlorobenzotrifluoride Content of Paints and Coatings by Solid Phase Microextraction-Gas Chromatography

Rationale

This methods is impractical as an alternative to EPA Method 311 because it targets chemicals that are VOC and are not HAP

(23) Government Unique Standard

EPA Method 3A – Carbon Dioxide and Oxygen Concentrations, IAP [Incorporated: 1999]

Voluntary Standard

ISO 12039:2001

ANSI/ASME PTC 19-10-1981(2010)

ISO 10396:(2007)

ASTM D5835-95 (2013)

ASTM D6522-11

ASTM D6522

CAN/CSA Z223.2-M86 (R1999)

Rationale

ISO 12039:2001, Stationary Source Emissions-- Determination of Carbon Monoxide, Carbon Dioxide, and Oxygen--Automated Methods: This ISO standard is similar to EPA Method 3A, but is missing some key features. In terms of sampling, the hardware required by ISO 12039:2001 does not include a 3-way calibration valve assembly or equivalent to block the sample gas flow while calibration gases are introduced. In its calibration procedures, ISO 12039:2001 only specifies a two-point calibration while EPA Method 3A specifies a three-point calibration. Also, ISO 12039:2001 does not specify performance criteria for calibration error, calibration drift, or sampling system bias tests as in the EPA method, although checks of these quality control features are required by the ISO standard.

ANSI/ASME PTC 19-10-1981(2010) - Part 10 Flue and Exhaust Gas Analyses: (added to Annual Report in FY2018) This standard includes manual and instrumental methods of analyses for carbon dioxide (CO₂), carbon monoxide (CO), hydrogen sulfide (H₂S), nitrogen oxides (NO_x), oxygen (O₂), and sulfur dioxide (SO₂). The VCS method analytes that include one or more of the same techniques as the EPA methods are as follows: CO₂ [manual (3B, 6A and 6B) and instrumental (3A and 3C)]; CO [manual (3B) and instrumental (10 and 10B)], H₂S [manual (15A and 16A) and instrumental (15, 16, and 16B)], NO_x [manual (7 and 7C) and instrumental (7A, 7B, 7E, 20)], O₂ [manual (3B) and instrumental (3A, 3C, 20)], and SO₂ [manual (6, 6A, 6B, 20) and instrumental (6C)]. The manual methods are all acceptable alternatives to the corresponding EPA test methods (3B, 6, 6A, 6B, 7, 7C, 15A, 16A, 20 (SO₂ part of 20 only)). [Note that one of the standard's manual SO₂ procedures incorporates EPA Method 6 in its entirety]. For the standard's instrumental procedures, only general descriptions of the procedures are included which are not true methods. Therefore, the instrumental procedures (3A, 3C, 6C, 7A, 7B, 7E, 10, 10B, 15, 16, 16B, 20 (NO_x part of 20 only)) are not acceptable alternatives to the corresponding EPA methods.

ISO 10396:(2007) - Stationary Source Emissions: Sampling for the Automated Determination of Gas Concentrations: (added to Annual Report in FY2018) This standard is similar to EPA Methods 3A, 6C, 7E, 10, 20 (nitrogen oxides and oxygen parts of 20 only), ALT 004, CTM 022, but lacks in detail and quality assurance/quality control requirements. Specifically, ISO 10396 does not include the following: 1) sensitivity of the method; 2) acceptable levels of analyzer calibration error; 3) acceptable levels of sampling system bias; 4) zero drift and calibration drift

limits, time span, and required testing frequency; 5) a method to test the interference response of the analyzer; 6) procedures to determine the minimum sampling time per run and minimum measurement time; 7) specifications for data recorders, in terms of resolution (all types) and recording intervals (digital and analog recorders, only). This standard is also very similar to ASTM D5835.

ASTM D5835-95 (2013) - Standard Practice for Sampling Stationary Source Emissions for Automated Determination of Gas Concentration: (added to Annual Report in FY2018) This standard is similar to EPA Methods 3A, 6C, 7E, 10, 20 (nitrogen oxides and oxygen parts of 20 only), ALT 004, CTM 022, but lacks in detail and quality assurance/quality control requirements. Specifically, ASTM D5835-95 does not include the following: 1) sensitivity of the method; 2) acceptable levels of analyzer calibration error; 3) acceptable levels of sampling system bias; 4) zero drift and calibration drift limits, time span, and required testing frequency; 5) a method to test the interference response of the analyzer; 6) procedures to determine the minimum sampling time per run and minimum measurement time; 7) specifications for data recorders, in terms of resolution (all types) and recording intervals (digital and analog recorders, only). This standard is also very similar to ISO 10396.

ASTM D6522-11 - Standard Test Method for the Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers and Process Heaters Using Portable Analyzers: (added to Annual Report in FY2018) ASTM D6522 has been determined to be technically appropriate for identifying nitrogen oxides, carbon monoxide, and oxygen concentrations when the fuel is natural gas.

CAN/CSA Z223.2-M86 (R1999) - Method for the Continuous Measurement of Oxygen, Carbon Dioxide, Carbon Monoxide, Sulphur Dioxide, and Oxides of Nitrogen in Enclosed Combustion Flue Gas Streams: (added to Annual Report in FY2018) This standard is unacceptable as a substitute for EPA Methods 3A, 6C, 7E, 10, 10A, and 20 (nitrogen oxides and oxygen parts of 20 only), since it does not include quantitative specifications for measurement system performance, most notably the calibration procedures and instrument performance characteristics. The instrument performance characteristics that are provided are non-mandatory and also do not provide the same level of quality assurance as the EPA methods. For example, the zero and span/calibration drift is only checked weekly, whereas the EPA methods requires drift checks after each run.

(24) Government Unique Standard

EPA Method 3B – Gas Analysis for the determination of emission rate correction Factor for Excess Air [Incorporated: 2018]

Voluntary Standard

ASTM D3154 – 00 (2014), Standard Method for Average Velocity in a Duct (Pitot Tube Method)

Rationale

This standard appears to cover EPA's Part 60 Methods 1, 2, 2C, 3, 3B, 4, but lacks in quality control and quality assurance requirements. Specifically, ASTM D3154 00 does not include the following: 1) proof that openings of standard pitot tube have not plugged during the test; 2) if differential pressure gauges other than inclined manometers (e.g., magnehelic gauges) are used, their calibration must be checked after each test series; and 3) the frequency and validity range for calibration of the temperature sensors. (not for EPA Methods 1, 2, 2C, 3, 3B, 4)

(25) Government Unique Standard

EPA Method 4 – Determination of Moisture Content in Stack Gas [Incorporated: 2018]

Voluntary Standard

- a. ASTM D3154-00 (2014) Standard Method for Average Velocity in a Duct (Pitot Tube Method)
- b. ASME B133.9-1994 (2001) - Measurement of Exhaust Emissions from Stationary Gas Turbine Engines

Rationale

a. This standard appears to cover EPA's Part 60 Methods 1, 2, 2C, 3, 3B, 4, but lacks in quality control and quality assurance requirements. Specifically, ASTM D3154 00 does not include the following: 1) proof that openings of standard pitot tube have not plugged during the test; 2) if differential pressure gauges other than inclined manometers (e.g., magnehelic gauges) are used, their calibration must be checked after each test series; and 3) the frequency and validity range for calibration of the temperature sensors. (not for EPA Methods 1, 2, 2C, 3, 3B, 4)

b. Not a quantitative method, per se, although a good primer for this source category that includes technical descriptions of manual and instrumental sampling procedures, as well as performance specifications for instrumental methods. This standard has many good references, including the EPA Methods and Performance Specifications. Only use for engines and turbines. Not a method. (not for EPA Methods 2, 3A, 4, 5).

(26) Government Unique Standard

EPA Method 5 [Incorporated: 2015]

Voluntary Standard

- ASME B133.9-1994 (2001)
- ISO 9096:1992 (2003)
- ANSI/ASME PTC-38-1980 (1985)
- ASTM D3685/D3685M-98 (2005)
- CAN/CSA Z223.1-M1977

Rationale

The use of these voluntary consensus standards would not be practical with applicable law due

to a lack of equivalency, documentation, validation data and other important technical and policy considerations.

(27) Government Unique Standard

EPA Method 515.4 – Chlorinated Acids in DW by LL Fast CG/ECD [Incorporated: 2003]

Voluntary Standard

ASTM D5317-98 -- Standard Test Method For Determination of Chlorinated Organic Acid Compounds in Water by Gas Chromatography With an Electron Capture Detector

Rationale

ASTM D5317-98 specifies acceptance windows for the initial demonstration of proficiency for laboratory fortified blank samples that are as small as 0 percent to as large as 223 percent recovery for picloram, with tighter criteria for other regulated contaminants. Therefore, this method permits unacceptably large control limits, which include 0 percent recovery.

Voluntary Standard

Standard Method 6640 B for the chlorinated acids

Rationale

The use of this voluntary consensus standard would have been impractical due to significant shortcomings in the sample preparation and quality control sections of the method instructions. Section 1b of Method SM 6640 B states that the alkaline wash detailed in section 4b2 is optional. The hydrolysis that occurs during this step is essential to the analysis of the esters of many of the analytes. Therefore, this step is necessary and cannot be optional. In addition, the method specifies that the quality control limits for laboratory-fortified blanks are to be based upon plus or minus three times the standard deviation of the mean recovery of the analytes, as determined in each laboratory. Therefore, this method permits unacceptably large control limits, which may include 0 percent recovery.

(28) Government Unique Standard

EPA Method 531.2 – N-Methylcarbamoylozimes/ates, Aqueous In/HPLC [Incorporated: 2003]

Voluntary Standard

Standard Method 6610, 20th Edition

Rationale

Standard Method 6610, 20th Edition has recently been approved for compliance monitoring. Standard Method 6610, 20th Supplemental Edition permits the use of a strong acid, hydrochloric acid (HCL), as a preservative. The preservatives in all of the other approved EPA and Standard Methods procedures for these analytes are weak acids that adjust the pH to a specific value based upon the pKa of the preservative. The use of HCL would require accurate determinations of the pH of the sample in the field and could be subject to considerable error and possible changes in pH upon storage. Although not specifically observed for oxamyl or carbofuran during the development of similar methods, structurally similar pesticides have

been shown to degrade over time when kept at pH 3. Therefore, approval of this method is impractical because it specifies the use of a strong acid (HCL) when positive control of the pH is critical.

Voluntary Standard

Standard Method 6610, 20th Supplemental Edition

Rationale

Standard Method 6610, 20th Edition has recently been approved for compliance monitoring. Standard Method 6610, 20th Supplemental Edition permits the use of a strong acid, hydrochloric acid (HCL), as a preservative. The preservatives in all of the other approved EPA and Standard Methods procedures for these analytes are weak acids that adjust the pH to a specific value based upon the pKa of the preservative. The use of HCL would require accurate determinations of the pH of the sample in the field and could be subject to considerable error and possible changes in pH upon storage. Although not specifically observed for oxamyl or carbofuran during the development of similar methods, structurally similar pesticides have been shown to degrade over time when kept at pH 3. Therefore, approval of this method is impractical because it specifies the use of a strong acid (HCL) when positive control of the pH is critical.

(29) Government Unique Standard

EPA Method 5i - Low Level Particulate Matter, Stationary Sources [Incorporated: 2001]

Voluntary Standard

ASTM D6331-98

Rationale

This standard does not have paired trains as specified in method 5 and does not include some quality control procedures specified in the EPA method and which are appropriate to use in this rule.

(30) Government Unique Standard

EPA Method 6 - Determination of Sulfur Dioxide Emissions from Stationary Sources
[Incorporated: 2018]

Voluntary Standard

a. ISO 7934:1998 (2016) - Stationary Source Emissions Determination of the Mass Concentration of Sulfur Dioxide Hydrogen Peroxide/Barium Perchlorate/Thorin Method

b. ISO 11632:1998 (2016) - Stationary Source Emissions Determination of the Mass Concentration of Sulfur Dioxide Ion Chromatography

Rationale

a. This standard is only applicable to sources with 30 mg/m³ SO₂ or more. Also, this standard does not separate SO₃ from SO₂ as does the EPA methods; therefore, ISO 7934:1998 is not

valid if more than a negligible amount of SO₃ is present. Also, it does not address ammonia interferences.

b. Sampling procedures are similar to EPA Method 6, but lacks in detail and quality control procedures, such as calibration checks and leaks tests.

(31) Government Unique Standard

EPA Method 7E [Incorporated: 2015]

Voluntary Standard

ANSI/ASME PTC 19-10-1981-Part 10

ISO 10396:1993 (2007)

ASTM D5835-95 (2007)

CAN/CSA Z223.2-M86 (1999)

Rationale

The use of these voluntary consensus standards would not be practical with applicable law due to a lack of equivalency, documentation, validation data and other important technical and policy considerations.

(32) Government Unique Standard

EPA Method 9 [Incorporated: 2016]

Voluntary Standard

ASTM D7520-09 "Standard Test Method for Determining Opacity of a Plume in the Outdoor Ambient Atmosphere"

Rationale

The use of this voluntary consensus standard would not be practical due to a lack of equivalency, documentation, validation data and other important technical and policy considerations. The EPA did not receive comments during the notice and comment period that caused us to alter the standards and methods in the final permits.

(33) Government Unique Standard

EPA Method ALT 004 [Incorporated: 2002]

Voluntary Standard

ASTM D5835-95 - Standard Practice for Sampling Stationary Source Emissions for Automated Determination of Gas Concentration

Rationale

Similar to Methods 3a, 6c, 7e, 10, ALT 004, CTM 022. Lacks in detail and quality assurance and quality control requirements. Very similar to ISO 10396.

Voluntary Standard

ISO 10396:1993 - Stationary Source Emissions: Sampling for the Automated Determination of Gas Concentrations

Rationale

Duplicates Method 3a, 6c, 7e, 10, ALT 004, CTM 022. Lacks in detail and quality assurance plus quality control requirements. Similar to ASTM D5835.

(34) Government Unique Standard

EPA Method CTM 022 [Incorporated: 2002]

Voluntary Standard

ASTM D5835-95 - Standard Practice for Sampling Stationary Source Emissions for Automated Determination of Gas Concentration

Rationale

Similar to Methods 3a, 6c, 7e, 10, ALT 004, CTM 022. Lacks in detail and quality assurance and quality control requirements. Very similar to ISO 10396.

Voluntary Standard

ISO 10396:1993 - Stationary Source Emissions: Sampling for the Automated Determination of Gas Concentrations

Rationale

Duplicates Method 3a, 6c, 7e, 10, ALT 004, CTM 022. Lacks in detail and quality assurance plus quality control requirements. Similar to ASTM D5835.

(35) Government Unique Standard

EPA Performance Specification 2 (nitrogen oxide portion only) [Incorporated: 2001]

Voluntary Standard

ISO 10849:1996, Determination of the Mass Concentration of Nitrogen Oxides--Performance

Rationale

Is too general, too broad, or not sufficiently detailed to assure compliance with EPA regulatory requirements.

(36) Government Unique Standard

EPA Performance Specification 2 (sulfur dioxide portion only) [Incorporated: 2001]

Voluntary Standard

ISO 7935:1992, Stationary Source Emissions--Determination of the Mass Concentration of Sulfur Dioxide--Performance Characteristics of Automated Measuring Methods"

Rationale

Is too general, too broad, or not sufficiently detailed to assure compliance with EPA regulatory requirements.

(37) Government Unique Standard

SW846-6010b [Incorporated: 2002]

Voluntary Standard

ASTM C1111-98 (1998) - Standard Test Method for Determining Elements in Waste Streams by Inductively Coupled Plasma-Atomic Emission Spectrometers

Rationale

This standard lacks details for instrument operation QA/QC, such as optimizing plasma operating conditions; upper limit of linear dynamic range; spectral interference correction; and calibration procedures, which include initial and continuous calibration verifications. Also lacks internal standard and method of standard addition options for samples with interferences.

Voluntary Standard

ASTM D6349-99 (1999) - Standard Test Method for Determining Major and Minor Elements in Coal, Coke, and Solid Residues from Combustion of Coal and Coke by Inductively Coupled Plasma-Atomic Emission Spectrometers

Rationale

This standard lacks details for instrument operation QA/QC, such as optimizing plasma operating conditions, upper limit of linear dynamic range, spectral interference correction, and calibration procedures, that include initial and continuous calibration verifications. Also lacks details for standard preparation, and internal standard and method of standard addition options for samples with interferences.

(38) Government Unique Standard

Validated Method 8327: Per- and Polyfluoroalkyl Substances (PFAS) Using External Standard Calibration and Multiple Reaction Monitoring (MRM) Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) [Incorporated: 2019]

Voluntary Standard

ASTM D7979-19: Standard Test Method for Determination of Perfluorinated Compounds in Water, Sludge, Influent, Effluent and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS)

Rationale

For the reasons set forth below, EPA determined that PFAS analytical methods should be validated by multiple laboratories, rather than by a single lab, for use under the Resource Conservation and Recovery Act (RCRA) and other EPA programs, e.g., the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The ASTM D7979 standard is not multi-lab validated for the matrices of concern for RCRA and CERCLA.

Multi-lab validation accomplishes several purposes: First, it is a means to assess accuracy and reproducibility of data independent of the organization that developed the method. Second, it

reduces uncertainty regarding the method used to produce the data to support decision making. By assuring accuracy and reproducibility of the data and confidence in the method, methods that are multi-lab validated provide additional assurance to EPA decision-makers and the public that resulting data used to protect human health and the environment are robust, reliable and of known quality.

EPA test methods that support RCRA and are used by other Federal programs can be found in the EPA publication, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, also known as SW-846. Under RCRA's SW-846 methods program, the methods development and validation process for Validated Method 8327 and other methods contained in SW-846 includes posting a method on EPA's public website for public comment, comment adjudication and relevant method revisions

(39) Government Unique Standard

WaterSense Specification for Spray Sprinkler Bodies Appendix B: Spray Sprinkler Body Performance test method [Incorporated: 2017]

Voluntary Standard

ASABE/ICC 802-2014, "Landscape Irrigation Sprinkler and Emitter Standard"

Rationale

WaterSense used ASABE/ICC 802-2014 (section 303.5.2) as the basis for its sprinkler performance test. However, no product testing was done by the ASABE/ICC standard development committee prior to publishing the standard. When WaterSense did this testing many changes had to be made to eliminate redundant steps, correct deficiencies in the method and provide sufficient detail to run the test consistently at any laboratory. WaterSense has submitted the revised method to the ASABE/ICC 802 committee for consideration in the revision of the standard