PROCEDURES FOR TESTING AND MONITORING SOURCES OF AIR POLLUTANTS

[REVISED: January 31, 2025]

Introduction

PART I: GENERAL PROVISIONS

- Section 1.1 Applicability
 - 1.2 Performance and Compliance Testing
 - 1.3 Compliance with Standards and Maintenance Requirements
 - 1.4 Monitoring Requirements
 - 1.5 Notification and Record Keeping
 - 1.6 Incorporations by Reference
 - 1.7 General Control Device Requirements
 - 1.8 Required Overall Emissions Reduction Efficiency
 - 1.9 General Notification and Reporting Requirements

PART II: SOURCE CATEGORIES

- Section 2.1 Fuel Burning Equipment
 - 2.1b Industrial-Commercial-Institutional Steam Generating Units (Constructed after June 19, 1984)
 - 2.1c Small Industrial-Commercial-Institutional Steam Generating Units (NSPS)
 - 2.2 Incinerators
 - 2.2b Municipal Waste Combustors
 - 2.3 Portland Cement Plants
 - 2.4 Nitric Acid Plants
 - 2.5 Sulfuric Acid Plants
 - 2.6 Asphalt Concrete Plants
 - 2.7 Petroleum Refineries
 - 2.8 Storage Vessels for Petroleum Liquids and External Floating Roof Tanks
 - 2.8a Storage Vessels for Petroleum Liquids (Constructed after May 18, 1978)
 - 2.8b Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels-After July 23, 1984)
 - 2.9 Secondary Lead Smelters
 - 2.10 Secondary Brass and Bronze Ingot Production Plants
 - 2.11 Iron and Steel Plants

- 2.11a Iron and Steel Plants (Secondary Emissions) 2.12 - Sewage Treatment Plants 2.13 - Primary Copper Smelters 2.14 - Primary Zinc Smelters 2.15 - Primary Lead Smelters 2.16 - New Primary Aluminum Reduction Plants 2.22 - Coal Preparation Plants 2.23 - Ferroalloy Production Facilities 2.24 - Steel Plants: Electric Arc Furnaces 2.24a - Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels (Constructed after August 7, 1983) 2.25 - Metallurgical Melting - Cupola Furnaces 2.28 - Existing Kraft Pulp Mills 2.29 - New Kraft Pulp Mills 2.30 - Glass Manufacturing Plants 2.31 - Grain Elevators 2.33 - Surface Coating of Metal Furniture 2.34 - Stationary Gas Turbines 2.35 - Lime Manufacturing Plants 2.39 - Lead-Acid Battery Manufacturing Plants 2.40 - New Automobile and Light-Duty Truck Surface Coating Operations 2.42 - New Bulk Gasoline Terminals 2.43 - Paper Coating (All Sources) 2.44 - Graphic Arts Industry: Publication Rotogravure Printing (NSPS Sources) 2.45 - Graphic Arts Industry: All Sources
- 2.48 Asphalt Processing and Asphalt Roofing Plants

- Metal Coil Coating

2.46

2.47

2.49 - Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry

Pressure Sensitive Tape and Label Surface Coating Operations (NSPS Sources)

2.50 - Industrial Surface Coating of Large Appliances 2.51 - Beverage Can Coating 2.52 - Surface Coating of Miscellaneous Metal Parts 2.53 - Wire Coating 2.54 - Rubber Tire Manufacturing Industry (NSPS Sources) 2.55 - Paper Coating Operations 2.56 - Industrial Cleaning Solvents 2.59 - Flexible Vinyl and Urethane Coating and Printing 2.60 - Equipment Leaks of VOC in Petroleum Refineries 2.62 - Synthetic Organic Chemical Manufacturing Industry (SOCMI) - Air Oxidation Unit **Processes** 2.67 - Synthetic Organic Chemical Manufacturing Industry (SOCMI) - Distillation Operations 2.68 - Non-Metallic Mineral Processing Plants 2.69 - Wool Fiberglass Insulation Manufacturing Plants 2.73 - Surface Coating of Plastic Parts for Business Machines 2.74 - Calciners and Dryers in Mineral Industries 2.99 - Visible Emissions 2.100 - Granular and Mixed Fertilizer Manufacturing Plants 2.101 - Normal Superphosphate Facilities 2.102 - Kaolin and Fuller's Earth Manufacturing Processes 2.103 - Cotton Gins 2.104 - General Manufacturing Processes 2.105 - Ammonium Nitrate Fertilizer Processes 2.106 - Ammonium Sulfate Processes 2.107 - Metallic Mineral Processing Plants 2.108 - Synthetic Fiber Production Facilities

2.109 - Fabric and Vinyl Coating (All Sources)

2.110 - Gasoline Transport Vehicles

2.111 - Major Stationary Sources of VOC

- 2.112 Automobile and Light-Duty Truck Surface Coating Operations (All Sources)
- 2.113 Flat Wood Paneling
- 2.114 Municipal Solid Waste Landfills
- 2.115 Gasoline Dispensing Facility Stage I
- 2.116 Electric Utility Steam Generation Units
- 2.117 Hospital/Medical/Infectious Waste Incinerators
- 2.118 Aerospace Manufacturing and Rework Facilities
- 2.119 Fuel Burning Equipment
- 2.120 Stationary Gas Turbines and Stationary Engines used to Generate Electricity
- 2.121 Large Stationary Combined Cycle Gas Turbines
- 2.122 Commercial and Industrial Solid Waste Incineration (Constructed before November 30, 1999)
- 2.123 VOC Emissions from Extruded Polystyrene Products Manufacturing Utilizing an Injected Blowing Agent
- 2.124 Multipollutant Control for Electric Utility Steam Generating Units
- 2.125 Sulfur Dioxide Emissions from Electric Utility Steam Generating Plants
- 2.126 Surface Coating of Miscellaneous Plastic Parts and Products
- 2.127 Surface Coating of Miscellaneous Industrial Adhesives
- 2.128 Surface Coating of Pleasure Craft
- 2.129 VOC Emissions from Fiberglass Boat Manufacturing

2.130 - Sewage Sludge Incineration Units

PART III: HAZARDOUS AIR POLLUTANTS

Section 3.0 - General Provisions

> 3.1 - Asbestos

- Beryllium 3.2

3.4 - Mercury

3.5 - Ethylene Dichloride, Vinyl Chloride, and PolyVinyl Chloride Plants

3.21 - Equipment Leaks (Fugitive Emission Sources)

3.27 - Benzene Transfer Operations

<u>P/</u>

Method 3B

PART IV: APPE	NDICES
Appendix A	- Part I - Test Methods:
Method 1	- Sample and Velocity Traverses for Stationary Sources
Method 1A	- Sample and Velocity Traverses for Stationary Sources with Small Stacks or Ducts
Method 2	- Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)
Method 2A	- Direct Measurement of Gas Volume Through Pipes and Small Ducts
Method 2B	- Determination of Exhaust Gas Volume Flow Rate from Gasoline Vapor Incinerators
Method 2C	- Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts (Standard Pitot Tube)
Method 2D	- Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts
Method 2E	- Determination of Landfill Gas Production Flow Rate
Method 2F	- Determination of Stack Gas Velocity And Volumetric Flow Rate With Three- Dimensional Probes
Method 2G	- Determination of Stack Gas Velocity and Volumetric Flow Rate With Two-Dimensional Probes
Method 2H	- Determination of Stack Gas Velocity Taking Into Account Velocity Decay Near the Stack Wall
Method 3	- Gas Analysis for the Determination of Dry Molecular Weight
Method 3A	- Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from

Stationary Sources [Instrumental Analyzer Procedure]

- Gas Analysis for the Determination of Emission Rate Correction Factor or Excess Air

Method 3C - Determination of Carbon Dioxide, Methane, Nitrogen, and Oxygen from Stationary Sources - Determination of Moisture Content in Stack Gases Method 4 Method 5 - Determination of Particulate Emissions from Stationary Sources Method 5A - Determination of Particulate Emissions from the Asphalt Processing and Asphalt Roofing Industry Method 5D - Determination of Particulate Matter Emissions from Positive Pressure Fabric Filters Method 5E - Determination of Particulate Emissions from the Wool Fiberglass Insulation Manufacturing Industry Method 5F - Determination of Nonsulfate Particulate Matter from Stationary Sources Method 5T - Determination of Particulate Emissions from Stationary Sources - Total Dry and Wet Catch Method Method 6 - Determination of Sulfur Dioxide Emissions from Stationary Sources Method 6A - Determination of Sulfur Dioxide, Moisture, and Carbon Dioxide Emissions from Fossil **Fuel Combustion Sources** Method 6B - Determination of Sulfur Dioxide and Carbon Dioxide Daily Average Emissions from Fossil Fuel Combustion Sources Method 6C - Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure) Method 7 - Determination of Nitrogen Oxide Emissions from Stationary Sources Method 7A - Determination of Nitrogen Oxide Emissions from Stationary Sources (Ion Chromatography) Method 7B Determination of Nitrogen Oxide Emissions from Stationary Sources (Ultraviolet Spectrophotometry) Method 7C - Determination of Nitrogen Oxide Emissions from Stationary Sources (Alkaline-Permanganate/Ion Colorimetric Method) Method 7D - Determination of Nitrogen Oxide Emissions from Stationary Sources (Alkaline-Permanganate/Ion Chromatographic Method) Method 7E - Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure) Method 8 - Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources - Visual Determination of the Opacity of Emissions from Stationary Sources Method 9 Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources

- Determination of Carbon Monoxide Emissions in Certifying Continuous Emission

Monitoring Systems at Petroleum Refineries

Method 10A

Method 10B	-	Determination of Carbon Monoxide Emissions from Stationary Sources
Method 11	-	Determination of Hydrogen Sulfide Content of Fuel Gas Streams in Petroleum Refineries
Method 12	-	Determination of Inorganic Lead Emissions from Stationary Sources
Method 13A	-	Determination of Total Fluoride Emissions from Stationary Sources - SPADNS Zirconium Lake Method
Method 13B	-	Determination of Total Fluoride Emissions from Stationary Sources - Specific Ion Electrode Method
Method 14	-	Determination of Fluoride Emissions from Potroom Roof Monitors for Primary Aluminum Plants
Method 15	-	Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions from Stationary Sources
Method 15A	-	Determination of Total Reduced Sulfur Emissions from Sulfur Recovery Plants in Petroleum Refineries
Method 16	-	Semicontinuous Determination of Sulfur Emissions from Stationary Sources
Method 16A	-	Determination of Total Reduced Sulfur Emissions from Stationary Sources (Impinger Technique)
Method 16B	-	Determination of Total Reduced Sulfur Emissions from Stationary Sources
Method 16C	-	Determination of Total Reduced Sulfur Emissions from Stationary Sources (Instrumental Analyzer Procedure)
Method 17	-	Determination of Particulate Emissions from Stationary Sources (In-Stack Filtration Method)
Method 18	-	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography
Method 19	-	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates
Method 20	-	Determination of Nitrogen Oxides, Sulfur Dioxide, and Oxygen Emissions from Stationary Gas Turbines
Method 21	-	Determination of Volatile Organic Compounds Leaks
Method 22	-	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares
Method 23	-	Determination of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans from Stationary Sources
Method 24	-	Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings
Method 24A	-	Determination of Volatile Matter Content and Density of Printing Inks and Related Coatings

Method 25	- Determination of Total Gaseous Nonmethane Organic Emissions as Carbon
Method 25A	- Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer
Method 25B	- Determination of Total Gaseous Organic Concentration Using a Nondispersive Infrared Analyzer
Method 25C	- Determination of Nonmethane Organic Compounds (NMOC) in MSW Landfill Gases
Method 25D	- Determination of the Volatile Organic Concentration of Waste Samples
Method 25E	- Determination of Vapor Phase Organic Concentration in Waste Samples
Method 26	- Determination of Hydrogen Chloride Emissions from Stationary Sources
Method 26A	- Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources - Isokinetic Method
Method 27	- Determination of Vapor Tightness of Gasoline Delivery Tank Using Pressure-Vacuum Test
Method 29	- Determination of Metals Emissions from Stationary Sources
Method 30A	- Determination of Total Vapor Phase Mercury Emissions From Stationary Sources (Instrumental Analyzer Procedure)
Method 30B	- Determination of Total Vapor Phase Mercury Emissions From Coal-Fired Combustion Sources Using Carbon Sorbent Traps
Method 101	- Determination of Particulate and Gaseous Mercury Emissions from Chlor-Alkali Plants- Air Streams
Method 101A	- Determination of Particulate and Gaseous Mercury Emissions from Stationary Sources
Method 102	- Determination of Particulate and Gaseous Mercury Emissions from Chlor-Alkali Plants- Hydrogen Streams
Method 103	- Beryllium Screening Method
Method 104	- Determination of Beryllium Emissions from Stationary Sources
Method 105	- Determination of Mercury in Wastewater Treatment Plant Sewage Sludge
Method 106	- Determination of Vinyl Chloride from Stationary Sources
Method 107	- Determination of Vinyl Chloride Content of Process Stream Samples
Method 107A	- Determination of Vinyl Chloride Content of Solvents, Resin-Solvent Solution, Polyvinyl Chloride Resin, Resin Slurry, Wet Resin, and Latex Samples
Method 108	- Determination of Particulate and Gaseous Arsenic Emissions
Method 108A	- Determination of Arsenic Content in Ore Samples from Nonferrous Smelters
Method 108B	- Determination of Arsenic Content in Ore Samples from Nonferrous Smelters

Method 108C	Determination of Arsenic Content in Ore Samples from Nonferrous Smelters	
Method 200	Determination of Total Particulate, Free Chlorine, and Total Chlorides from Sec Aluminum Smelters and Other Stationary Sources	ondary
Method 201	Determination of PM ₁₀ Emissions (Exhaust Gas Recycle Procedure)	
Method 201A	Determination of PM ₁₀ Emissions (Constant Sampling Rate Procedure)	
Method 202	Determination of Condensible Particulate Emissions from Stationary Sources	
Method 204	Criteria for and Verification of a Permanent or Temporary Total Enclosure	
Method 204A	Volatile Organic Compounds Content in Liquid Input Stream	
Method 204B	Volatile Organic Compounds Emissions in Capture Stream	
Method 204C	Volatile Organic Compounds Emissions in Captured Stream (Dilution Technique)	
Method 204D	Volatile Organic Compounds Emissions in Fugitive Stream from Temporary Enclosure	Total
Method 204E	Volatile Organic Compounds Emissions in Fugitive Stream from Building Enclosure	е
Method 204F	Volatile Organic Compounds Content in Liquid Input Stream (Distillation Approac	:h)
Method 205	Verification of Gas Dilution Systems for Field Instrument Calibrations	
Method 300	Determination of Surface Coating Transfer Efficiency	
Method 301	Field Validation of Pollutant Measurement Methods from Various Waste Media	
Method 304A	Determination of Biodegradation Rates of Organic Compounds (Vent Option)	
Method 304B	Determination of Biodegradation Rates of Organic Compounds (Scrubber Option)	
Method 305	Measurement of Emission Potential of Individual Volatile Organic Compounds in V	Waste
Method 306	Determination of Chromium Emissions from Decorative and Hard Chromium Electroplating and Anodizing Operations	omium
Method 306A	Determination of Chromium Emissions from Decorative and Hard Chromium Electroplating and Anodizing Operations	omium
Method 306B	Surface Tension Measurement and Recordkeeping for Chromium Plating Tanks L Electroplating and Anodizing Facilities	Ised at
Method 307	Determination of Emissions from Halogenated Solvent Vapor Cleaning Machines Liquid Level Procedure	using a
Method 308	Procedure for Determination of Methanol Emissions from Stationary Sources	
Method 310A	Determination of Residual Hexane through Gas Chromatography	
Method 310B	Determination of Residual Solvent through Gas Chromatography	
Method 310C	Determination of Residual N-Hexane in EPDM Rubber through Gas Chromatograph	ny

Method 311	- Analysis of Hazardous Air Pollutant Compounds in Paints and Coatings by Direct Injection into a Gas Chromatograph
Method 312A	- Determination of Styrene in Latex Styrene-Butadiene Rubber through Gas Chromatography
Method 312B	- Determination of Residual Styrene in Styrene-Butadiene (SBR) Rubber Latex by Capillary Gas Chromatography
Method 312C	- Determination of Residual Styrene in SBR Latex Produced by Emulsion Polymerization
Method 313A	- Determination of Residual Hydrocarbons in Rubber Crumb
Method 313B	- The Determination of Residual Hydrocarbon in Solution Polymers by Capillary Gas Chromatography
Method 316	- Sampling and Analysis for Formaldehyde Emissions from Stationary Sources in the Mineral Wool and Wool Fiberglass Industries
Method 318	- Extractive FTIR for Measurement of Emissions from the Mineral Wool and Wool Fiberglass Industries
Method 320	- Vapor Phase Organic and Inorganic Emissions by Extractive FTIR
Method 321	- Measurement of Gaseous Hydrogen Chloride Emissions at Portland Cement Kilns by Fourier Transform Infared (FTIR) Spectroscopy
Appendix A	- Part II - Field Data Sheets
Appendix A Appendix B	Part II - Field Data SheetsContinuous Emission Monitor Performance Specifications
Appendix B	- Continuous Emission Monitor Performance Specifications
Appendix B	Continuous Emission Monitor Performance SpecificationsQuality Assurance Procedures for Gas Chromatography:
Appendix B	 Continuous Emission Monitor Performance Specifications Quality Assurance Procedures for Gas Chromatography: Procedure 1 - Determination of Adequate Chromatographic Peak Resolution
Appendix B Appendix C	 Continuous Emission Monitor Performance Specifications Quality Assurance Procedures for Gas Chromatography: Procedure 1 - Determination of Adequate Chromatographic Peak Resolution Procedure 2 - Procedure for Field Auditing GC Analysis
Appendix B Appendix C Appendix D	 Continuous Emission Monitor Performance Specifications Quality Assurance Procedures for Gas Chromatography: Procedure 1 - Determination of Adequate Chromatographic Peak Resolution Procedure 2 - Procedure for Field Auditing GC Analysis Determination of Emission Rate Change
Appendix B Appendix C Appendix D Appendix E	 Continuous Emission Monitor Performance Specifications Quality Assurance Procedures for Gas Chromatography: Procedure 1 - Determination of Adequate Chromatographic Peak Resolution Procedure 2 - Procedure for Field Auditing GC Analysis Determination of Emission Rate Change Performance Specifications for Flow Monitors
Appendix B Appendix C Appendix D Appendix E	 Continuous Emission Monitor Performance Specifications Quality Assurance Procedures for Gas Chromatography: Procedure 1 - Determination of Adequate Chromatographic Peak Resolution Procedure 2 - Procedure for Field Auditing GC Analysis Determination of Emission Rate Change Performance Specifications for Flow Monitors Quality Assurance Procedures: Procedure 1 - Quality Assurance Requirements for Gas Continuous Emission

- Protocols for Determining VOC Capture Efficiency

Appendix G

Table of Contents Rev. 1/25 Page 11 of 11

Appendix H - Calculation of VOC Emissions from Open Molding Fiber-Reinforced Plastics

Manufacturing

Appendix I - Performance Test Calculations and Reporting

PART V: BIBLIOGRAPHY