

CHAPTER 139. SAMPLING AND TESTING

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Authority

The provisions of this Chapter 139 issued under section 1920-A of The Administrative Code of 1929 (71 P. S. § 510-20); and section 5 of the Air Pollution Control Act (35 P. S. § 4005), unless otherwise noted.

Source

The provisions of this Chapter 139 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383, unless otherwise noted.

Cross References

This chapter cited in 25 Pa. Code § 121.1 (relating to definitions); 25 Pa. Code § 123.22 (relating to combustion units); 25 Pa. Code § 123.108 (relating to source emissions monitoring requirements); 25 Pa. Code § 123.110 (relating to source compliance requirements); 25 Pa. Code § 123.211 (relating to initial certification and recertification procedures for emissions monitoring); 25 Pa. Code § 127.12b (relating to plan approval terms and conditions); 25 Pa. Code § 127.207 (relating to creditable emissions decrease or ERC generation and creation); 25 Pa. Code § 127.441 (relating to operating permit terms and conditions); 25 Pa. Code § 129.17 (relating to kraft pulp mills); 25 Pa. Code § 129.51 (relating to general); 25 Pa. Code § 129.94 (relating to NO_x RACT emission averaging general requirements); 25 Pa. Code § 129.104 (relating to compliance procedures and monitoring requirements); 25 Pa. Code § 129.204 (relating to emission accountability); 25 Pa. Code § 145.2 (relating to definitions); 25 Pa. Code § 145.70 (relating to general monitoring requirements); 25 Pa. Code § 145.112 (relating to definitions); 25 Pa. Code § 145.113 (relating to standard requirements); 25 Pa. Code § 145.142 (relating to definitions); 25 Pa. Code § 145.143 (relating to standard requirements); and 25 Pa. Code § 250.10 (relating to measurement of regulated substances).

**Subchapter A. SAMPLING AND TESTING METHODS
AND PROCEDURES****GENERAL**

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Cross References

This subchapter cited in 25 Pa. Code § 139.52 (relating to monitoring methods and techniques).

GENERAL

§ 139.1. Sampling facilities.

Upon the request of the Department, the person responsible for a source shall provide adequate sampling ports, safe sampling platforms and adequate utilities for the performance by the Department of tests on the source. The Department will set forth, in the request, the time period within which the facilities shall be provided, as well as the specifications for the facilities.

Source

The provisions of this § 139.1 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383.

Cross References

This section cited in 25 Pa. Code § 139.17 (relating to general requirements); and 25 Pa. Code § 139.101 (relating to general requirements).

§ 139.2. Sampling by others.

Sampling and testing done by persons other than the Department may be accepted by the Department, provided that:

- (1) The Department has been given reasonable notice of the sampling and testing and has been given reasonable opportunity to observe and participate in the sampling and testing.
- (2) The sampling and testing is conducted under the direct supervision of persons qualified, by training and experience, to conduct the sampling and testing.
- (3) Procedures for the sampling and testing are in accord with the provisions of this chapter.
- (4) The reports of the sampling and testing are accurate and comprehensive.

Source

The provisions of this § 139.2 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383.

Cross References

This section cited in 25 Pa. Code § 139.17 (relating to general requirements).

§ 139.3. General requirements.

(a) The Department will use the methods set forth in this chapter to assess emissions from stationary sources or ambient levels of air contaminants.

(b) The Department has published a supplement to this chapter entitled "Source Testing Manual." This supplement contains detailed information on source test methods, procedures and guidance for the reporting of emissions to the Department. This supplement is available from the Department by request.

(c) The performance standards for stationary sources set forth in this chapter permit freedom in the selection of equipment and consistency in obtaining accurate results which are representative of the conditions under which a source is evaluated.

(d) The sampling and analytical procedures employed to measure ambient levels of air contaminants shall be consistent with obtaining accurate results which are representative of the conditions being evaluated.

Source

The provisions of this § 139.3 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383, amended April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534. Immediately preceding text appears at serial page (35404).

Cross References

This section cited in 25 Pa. Code § 139.17 (relating to general requirements).

§ 139.4. References.

The references referred to in this chapter are as follows:

(1) Standards of Performance for New Stationary Sources, 40 CFR Chapter I, Part 60, Appendix A, Current Edition, Superintendent of Documents, Washington, D.C. 20402-9328.

(2) National Emission Standards for Hazardous Air Pollutants, 40 CFR, Chapter I, Part 61, Appendix B, Current Edition, Superintendent of Documents, Washington, D.C. 20402-9328.

(3) Requirements for Preparation, Adoption, and Submittal of Implementation Plans, 40 CFR, Chapter I, Part 51, Appendix M, Current Edition, Superintendent of Documents, Washington, D.C. 20402-9328.

(4) Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities, 40 CFR, Chapter I, Part 266, Appendix IX, Current Edition, Superintendent of Documents, Washington, D.C. 20402-9328.

(5) Source Testing Manual, Commonwealth of Pennsylvania, Department of Environmental Protection, Bureau of Air Quality, Post Office Box 8468, Harrisburg, Pennsylvania 17105-8468, including future revisions as noted in

§ 139.5(b) (relating to revisions to the source testing manual and continuous source monitoring manual).

(6) *Recommended Standard Method for Continuing Dust Fall Survey (APM-I, Revision 1)* PR-2 Air Pollution Measurement Commission, J. Air Assoc., 16:372 (1966).

(7) *Air Pollution Measurements of the National Air Sampling Network: Analyses of Suspended Particulates 1957-1961*, Public Health Service Pub. No. 978, Washington, D.C., 1962.

(8) Interbranch Chemical Advisory Committee, *Selected Methods for the Measurement of Air Pollutants*, PHS Pub. No. 999-AP-11, Cincinnati, Ohio, 1965, page I-1.

(9) *Standard Method of Test for Inorganic Fluoride in the Atmosphere*, ASTM Standards on Methods of Atmospheric Sampling and Analyses, Philadelphia, Pennsylvania, 1962, page 67.

(10) *Standard Method of Sampling Petroleum and Petroleum Products*, American Society for Testing Materials, D 270-80, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(11) *Standard Method of Test for Kinematic Viscosity of Transparent and Opaque Liquids (and the calculation of Dynamic Viscosity)*, American Society for Testing Materials, D 445-79, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(12) *Standard Method of Test for Sulfur in Petroleum Products (Lamp Method)*, American Society for Testing Materials, D 1266-80, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(13) *Standard Method of Test for Sulfur in Petroleum Products by the Bomb Method*, American Society for Testing Materials, D 129-78, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(14) *Standard Method of Test for Sulfur in Petroleum Products (High Temperature Method)*, American Society for Testing Materials, D 1552-79, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(15) *Standard Method of Test for Sulfur in Petroleum Products (X-Ray Spectrographic Method)*, American Society for Testing Materials, D 2622-77, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(16) *Standard Methods for the Examination of Water and Wastewater*, 14th Ed., *Organic Carbon (total), Combustion-Infrared Method*, American Public Health Association, Washington, D.C.

(17) Jacobs, M. B. et al., *Ultramicrodetermination of Sulfides in Air*, Anal. Chem., 29:1949 (1957).

(18) "Sampling procedures for fuel volatility," 40 CFR Part 80, Appendix D (relating to sampling procedures for fuel volatility).

(19) “Tests for Determining Reid Vapor Pressure (RVP) of Gasoline and Gasoline-Oxygenate Blends,” 40 CFR Part 80, Appendix E (relating to test for determining Reid vapor pressure (RVP) of gasoline and gasoline-oxygenate blends).

Source

The provisions of this § 139.4 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383; amended April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended June 19, 1981, effective June 20, 1981, 11 Pa.B. 2118; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478; amended May 6, 1988, effective May 7, 1988, 18 Pa.B. 2098; amended May 6, 1988, effective May 7, 1988, 18 Pa.B. 2102; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899; amended October 31, 1997, effective November 1, 1997, 27 Pa.B. 5601; amended October 1, 1999, effective October 2, 1999, 29 Pa.B. 5089; amended June 9, 2000, effective June 10, 2000, 30 Pa.B. 2995. Immediately preceding text appears at serial pages (260541) to (260543).

Cross References

This section cited in 25 Pa. Code § 139.5 (relating to revisions to the source testing manual and continuous source monitoring manual); 25 Pa. Code § 139.12 (relating to emissions of particulate matter); 25 Pa. Code § 139.13 (relating to emissions of SO₂, H₂S, TRS and NO₂); 25 Pa. Code § 139.14 (relating to emissions of VOCs); 25 Pa. Code § 139.16 (relating to sulfur in fuel oil); 25 Pa. Code § 139.17 (relating to general requirements); and 25 Pa. Code § 139.32 (relating to sampling and analytical procedures).

§ 139.5. Revisions to the source testing manual and continuous source monitoring manual.

(a) This section describes the procedure that the Department will follow to update and revise the “Source Testing Manual” referred to in § 139.4(5) (relating to references) and the “Continuous Source Monitoring Manual” referred to in § 139.102(3) (relating to references).

(b) The Department will provide notice of proposed revisions to the “Source Testing Manual” and the “Continuous Source Monitoring Manual” in the *Pennsylvania Bulletin*. The notice will describe the proposed revisions and provide the name, address and telephone number of the person from whom the text of the proposed revisions can be obtained.

(c) The Department will provide an opportunity for comments on the proposed revisions. The comment period will be at least 30 days from the date of the publication of the notice required by subsection (b).

(d) After the public comment period, the Department will evaluate the comments and finalize the changes to the “Source Testing Manual” and the “Continuous Source Monitoring Manual.”

(e) The Department will provide notice of the revisions to the “Source Testing Manual” and the “Continuous Source Monitoring Manual” in the *Pennsylvania*

nia Bulletin. The notice will describe the revisions and provide the name, address and telephone number of the person from whom the revised manual can be obtained.

(f) A person proposing test methods, procedures and guidance for the reporting of emissions different from those contained in the "Source Testing Manual" and the "Continuous Source Monitoring Manual" shall have the burden of proof to demonstrate that test methods, procedures and guidance accurately characterize the emissions from the source.

Source

The provisions of this § 139.5 adopted November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899.

Cross References

This section cited in 25 Pa. Code § 139.4 (relating to references).

STATIONARY SOURCES

§ 139.11. General requirements.

The following provisions are applicable to source tests for determining emissions from stationary sources:

- (1) Performance tests shall be conducted while the source is operating at maximum routine operating conditions or under such other conditions, within the capacity of the equipment, as may be requested by the Department.
- (2) The Department will consider test results for approval where sufficient information is provided to verify the source conditions existing at the time of the test and where adequate data is available to show the manner in which the test was conducted. Information submitted to the Department shall include, as a minimum, all of the following:
 - (i) A thorough source description, including a description of air cleaning devices and the flue.
 - (ii) Process conditions, for example, the charging rate of raw material or rate of production of final product, boiler pressure, oven temperature and other conditions which may affect emissions from the process.
 - (iii) The location of the sampling ports.
 - (iv) Effluent characteristics, including velocity, temperature, moisture content, gas density (percentage of CO, CO₂, O₂ and N₂), static and barometric pressures.
 - (v) Sample collection techniques employed, including procedures used, equipment descriptions and data to verify that isokinetic sampling for particulate matter collection occurred and that acceptable test conditions were met.
 - (vi) Laboratory procedures and results.

(vii) Calculated results.

Source

The provisions of this § 139.4 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383.

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations); and 25 Pa. Code § 139.17 (relating to general requirements).

§ 139.12. Emissions of particulate matter.

Tests for determining emissions of particulate matter from stationary sources shall conform with the following:

- (1) Test methods for particulate emissions shall include dry filters and provide for at least a 95% collection efficiency of particulate matter.
- (2) Isokinetic sampling procedures shall be used in sampling for particulate matter emissions and the weight determined gravimetrically after the removal of uncombined water.
- (3) Test methods and procedures shall be equivalent to those specified in § 139.4(5) (relating to references). The equipment shall be inert where appropriate and similar to that specified in § 139.4(1).
- (4) The minimum sampling time shall be 1 hour or as specified in an applicable standard or by the Department and the minimum sample volume shall be 50 cubic feet or as specified in an applicable standard or by the Department, corrected to standard conditions (dry basis).
- (5) Results shall be calculated based upon sample train component weights specified in § 139.4(5). Results shall be reported as pounds of particulate matter per hour and in accordance with the units specified in §§ 123.11—123.13 (relating to particulate matter emissions).

Source

The provisions of this § 139.12 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383; amended June 22, 1979, effective July 1, 1979, 9 Pa.B. 2150; corrected June 29, 1979, effective July 1, 1979, 9 Pa.B. 2150; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899; amended December 26, 1997, effective December 27, 1997, 27 Pa.B. 6804; amended May 1, 1998, effective March 7, 1998, 28 Pa.B. 2035. Immediately preceding text appears at serial page (239781).

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations); and 25 Pa. Code § 139.17 (relating to general requirements).

§ 139.13. Emissions of SO₂, H₂S, TRS and NO₂.

The following are applicable to tests for determining emissions of SO₂, H₂S, TRS and NO₂ from stationary sources:

- (1) Test methods and procedures for sulfur oxides shall be equivalent to or modified to produce results equivalent to those which would be obtained by

employing the procedures specified in § 139.4(5) (relating to references). Test methods and procedures for SO₂ from combustion sources shall be equivalent to or modified to produce results equivalent to those which would be obtained by employing procedures specified in § 139.4(5). Details for sampling equipment are contained in § 139.4(1) or (5).

(2) Test methods and procedures for HS shall be equivalent to or modified to produce results equivalent to those obtained by employing the procedures specified in § 139.4(5). The equipment shall be inert where appropriate and similar to that specified in § 139.4(1) or (5).

(3) Test methods and procedures for TRS shall be equivalent to or modified to produce results equivalent to those obtained by employing the procedures specified in § 139.4(5). The equipment shall be inert when appropriate and similar to that specified in § 139.4(1).

(4) For determination of emissions of TRS using EPA Method 16, a minimum of 16 injects per test run shall be analyzed. Each test run shall be over a period of at least 3 hours but not more than 6 hours. For determination of TRS emissions using EPA Method 16A, a test run shall consist of either one 3-hour sample or three 60-minute samples. Three test runs constitute a determination for purposes of both EPA Methods.

(5) Test methods and procedures and equipment for NO shall be similar to those specified in § 139.4(1) and (5).

(6) For determining emissions of SO₂ and H₂S, the minimum sampling time shall be 1 hour and the minimum sample volume shall be 30 cubic feet corrected to standard conditions—dry basis.

Source

The provisions of this § 139.13 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383; amended April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478; amended May 6, 1988, effective May 7, 1988, 18 Pa.B. 2102; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899. Immediately preceding text appears at serial pages (128483) to (128484) and (170287).

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations).

§ 139.14. Emissions of VOCs.

(a) The following are applicable to tests for determining volatile organic content:

(1) Test methods and procedures for the total volatiles content, solids content, exempt solvent content, water content and density of surface coatings shall be equivalent to those specified in § 139.4(1) and (5) (relating to references).

(2) Test methods and procedures for VOCs in effluent water shall be equivalent to those specified in § 139.4(16), expressed as pentane.

(3) For determining the solvent content of wastes in dry cleaning facilities, test methods and procedures shall be equivalent to those specified in § 139.4(17).

(4) Results shall be reported in accordance with the units specified in the appropriate section of Chapter 129 (relating to standards for sources).

(b) The following are applicable to tests for determining the emissions of VOCs:

(1) Test methods for VOC emissions shall use a technique having at least a 95% collection efficiency for VOCs.

(2) Except for those sources or systems specified in this subsection, the test methods and procedures and equipment for VOCs, excluding carbon dioxide, carbon monoxide and methane shall be equivalent to those specified in EPA Method 25 or as specified in § 139.4(5). The owner or operator of a source may exclude ethane from the VOC measurement. If ethane is excluded, the measurement of ethane shall be reported separately.

(3) For gasoline vapor recovery systems, test methods and procedures and equipment for VOCs shall be equivalent to those specified in EPA Method 25B or as specified in § 139.4(5).

(4) For determining the magnitude of VOC leaks from petroleum refinery equipment, from synthetic organic chemical and polymer manufacturing equipment and from surface active agent manufacturing equipment, test methods and procedures shall be equivalent to those specified in EPA Method 21 or as specified in § 139.4(5). The owner or operator of a source may exclude methane and ethane from this measurement. If methane and ethane are excluded, the measurement of methane and ethane together shall be reported.

(5) For determining the VOC leak tightness of truck tanks, test methods and procedures shall be equivalent to those specified in EPA Method 27 or as specified in § 139.4(5).

(6) For determining the magnitude of VOC leaks from gasoline tank trucks and vapor collection systems, test methods and procedures shall be equivalent to those specified in EPA Method 21 or as specified in § 139.4(5).

(7) Results shall be reported in accordance with the units specified in the appropriate section of Chapter 129.

(8) Test methods for the determination of RVP in gasoline shall be in accordance with the procedures in 40 CFR Part 80, Appendix E (relating to test for determining Reid vapor pressure (RVP) of gasoline and gasoline-oxygenate blends).

Source

The provisions of this § 139.14 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383; amended April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended June 19, 1981, effective June 20, 1981, 11 Pa.B. 2118; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478; amended August 24, 1984, effective March 24, 1984, 14 Pa.B. 3090; amended May 6, 1988, effective May 7, 1988, 18 Pa.B. 2098; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899; amended October 31, 1997, effective November 1, 1997, 27 Pa.B. 5601; amended June 9, 2000, effective June 10, 2000, 30 Pa.B. 2995. Immediately preceding text appears at serial pages (244316) and (237321) to (237322).

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations); 25 Pa. Code § 129.58 (relating to petroleum refineries—fugitive sources); 25 Pa. Code § 129.62 (relating to general standards for bulk gasoline terminals, bulk gasoline plants and small gasoline storage tanks); 25 Pa. Code § 129.71 (relating to synthetic organic chemical and polymer manufacturing—fugitive sources); and 25 Pa. Code § 129.81 (relating to organic liquid cargo vessel loading and ballasting).

§ 139.15. Emissions of other air contaminants.

Test methods and procedures may be modified for determining emissions of contaminants other than particulate matter, SO₂, H₂S, total reduced sulfur (TRS) and NO₂ from stationary sources in a manner consistent with accepted air pollution testing practices and with obtaining accurate results which are representative of the conditions evaluated. The modifications shall be subject to the approval of the Department and shall be clearly indicated in the report of test results.

Source

The provisions of this § 139.15 adopted April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected April 27, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended May 6, 1988, effective May 7, 1988, 18 Pa.B. 2102. Immediately preceding text appears at serial page (92837).

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations).

§ 139.16. Sulfur in fuel oil.

The following are applicable to tests for the analysis of commercial fuel oil:

- (1) The fuel oil sample for chemical analysis shall be collected in a manner that provides a representative sample. Upon the request of a Department official, the person responsible for the operation of the source shall collect the sample employing the procedures and equipment specified in § 139.4(10) (relating to references).
- (2) Test methods and procedures for the determination of viscosity shall be that specified in § 139.4(11). The viscosity shall be determined at 100°F.
- (3) Tests methods and procedures for the determination of sulfur shall be those specified in § 139.4(12)—(15).

(4) Results shall be reported in accordance with the units specified in § 123.22 (relating to combustion units).

Source

The provisions of this § 139.16 adopted April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478. Immediately preceding text appears at serial pages (62542) and (62543).

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations).

§ 139.17. General requirements.

The following are applicable to source tests for determining alternative opacity limitations under § 123.45 (relating to alternative opacity limitations).

(1) A series of three consecutive performance tests shall be conducted in accordance with the requirements of §§ 139.1—139.4, 139.11 and 139.12. The time period from the beginning of the first test to the end of the third test may not exceed 8 hours.

(2) The opacity of emissions, as determined in accordance with the measurement technique specified in § 123.45 (relating to alternative opacity limitations), shall be recorded for the entire time period from the beginning of the first performance test to the end of the third performance test.

(3) If continuous opacity monitoring equipment is required, it shall be installed, operated and maintained in accordance with Subchapter C (relating to requirements for source monitoring for stationary sources).

(4) If continuous opacity monitoring equipment is not required, visual observation of opacity shall be conducted by the source owner or operator in accordance with the procedures in Appendix A, Method 9 of § 139.102(1) (relating to references).

(5) Prior to the first performance test, the results of opacity measurements obtained in accordance with the technique specified in § 123.45 will be compared to the results of visual observations conducted by the Department in accordance with Appendix A, Method 9 of § 139.102(1).

(i) A series of 60 consecutive observations will be conducted by the Department observer at intervals of 15 seconds. The results will be reduced to fifteen 1-minute averages.

(ii) The opacity measurements obtained by the techniques specified in § 123.45 for the same time period will be reduced to fifteen 1-minute averages corresponding to those calculated in subparagraph (i).

(iii) If any of the 1-minute averages as calculated in subparagraph (ii) differ by more than 15% opacity from the corresponding 1-minute average as calculated in subparagraph (i), the cause shall be determined and the comparison repeated after appropriate adjustments have been made but before commencement of the first performance test.

(iv) If the average of the absolute values of the differences between the 1-minute averages as calculated in subparagraph (ii) and the corresponding 1-minute averages as calculated in subparagraph (i) is greater than 7.5% opacity, the cause shall be determined and the comparison repeated after appropriate adjustments have been made but before commencement of the first performance test.

Source

The provisions of this § 139.17 adopted June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132.

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations); and 25 Pa. Code § 139.12 (relating to emissions of particulate matter).

§ 139.18. Calculation of alternative opacity limitations.

(a) The results of opacity measurements obtained by the technique specified in § 123.45 (relating to alternative opacity limitations) for the entire time period from the beginning of the first performance test to the end of the third performance test will be reduced to 1-minute averages.

(b) The 1-minute averages which correspond to each of the three performance tests will be used for calculation of the alternative opacity limits and treated as if they represented contiguous data.

(c) The highest 1-minute average as determined in subsection (b) is the alternative opacity limitation not to be exceeded at any time.

(d) The median value of the 1-minute averages as determined in subsection (b) is determined.

(e) One-minute averages equal to or less than the median value calculated in subsection (d) will be eliminated from calculations in subsections (f) and (g).

(f) The mean and modified 95% confidence interval shall be calculated for the remaining 1-minute averages as follows:

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{n}$$

$$C.I._m = \frac{2}{n \sqrt{-1}} \sqrt{n \sum_{i=1}^n X_i^2 - \left(\sum_{i=1}^n X_i\right)^2}$$

X_i = individual 1-minute average

n = number of individual 1-minute average (after elimination of averages less than or equal to the median value)

$C.I._m$ = modified 95% confidence interval

(g) The alternative opacity limitation not to be exceeded more than 3 minutes in any 1 hour shall be equal to the sum of the mean and the modified 95% confidence interval as calculated in subsection (f) ($\bar{X} + C.I._m$), truncated to an integer % opacity.

(h) An hourly average opacity limitation not to be exceeded at any time will be calculated as follows:

(1) The 1-minute averages as determined in subsection (b) will be grouped in discrete hourly time periods starting with the beginning of the first performance test.

(2) A remaining 1-minute averages constituting less than a full hourly time period will be eliminated from calculations in paragraphs (3) and (4).

(3) The mean for each hourly time period will be calculated as follows:

$$\bar{X} = \frac{\sum_{i=1}^{60} X_i}{60}$$

where: \bar{X} = mean
 X_i = individual 1-minute average

(4) The hourly average opacity limitation not to be exceeded at any time shall be equal to the highest mean as calculated in paragraph (3) truncated to the nearest integer % opacity.

Source

The provisions of this § 139.18 adopted June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132.

Cross References

This section cited in 25 Pa. Code § 123.45 (relating to alternative opacity limitations).

§ 139.21. [Reserved].

Source

The provisions of this § 139.21 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383; reserved August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478. Immediately preceding text appears at serial page (62546).

AMBIENT LEVELS OF AIR CONTAMINANTS

§ 139.31. General.

Sections 139.32 and 139.33 (relating to sampling and analytical procedures; and incorporation of Federal procedures) are applicable to methods for determining ambient levels of air contaminants.

Source

The provisions of this § 139.31 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383.

§ 139.32. Sampling and analytical procedures.

(a) Sampling and analytical techniques which may be used directly or employed as reference standards against which other methods may be calibrated shall be as follows:

<i>Contaminant</i>	<i>Sampling Method</i>	<i>Analytical Method</i>
Settled particulates (total)	Open top cylinder (6)	Gravimetric (6)
Beryllium	High-volume filtration (7)	Spectrographic (7)
Flourides (total soluble, as HF)	Filtration plus gas absorption (9)	Thorium-alizarin lake titration (9)
Hydrogen sulfide	Gas absorption (18)	Methylene blue method (18)

(b) The numbers following the reference standards in subsection (a) refer to the references contained in § 139.4 (relating to references).

Source

The provisions of this § 139.32 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899; amended September 4, 1998, effective September 5, 1998, 28 Pa.B. 4525. Immediately preceding text appears at serial pages (239783) to (239784).

Cross References

This section cited in 25 Pa. Code § 139.31 (relating to general); and 25 Pa. Code § 139.33 (relating to incorporation of Federal procedures).

§ 139.33. Incorporation of Federal procedures.

Sampling and analytical procedures promulgated by the Administrator of the EPA under the Clean Air Act are hereby incorporated, by reference, as part of the techniques listed in § 139.32(a) (relating to sampling and analytical procedures).

Source

The provisions of this § 139.33 adopted March 3, 1972, effective March 20, 1972, 2 Pa.B. 383.

Cross References

This section cited in 25 Pa. Code § 139.31 (relating to general).

Subchapter B. MONITORING DUTIES OF CERTAIN SOURCES

GENERAL

- Sec.
139.51. Purpose.
139.52. Monitoring methods and techniques.
139.53. Filing monitoring reports.
139.61. [Reserved].
139.62. [Reserved].

Cross References

This subchapter cited in 25 Pa. Code § 139.101 (relating to general requirements).

GENERAL

§ 139.51. Purpose.

The intent of this subchapter is to require the periodic monitoring of air contaminants emitted from certain sources which have or are likely to have a sub-

stantial impact on the maintenance of ambient air quality standards or may cause air pollution. The identification of sources subject to this subchapter, or the establishment of a specific frequency of source emission monitoring in this subchapter, will not be construed to limit the Department's authority under section 4 of the act (35 P. S. § 4004) or § 127.12 (relating to content of applications) to establish monitoring requirements for other sources, or additional monitoring requirements for sources subject to this subchapter.

Source

The provisions of this § 139.51 adopted August 12, 1977, effective August 29, 1977, 7 Pa.B. 2251; amended March 17, 1989, effective March 18, 1989, 19 Pa.B. 1169. Immediately preceding text appears at serial page (128492).

§ 139.52. Monitoring methods and techniques.

Persons responsible for the operation of sources subject to monitoring requirements established by order, by condition of plan approval or permit, or under this subchapter, shall:

- (1) Conduct source testing or air sampling and perform analyses in accordance with the requirements of Subchapter A (relating to sampling and testing methods and procedures), or shall install, operate and maintain a device approved by the Department for installation in a flue for the purpose of continuous measurement of specific air contaminants.
- (2) Perform visible emission observations in accordance with the methods for observing and recording visible emissions established pursuant to Chapter 123 (relating to standards for contaminants); provided, however, visible emissions discharged through a flue may also be monitored by use of a device approved by the Department for installation in a stack for the purpose of measuring opacity.

Source

The provisions of this § 139.52 adopted August 12, 1977, effective August 29, 1977, 7 Pa.B. 2251.

Cross References

This section cited in 25 Pa. Code § 139.53 (relating to filing monitoring reports).

§ 139.53. Filing monitoring reports.

(a) Persons responsible for the operation of sources subject to monitoring requirements established by order, by condition of plan approval or permit or under this subchapter, shall submit periodic reports of the results of tests, samples or observations conducted, obtained or made in accordance with the methods or techniques referenced in § 139.52 (relating to monitoring methods and techniques). The reports shall be:

- (1) Submitted on forms supplied or in a format specified by the Department.

(2) Sworn by the person exercising managerial responsibility over the operation of the source for which monitoring is required.

(3) Submitted on the schedule established by order, condition of plan approval or permit or this subchapter.

(4) Submitted to the Regional Air Pollution Control Engineer for the region of the Department in which the source is located.

(b) In addition to the information required by subsection (a) the Department may, by use of a standard form or by written notice, require information regarding test methods, test conditions, operating conditions of the source or other information which may be necessary to properly evaluate the results of emissions monitoring performed at a source.

Source

The provisions of this § 139.53 adopted August 12, 1977, effective August 29, 1977, 7 Pa.B. 2251; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478. Immediately preceding text appears at serial pages (62549) and (62550).

§ 139.61. [Reserved].

Source

The provisions of this § 139.61 adopted August 12, 1977, effective August 29, 1977, 7 Pa.B. 2251; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478; reserved December 26, 1997, effective December 27, 1997, 27 Pa.B. 6804. Immediately preceding text appears at serial pages (233622) to (233623).

§ 139.62. [Reserved].

Source

The provisions of this § 139.62 adopted August 4, 1978, effective August 5, 1978, 8 Pa.B. 2164; reserved December 26, 1997, effective December 27, 1997, 27 Pa.B. 6804. Immediately preceding text appears at serial pages (233623) to (233624).

**Subchapter C. REQUIREMENTS FOR SOURCE MONITORING
FOR STATIONARY SOURCES**

Sec.

- 139.101. General requirements.
- 139.102. References.
- 139.103. Opacity monitoring requirements.
- 139.104. [Reserved].
- 139.105. [Reserved].
- 139.106. [Reserved].
- 139.107. [Reserved].
- 139.108. TRS compound monitoring requirements.
- 139.111. Waste incinerator monitoring requirements.

Cross References

This subchapter cited in 25 Pa. Code § 123.25 (relating to monitoring requirements); 25 Pa. Code § 123.46 (relating to monitoring requirements); 25 Pa. Code § 123.51 (relating to monitoring requirements); 25 Pa. Code § 123.210 (relating to general monitoring and reporting requirements); 25 Pa. Code § 123.211 (relating to initial certification and recertification procedures for emissions monitoring); 25 Pa. Code § 123.212 (relating to out-of-control periods for emissions monitors); 25 Pa. Code § 129.17 (relating to kraft pulp mills); 25 Pa. Code § 129.18 (relating to municipal waste incinerators); and 25 Pa. Code § 139.17 (relating to general requirements).

§ 139.101. General requirements.

This section applies to monitoring systems as defined in the manual referenced in § 139.102(3) (relating to references), installations required or approved under Chapters 122, 124, 127 and 129 or in an order issued under section 4 of the act (35 P. S. § 4004).

(1) The submittal procedures specified in the publication entitled “Continuous Source Monitoring Manual,” available from the Department shall be utilized to obtain Department approval. This publication includes:

- (i) Installation requirements.
- (ii) Performance specifications.
- (iii) Test procedures.
- (iv) Reporting requirements.
- (v) Quality assurance requirements.
- (vi) Administrative procedures for obtaining Department approval.

(2) The monitoring system installation, certification and operation shall be conducted under the direct supervision of persons qualified by training and experience.

(3) The monitoring systems may be designed to monitor source emissions or stack emissions if the representativeness of emissions can be verified. The method of conversion of monitoring results to source or stack emissions shall be approved by the Department.

(4) The location of monitoring devices shall be approved by the Department prior to installation. The selection of the monitoring location shall utilize applicable criteria in the manual referenced in § 139.102(3). The Department has the authority to determine which of the criteria are applicable. The representativeness of the measurements at the chosen monitoring location shall be verified.

(5) The owner of a monitored source shall maintain records containing monitoring information and report data to the Department as specified in the manual referenced in § 139.102(3). The records shall be maintained for 5 years and be available for inspection by Department personnel.

(6) The owner of a monitored source shall provide permanent sampling facilities as specified in § 139.1 (relating to sampling facilities) to permit verification testing by the Department. For extractive monitors, calibration gas inlets shall be available as near as possible to the monitor probe inlet to permit

the Department to verify calibration of the monitoring system. Facilities shall be approved by the Department prior to construction.

(7) Verification testing for monitoring systems shall be in accordance with Subchapter B (relating to monitoring duties of certain sources), and of the manual referenced in § 139.102(3).

(8) A quality assurance program shall be established and maintained by the owner of the monitored source. This program shall be in accordance with the criteria in the sources listed in § 139.102.

(9) The Department's approval will be based on the criteria specified in the manual referenced in § 139.102(3). Failure to utilize the specified procedures or to conduct the quality assurance program could result in denying or rescinding the Department's approval.

(10) The owner of a monitored source shall notify the Department when the monitoring system is inoperative for more than 1 hour during an air pollution episode as specified in Chapter 137 (relating to air pollution episodes). The notice shall be given within 2 hours of the malfunction.

(11) Manual sampling conducted under Subchapter B may be required if the Department determines that the monitoring system data is not accurate or that the owner of the monitored source does not conduct the quality assurance program specified in the manual referenced in § 139.102(3).

(12) Required monitoring shall meet at least one of the following minimum data availability requirements unless other data availability requirements are stipulated elsewhere in this title, in a plan approval or permit condition under Chapter 127 (relating to construction, modification, reactivation and operation of sources), or in an order issued under section 4 of the act. For purposes of calculating data availability, "process down" time, as specified in the manual referenced in § 139.102(3), shall be considered valid time.

(i) In each calendar month, at least 90% of the time periods for which an emission standard or an operational parameter applies shall be valid as set forth in the quality assurance section of the manual referenced in § 139.102(3).

(ii) In each calendar quarter, at least 95% of the hours shall be valid as set forth in the quality assurance section of the manual referenced in § 139.102(3).

(13) The monitor results shall be expressed in terms of the applicable standard or criteria required. The method used to convert monitor data shall be approved by the Department.

(14) Monitoring systems shall comply with the applicable performance specifications section of the manual referenced in § 139.102(3). The Department has the authority to determine which of the performance specifications are applicable.

(15) Verification of calibration standards shall be conducted in accordance with the applicable sampling methods in the Department's "Source Testing

Manual” or as otherwise approved by the Department. The “Source Testing Manual” may be obtained from the Department.

(16) The requirements of this section apply to monitoring to demonstrate compliance with emissions standards and process operational parameter criteria.

Source

The provisions of this § 139.101 adopted April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478; amended October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899; corrected January 28, 2000, effective March 7, 1998, 30 Pa.B. 533. Immediately preceding text appears at serial pages (239787) to (239789).

Cross References

This section cited in 25 Pa. Code § 123.108 (relating to source emissions monitoring requirements) and 25 Pa. Code § 123.210 (relating to general monitoring and reporting requirements).

§ 139.102. References.

The following are references of this subchapter:

- (1) “Standards of Performance for New Stationary Sources,” 40 CFR Chapter I, Subchapter C, Part 60, Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402-9328.
- (2) “Minimum Emission Monitoring Requirements,” 40 CFR Subchapter C, Part 51, Appendix P, Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402-9328.
- (3) “Continuous Source Monitoring Manual,” Commonwealth of Pennsylvania, Department of Environmental Resources, Bureau of Air Quality Control, Post Office Box 8468, Harrisburg, Pennsylvania 17105-8468.

Source

The provisions of this § 139.102 adopted April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended August 12, 1983, effective August 13, 1983, 13 Pa.B. 2478; amended October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899. Immediately preceding text appears at serial page (188275).

Cross References

This section cited in 25 Pa. Code § 123.108 (relating to source emissions monitoring requirements); 25 Pa. Code § 139.5 (relating to revisions to the source testing manual and continuous source monitoring manual); 25 Pa. Code § 139.17 (relating to general requirements); 25 Pa. Code § 139.101 (relating to general requirements); 25 Pa. Code § 139.103 (relating to opacity monitoring requirements); 25 Pa. Code § 139.108 (relating to TRS compound monitoring requirements); and 25 Pa. Code § 139.111 (relating to municipal waste incinerator monitoring requirements).

§ 139.103. Opacity monitoring requirements.

This section applies to sources monitoring opacity.

(1) Opacity measurements shall be converted to represent plume opacity as described in the manual referenced in § 139.102(3) (relating to references). The conversion method shall be approved by the Department.

(2) Opacity monitoring systems shall meet at least one of the following minimum data availability requirements unless other data availability requirements are stipulated elsewhere in this title for a particular process:

(i) At least 90% of the hours in each calendar month shall be valid hours as set forth in the quality assurance section of the manual referenced in § 139.102(3).

(ii) At least 95% of the hours in each calendar quarter shall be valid hours as set forth in the quality assurance section of the manual referenced in § 139.102(3).

Source

The provisions of this § 139.103 adopted April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132; amended October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899. Immediately preceding text appears at serial pages (188275) to (188276).

§ 139.104. [Reserved].

Source

The provisions of this § 139.104 adopted April 27, 1979, effective August 1, 1979, 9 Pa.B. 1447; corrected May 11, 1979, effective August 1, 1979, 9 Pa.B. 1534; amended June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132; amended October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899; amended December 26, 1997, effective December 27, 1997, 27 Pa.B. 6804. Immediately preceding text appears at serial pages (237326) to (237327).

§ 139.105. [Reserved].

Source

The provisions of this § 139.105 adopted August 4, 1978, effective August 5, 1978, 8 Pa.B. 2164; amended June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132; reserved October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416. Immediately preceding text appears at serial page (128500).

§ 139.106. [Reserved].

Source

The provisions of this § 139.106 adopted June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132; reserved October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416. Immediately preceding text appears at serial pages (128500) to (128501).

§ 139.107. [Reserved].**Source**

The provisions of this § 139.107 adopted June 19, 1981, effective June 20, 1981, 11 Pa.B. 2132; reserved October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416. Immediately preceding text appears at serial page (128501).

§ 139.108. TRS compound monitoring requirements.

This section applies to sources monitoring total reduced sulfur (TRS) emissions. TRS monitoring systems shall meet at least one of the following minimum data availability requirements unless other data availability requirements are stipulated elsewhere in this title for a particular process:

- (1) At least 75% of the 12-hour averages during each calendar month shall be valid 12-hour averages as set forth in the quality assurance section of the manual referenced in § 139.102(3) (relating to references).
- (2) At least 85% of the 12-hour averages in each calendar quarter shall be valid 12-hour averages as set forth in the quality assurance section of the manual referenced in § 139.102(3).

Source

The provisions of this § 139.108 adopted May 6, 1988, effective May 7, 1988, 18 Pa.B. 2102; reserved October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416; amended November 25, 1994, effective November 26, 1994, 24 Pa.B. 5899. Immediately preceding text appears at serial page (151715).

§ 139.111. Waste incinerator monitoring requirements.

This section applies to monitoring systems installed on municipal and hospital waste incinerators.

- (1) Carbon monoxide, combustion efficiency and temperature monitoring systems shall meet the following minimum data availability requirements:
 - (i) One hundred percent of the data hours shall be valid hours as set forth in the quality assurance section of the manual referenced in § 139.102(3) (relating to references).
 - (ii) At least 90% of the data required to be collected each hour shall be valid data as set forth in the quality assurance section of the manual referenced in § 139.102(3).
- (2) Opacity monitoring systems shall meet the following minimum data availability requirement: At least 95% of the data hours each day shall be valid hours as set forth in the quality assurance section of the manual referenced in § 139.102(3).
- (3) Hydrogen chloride, sulfur dioxide and nitrogen oxide monitoring systems shall meet the following minimum data availability requirement: At least 90% of the data hours each month shall be valid hours as set forth in the quality assurance section of the manual referenced in § 139.102(3).

Authority

The provisions of this § 139.111 issued under section 5 of the Air Pollution Control Act (35 P. S. § 4005).

Source

The provisions of this § 139.111 adopted October 26, 1990, effective October 27, 1990, 20 Pa.B. 5416; amended December 26, 1997, effective December 27, 1997, 27 Pa.B. 6804. Immediately preceding text appears at serial page (237328).

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