

## Environmental Protection Agency

## § 50.17

(ii) A State that flags data collected during calendar years 2004–2006, pursuant to paragraph (c)(2)(iv) of this section, must adopt the procedures and requirements specified in paragraph (c)(3)(i) of this section and must include a demonstration to justify the exclusion of the data not later than the submittal of the Governor's recommendation letter on nonattainment areas.

(iii) A State that flags Pb data collected during calendar years 2006–2009, pursuant to paragraph (c)(2)(v) of this section shall, after notice and opportunity for public comment, submit to EPA a demonstration to justify exclusion of the data not later than October 15, 2010. A State that flags Pb data collected during calendar year 2010 shall, after notice and opportunity for public comment, submit to EPA a demonstration to justify the exclusion of the data not later than May 1, 2011. A state must submit the public comments it received along with its demonstration to EPA.

(iv) The demonstration to justify data exclusion shall provide evidence that:

(A) The event satisfies the criteria set forth in 40 CFR 50.1(j);

(B) There is a clear causal relationship between the measurement under consideration and the event that is claimed to have affected the air quality in the area;

(C) The event is associated with a measured concentration in excess of normal historical fluctuations, including background; and

(D) There would have been no exceedance or violation but for the event.

(v) With the submission of the demonstration, the State must document that the public comment process was followed.

[72 FR 13580, Mar. 22, 2007; 72 FR 28612, May 22, 2007; 73 FR 67051, Nov. 12, 2008; 74 FR 70598, Nov. 21, 2008; 74 FR 23312, May 19, 2009; 75 FR 6531, Feb. 9, 2010; 75 FR 35592, June 22, 2010; 78 FR 3277, Jan. 15, 2013]

### § 50.15 National primary and secondary ambient air quality standards for ozone.

(a) The level of the national 8-hour primary and secondary ambient air quality standards for ozone (O<sub>3</sub>) is 0.075

parts per million (ppm), daily maximum 8-hour average, measured by a reference method based on appendix D to this part and designated in accordance with part 53 of this chapter or an equivalent method designated in accordance with part 53 of this chapter.

(b) The 8-hour primary and secondary O<sub>3</sub> ambient air quality standards are met at an ambient air quality monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration is less than or equal to 0.075 ppm, as determined in accordance with appendix P to this part.

[73 FR 16511, Mar. 27, 2008]

### § 50.16 National primary and secondary ambient air quality standards for lead.

(a) The national primary and secondary ambient air quality standards for lead (Pb) and its compounds are 0.15 micrograms per cubic meter, arithmetic mean concentration over a 3-month period, measured in the ambient air as Pb either by:

(1) A reference method based on appendix G of this part and designated in accordance with part 53 of this chapter or;

(2) An equivalent method designated in accordance with part 53 of this chapter.

(b) The national primary and secondary ambient air quality standards for Pb are met when the maximum arithmetic 3-month mean concentration for a 3-year period, as determined in accordance with appendix R of this part, is less than or equal to 0.15 micrograms per cubic meter.

[73 FR 67052, Nov. 12, 2008]

### § 50.17 National primary ambient air quality standards for sulfur oxides (sulfur dioxide).

(a) The level of the national primary 1-hour annual ambient air quality standard for oxides of sulfur is 75 parts per billion (ppb), which is 1 part in 1,000,000,000, measured in the ambient air as sulfur dioxide (SO<sub>2</sub>).

(b) The 1-hour primary standard is met at an ambient air quality monitoring site when the three-year average of the annual (99th percentile) of the

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daily maximum 1-hour average concentrations is less than or equal to 75 ppb, as determined in accordance with appendix T of this part.

(c) The level of the standard shall be measured by a reference method based on appendix A or A-1 of this part, or by a Federal Equivalent Method (FEM) designated in accordance with part 53 of this chapter.

[75 FR 35592, June 22, 2010]

### § 50.18 National primary ambient air quality standards for PM<sub>2.5</sub>.

(a) The national primary ambient air quality standards for PM<sub>2.5</sub> are 12.0 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) annual arithmetic mean concentration and 35  $\mu\text{g}/\text{m}^3$  24-hour average concentration measured in the ambient air as PM<sub>2.5</sub> (particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers) by either:

(1) A reference method based on appendix L to this part and designated in accordance with part 53 of this chapter; or

(2) An equivalent method designated in accordance with part 53 of this chapter.

(b) The primary annual PM<sub>2.5</sub> standard is met when the annual arithmetic mean concentration, as determined in accordance with appendix N of this part, is less than or equal to 12.0  $\mu\text{g}/\text{m}^3$ .

(c) The primary 24-hour PM<sub>2.5</sub> standard is met when the 98th percentile 24-hour concentration, as determined in accordance with appendix N of this part, is less than or equal to 35  $\mu\text{g}/\text{m}^3$ .

[78 FR 3277, Jan. 15, 2013]

#### APPENDIX A-1 TO PART 50—REFERENCE MEASUREMENT PRINCIPLE AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF SULFUR DIOXIDE IN THE ATMOSPHERE (ULTRAVIOLET FLUORESCENCE METHOD)

##### 1.0 APPLICABILITY

1.1 This ultraviolet fluorescence (UVF) method provides a measurement of the concentration of sulfur dioxide (SO<sub>2</sub>) in ambient air for determining compliance with the national primary and secondary ambient air quality standards for sulfur oxides (sulfur dioxide) as specified in § 50.4, § 50.5, and § 50.17 of this chapter. The method is applicable to the measurement of ambient SO<sub>2</sub> concentrations using continuous (real-time) sampling.

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Additional quality assurance procedures and guidance are provided in part 58, appendix A, of this chapter and in Reference 3.

### 2.0 PRINCIPLE

2.1 This reference method is based on automated measurement of the intensity of the characteristic fluorescence released by SO<sub>2</sub> in an ambient air sample contained in a measurement cell of an analyzer when the air sample is irradiated by ultraviolet (UV) light passed through the cell. The fluorescent light released by the SO<sub>2</sub> is also in the ultraviolet region, but at longer wavelengths than the excitation light. Typically, optimum instrumental measurement of SO<sub>2</sub> concentrations is obtained with an excitation wavelength in a band between approximately 190 to 230 nm, and measurement of the SO<sub>2</sub> fluorescence in a broad band around 320 nm, but these wavelengths are not necessarily constraints of this reference method. Generally, the measurement system (analyzer) also requires means to reduce the effects of aromatic hydrocarbon species, and possibly other compounds, in the air sample to control measurement interferences from these compounds, which may be present in the ambient air. References 1 and 2 describe UVF method.

2.2 The measurement system is calibrated by referencing the instrumental fluorescence measurements to SO<sub>2</sub> standard concentrations traceable to a National Institute of Standards and Technology (NIST) primary standard for SO<sub>2</sub> (see Calibration Procedure below).

2.3 An analyzer implementing this measurement principle is shown schematically in Figure 1. Designs should include a measurement cell, a UV light source of appropriate wavelength, a UV detector system with appropriate wave length sensitivity, a pump and flow control system for sampling the ambient air and moving it into the measurement cell, sample air conditioning components as necessary to minimize measurement interferences, suitable control and measurement processing capability, and other apparatus as may be necessary. The analyzer must be designed to provide accurate, repeatable, and continuous measurements of SO<sub>2</sub> concentrations in ambient air, with measurement performance as specified in Subpart B of Part 53 of this chapter.

2.4 *Sampling considerations:* The use of a particle filter on the sample inlet line of a UVF SO<sub>2</sub> analyzer is required to prevent interference, malfunction, or damage due to particles in the sampled air.

### 3.0 INTERFERENCES

3.1 The effects of the principal potential interferences may need to be mitigated to meet the interference equivalent requirements of part 53 of this chapter. Aromatic