Question 2.1

Topic: SO_2 Monitoring for Very Low Sulfur Fuel

Question: If I have a coal-fired unit with an SO_2 CEMS that occasionally burns a "very low sulfur fuel" (as defined in 40 CFR 72.2), am I required to use a different monitoring approach for SO_2 for hours in which very low sulfur fuel is the only fuel being combusted, or may I continue to use the SO_2 CEMS for those hours?

Answer: When a very low sulfur fuel (e.g., natural gas) is the only fuel being combusted in the coal-fired unit, you may either continue to use the SO_2 CEMS (as described in paragraph (1), below) or you may use the alternative method described in paragraph (2), below, to quantify SO_2 emissions.

(1) Section 75.11(e)(3) allows you to continue using the SO_2 monitor during the combustion of a "very low sulfur fuel" such as natural gas. If you choose this option, you must report a default value of 2.0 ppm SO_2 whenever the bias-adjusted SO_2 hourly average value recorded by the CEMS is less than 2.0 ppm. In addition:

  ☐ For daily calibrations of the SO_2 monitor, the zero level gas must have a concentration of 0.0 percent of span;
  ☐ Routine calibration adjustments of the SO_2 monitor are recommended when the zero-level calibration response in a daily calibration error test exceeds ± 2.5% of span or ± 5 ppm (whichever is less restrictive); and
  ☐ A second (low-scale) span value is not required.

(2) As an alternative to using the SO_2 monitor when very low sulfur fuel is the only fuel being combusted, § 75.11(e)(1) allows you to use hourly measurements of heat input rate (derived from CO_2 or O_2 and flow rate CEMS data), together with a default SO_2 emission rate from Section 2.3.1.1 or Section 2.3.2.1.1 of Part 75, Appendix D, to calculate the hourly SO_2 emission rates. If this option is selected, Equation F-23 from Section 7 of Appendix F to Part 75 is used:

$$E_h = ER \ x \ HI \qquad \text{(Equation F-23)}$$

Where:
  E_h = Hourly SO_2 mass emission rate, lb/hr
  ER = Default SO_2 emission rate, either: 0.0006 for "pipeline natural gas" (as defined in 40 CFR 72.2); or as calculated using Equation D-1h in Appendix D, for (as defined in 40 CFR 72.2), lb/mmBtu
  HI = Hourly heat input rate measured with CEMS, mmBtu/hr

For hours in which Equation F-23 is used, the following activities are all temporarily suspended: (a) calculation of the SO_2 percent monitor data availability (PMA); (b) use of the standard SO_2 missing data procedures; and (c) QA assessments of the SO_2 monitor. These activities resume when

the SO_2 monitor returns to service. However, for the flow and diluent monitors, PMA calculations, missing data substitution, and QA assessments continue uninterrupted during Equation F-23 hours.

If you elect to use Equation F-23, you must include the equation in your electronic monitoring plan (in a Monitoring Formula Data record), and you must specify your default SO_2 emission rate in a Monitoring Default Data record. For emissions reporting purposes, do not report a Monitor Hourly Value (MHV) record for SO_2 when Equation F-23 is used. Rather, report the calculated SO_2 mass emission rate in the "adjusted hourly value" field of a Derived Hourly Value (DHV) record, leaving the "unadjusted hourly value" field blank.

[Regulatory Update: Prior to 2008, § 75.11(e) placed two restrictions on the use of Equation F-23: (1) the equation could only be used by an affected unit equipped with an SO_2 monitor; and (2) the equation could only be used during the combustion of very low sulfur *gaseous* fuel. However, on January 24, 2008, EPA revised § 75.11(e) to remove these restrictions (see: 73 FR 4315-16, January 24, 2008). The revised rule no longer limits the use of Equation F-23 to units with SO_2 monitors. Also, the use of Equation F-23 has been expanded to include "very low sulfur fuel" in all three states of matter (solid, liquid, and gas). To use Equation F-23 for very low sulfur fuels other than natural gas, (or mixtures of these fuels) the owner or operator must obtain Administrative approval of fuelspecific default SO_2 emission rates, by means of special petition under § 75.66.]

References: § 75.11(e), 75.64, 75.21(a)(4); Appendix D, Section 2.3; Appendix F, Section 7; ECMPS Monitoring Plan Reporting Instructions, sections 9.0 and 10.0; ECMPS Emissions Reporting Instructions, Sections 2.5.1 and 2.5.2

History: First published in March 1995, Update #5; revised July 1995, Update #6; revised March 1996, Update #8; revised in October 1999 Revised Manual; revised in 2013 Manual