

**PERFORMANCE SPECIFICATION 5 - SPECIFICATIONS AND TEST  
PROCEDURES FOR TRS CONTINUOUS EMISSION  
MONITORING SYSTEMS IN STATIONARY SOURCES**

1.0 *Scope and Application.*

1.1 Analytes.

Analyte	CAS No.
Total Reduced Sulfur (TRS)	NA

1.2 *Applicability.* This specification is for evaluating the applicability of TRS continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. The CEMS may include oxygen monitors which are subject to Performance Specification 3 (PS 3).

1.3 The definitions, performance specification, test procedures, calculations and data analysis procedures for determining calibration drifts (CD) and relative accuracy (RA) of PS 2, Sections 3.0, 8.0, and 12.0, respectively, apply to this specification.

2.0 *Summary of Performance Specification.*

The CD and RA tests are conducted to determine conformance of the CEMS to the specification.

3.0 *Definitions.*

Same as in Section 3.0 of PS 2.

4.0 *Interferences.* [Reserved]

### 5.0 *Safety.*

This performance specification may involve hazardous materials, operations, and equipment. This performance specification may not address all of the safety problems associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicable regulatory limitations prior to performing this performance specification. The CEMS users manual should be consulted for specific precautions to be taken with regard to the analytical procedures.

### 6.0 *Equipment and Supplies.*

Same as Section 6.0 of PS 2.

### 7.0 *Reagents and Standards.*

Same as Section 7.0 of PS 2.

### 8.0 *Sample Collection, Preservation, Storage, and Transport.*

8.1 Relative Accuracy Test Procedure. Sampling Strategy for reference method (RM) Tests, Number of RM Tests, and Correlation of RM and CEMS Data are the same as PS 2, Sections 8.4.3, 8.4.4, and 8.4.5, respectively.

**NOTE:** For Method 16, a sample is made up of at least three separate injects equally space over time. For Method 16A, a sample is collected for at least 1 hour.

8.2 Reference Methods. Unless otherwise specified in the applicable subpart of the regulations, Method 16, Method 16A, 16B or other approved alternative is the RM for TRS.

9.0 *Quality Control.* [Reserved]

10.0 *Calibration and Standardization.* [Reserved]

11.0 *Analytical Procedure.*

Sample collection and analysis are concurrent for this performance specification (see Section 8.0). Refer to the reference method for specific analytical procedures.

12.0 *Calculations and Data Analysis.*

Same as Section 12.0 of PS 2.

13.0 *Method Performance.*

13.1 Calibration Drift. The CEMS detector calibration must not drift or deviate from the reference value of the calibration gas by more than 5 percent of the established span value for 6 out of 7 test days. This corresponds to 1.5 ppm drift for Subpart BB sources where the span value is 30 ppm. If the CEMS includes pollutant and diluent monitors, the CD must be determined separately for each in terms of concentrations (see PS 3 for the diluent specifications).

13.2 Relative Accuracy. The RA of the CEMS must be no greater than 20 percent when the average RM value is used

to calculate RA or 10 percent when the applicable emission standard is used to calculate RA.

*14.0 Pollution Prevention.* [Reserved]

*15.0 Waste Management.* [Reserved]

*16.0 Alternative Procedures.* [Reserved]

*17.0 References.*

1. Department of Commerce. Experimental Statistics, National Bureau of Standards, Handbook 91. 1963. Paragraphs 3-3.1.4, p. 3-31.

2. A Guide to the Design, Maintenance and Operation of TRS Monitoring Systems. National Council for Air and Stream Improvement Technical Bulletin No. 89. September 1977.

3. Observation of Field Performance of TRS Monitors on a Kraft Recovery Furnace. National Council for Air and Stream Improvement Technical Bulletin No. 91. January 1978.

*18.0 Tables, Diagrams, Flowcharts, and Validation Data.*

Same as Section 18.0 of PS 2.