

ARTICLE 3. MONITORING REQUIREMENTS

Rule 7. Fuel Sampling and Analysis Procedures

326 IAC 3-7-1 Applicability

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-14-4-3; IC 13-15; IC 13-17

Sec. 1. This rule applies to fuel sampling and analysis that is performed to determine compliance with the emission limitations specified in 326 IAC 7. (*Air Pollution Control Division; 326 IAC 3-7-1; filed Jan 30, 1998, 4:00 p.m.: 21 IR 2075; readopted filed Jan 10, 2001, 3:20 p.m.: 24 IR 1477; filed Aug 11, 2011, 1:54 p.m.: 20110907-IR-326050330FRA*)

326 IAC 3-7-2 Coal sampling and analysis methods

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-14-4-3; IC 13-15; IC 13-17

Sec. 2. (a) Owners or operators of coal sampling systems for sources with total coal-fired capacity greater than or equal to one thousand five hundred (1,500) million British thermal units (Btu) per hour actual heat input shall follow procedures specified in ASTM D2234-89*, "Standard Methods for Collection of a Gross Sample of Coal", unless otherwise provided in section 3 of this rule. Additionally, the coal sampling system shall meet the following requirements:

(1) The coal sample acquisition point shall be at a location where representative samples of the total coal flow to be combusted by the emissions unit may be obtained. A single as-bunkered sampling station may be used to represent the coal to be combusted by multiple emissions units using the same stockpile feed system.

(2) The increment collection method to be used is specified in ASTM D2234-89*, Table 1, I-A-1, I-B-1, or I-C-1.

(3) The opening of the sampling device shall be at least two and one-half (2.5) times the top-size of the coal and not less than one and one-fourth (1.25) inches.

(4) The sampling device shall have sufficient capacity to completely retain or entirely pass the increment without loss or spillage.

(5) The velocity with which the cross-stream cutting instrument travels through the stream shall not exceed eighteen (18) inches per second. The velocity requirement shall not apply to a swing-arm sampler or to a sampler whose cutter opening is perpendicular to the stream of coal. Owners or operators of all coal sampling systems shall detail the proper operating procedures in the standard operating procedures document required under section 5 of this rule.

(6) Increments obtained during the sampling period shall be protected from changes in composition to maintain the integrity of constituent characteristics required to convert sample sulfur content to units of the applicable emission standard.

(7) A comparison of weight or volume of collected sample with that of the total flow of coal shall be conducted at a minimum of one (1) time every two (2) weeks to assure a constant sampling ratio is maintained for increments composited into a sample representing a single twenty-four (24) hour period.

(8) A routine inspection of the sampling system shall be established to meet requirements and guidelines specified in ASTM D4702-87*, "Guide for Inspecting Mechanical Coal Sampling Systems that Use Cross-Cut Sample Cutters for Conformance with Current ASTM Methods".

(9) Composite samples shall be collected for analysis at a minimum of one (1) time per twenty-four (24) hour period.

(b) Owners or operators of coal sampling systems for sources with total coal-fired capacity between one hundred (100) and one thousand five hundred (1,500) million Btu per hour actual heat input shall comply with requirements:

(1) in subsection (a);

(2) in section 3 of this rule; or

(3) shall meet the following minimum requirements:

(A) The coal sample acquisition point shall be at a location where representative samples of the total coal flow to be combusted by the emissions unit may be obtained. A single as-bunkered or as-burned sampling station may be used to represent the coal to be combusted by multiple emissions units using the same stockpile feed system.

(B) Coal shall be sampled at least three (3) times per day and at least one (1) time per eight (8) hour period unless no coal is bunkered during the preceding eight (8) hour period.

(C) Minimum sample size shall be five hundred (500) grams.

(D) Samples shall be composited and analyzed at the end of each calendar month.

(c) Coal samples shall be prepared for analysis in accordance with procedures specified in ASTM D2013-86*, "Standard Method of Preparing Coal Samples for Analysis". The preparation of samples shall meet the following requirements:

(1) Samples shall be prepared in accordance with ASTM D2013-86*, Procedure A or Procedure B.

(2) Sample preparation shall be checked at weekly intervals by performing a split sample of the twenty-four (24) hour composite sample and preparing and analyzing these two (2) identically.

(d) The heat content of coal samples shall be determined in accordance with procedures specified in ASTM D2015-95*, "Standard Test Method for Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter", or ASTM D3286-91A*, "Standard Test Method for Gross Calorific Value of Coal and Coke by the Isothermal Jacket Bomb Calorimeter". Restandardization requirements in Section 11 of both methods shall be followed. Precision requirements for repeatability shall be verified according to Section 16.1.1 of both methods at a minimum of once per week.

(e) The sulfur content of coal samples shall be determined according to procedures specified in ASTM D3177-89*, "Standard Test Methods for Total Sulfur in the Analysis Sample of Coal and Coke", or ASTM D4239-94*, "Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods". Precision requirements for repeatability shall be verified according to ASTM D3177-89*, Section 13, or ASTM D4239-94, Section 18*, at a minimum of one (1) time per week. The laboratory that performs the analysis shall participate in an interlaboratory audit program using coal samples supplied by the department.

(f) The department may approve minor modifications to the coal sampling and analysis procedures at a source upon demonstration by the source owner or operator that the minor modifications are necessary to meet the requirements of this section.

*These documents are incorporated by reference. Copies are available for review and copying at the Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center North, Tenth Floor, 100 North Senate Avenue, Indianapolis, Indiana 46204. (*Air Pollution Control Division; 326 IAC 3-7-2; filed Jan 30, 1998, 4:00 p.m.: 21 IR 2075; readopted filed Jan 10, 2001, 3:20 p.m.: 24 IR 1477; errata filed Dec 12, 2002, 3:35 p.m.: 26 IR 1567; filed Aug 26, 2004, 11:30 a.m.: 28 IR 38; filed Aug 11, 2011, 1:54 p.m.: 20110907-IR-326050330FRA*)

326 IAC 3-7-3 Alternative coal sampling and analysis methods

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-14-4-3; IC 13-15; IC 13-17

Sec. 3. (a) As an alternative to the coal sampling and analysis procedures in section 2 of this rule, a source owner or operator may use manual or other non-ASTM automatic sampling and analysis procedures upon a demonstration as described in subsection (b), submitted to and approved by the department and U.S. EPA that the procedures provide sulfur dioxide emission estimates representative either of estimates based on coal sampling and analysis procedures specified in section 2 of this rule or of continuous emissions monitoring.

(b) For the demonstration described in this section, a source owner or operator may submit documentation of procedures and results of a stopped-belt bias test or other comparisons between a sampling system meeting the requirements of section 2 of this rule and those methods and procedures proposed by the source owner or operator. A stopped-belt bias test and a sampling system meeting the requirements of section 2 of this rule shall be considered reference method systems. A comparison shall utilize a series of at least twenty-five (25) reference method system samples paired with nonreference method system samples and analyzed for the percent of sulfur content to determine the presence of significant systemic error. The detection of significant systemic error shall be based on the application of a statistical test (t-test) to determine if there is a difference between the reference and nonreference systems at the ninety-five percent (95%) confidence level, according to the following formula:

$$t = \frac{d\sqrt{n}}{Sd}$$

Where: t = Calculated t value.
d = Average difference between paired data.
Sd = Standard deviation of the differences.
N = Number of paired data sets.

The calculated t value is compared to the t value in the standard statistical t tables at the ninety-five percent (95%) probability and the appropriate degrees of freedom (n - 1). If the calculated t value is greater than or equal to the value of t in the t table, then the systems are not comparable. Certain coals with low variability may detect a small bias, which may be acceptable as decided on a case-by-case

basis. This method tests for positive and negative bias. Provisions for testing only for a negative bias that would cause a source owner or operator to report less than actual values may be acceptable if supported by statistical tests. Upon request, the department shall provide written guidance to a source owner or operator as to the procedures to be followed in conducting this comparison.

(c) The demonstration described in this section shall be repeated upon any significant change to the coal sampling procedures or upon notification by the department that a new demonstration is necessary. If the department has reason to doubt that the alternative sampling and analysis procedures are comparable to methods and procedures provided in section 2 of this rule, based on:

- (1) inspections;
- (2) monitoring;
- (3) quality assurance data; or
- (4) other information;

the department may notify the owner or operator that the demonstration shall be repeated. Written notification by the department of the request shall be made to the source owner or operator allowing at least sixty (60) days to schedule the demonstration. (*Air Pollution Control Division; 326 IAC 3-7-3; filed Jan 30, 1998, 4:00 p.m.: 21 IR 2077; readopted filed Jan 10, 2001, 3:20 p.m.: 24 IR 1477; filed Aug 11, 2011, 1:54 p.m.: 20110907-IR-326050330FRA*)

326 IAC 3-7-4 Fuel oil sampling; analysis methods

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-14-4-3; IC 13-15; IC 13-17

Sec. 4. (a) The source owner or operator shall perform sampling and analysis of the sulfur content of fuel oil in accordance with the following ASTM procedures:

- (1) Collection of fuel oil samples shall be conducted according to either of the following:
 - (A) ASTM D4057-88*, "Standard Practice for Manual Sampling of Petroleum and Petroleum Products".
 - (B) ASTM D4177-82*, "Standard Method for Automatic Sampling of Petroleum and Petroleum Products".
- (2) Determination of sulfur content shall be conducted according to any of the following:
 - (A) ASTM D129-95*, "Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)".
 - (B) ASTM D1266-91*, "Standard Test Method for Sulfur in Petroleum Products (Lamp Method)".
 - (C) ASTM D1552-95*, "Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method)".
 - (D) ASTM D2622-94*, "Standard Test Method for Sulfur in Petroleum Products (X-Ray Spectrographic Method)".
- (3) Determination of heat content shall be conducted according to ASTM D240-92*, "Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter".

(b) A source owner or operator may, with the prior written approval of the department and U.S. EPA, modify the procedures specified in subsection (a), use alternate equivalent procedures, or rely upon equivalent sampling and analysis procedures performed by the vendor prior to delivery of the fuel oil to the owner or operator.

*These documents are incorporated by reference. Copies are available for review and copying at the Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center North, Tenth Floor, 100 North Senate Avenue, Indianapolis, Indiana 46204. (*Air Pollution Control Division; 326 IAC 3-7-4; filed Jan 30, 1998, 4:00 p.m.: 21 IR 2077; readopted filed Jan 10, 2001, 3:20 p.m.: 24 IR 1477; errata filed Dec 12, 2002, 3:35 p.m.: 26 IR 1567; filed Aug 26, 2004, 11:30 a.m.: 28 IR 40; filed Aug 11, 2011, 1:54 p.m.: 20110907-IR-326050330FRA*)

326 IAC 3-7-5 Record keeping requirements; standard operating procedures

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-14-4-3; IC 13-15; IC 13-17

Sec. 5. (a) Owners or operators of sources with total coal-fired capacity greater than or equal to one hundred (100) million British thermal units per hour actual heat input shall develop a standard operating procedure (SOP) to be followed for:

- (1) sampling;
- (2) handling;
- (3) analysis;
- (4) quality control;
- (5) quality assurance; and

(6) data reporting of the information collected under sections 2 through 4 of this rule.

In addition, any revision to the SOP shall be maintained by the source and made available upon request by the department.

(b) Owner or operators of emissions units using CEMS for compliance that do not use coal sampling and analysis as a backup when the CEMS is not in use do not need to have a SOP.

(c) The owner or operator of a source or emissions unit subject to this rule shall maintain records sufficient to verify compliance with the procedures specified in sections 2 through 4 of this rule. Records shall be:

(1) maintained for a period of five (5) years; and

(2) made available upon request by the department.

The department may at any time perform a systems audit to determine compliance with the requirements in sections 2 through 4 of this rule. Audit procedures shall be submitted to the owner or operator of a fuel sampling and analysis system subject to audit prior to conducting the audit. (*Air Pollution Control Division; 326 IAC 3-7-5; filed Jan 30, 1998, 4:00 p.m.: 21 IR 2078; readopted filed Jan 10, 2001, 3:20 p.m.: 24 IR 1477; filed Aug 11, 2011, 1:54 p.m.: 20110907-IR-326050330FRA*)