

10 CSR 10-5.570 Control of Sulfur Emissions From Stationary Boilers

(1) Applicability. This rule applies to all applicable installations located in the counties of Franklin, Jefferson, St. Charles, St. Louis, and the City of St. Louis.

(A) This rule applies to installations that own or operate an industrial, commercial, or institutional boiler or process heater that has a nameplate capacity greater than fifty (50) million British thermal units (mmBtu) per hour.

(B) Installations affected by this rule shall be in compliance no later than December 31, 2010.

(C) The types of boilers and process heaters listed in paragraphs (1)(C)1. through 5. of this rule are not subject to this rule.

1. Any unit subject to and in compliance with the Phase II Acid Rain program (40 CFR 96 subpart AAA).

2. A boiler or process heater that is used specifically for research and development. This does not include units that only provide heat or steam commercially to a process at a research and development installation.

3. Temporary boilers as defined in section (2) of this rule.

4. Any unit under subsection (1)(A) of this rule which demonstrates, using the emission estimation methods outlined in section (5) of this rule, that the unit's mass SO₂ emissions are twenty-five (25) tons or less during the calendar year. To the extent such demonstration relies on pollution control equipment or operational controls, such controls must be enforceable.

5. Boilers that exclusively burn natural gas, liquefied petroleum (LP) gas, and/or fuel oil number two (2) with less than five-tenths percent (0.5%) sulfur, at the option of the installation.

6. Loss of exemption. If the exemption limit in paragraph (1)(C)4. of this rule is exceeded, the exemption no longer applies and the owner or operator must notify the staff director or designee within thirty (30) days of such event. If the owner or operator can demonstrate to the staff director or designee that the exemption limit was exceeded due to emergency operations or uncontrolled circumstances, the exemption in paragraph (1)(C)4. of this rule is reinstated. Emergency events include the use of boilers to produce power for critical networks or equipment when electric power from the local utility or the normal power source, if the installation runs on

its own power production, is interrupted, or the use of boilers to pump water in the case of fire or flood, etc. The use of boilers to reduce electricity drawn from a power utility during utility designated peak time periods, to supply power to an electric grid, or to supply power as part of a financial arrangement with another entity is not considered an emergency event.

7. Compliance with this rule does not relieve any owner or operator of the responsibility to comply fully with applicable provisions of the Air Conservation Law or any other requirements under local, state, or federal law. Specifically, compliance with this rule shall not violate the permit conditions previously established under 10 CSR 10-6.060 or 10 CSR 10-6.065.

(2) Definitions.

(A) Boiler—An enclosed fossil or other fuel-fired combustion device used to produce heat and to transfer heat to recirculating water, steam, or other medium.

(B) Commercial/Institutional boiler—A boiler used in commercial establishments or institutional establishments such as medical centers, institutions of higher education, hotels, and laundries to provide electricity, steam, and/or hot water.

(C) Gaseous fuel—A combustible gas that includes, but is not limited to, natural gas, landfill gas, coal-derived gas, refinery gas, and biogas. Blast furnace gas is not considered a gaseous fuel under this definition.

(D) Industrial boiler—A boiler used in manufacturing, processing, mining, and refining, or any other industry to provide steam, hot water, and/or electricity.

(E) Liquid fuel—A combustible liquid that includes, but is not limited to, distillate oil, residual oil, waste oil, and process liquids.

(F) Process heater—Any enclosed device using controlled flame, that is not a boiler, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to heat transfer material for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not directly come into contact with process materials. Process heaters do not include units 10 CSR used for comfort heat or space heat, food preparation for

on-site consumption, or autoclaves.

(G) Solid fuel—A solid material used as a fuel that includes, but is not limited to, coal, wood, biomass, tires, plastics, and other nonfossil solid materials.

(H) Temporary boiler—Any gaseous or liquid fuel boiler that is designed to be, and is capable of being, carried or moved from one (1) location to another. A temporary boiler that remains at a location for more than one hundred eighty (180) days during any three hundred sixty-five (365)-day period is no longer considered to be a temporary boiler. Any temporary boiler that replaces a temporary boiler at a location and is intended to perform the same or similar function will be included in calculating the consecutive time period.

(I) Definitions of certain terms in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Emission Limitations.

1. Except as otherwise provided in this section, no installation shall cause or allow the emission of sulfur dioxide (SO₂) into the atmosphere exceeding one (1.0) pound (lb) of SO₂ per mmBtu of actual heat input in any thirty (30)-day period from any installation with applicable units.

2. No brewery shall cause or allow the combined total of atmospheric emissions of SO₂ from all applicable emission units within an installation to exceed three thousand fifty (3,050) tons during any twelve (12)-month rolling period. SO₂ emission from all applicable units shall be determined by compliance with subparagraph (3)(C)2.D. of this rule.

(B) Measurements for Single Units. Measurements shall be one (1) of the following:

1. Measurements of SO₂ emissions from stationary sources are made according to an applicable method in 40 CFR 60, Appendix A, Method 6, 6A, 6B, or 6C as specified in 10 CSR 10-6.030(22) or by measurement procedures established pursuant to 40 CFR 60.8(b) as specified in 10 CSR 10-6.030(22); or

2. Monthly analysis method. Installations subject to this rule shall demonstrate compliance or non-compliance by an analysis of calendar monthly composites of daily fuel samples using American Society for Testing and Materials (ASTM) procedures, or by vendor certification, at the option of the installation. Installations opting to use vendor certification shall provide monthly individual verification from all vendors using the ASTM procedures prescribed in this paragraph of consumed solid fuels including different vendor supplied batches of coal. The specific ASTM procedures, D2234, D2013, D3177, D3180, D4239, D5865, D240, D2622, D5504, and D6228) shall be used for fossil fuel or gaseous fuel sampling, sulfur, and, if needed, heating value determinations as specified in 10 CSR 10-6.040.

(C) Measurements for Multi-Unit and Multi-Fuel Installations. For sources not controlling SO₂ emissions by flue gas desulphurization equipment or by sorbent injection, the following alternate compliance method may be used:

1. SO₂ emission rates for a single boiler that burns different fuels. The owner or operator of an affected installation shall determine the SO₂ emission rate of a large boiler which burns multiple fuels separately, according to the following formula:

$$E_s = \frac{\sum_{i=1}^q (Ka_q) + \sum_{i=1}^r (Kb_r) + \sum_{i=1}^s (Kc_s)}{H_T}$$

Where:

E_s = unit SO_2 emissions in lb per mmBtu heat input;

K_a = solid fuel sample monthly composite SO_2 emission rate in lbs;

K_b = liquid fuel sample monthly composite SO_2 emission rate in lbs;

K_c = gaseous fuel sample monthly composite SO_2 emission rate in lbs;

q = number of different solid fuels used including the number of different batches of coal;

r = number of different liquid fuels used;

s = number of different gaseous fuels used; and

H_T = total heat content for all fuels in any monthly period.

2. Averaging SO_2 emissions among different boilers.

A. To meet the requirements of paragraphs (3) (A)1. and (3) (A)2. of this rule, if there is more than one (1) existing boiler located at a installation, compliance may be demonstrated by emission averaging according to the procedures in this paragraph.

B. For a group of two (2) or more existing boilers that each vent to a separate or common stack, SO_2 emissions may be averaged to demonstrate compliance with the limits in paragraphs (3) (A)1. and (3) (A)2. of this rule.

C. Compliance with the limit in paragraph (3) (A)1. of this rule must be demonstrated on a monthly rolling average. The first period begins on the compliance date. For each monthly period, the following equation must be used to calculate the monthly rolling average weighted emission rate using the actual heat capacity for each existing boiler participating in the emissions averaging option.

$$\text{Avg Weighted Emissions} = \frac{\sum_{i=1}^n (E_r \times H_b)}{\sum_{i=1}^n H_b}$$

Where:

Avg Weighted Emissions = monthly average weighted emission level for SO_2 , in units of lbs per mmBtu of heat input;

E_r = Emission rate, in units of lbs per mmBtu of heat input;

H_b = The average heat input for each monthly period of boiler, i , in units of mmBtu; and

n = Number of boilers participating in the emissions averaging option.

D. Compliance with the limit in paragraph (3) (A)2. of this rule must be demonstrated on a twelve (12)-month rolling total. The first period begins on the compliance date. For each twelve (12)-month period, the following equation must be used to calculate the twelve (12)-month rolling total weighted emission rate using the actual heat capacity for each existing boiler participating in the emission averaging option.

$$\text{Avg SO}_2 \text{ Emissions} = \sum_{i=1}^n \frac{\sum_{j=1}^q (K_{a_j})_n + \sum_{j=1}^r (K_{b_j})_n + \sum_{j=1}^s (K_{c_j})_n}{1}$$

Where:

Avg SO₂ Emissions = twelve (12)-month total weighted emission level for SO₂, in units of tons of SO₂;

K_a = solid fuel monthly SO₂ emissions in tons based on material/mass balance as the source of the emission factor;

Where:

$$K_a = \frac{\text{Sulfur \% by weight}}{100} \times \frac{64.064}{32.065} \times \frac{\text{tons fuel burned}}{\text{burned}}$$

K_b = liquid fuel monthly SO₂ emissions in tons based on similar material/mass balance calculations as K_a as the source of the emission factor;

K_c = gaseous fuel monthly SO₂ emissions in tons based on similar material/mass balance calculations as K_a as the source of the emission factor;

n = number of boilers participating in the emissions averaging option;

q = number of different solid fuels used including the number of different batches of coal;

r = number of different liquid fuels used;

and

s = number of different gaseous fuels used.

(D) Monitoring Requirements. Any owner or operator of an industrial, commercial, or institutional boiler; or process heater subject to this rule equipped with flue gas desulfurization or sorbent inject controls shall use a continuous emission monitoring system (CEMS) to monitor compliance. Owners or operators subject to this rule without control equipment shall comply with one (1) of the following requirements:

1. A CEMS that:

A. Meets the applicable requirements of 40 CFR part 60, subpart A, Appendix B, as specified in 40 CSR 10-6.030(22); and

B. Complies with the quality assurance procedures regardless of whether the installation is subject to new source performance standards (NSPS) specified in 40 CFR part 60, Appendix F, as specified in 10 CSR 10-6.030(22);

2. An alternate monitoring procedure or monitoring plan approved by the director and the U.S. Environmental Protection Agency (EPA).

(4) Reporting and Record Keeping.

(A) Reporting Requirements. The owner or operator subject to this rule shall-

1. Submit the calculation and record keeping procedure by February 15 of each year based upon correlations with ASTM and 40 CFR part 60, Appendix A reference method results, as specified in 10 CSR 10-6.030(22);

2. Submit an annual report to the director by February 15 following the end of the initial compliance period and by February 15 for each year thereafter unless the affected unit is subject to an NSPS. The annual report shall document for each affected unit, the average of the tons of SO₂ emitted during the previous twelve (12)-month period or the twelve (12)-month rolling total starting the first full year after the compliance period;

3. By February 15 of every year following the initial compliance period, submit monthly reports for the previous calendar year unless the affected unit is subject to an NSPS. The monthly reports shall document the following information for each affected unit:

A. For units equipped with a CEMS, both the total heat input in mmBtu and the SO₂ emission rate in lbs per mmBtu for the unit; and

B. For units without a CEMS, the total number of tons of each solid fuel burned including different vendor supplied batches of coal, volume of each gaseous fuel and/or volume each liquid fuel; average percent sulfur content of each solid fuel including different vendor supplied batches of coal, each liquid fuel and/or each gaseous

fuel; and each solid fuel including different vendor supplied batches of coal, each liquid fuel and/or each gaseous fuel average heat content in Btu per lb; and

4. Excess emissions.

A. Units maintaining a CEMS, shall submit an excess emissions monitoring system performance report by February 15 following the end of the initial compliance period and by February 15 for each year thereafter unless the affected unit is subject to an NSPS, in accordance with-

(I) 40 CFR 60.7(c as specified in 10 CSR 10-6.030(22);

and

(II) 40 CFR 60.13, as specified in 10 CSR 10-6.030(22).

B. Units not maintaining a CEMS, shall submit a written report of excess emissions according to 10 CSR 10-6.260, subsection (4)(A) regardless of whether 10 CSR 10-6.260 applies, unless the affected unit is subject to an NSPS.

(B) Record Keeping Requirements. The owner or operator subject to this rule shall maintain all records necessary to demonstrate compliance with this rule for a period of five (5) years at the plant at which the unit is located. Daily records, along with the twelve (12)-month rolling tonnage or twelve (12)-month rolling average, shall be made available no later than one (1) month following any calendar month. The records shall be made available to the director upon request. The owner or operator shall maintain records of the following information for each month the unit is operated:

1. The identification number of each unit and the name and address of the plant where the unit is located for each unit subject to this rule;

2. The calendar date of record;

3. The number of hours the unit is operated each day including start-ups, shutdowns, malfunctions, and the type and duration of maintenance and repair;

4. The date and results of each emissions inspection;

5. A summary of any emissions corrective maintenance taken;

6. The results of all compliance tests;

7. If a unit is equipped with a CEMS—

A. The identification of time periods during which SO₂ standards are exceeded, the reason for exceedance, and action taken to correct the exceedance and prevent similar future exceedances; and

B. The identification of the time periods for which operating conditions and pollutant data were not obtained, including reasons for not obtaining sufficient data, and a description of corrective actions taken;

8. The total heat input for each fuel used per emissions unit on a monthly basis;

9. The amount of each fuel consumed per emissions unit on a monthly basis;

10. The average heat content for each fuel used per emissions unit on a monthly basis;

11. The average percent sulfur for each fuel used per emissions unit on a monthly basis;

12. The emission rate in lbs per mmBtu for each unit on a monthly basis for those units complying with the limit in paragraph (3)(A)1. of this rule. The twelve (12)-month rolling averages will be made available upon request for the inspector to review no later than one (1) month following any calendar month;

13. The monthly emission rate in tons SO₂ for those units complying with the limit in paragraph (3)(A)2. of this rule. The twelve (12)-month rolling tonnages will be made available upon request for inspector review no later than one (1) month following any calendar month; and

14. Any other reports deemed necessary by the director.

(5) Test Methods. The following hierarchy of methods shall be used to determine if a unit qualifies for the low-emitter exemption in paragraph (1)(C)4. of this rule. If data is not available for an emission estimation method or an emission estimation method is impractical for a source, then the subsequent emission estimation method shall be used in its place:

(A) CEMS as specified in 10 CSR 10-6.110;

(B) Stack tests as specified in 10 CSR 10-6.110;

(C) Material/mass balance;

(D) AP-42 (*EPA Compilation of Air Pollution Emission Factors*) or FIRE (Factor Information and Retrieval System) as published by EPA August 2018 and August 2017 and hereby incorporated by reference in this rule. Copies can be obtained from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield VA 22161. This rule does not incorporate any subsequent amendments or additions;

(E) Other EPA documents as specified in 10 CSR 10-6.110;

(F) Sound engineering calculations; or

(G) Installations shall obtain department and EPA pre-approval of any other alternate emission estimation method not listed in this section before using such method to estimate emissions.

EPA Rulemakings

CFR: 40 C.F.R. 52.1320(c)
 FRM: 85 FR 50784 (8/18/20) (effective 9/17/20)
 PRM: 85 FR 34671 (6/8/20)
 State Submission: 1/14/19
 State Final: 10 C.S.R.10-5.570 (12/31/18); effective 1/30/19
 APDB File: MO-393; EPA-R07-OAR-2020-0277
 Description: This revision streamlines the rule, updates references to test methods, and makes administrative changes.

CFR: 40 C.F.R. 52.1320(c)
 FRM: 80 FR 16564 (3/30/15) (effective 5/29/15)
 PRM: 80 FR 16611 (3/30/15)
 State Submission: 10/17/13
 State Final: 10 C.S.R.10-5.570 (9/3/13); effective 10/30/13
 APDB File: MO-351; EPA-R07-OAR-2015-0170
 Description: This revision clarifies that the sulfur dioxide (SO₂) emission limits for breweries specified in subsection (3)(A)2 apply only to the total SO₂ emissions from applicable emission units operating within an installation, and not the combined emissions from the entire brewery. Definitions originally listed in section (2) of this rule have been removed and are now located at 10 CSR 10-6.020, "Definitions and Common Reference Tables."

CFR: 40 C.F.R. 52.1320(c)
 FRM: 78 FR 5303 (1/25/13) (effective 3/26/2013)
 PRM: 78 FR 5346 (1/25/13)
 State Submission: 10/27/2009
 State Final: 10 C.S.R.10-5.570 (12/16/08); effective 9/30/2009
 APDB File: MO-284; EPA-R07-OAR-2012-0763
 Description: Effective March 26, 2013, EPA approved a revision to the SIP to add new rule "Control of Sulfur Emissions from Stationary Boilers". This rule reduces PM_{2.5} in the St. Louis nonattainment area by limiting SO₂ emissions from industrial boilers.

Difference Between the State and EPA-Approved Regulation

None.