ENERGY AND ENVIRONMENT CABINET

Department for Environmental Protection

Division for Air Quality

(Amendment)

401 KAR 59:015. New indirect heat exchangers.

RELATES TO: KRS 224.10, 40 C.F.R. Part 60, Subparts D, Da, Db, Dc, Appendices A and B, Part 63, Subparts DDDDD, UUUUU, JJJJJJ

STATUTORY AUTHORITY: KRS 224.10-100(5)

NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100(5) requires the cabinet to promulgate administrative regulations for the prevention, abatement, and control of air pollution. This administrative regulation provides for the control of emissions from new indirect heat exchangers.

Section 1. Definitions. (1) "Affected facility" means an indirect heat exchanger having a heat input capacity greater than one (1) million BTU per hour (MMBTU/hr).

(2) [~~"CEMS" means continuous emissions monitoring system.~~

~~(3)~~] "Classification date" means:

(a) August 17, 1971, for an affected facility with a capacity greater than 250 MMBTU/hr [~~(MMBTU/hr)~~] heat input; and[~~:~~

~~1. For particulate emissions;~~

~~2. For sulfur dioxide emissions; and~~

~~3. For nitrogen oxide emissions, if fuels other than lignite are burned.~~]

(b) April 9, 1972, for an affected facility with a capacity of 250 MMBTU/hr heat input or less.

(3) "Fuel" means any material combusted for the purpose of creating useful heat.

(4) "GCV" means gross calorific value.[~~for particulate emissions and sulfur dioxide emissions; and~~

~~(c) December 22, 1976, for an affected facility with a capacity greater than 250 MMBTU/hr. heat input for nitrogen oxides if lignite fuel is burned.~~

~~(4) "COMS" means continuous monitoring system for opacity.~~]

(5) "Indirect heat exchanger" means a piece of equipment, apparatus, or contrivance used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come in contact with or add to the products of combustion.

(6) "Shutdown period" means the period:

(a) Beginning when, whichever occurs first:

1. The affected facility no longer supplies useful thermal energy for heating, cooling, process purposes, or generation of electricity; or

2. Fuel is not being combusted in the affected facility; and

(b) Ending when:

1. The affected facility no longer supplies useful thermal energy for heating, cooling, process purposes, or generation of electricity; and

2. Fuel is not being combusted in the affected facility.

(7) "Startup period" means the period:

(a) Beginning with either:

1. The combustion of any fuel in an affected facility for the purpose of supplying useful thermal energy for heating, cooling, process purposes, or generation of electricity; or

2. The combustion of fuel in an affected facility for any purpose after a shutdown event; and

(b) Ending after the longest manufacturer-recommended time required to engage all control devices utilized by the affected facility applicable to the pollutant, not to exceed four (4) hours after any of the useful thermal energy from the affected facility is supplied for any purpose.

(8) "Useful thermal energy" means energy that meets the minimum operating temperature, flow, or pressure required by an energy use system that uses energy provided by the affected facility[~~"PM CEMS" means a particulate matter continuous emissions monitoring system~~].

Section 2. Applicability. (1) This administrative regulation shall apply to an affected facility[~~facilities~~] commenced on or after the applicable classification date.

(2) An affected facility subject to 40 C.F.R. 60.40 to 60.46 (Subpart D),[~~;~~] 60.40Da to 60.52Da (Subpart Da),[~~;~~] 60.40b to 60.49b (Subpart Db),[~~;~~] or 60.40c to 60.48c (Subpart Dc) shall be exempt from Sections 3 through 6 of this administrative regulation for each pollutant covered under this administrative regulation with a specific emission standard in the applicable New Source Performance Standard (NSPS) codified at 40 C.F.R. Part 60.

Section 3. Method for Determining Allowable Emission Rates. (1) Except as established[~~provided~~] in subsection (3) of this section, the total rated heat input capacity of all affected facilities at a source, including those for which an application to construct, modify, or reconstruct has been submitted to the cabinet, shall be used as established[~~specified~~] in Sections 4 and 5 of this administrative regulation to determine the allowable emission rate in terms of lb/MMBTU[~~pounds per million BTU (lb/MMBTU)~~] heat input.

(2) The permitted allowable emissions rate of an affected facility shall not be changed due to inclusion or shutdown of another affected facility at the source.

(3) A source[~~Sources~~] may submit a request to[~~petition~~] the cabinet for approval of[~~to approve~~] an allowable emission rate apportioned independently from individual heat input pursuant to this subsection, as follows:

(a) The following equation shall be used to determine the allowable emissions rate: $F = (AB + DE)/C$, in which:

1. A = allowable emission rate (in lb/MMBTU heat input) determined pursuant to subsection (1) of this section;

2. B = total rated heat input (in MMBTU/hr) of all affected facilities at the source commenced on or after the applicable classification date, including those for which an application to construct, modify, or reconstruct has been submitted to the cabinet;

3. C = total rated heat input (in MMBTU/hr) of all affected facilities at the source, including those for which an application to construct, modify, or reconstruct has been submitted to the cabinet;

4. D = allowable emission rate (in lb/MMBTU heat input) determined pursuant to 401 KAR 61:015, Section 3(1);

5. E = total rated heat input (in MMBTU/hr) of all affected facilities at the source commenced before the applicable classification date; and

6. F = alternate allowable emission rate in lbs per actual MMBTU heat input.[~~;~~]

(b) In determining an alternative allowable emission rate for sulfur dioxide, the formula established in paragraph (a) of this subsection shall utilize values for allowable emissions rates for an affected facility stated in terms of total rated heat input capacity based on the use of the same

fuel category (solid, liquid, or gaseous fuel), which shall be determined by utilizing the formulas established in Section 5 of this administrative regulation.

(c) The total emissions in (lb/hr) from all affected facilities at the source subject to this administrative regulation divided by the total actual heat input (in MMBTU/hr) of the affected facilities shall not exceed the alternate allowable emission rate as determined in paragraph (a) of this subsection.[;]

(d)[~~(c)~~] A source operating an affected facility that is not subject to a federal NSPS codified at 40 C.F.R. Part 60 only because the affected facility commenced construction prior to the NSPS classification date, shall not allow emissions of the affected facility to exceed the allowable emission rate determined pursuant to Sections 4 and 5 of this administrative regulation.[;]

(e)[~~(d)~~] The source shall demonstrate compliance with this subsection by conducting a performance test pursuant to 401 KAR 50:045 for each affected facility subject to this administrative regulation.[~~; and~~]

(f)[~~(e)~~] The source shall demonstrate that compliance with this subsection shall be maintained on a continuous[~~continual~~] basis.

Section 4. Standard for Particulate Matter. Except as established[~~provided~~] in Sections[~~Section~~] 3(3) and 7 of this administrative regulation, an affected facility subject to this administrative regulation shall not cause emissions of particulate matter in excess of:

(1)(a) 0.56 lb/MMBTU actual heat input for sources with total heat input capacity totaling ten (10) MMBTU/hr or less for all affected facilities at the source;

(b) 0.10 lb/MMBTU actual heat input for sources with total heat input capacity totaling 250 MMBTU/hr or more for all affected facilities at the source; and

(c) 0.9634 multiplied by the quantity obtained by raising the total heat input capacity (in MMBTU/hr) to the -0.2356 power for sources with heat input values totaling greater than ten (10) MMBTU/hr and less than 250 MMBTU/hr for all affected facilities at the source; and

(2) Twenty (20) percent opacity, except:

(a) For a source[~~sources~~] with heat input capacity totaling 250 MMBTU/hr or more for all affected facilities at the source, a maximum of twenty-seven (27) percent opacity shall be allowed for one (1) six (6) minute period in any sixty (60) consecutive minutes;

(b) For a source[~~sources~~] with total heat input capacity of less than 250 MMBTU/hr for all affected facilities at the source, a maximum of forty (40) percent opacity shall be allowed for a maximum of six (6) consecutive minutes in any sixty (60) consecutive minutes during fire box cleaning or soot blowing; and

(c) For emissions from an affected facility caused by building a new fire, emissions during the period required to bring the boiler up to operating conditions shall be allowed, if the method used is recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Section 5. Standard for Sulfur Dioxide. (1) Except as established[~~provided~~] in Sections[~~Section~~] 3(3) and 7 of this administrative regulation, an affected facility subject to this administrative regulation shall not cause emissions of gases that contain sulfur dioxide in excess of:

(a) For a source[~~sources~~] with heat input capacity totaling ten (10) MMBTU/hr or less for all affected facilities at the source:

1. Three and zero-tenths (3.0) lb/MMBTU actual heat input for combustion of liquid and gaseous fuels; and

2. Five and zero-tenths (5.0) lb/MMBTU actual heat input for combustion of solid fuels;

(b) For sources with heat input capacity totaling 250 MMBTU/hr or more for all affected facilities at the source:

1. Eight-tenths (0.8) lb/MMBTU actual heat input for combustion of liquid and gaseous fuels; and

2. One and two-tenths (1.2) lb/MMBTU actual heat input for combustion of solid fuels; and

(c) For a source[~~sources~~] with total heat input values greater than ten (10) MMBTU/hr and less than 250 MMBTU/hr for all affected facilities at the source, the standard, in lb/MMBTU actual heat input, shall be equal to:

1. For an affected facility combusting liquid fuels, the lesser of:

a. Three and zero-tenths (3.0) lb/MMBTU; or

b. The value of 7.7223 multiplied by the quantity obtained by raising to the -0.4106 power the total heat input capacity (in MMBTU/hr) of the affected facilities combusting liquid fuels;

2. For an affected facility combusting gaseous fuels, the lesser of:

a. Three and zero-tenths (3.0) lb/MMBTU; or

b. The value of 7.7223 multiplied by the quantity obtained by raising to the -0.4106 power the total heat input capacity (in MMBTU/hr) of the affected facilities combusting gaseous fuels; and

3. For an affected facility combusting solid fuels, the lesser of:

a. Five and zero-tenths (5.0) lb/MMBTU; or

b. The value of 13.8781 multiplied by the quantity obtained by raising to the -0.4434 power the total heat input capacity (in MMBTU/hr) of the affected facility[~~facilities~~] combusting solid fuels.

(2) For simultaneously combusting[~~burning~~] different fuels in combination, the applicable standard shall be determined by prorating BTUs pursuant to the following equation: Allowable sulfur dioxide emission in lb/MMBTU[~~/hr. heat input~~] = $[x(a) + y(b) + z(c)]/(x + y + z)$[~~(y(a) + z(b))/(y + z)~~], in which:

(a) x[~~y~~] = percent total heat input derived from liquid[~~or gaseous~~] fuel;

(b) y[~~z~~] = percent total heat input derived from gaseous[~~solid~~] fuel;

(c) z = percent total heat input derived from solid fuel;

(d) a = allowable sulfur dioxide emission in lb/MMBTU[~~/hr heat input~~] derived from liquid[~~or gaseous~~] fuel; [~~and~~]

(e)[~~(d)~~] b = allowable sulfur dioxide emission in lb/MMBTU[~~/hr~~] derived from gaseous[~~solid~~] fuel; and

(f) c = allowable sulfur dioxide emission in lb/MMBTU derived from solid fuel.

(3) Compliance shall be based on the total heat input from all fuels combusted[~~burned~~].

Section 6. [~~Standard for Nitrogen Oxides. (1) An affected facility with heat input capacity of 250 MMBTU/hr or more shall not cause emissions of gases that contain nitrogen oxides expressed as nitrogen dioxide in excess of:~~

~~(a) 0.20 lb/MMBTU heat input (0.36 grams per million calories (g/MMCal)) derived from gaseous fuel;~~

~~(b) 0.30 lb/MMBTU heat input (0.54 g/MMCal) derived from liquid fuel;~~

~~(c) 0.70 lb/MMBTU heat input (1.26g/MMCal) derived from solid fuel except lignite;~~

~~(d) 0.60 lb/MMBTU heat input (1.08 g/MMCal) derived from lignite or lignite and wood residue except as provided in paragraph (e) of this subsection; and~~

~~(e) 0.80 lb/MMBTU derived from lignite that is mined in North Dakota, South Dakota, or Montana and that is burned in a cyclone fired unit.~~

~~(2) Except as provided in subsections (3) and (4) of this section, if different fuels are burned simultaneously in any combination, the allowable nitrogen dioxide emission shall be prorated using the following equation: Allowable nitrogen dioxide emission in lb/MMBTU/hr heat input {x(0.20) + y(0.30) + w(0.60)} ÷ {(x + y+ z+ w)} in which:~~

~~(a) x = percent of total heat input derived from gaseous fuel;~~

~~(b) y = percent of total heat input derived from liquid fuel;~~

~~(c) z = percent of total heat input derived from solid fuel (except lignite); and~~

~~(d) w = percent of total heat input derived from lignite.~~

~~(3) For fossil fuel containing at least twenty five (25) percent by weight coal refuse burned in combination with gaseous, liquid, or other solid fossil fuel; wood residue; or biomass, the standard for nitrogen oxides shall not apply.~~

~~(4) A cyclone fired unit burning fuel containing at least twenty five (25) percent lignite mined in North Dakota, South Dakota, or Montana shall be subject to subsection (1)(e) of this section for all types of fuel combusted in combination with the lignite.~~

~~Section 7. Emission and Fuel Monitoring.~~

~~(1) Except as provided in subsection (2) of this section, sources shall install, calibrate, maintain, and operate a continuous monitoring system for measuring:~~

~~(a) Opacity of emissions;~~

~~(b) Sulfur dioxide emissions;~~

~~(c) Nitrogen oxides emissions; and~~

~~(d) Oxygen or carbon dioxide emissions.~~

~~(2) Subsection (1) of this section shall not apply as follows:~~

~~(a) For an affected facility burning only gaseous fuel, a continuous monitoring system for opacity (COMS) shall not be required.~~

~~(b) For an affected facility burning only natural gas, wood, wood residue, or biomass; or a combination of natural gas, wood, wood residue, or biomass, a continuous emissions monitoring system (CEMS) for sulfur dioxide emissions shall not be required.~~

~~(c)1. For nitrogen oxides, installation of CEMS may be delayed until after the initial performance tests required by 401 KAR 59:005, Sections 2 and 4(2); and~~

~~2. If the initial performance test results show nitrogen oxide emissions:~~

~~a. Are less than seventy (70) percent of the applicable standard in Section 6 of this administrative regulation, CEMS for nitrogen oxides shall not be required; or~~

~~b. Are equal to or greater than seventy (70) percent of the applicable standard in Section 6 of this administrative regulation, the source shall install CEMS for nitrogen oxides within one (1) year after the date of the initial performance tests.~~

~~(d) For a source exempt from installing CEMS for sulfur oxides and nitrogen oxides pursuant to paragraphs (b) and (c) of this subsection, a continuous monitoring system for measuring oxygen or carbon dioxide shall not be required.~~

~~(e) For an affected facility not using a flue gas desulfurization device, CEMS for sulfur dioxide emissions shall not be required if the source monitors sulfur dioxide emissions by fuel sampling and analysis pursuant to subsection (5) of this section.~~

(3) For performance evaluations subject to 401 KAR 59:005, Section 4(3), and calibration checks subject to 401 KAR 59:005, Section 4(4):

(a) Reference Methods 6 6C or 7 7E, incorporated by reference in 401 KAR 50:015, as applicable, shall be used for conducting performance evaluations of CEMS for sulfur dioxide and nitrogen oxides;

(b) Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures pursuant to 40 C.F.R. Part 60, Appendix B, Performance Specification 2;

(c) The span value for a continuous monitoring system:

1. For an affected facility burning fossil fuels, shall be eighty (80), ninety (90), or 100 percent; and

2. For systems measuring sulfur oxides or nitrogen oxides, shall be determined pursuant to the following table:

DETERMINATION OF SPAN VALUE (in parts per million)		
Fossil Fuel	Span Value for Sulfur Dioxide	Span Value for Nitrogen Oxides
Gas	*	500
Liquid	1,000	500
Solid	1,500	500
Combinations	1,000y + 1,500z	500(x + y) + 1,000z

In which:

a. * shall indicate that a value shall not be applicable;

b. x = fraction of total heat input derived from gaseous fossil fuel.

c. y = fraction of total heat input derived from liquid fossil fuel; and

d. z = fraction of total heat input derived from solid fossil fuel;

(d) Span values computed pursuant to paragraph (c) of this subsection for burning combinations of fuels shall be rounded to the nearest 500 parts per million (ppm); and

(e) The source shall submit the proposed CEMS span value for cabinet approval pursuant to 40 C.F.R. 60.13(d) and this subsection, for all affected facilities that simultaneously burn fossil fuel and non-fossil fuel.

(4) For continuous monitoring systems installed pursuant to subsection (1) of this section, the following conversion procedures shall be used to convert the continuous monitoring data into units of the applicable requirement in nanograms/joule (ng/J) or lb/MMBTU:

(a) For continuous monitoring systems measuring oxygen, the pollutant concentration and oxygen concentration shall be measured on a consistent wet or dry basis as follows:

1. Procedures approved by the cabinet and the U. S. EPA pursuant to 40 C.F.R. Part 60, Appendix B, shall be used for wet basis measurements; and

2. For dry basis measurements, the following conversion procedure shall be used:

E = (20.9CF)/(20.9 - percent oxygen) in which E, C, F, and percent oxygen shall be determined pursuant to subsection (5) of this section; and

(b) For continuous monitoring systems measuring carbon dioxide, the pollutant concentration and carbon dioxide concentration shall be measured on a consistent wet or dry basis and the following conversion procedure shall be used: $E = (100 CF_c)/(\text{percent carbon dioxide})$, in which E, C, Fc, and percent carbon dioxide shall be determined pursuant to subsection (5) of this section.

~~(5) The values used in the equations in subsection (4)(a) and (b) of this section shall be derived as follows:~~

~~(a) E = pollutant emissions in grams per million calorie (g/MMCal) or lb/MMBTU;~~

~~(b) C = pollutant concentration in grams per dry cubic meter at standard conditions (g/dscm) or pounds per dry cubic feet at standard conditions (lb/dscf) determined by multiplying the average concentration (ppm) for each one (1) hour period by 0.0000415 M (g/dscm)/ppm or (lb/dscf)/ppm; multiplied by two and five tenths (2.5) multiplied by ten (10) raised to the negative ninth (9) power; and multiplied by M (g/dscm)/ppm or (lb/dscf)/ppm in which M equals:~~

~~1. Pollutant molecular weight in grams per gram mole (g/g mole) or pounds/pound mole (lb/lb mole); or~~

~~2. 64.07 for sulfur dioxide and 46.01 for nitrogen oxides;~~

~~(c) F, Fc = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (Fc), respectively, pursuant to the applicable American Society for Testing and Materials (ASTM) standard from the Book of ASTM Standards incorporated by reference in 401 KAR 50:015 as follows:~~

~~1. For anthracite coal as classified according to ASTM D388 66(72), F equals 10,140 dscf/MMBTU and Fc equals 1,980 standard cubic feet (scf) CO_2/MMBTU;~~

~~2. For subbituminous and bituminous coal as classified according to ASTM D388 66(72), F equals 9,820 dscf/MMBTU and Fc equals 1,810 scf CO_2/MMBTU;~~

~~3. For liquid fossil fuels including crude, residual, and distillate oils, F equals 9,220 dscf/MMBTU and Fc equals 1,430 scf CO_2/MMBTU;~~

~~4a. For gaseous fossil fuels, F equals 8,740 dscf/MMBTU;~~

b. For natural gas, Fc equals 1,040 scf CO_2/MMBTU; for propane, Fc equals 1,200 scf CO_2/MMBTU; and for butane Fc equals 1,260 scf CO_2/MMBTU;

5a. For bark, F equals 9,575 dscf/MMBTU and Fc equals 1,927 scf CO_2/MMBTU;

b. For wood residue other than bark, F equals 9,233 dscf/MMBTU, and Fc equals 1,842 scf CO_2/MMBTU; and

6. For lignite coal as classified according to ASTM D388 66(72), F equals 9,900 dscf/MMBTU and Fc equals 1,920 scf CO_2/MMBTU;

(d) The source may use the equation given in subparagraph 1 of this paragraph to determine an F factor (dscm/MMCcal, or dscf/MMBTU) on a dry basis or Fc factor (standard cubic meters (scm) CO_2/MMCal, or standard cubic feet (scf) CO_2/MMBTU) on either wet or dry basis in lieu of the F or Fc factors specified in paragraph (c) of this subsection; where

1. The F or Fc Factor shall be determined by the following:

a. $F = \{227.2\ (\%H) + 95.5\ (\%C) + 35.6\ (\%S) + 8.7\ (\%N) - 28.7\ (\%O)\} / GCV$ (metric units);

b. $F = 10^6 \{3.64\ (\%H) + 1.53\ (\%C) + 0.57\ (\%S) + 0.14\ (\%N) - 0.46\ (\%O)\} / GCV$ (English units);

c. $Fc = \{2.0 \times 10^{-5}\ (\%C)\} / GCV$ (metric units); and

d. $Fc = \{3.21 \times 10^{5}\ (\%C)\} / GCV$ (English units);

2. H, C, S, N, and O shall be content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fired using ASTM method D3178-73 or D3176-74 (solid fuels) or computed from results using ASTM methods D1137-53(75), D1945-64(73), or D1946-67(72) (gaseous fuels) as applicable; and

~~3. GCV shall be the gross calorific value (Cal/g or BTU/lb) of the fuel combusted determined by ASTM test methods D2015-66(72) for solid fuels and D1826-64(70) for gaseous fuels as applicable; and~~

~~(c) For an affected facility firing a combination of fuels, the F or Fc factors determined by paragraphs (c) and (d) of this subsection shall be prorated in accordance with the applicable formula as follows:~~

~~1. $F = xF_1 + yF_2 + zF_3$, where:~~

~~a. x, y, z = the fraction of total heat input derived from gaseous, liquid, and solid fuels, respectively; and~~

~~b. F_1, F_2, F_3 = the value of F for gaseous, liquid, and solid fuels, respectively, pursuant to subsection (5)(c) and (d) of this section; or~~

~~2. $Fc = \sum_{i=1}^{y} X_i(Fc)i$~~

~~where:~~

~~a. X_i = fraction of total heat input derived from each type fuel; and~~

~~b. $(Fc)_i$ = applicable Fc factor for each fuel type determined pursuant to subsection (5)(c) and (d) of this section.~~

~~(6) For reports required pursuant to 401 KAR 59:005, Section 3(3), periods of excess emissions required to be reported shall be as follows:~~

~~(a) Excess emissions shall be any six (6) minute period during which the average opacity of emissions exceeds twenty (20) percent opacity, except that one (1) six (6) minute average per hour of up to twenty seven (27) percent opacity shall not be required to be reported;~~

~~(b) For sulfur dioxide, excess emissions shall be any three (3) hour period during which the average emissions (arithmetic average of three (3) contiguous one (1) hour periods) of sulfur~~

~~dioxide as measured by a continuous monitoring system exceed an applicable standard in Section 5 of this administrative regulation; and~~

~~(c) For nitrogen oxides, excess emissions shall be any three (3) hour period during which the average emissions (arithmetic average of three (3) contiguous one (1) hour periods) of nitrogen oxides as measured by a continuous monitoring system exceed an applicable standard in Section 6 of this administrative regulation.~~

~~(7) The source may request approval to install a Particulate Matter Continuous Emissions Monitoring System (PM CEMS) as an alternative to subsection (1)(a) of this section as follows:~~

~~(a) The request for approval shall be made in writing to the cabinet;~~

~~(b) if the PM CEMS request is approved, the source:~~

~~1. Shall be subject to a federally enforceable PM limit of 0.030 lb/MMBTU/hr or less;~~

~~2. Shall comply with 40 C.F.R. 60.42Da(a); and~~

~~3. Shall follow the compliance and monitoring provisions of 40 C.F.R. 60.48Da and 60.49Da that are applicable to particulate matter, excluding 40 C.F.R. 60.48Da(c) and (g)(3);~~

~~(c) Excess emissions for an affected facility using PM CEMS shall be determined by a boiler operating day, as defined by 40 C.F.R. 60.41Da, in which the average emissions (arithmetic average of all operating one (1) hour periods) exceed the applicable standard pursuant to 40 C.F.R. 60.42Da; and~~

~~(d) For calculating average emissions and determining compliance:~~

~~1. The boiler operating day shall have at least eighteen (18) hours of unit operation during which the standard shall apply; and~~

~~2. All valid hourly emission rates of the boiler operating day not meeting the minimum eighteen (18) hours valid data daily average requirement shall be averaged with the valid hourly~~

~~emission rates of the next boiler operating day with eighteen (18) hours or more of valid PM CEMS data.~~

~~Section 8.~~]Test Methods and Procedures. (1) Except as established[~~provided~~] in 401 KAR 50:045, the reference methods established[~~specified~~] in 40 C.F.R. Part 60, Appendix A, shall be used to determine compliance with Sections 4 and 5[~~, 5, and 6~~] of this administrative regulation as follows:

(a) Reference Method 1 shall be used for the selection of sampling site and sample traverses;

(b) Reference Method 3 shall be used for gas analysis in applying Reference Methods 5 and 6[~~, 6, and 7~~];

(c) Reference Method 5 shall be used for concentration of particulate matter and the associated moisture content;

(d) Reference Method 6 shall be used for the concentration of sulfur dioxide; and

(e) [~~Reference Method 7 shall be used for the concentration of nitrogen oxides; and~~

~~(f)~~]Reference Method 9 shall be used for visible emissions.

(2) For Reference Method 5:

(a) Reference Method 1 shall be used to select the sampling site and the number of traverse sampling points;

(b) The sampling time for each run shall be at least sixty (60) minutes, and the minimum sampling volume shall be 0.85 dscm (thirty (30) dscf), except smaller sampling times or volumes, if necessitated by process variables or other factors, may be requested by the source; and

(c) The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature not greater than 160 degrees Centigrade (320 degrees Fahrenheit).

(3) For Reference Method 6[~~Methods 6 and 7~~]:

(a) The sampling site shall be the same as the site selected for Reference Method 5;

(b) The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than one (1) meter (3.28 ft); [~~and~~]

(c) [~~For Reference Method 6,~~]The sample shall be extracted at a rate proportional to the gas velocity at the sampling point;[~~.~~]

[~~(4) For Reference Method 6:~~]

(d)[~~(a)~~] The minimum sampling time shall be twenty (20) minutes, and the minimum sampling volume shall be 0.02 dscm (0.71 dscf) for each sample;

(e)[~~(b)~~] The arithmetic mean of two (2) samples shall constitute one (1) run; and

(f)[~~(c)~~] Samples shall be taken at approximately thirty (30) minute intervals.

(4)[~~(5) For Reference Method 7:~~

~~(a) Each run shall consist of at least four (4) grab samples taken at approximately fifteen (15) minute intervals; and~~

~~(b) The arithmetic mean of the samples shall constitute the run value.~~

~~(6)~~] For each run using the methods establihsed[~~specified~~] by subsection (1)[~~(a), (b), and (c)~~] of this section, the emissions expressed in g/MMcal[~~g/MMCal~~] (lb/MMBTU) shall be determined by the following procedure:

$$E = \frac{20.9CF}{20.9 - \%O2}$$

[~~E = 20.9CF/(20.9 - percent oxygen)~~], in which:

(a) E = pollutant emission, g/MMcal[~~g/MMCal~~] (lb/MMBTU);

(b) C = pollutant concentration, g/dscm (lb/dscf), as determined by Reference Methods 5 or 6[~~, 6, or 7~~]:

(c) Percent oxygen:

1. Shall equal oxygen content by volume (expressed as a percent), dry basis; and

2. Shall be determined using the integrated or grab sampling and analysis procedures of Reference Method 3.[:]

a. For determination of sulfur dioxide [~~and nitrogen oxides~~] emissions, the oxygen sample shall be obtained simultaneously at the same point in the duct as used to obtain the samples for Reference Method 6.[~~Methods 6 and 7~~] determinations[~~, respectively, with the oxygen sample for reference Method 7 obtained using the grab sampling and analysis procedures of Reference Method 3; and~~]

b. For determination of particulate emissions, the oxygen sample shall be obtained simultaneously by traversing the duct at the same sampling location used for each run of Reference Method 5 pursuant to subsection (2) of this section, using Reference Method 1 for selection of the number of traverse points, except that not more than twelve (12) points shall be required; and

(d) F = a factor as determined in 40 CFR 60.45(f)[~~Section 7(5) of this administrative regulation~~].

(5)[~~(7)~~] If an affected facility fires a combination of [~~fossil~~] fuels, the heat input, expressed in cal/hr[~~Cal/hr~~] (BTU/hr), shall be determined during each testing period by multiplying the GCV[~~gross calorific value~~] of each fuel fired by the rate of each fuel combusted[~~burned~~], in which:

(a) GCV[~~Gross calorific value~~] shall be determined in accordance with the applicable ASTM methods D2015-66(72) (solid fuels), D240-76 (liquid fuels), or D1826-64(75)[~~D1826-64(70)~~] (gaseous fuels), incorporated by reference in 401 KAR 50:015[~~as applicable~~]; and

(b) The rate of fuels combusted[~~burned~~] during each testing period shall be determined by the applicable method and shall be confirmed by a material balance over the steam generation system.

Section 7. Standards during a startup period or a shutdown period. During a startup period or a shutdown period, an owner or operator shall comply with the work practice standards established in this section.

(1)(a) At all times, the owner or operator of each affected facility shall operate the affected facility and all applicable control devices in a manner consistent with good air pollution control practices for minimizing emissions;

(b) The frequency and duration of startup periods or shutdown periods shall be minimized by the affected facility;

(c) All possible steps shall be taken by the owner or operator to minimize the impact of emissions on ambient air quality from the affected facility during startup periods and shutdown periods;

(d) The actions, including duration of the startup period, of the owner or operator of each affected facility during startup periods and shutdown periods, shall be documented by signed, contemporaneous logs or other relevant evidence; and

(e) Startups and shutdowns shall be conducted according to either:

1. The manufacturer's recommended procedures; or

2. Recommended procedures for a unit of similar design, for which manufacturer's recommended procedures are available, as approved by the cabinet based on documentation provided by the owner or operator of the affected facility; and

(2)(a) An affected facility subject to 40 C.F.R. 63.7500 shall meet the work practice standards established in Table 3 to Subpart DDDDD of 40 C.F.R. Part 63, as established in 401 KAR 63:002, Section 2(4)(iiii);

(b) An affected facility subject to 40 C.F.R. 63.9991 shall meet the work practice standards established in Table 3 to Subpart UUUUU of 40 C.F.R. Part 63, as established in 401 KAR 63:002, Section 2(4)(yyyy); or

(c) An affected facility subject to 40 C.F.R. 63.11201 shall meet the work practice standards established in Table 2 to Subpart JJJJJJ of 40 C.F.R. Part 63, as established in 401 KAR 63:002, Section 2(4)(jjjjj).

401 KAR 59:015 approved for filing.

9/1/2017
Date

Charles G. Snavely, Secretary
Energy and Environment Cabinet

PUBLIC HEARING AND PUBLIC COMMENT PERIOD

A public hearing on this administrative regulation and the SIP Revision package for the amended administrative regulation will be held on October 30, 2017, at 10:00 a.m. (Eastern Time) in Conference Room 111 at 300 Sower Boulevard, Frankfort, Kentucky. Individuals interested in being heard at this hearing shall notify this agency in writing by October 24, 2017, five workdays prior to the hearing of their intent to attend. If no notification of intent to attend the hearing is received by that date, the hearing shall be cancelled, and notification of the cancellation shall be posted at http://air.ky.gov/pages/publicnoticesandhearings.aspx. A transcript of the public hearing will not be made unless a written request for a transcript is made. If you do not wish to be heard at the public hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted until October 31, 2017. Send written notification of intent to be heard at the public hearing or written comments on the proposed administrative regulation to the contact person.

This administrative regulation is contained in Kentucky's State Implementation Plan approved by US EPA. The SIP revision package for the amended regulation will be submitted to US EPA once the proposed amendments to this administrative regulation become effective.

The hearing facility is accessible to persons with disabilities. Requests for reasonable accommodations, including auxiliary aids and services necessary to participate in the hearing, may be made to the contact person at least five (5) workdays prior to the hearing.

CONTACT PERSON:

Cassandra Jobe, Supervisor
Division for Air Quality
300 Sower Blvd.
Frankfort, KY 40601
Phone: (502) 782-6670
Fax: (502) 564-4245
E-mail: Cassandra.Jobe@ky.gov

REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

Administrative Regulation: 401 KAR 59:015
Contact person: Cassandra Jobe
Phone: (502) 782-6670
E-mail: Cassandra.Jobe@ky.gov

(1) Provide a brief summary of:

(a) What this administrative regulation does: This administrative regulation provides for the control of emissions of criteria pollutants from new indirect heat exchangers.

(b) The necessity of this administrative regulation: This administrative regulation is necessary to control the emissions of criteria pollutants from new indirect heat exchangers. This administrative regulation is necessary for the Energy and Environment Cabinet (Cabinet) to protect human health and the environment by establishing emission limits for criteria pollutants for new indirect heat exchangers.

(c) How this administrative regulation conforms to the content of the authorizing statutes: KRS 224.10-100(5) authorizes the Cabinet to promulgate administrative regulations for the prevention, abatement, and control of air pollution. This administrative regulation provides for the control of emissions from new indirect heat exchangers. This administrative regulation is part of the Kentucky State Implementation Plan (SIP).

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This administrative regulation will enable the Cabinet to continue to implement and enforce the control of emissions from new indirect heat exchangers, resulting in the protection of human health and the environment and attainment of the National Ambient Air Quality Standards (NAAQS).

(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:

(a) How the amendment will change this existing administrative regulation: This amendment establishes work practice standards for indirect heat exchangers, makes technical corrections to formulas, and removes duplicative requirements already covered by federal regulations.

(b) The necessity of the amendment to this administrative regulation: This amendment is necessary to control the emissions from new indirect heat exchangers. The amendment provides clarity for regulated entities and removes duplicative requirements covered by federal regulations.

(c) How the amendment conforms to the content of the authorizing statutes: The amendment conforms to the content of the authorizing statute by providing for the control of emissions from new indirect heat exchangers and removing duplicative requirements. The amendment also conforms to the content of the authorizing statute by establishing work practice standards for new indirect heat exchangers.

(d) How the amendment will assist in the effective administration of statutes: The amendment establishes work practice standards for new indirect heat exchangers and makes technical corrections to formulas within the administrative regulation.

(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation.
Owners and operators of new indirect heat exchangers will be affected by this administrative regulation.

(4) Provide an analysis of how the entities identified in question (3) will be impacted by either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

(a) List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment: Regulated entities will use the corrected formulas and meet the work practice standards.

(b) In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3): There is no additional cost to the regulated entities to comply with this amendment. This amendment will allow regulated entities to use the corrected formulas and comply with work practice standards.

(c) As a result of compliance, what benefits will accrue to the entities identified in question (3): As a result of compliance, the sources will be able to show they are meeting the work practice standards and will calculate emissions more accurately.

(5) Provide an estimate of how much it will cost to implement this administrative regulation:

(a) Initially: The Division for Air Quality will not incur any additional costs for the implementation of this administrative regulation initially.

(b) On a continuing basis: The Division for Air Quality will not incur any additional costs for the implementation of this administrative regulation on a continual basis.

(6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation: The Division for Air Quality's current operating budget will be used for the implementation and enforcement of the amendment to this administrative regulation.

(7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment. No increase in fees or funding is necessary to implement this administrative regulation.

(8) State whether or not this administrative regulation establishes any fees or directly or indirectly increases any fees. This administrative regulation does not establish any fees, nor does it directly or indirectly increase any fees.

(9) TIERING: Is tiering applied? (Explain why or why not) Yes. Emission limits for affected facilities apply based on the capacity of the new indirect heat exchanger.

FISCAL NOTE ON STATE AND LOCAL GOVERNMENT

Administrative Regulation: 401 KAR 59:015
Contact person: Cassandra Jobe
Phone Number: (502) 782-6670
E-mail: Cassandra.Jobe@ky.gov

1. What units, parts or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation?
   This administrative regulation has the potential to affect any unit, part, or division of state or local government operating a new indirect heat exchanger. The Division for Air Quality will continue to permit sources in accordance with this administrative regulation.

2. Identify each state or federal statute or federal regulation that requires or authorizes action taken by the administrative regulation.
   KRS 224.10-100(5), 224.20-120, 42 U.S.C. 7410, 7411, and 40 C.F.R. Part 60

3. Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the regulation is to be in effect.
   (a) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year?
   The proposed administrative regulation will not generate revenue in the first year.

   (b) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years?
   The proposed administrative regulation will not generate revenue in subsequent years.

   (c) How much will it cost to administer this program for the first year?
   The Division for Air Quality's current operating budget will be used to administer this program for the first year.

   (d) How much will it cost to administer this program for subsequent years?
   The Division for Air Quality's operating budget will be used to administer this program for subsequent years.

   Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impacts of the administrative regulation.

Revenues (+/-):	There is no known effect on current revenues.
Expenditures (+/-):	There is no known effect on current expenditures.
Other Explanation:	There is no further explanation.

FEDERAL MANDATE ANALYSIS COMPARISON

Administrative Regulation: 401 KAR 59:015
Contact person: Cassandra Jobe
Phone: (502) 782-6670
E-mail: Cassandra.Jobe@ky.gov

1. Federal statute or regulation constituting the federal mandate.
   The federal mandate for this administrative regulation is in 40 C.F.R. Part 60 and 42 U.S.C. 7411.

2. State compliance standards.
   This administrative regulation provides for the control of emissions from new indirect heat exchangers.

3. Minimum or uniform standards contained in the federal mandate.
   42 U.S.C. 7411 requires that the U.S. EPA promulgate emission standards for new stationary sources.

4. Will this administrative regulation impose stricter requirements, or additional or different responsibilities or requirements, than those required by the federal mandate?
   Yes. This administrative regulation establishes work practice standards that are not part of the federal mandate.

5. Justification for the imposition of the stricter standard, or additional or different responsibilities or requirements.
   The work practice standards were requested as an alternative way to address emissions during periods of startup and shutdown.