TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE B: AIR POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER c: EMISSION STANDARDS AND LIMITATIONS FOR STATIONARY SOURCES

# PART 214
# SULFUR LIMITATIONS

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AUTHORITY: Implementing Section 10 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/10 and 27].

SOURCE: Adopted as Chapter 2: Air Pollution, Rule 204: Sulfur Emission Standards and Limitations, R71-23, 4 PCB 191, filed and effective April 14, 1972; amended in R74-2 and R75-5, 32 PCB 295, at 3 Ill. Reg. 5, p. 777, effective February 3, 1979; amended in R74-2, R75-5, 38 PCB 129, at 4 Ill. Reg. 28, p. 417, effective June 26, 1980; amended in R78-17, 40 PCB 291, at 5 Ill. Reg. 1892, effective February 17, 1981; amended in R77-15, 44 PCB 267, at 6 Ill. Reg. 2146, effective January 28, 1982; amended and renumbered in R80-22(A), at 7 Ill. Reg. 4220, effective March 28, 1983; codified 7 Ill. Reg. 13579; amended in R80-22(B), at 8 Ill. Reg. 6172, effective April 24, 1984; amended in R84-28, at 10 Ill. Reg. 9806, effective May 20, 1986; amended in R86-31, at 12 Ill. Reg. 17387, effective October 14, 1988; amended in R86-30, at 12 Ill. Reg. 20778, effective December 5, 1988; amended in R87-31 at 15 Ill. Reg. 1017, effective January 15, 1991.

## SUBPART A:GENERAL PROVISIONS

### Section 214.101 Measurement Methods

A determination of non-compliance based on any subsection of this Section shall not be refuted by evidence of compliance with any other subsection.

a) Sulfur Dioxide Measurement. Measurement of sulfur dioxide emissions from stationary sources shall be made according to an applicable method specified in 40 CFR 60, Appendix A, Method 6, 6A, 6B, or 6C, incorporated by reference in Section 214.104(a), or by measurement procedures established pursuant to 40 CFR 60.8(b), incorporated by reference in Section 214.104(b). (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1010.)

b) Sulfuric Acid Mist and Sulfur Trioxide Measurement. Measurement of sulfuric acid mist and sulfur trioxide shall be according to the barium-thorin titration method specified in 40 CFR 60, Appendix A, Method 8, incoporated by reference in Section 214.104(a).

c) Solid Fuel Averaging Measurement Daily Analysis Method. This subsection applies to sources at plants with total solid fuel-fired heat input capacity exceeding 439.5 MW (1500 million Btu/hr). If daily fuel analysis is used to demonstrate compliance or non-compliance with Sections 214.122, 214.141, 214.142(a) 214.162, 214.186 and 214.421, the sulfur dioxide emission rate to be compared to the emission limit shall be considered to be the result of averaging daily samples taken over any consecutive two-month period provided no more than 5 percent of the sample values are greater than 20 percent above the sample average. If samples from a source cannot meet this statistical criterion, each individual daily sample analysis for such source shall be compared to the source's emission limit to determine compliance. The specific ASTM procedures, incorporated by reference in Section 214.104(c), shall be used for solid fuel sampling, sulfur, and heating value determinations.

e) Weekly Analysis Method. This subsection applies to sources at plants with total solid fuel-fired heat input capacity exceeding 146.5 MW (500 million Btu/hr) but not exceeding 439.5 MW (1500 million Btu/hr). These plants shall demonstrate compliance or non-compliance with Sections 214.122, 214.141, 214.142(a), 214.162, 214.186 and 214.421 by either an analysis of calendar weekly composites of daily fuel samples or by compliance with subsection (c) above, at the option of the plant. The specific ASTM procedures incorporated by reference in Section 214.104(c), shall be used for sulfur and heating value determinations.

e) Monthly Analysis Method. This subsection applies to sources at plants with total fuel-fired heat input capacity exceeding 14.65 MW (50 millions Btu/hr) but not exceeding 146.5 MW (500 million Btu/hr). These plants shall demonstrate compliance or non-compliance with Sections 214.122, 214.141, 214.142(a), 214.162, 214.186 and 214.421 by either an analysis of calendar monthly composites of daily fuel samples or by compliance with subsection (c) above, at the option of the plant. ASTM procedures incorporated by reference in Section 214.104(c), shall be used for sulfur and heating value determinations.

f) Small Source Alternative Method. This subsection applies to sources at plants with total solid fuel-fired heat input capacity not exceeding 14.65 MW (50 million Btu/hr). Compliance or non-compliance with Sections 214.122, 214.141, 214.142(a), 214.162, 214.186 and 214.421 shall be demonstrated by a calendar month average sulfur dioxide emission rate.

g) Exemptions. Subsections (c) through (f) shall not apply to sources controlling sulfur dioxide emissions by flue gas desulfurization equipment or by sorbent injection.

h) Hydrogen Sulfide Measurement. For purposes of determining compliance with Section 214.382(c), the concentration of hydrogen sulfide in petroleum refinery fuel gas shall be measured using the Tutwiler Procedure specified in 40 CFR 60.648, incorporated by reference in Section 214.104(d).

(Source: Amended at 15 Ill. Reg. 1017, effective January 15, 1991)

**Section 214.102 Abbreviations and Units**

a) The following abbreviations are used in this Part:

| | |
|---|---|
| btu | British thermal units (60 F) |
| ft | foot |
| gr | grains |
| J | Joule |
| kg | kilogram |
| kg/MW-hr | kilograms per megawatt-hour |
| km | kilometer |
| lbs | pounds |
| lbs/mmbtu | pounds per million btu |
| m | meter |
| mg | milligram |
| Mg | megagram, metric ton or tonne |
| mi | mile |
| mmbtu | million British thermal units |
| mmbtu/hr | million British thermal units per hour |
| MW | megawatt; one million watts |
| MW-hr | megawatt-hour |
| ng | nanogram, one billionth of a gram by volume |
| ng/J | nanograms per Joule |
| ppm | parts per million |
| scf | standard cubic foot |
| scm | standard cubic meter |
| T | English ton |

b) The following conversion factors have been used in this Part:

| English | Metric |
|---|---|
| 2.205 lb | 1 kg |
| 1 T | 0.907 Mg |
| 1 lb/T | 0.500 kg/Mg |
| mmbtu/hr | 0.293 MW |
| 1 lb/mmbtu | 1.548 kg/MW-hr |
| 1 mi | 1.61 km |
| 1 gr/scf | 2289 mg/scm |

(Source: Amended at 12 Ill. Reg. 20778, effective December 5, 1988)

**Section 214.104 Incorporations by Reference**

The following materials are incorporated by reference. These incorporations do not include any later amendments or editions.

a) 40 CFR 60, Appendix A (1989):

1) Method 6: Determination of Sulfur Dioxide Emissions From Stationary

Sources;

2) Method 6A: Determination of Sulfur Dioxide, Moisture, and Carbon Dioxide Emissions From Fossil Fuel Combustion Sources;

3) Method 6B: Determination of Sulfur Dioxide and Carbon Dioxide Daily Average Emissions From Fossil Fuel Combustion Sources;

4) Method 6C: Determination of Sulfur Dioxide Emissions From Stationary Sources (Instrumental Analyzer Procedure);

5) Method 8: Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions From Stationary Sources.

b) 40 CFR 60.8(b) (1989), Performance Tests.

c) American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103:

1) For solid fuel sampling:
ASTM D-2234 (1989)
ASTM D-2013 (1986)

2) For sulfur determinations:
ASTM D-3177 (1984)
ASTM D-2622 (1987)
ASTM D-3180 (1984)
ASTM D-4239 (1985)

3) For heating value determinations:
ASTM D-2015 (1985)
ASTM D-3286 (1985)

d) Tutwiler Procedure for hydrogen sulfide, 40 CFR 60.648 (1989).

(Source: Amended at 15 Ill. Reg. 1017, effective January 15, 1991)

## SUBPART B: NEW FUEL COMBUSTION EMISSION SOURCES

### Section 214.121 Large Sources

Sulfur Dioxide Emission Standards and Limitations for New Fuel Combustion Emission Sources with Actual Heat Input Greater than 250 Million BTU per Hour.

(1) Solid Fuel Burned Exclusively. No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion emission source greater than 250 million btu per hour, burning solid fuel exclusively, to exceed 1.2 pounds of sulfur dioxide per million btu of actual heat input.

(Board Note: This section was invalidated in Commonwealth Edison v. PCB, 25 Ill. App. 3d 271, 62 Ill.2d 494, 43 N.E.2d 459, 323 N.E. 2d 84, Ashland Chemical Corp. v. PCB, 64 Ill. App.3d 169, and Illinois State Chamber of Commerce v. PCB, 67 Ill. App.3d 839, 384 N.E.2d 922, 78 Ill.2d 1, 398 N.E.2d 9.)

(2) Liquid Fuel Burned Exclusively. No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion emission source greater than 250 million btu per hour, burning liquid fuel exclusively;

(A) to exceed 0.8 pounds of sulfur dioxide per million btu of actual heat input when residual fuel oil is burned; and

(B) to exceed 0.3 pounds of sulfur dioxide per million btu of actual heat input when distillate fuel oil is burned.

**Section 214.122 Small Sources**

Sulfur Dioxide Emission Standards and Limitations for New Fuel Combustion Emission Sources with Actual Heat Input Smaller than, or Equal to, 250 Million BTU per Hour.

(1) Solid Fuel Burned Exclusively. No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion source with actual heat input smaller than, or equal to 250 mmbtu per hour, burning solid fuel exclusively, to exceed 1.8 pounds of sulfur dioxide per million btu of actual heat input.

(2) Liquid Fuel Burned Exclusively. No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion source with actual heat input smaller than, or equal to, 250 million btu per hour, burning liquid fuel exclusively;

(a) To exceed 1.0 pounds of sulfur dioxide per million btuof actual heat input when residual fuel oil is burned; and

(b) To exceed 0.3 pounds of sulfur dioxide per million btu of actual heat input when distillate fuel oil is burned.

## SUBPART C:EXISTING SOLID FUEL COMBUSTION EMISSION SOURCES

**Section 214.141 Sources Located in Metropolitan Areas**

This Section applies to existing fuel combustion sources located in the Chicago, St. Louis (Illinois) or Peoria major metropolitan areas. Except as otherwise provided in this Section, no person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any existing fuel combustion source, burning solid fuel exclusively, located in the Chicago, St. Louis (Illinois) or Peoria major metropolitan areas, to exceed 2.79 kg of sulfur dioxide per MW-hr of actual heat input (1.8 lbs/mmbtu).

a) Sources located in Kankakee or McHenry Counties shall not exceed 6.8 pounds of sulfur dioxide per mmbtu of actual heat input (10.5kg/MW-hr).

(Source: Amended at 7 Ill. Reg. 4219, effective March 28, 1983)

b) Existing industrial sources, not equipped with flue gas desulfurization systems as of December 1, 1980, located in the Peoria major metropolitan area, shall not exceed 5.5 pounds of sulfur dioxide per mmBtu of actual heat input (2,365 nanograms per joule) in any one hour period, provided the emissions from any such source located in the City of Peoria exit from a stack which is at least 154 feet (47 meters) in height.

c) Sections 214.122 and 214.101(c) shall not apply to any fuel combustion emission sources equipped with flue gas desulfurization systems as of December 1, 1980, and located in the City of East Peoria as the city boundaries were then defined. No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any such sources to exceed 1.4 pounds of sulfur dioxide per mmBtu of actual heat input (602 nanograms per joule).

d) Sections 214.122 and 214.101(c) shall not apply to any fuel combustion emission sources which are capable of firing solid fuel at a heat input of more than 125 mmBtu per hour (36.6 megawatts) and which as of December 1, 1980, are equipped with flue gas desulfurization systems and are located in Hollis Township, Peoria County, as the township boundaries were then defined. No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any such sources to exceed 1.1 pounds of sulfur dioxide per mmBtu of actual heat input (473 nanograms per joule).

(Source: Amended at 10 Ill. Reg. 9806, effective May 20, 1986)

**Section 214.142 Small Sources Located Outside Metropolitan Areas**

Existing Fuel Combustion Sources Located Outside the Chicago, St. Louis (Illinois) and Peoria Major Metropolitan Areas.

No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any existing fuel combustion source, burning solid fuel exclusively, located outside the Chicago, St. Louis (Illinois) and Peoria major metropolitan areas, to exceed the following:

(i) 6.0 pounds of sulfur dioxide per million btu of actual heat input, on and after May 30, 1975; and

(ii) 1.8 pounds of sulfur dioxide per million btu of of actual heat input for all such fuel combustion emission sources located within any MMA other than Chicago, Peoria and St. Louis (Illinois) which, according to any one ambient air monitoring

station operated by or under supervision or control of the Agency within such MMA, has an annual arithmetic average sulfur dioxide level greater than;

60 ug/m3 (0.02ppm) for any year ending prior to May 30, 1976, or
45 ug/m3 (0.015ppm) for any year ending on or after May 30, 1976.

Compliance with this paragraph (ii) of Rule 204(C)(1)(b) shall be on and after three years from the date upon which the Board promulgates an Order for Compliance.

Before promulgation of such Order for Compliance, the Board shall:

(aa) publish in the Board Newsletter, within 21 days of receipt from the Agency, a proposed Order for Compliance along with the data used to obtain said annual arithmetic average sulfur dioxide level ; and,

(bb) serve a copy of such proposed Order and supporting data, within 21 days of receipt from the Agency, upon the owner or operator of each emission source located within the MMA; and,

(cc) defer promulgation of the Order for Compliance for at least 45 days from the date of publication to allow submission and consideration of additional written comments.

**Section 214.143 Large Sources Located Outside Metropolitan Areas**

No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any existing fuel combustion source with actual heat input greater than 250 million btu per hour, burning solid fuel exclusively, located outside the Chicago, St. Louis (Illinois) and Peoria major metropolitan areas, to exceed the emission limit provided by Rule 204(e) [Subpart E].

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

## SUBPART D:EXISTING LIQUID OR MIXED FUEL COMBUSTION EMISSION SOURCES

**Section 214.161 Liquid Fuel Burned Exclusively**

No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any existing fuel combustion emission source, burning liquid fuel exclusively:

a) To exceed 1.0 pounds of sulfur dioxide per million btu of actual heat input when residual fuel oil is burned; and,

b) To exceed 0.3 pounds of sulfur dioxide per million btu of actual heat input when distillate fuel oil is burned.

**Section 214.162 Combination of Fuels**

a) No person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any fuel combustion emission source burning simultaneously any combination of solid, liquid and gaseous fuels to exceed the allowable emission rate determined by the following equation:

$$E = S_S H_S + 0.3H_d + S_R H_R$$

b) Symbols in the equation mean the following:

E = allowable sulfur dioxide emission rate, in pounds per hour;

$S_S$= solid fuel sulfur dioxide emission standard, in pounds per million btu, which is applicable;

$S_R$= residual fuel oil sulfur dioxide emission standard, in pounds per million btu, which is applicable;

$H_S$= actual heat input from solid fuel, in million btu per hour;

$H_R$= actual heat input from residual fuel oil, in million btu per hour;

$H_d$= actual heat input from distillate fuel oil, in million btu per hour;

and where that portion of the actual heat input that is derived:

1) from the burning of gaseous fuels produced by the gasification of solid fuels shall be included in $H_S$;

2) from the burning of gaseous fuels produced by the gasification of distillate fuel oil shall be included in $H_d$;

3) from the burning of gaseous fuels produced by the gasification of residual fuel oil shall be included in $H_R$;

4) from the burning of gaseous fuels produced by the gasification of any other liquid fuel shall be included in $H_R$; and,

5) from the burning of by-product gases such as those produced from a blast furnace or a catalyst regeneration unit in a petroleum refinery shall be included in $H_R$.

## SUBPART E: AGGREGATION OF SOURCES OUTSIDE METROPOLITAN AREAS

**Section 214.181 Dispersion Enhancement Techniques**

No owner or operator of an existing fuel combustion emission source shall comply with the

emission standards of this Subpart by the use of dispersion enhancement techniques. Dispersion enhancement techniques shall include, but not be limited to, an intermittent control system or an increase of: stack height in excess of good engineering practice necessary to prevent downwash or fumigation conditions, stack diameter, exit gas velocity, or exit gas temperature, except as provided by Section 123 of the Clean Air Act (42 U.S.C. 7423) and regulations promulgated thereunder. Flue gas may be reheated where air pollution control equipment results in a reduction of flue gas temperature, provided that the degree of reheat does not exceed the temperature drop across such air pollution control equipment.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

**Section 214.182 Prohibition**

No person shall cause or allow the total emissions of sulfur dioxide into the atmosphere in any one hour period from all fuel combustion emission sources, located outside of the Chicago, St. Louis (Illinois) or Peoria major metropolitan areas, owned or operated by such person and located within a one mile radius (1.6 km) from the center point of any such fuel combustion emission source to exceed the emissions determined by the following Sections 214.183 through 214.185, whichever is applicable.

**Section 214.183 General Formula**

$$E = \frac{(H_A)^{0.11}(H_E)^2}{128}$$

where:

E = Total allowable emission of sulfur dioxide in pounds per hour into the atmosphere in any one-hour period from all fuel combustion emission sources owned or operated by such person and located within a 1 mile radius from the center point of any such emission source.

$H_A$ (feet) = Average actual stack height as determined by method outlined in Appendix C.

$H_E$ (feet) = Effective height of effluent release as determined by method outlined in Appendix C.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

**Section 214.184 Special Formula**

If the maximum total emissions of sulfur dioxide into the atmosphere in any one hour period from all fuel combustion emission sources owned or operated by any person and located within a 1 mile (1.6 km) radius from the center point of any such fuel combustion emission sources exceed, during normal cyclical variations in firing rate and fuel, the emissions allowed under Section 214.183 but, as of April 1, 1978, were in compliance with either the formula detailed below or a Board Order, then the owner or operator of the emission sources shall not cause or allow such emissions to exceed the emissions

allowed under Section 214.183 or the formula detailed below, whichever the owner or operator of the emission sources determines shall apply.

$$E = 20{,}000\left(\frac{H_S}{300}\right)^2$$

$$H_S = \frac{P_1 H_1 + P_2 H_2 + \ldots P_n H_n}{100}$$

(Note: $P_1 + P_2 \ldots P_n = 100$)

Where:

E = total emission of sulfur dioxide in pounds per hour into the atmosphere in any one hour period from all fuel combustion emission sources owned or operated by such person and located within a 1 mile radius from the center point of any such emission source,

$P_i$, i= 1, 2, . . ., n = percentage of total emissions E emitted from source i, and

$H_i$, i= 1, 2, . . ., n = physical height in feet above grade of stack i.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

**Section 214.185 Alternative Emission Rate**

Any owner or operator of a fuel combustion emission source may petition the Board for approval of an emission rate applicable to any one hour period for all fuel combustion emission sources owned or operated by such person and located within a one mile radius from the center point of any such fuel combustion emission source. Such person shall prove in an adjudicative hearing before the Board that the proposed emission rate will not under any foreseeable operating conditions and potential meteorological conditions cause or contribute to a violation of any applicable Primary or Secondary Sulfur Dioxide Ambient Air Quality Standard or violate any applicable PSD increment. An emission rate approved pursuant to this paragraph shall be a substitute for that standard determined by Section 214.183 or 214.184.

a) Every owner or operator of a fuel combustion emission source petitioning the Board for approval of an emission standard pursuant to this Section shall follow the applicable procedures described in the Procedural Rules, Chapter 1 of the Board's Rules and Regulations.

b) Any emission standard approved pursuant to this Section shall be included as a condition to operating permits issued pursuant to 35 Ill. Adm. Code 201. Any owner or operator of a fuel combustion emission source who receives Board approval of an emission standard pursuant to this Section shall apply to the Agency within 30 days of approval of such standard for a revision of its operating permit for such source.

c) The Agency shall impose as a condition to a permit to operate a source pursuant to an emission standard approved pursuant to this Section an ambient sulfur

dioxide monitoring and dispersion modeling program designed to verify that such emission standard will not cause or contribute to violations of any applicable Primary or Secondary Sulfur Dioxide Ambient Air Quality Standard. Such ambient monitoring and dispersion modeling program shall be operated for at least one year commencing no later than 6 months after the date of approval of an emission rate pursuant to this Section.

d) No more than fifteen (15) months after the commencement of the ambient monitoring and dispersion modeling program of subsection (c) the owner or operator shall apply for a new operating permit. The owner or operator shall submit, at the time of the application, a report containing the results of the ambient monitoring and dispersion modeling program.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

**Section 214.186 New Operating Permits**

No owner or operator of an existing fuel combustion emission source whose sulfur dioxide emission limitation is determined by Section 214.142, 214.183 or 214.184 shall cause or allow the total emissions of sulfur dioxide into the atmosphere from all fuel combustion emission sources owned or operated by such person and located within 1 mile radius (1.6 km) from the center point of any such fuel combustion source to exceed the level of sulfur dioxide emission allowed under the previous Rule 204 (effective April 14, 1972 until December 14, 1978) without first obtaining a new operating permit from the Agency. The application for a new operating permit shall include a demonstration that such total emissions will not violate any applicable PSD increment.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

## SUBPART F: ALTERNATIVE STANDARDS FOR SOURCES INSIDE METROPOLITAN AREAS

**Section 214.201 Alternative Standards for Sources in Metropolitan Areas**

Any owner or operator of an existing fuel combustion emission source located in the Chicago, St. Louis (Illinois) or Peoria major metropolitan areas may petition the Board for approval of an alternate emission rate specified in emissions of pounds of sulfur dioxide per mmbtu of actual heat input for any such fuel combustion emission source, up to a maximum or 6.8 pounds of sulfur dioxide per mmbtu of actual heat input (10.5 kg/MW-hr). Such person shall prove in an adjudicative hearing before the Board that the proposed emission rate will not, under predictable worst case conditions cause or contribute to a violation of any applicable primary or secondary sulfur dioxide ambient air quality standard or of any applicable prevention of significant deterioration increment. An emission rate approved pursuant to this Section shall be a substitute for that standard otherwise required by this Part.

a) Every owner or operator of an existing fuel combustion emission source so petitioning the Board for approval of an emission standard shall follow the applicable procedures described in 35 Ill. Adm. Code, Subtitle A, Chapter I.

b) Any emission standard so approved shall be included as a condition in operating permits issued pursuant to 35 Ill. Adm. Code 201. Any owner or operator of a fuel combustion emission source who receives Board approval of such an emission standard shall apply to the Agency within 30 days of approval of such standard for a revision of its operating permit for such source.

c) No owner or operator of an existing fuel combustion emission source shall seek such an exemption or comply with the emission standard so granted by the use of dispersion enhancement techniques referred to in Section 214.202.

(Source: Adopted at 7 Ill. Reg. 4219, effective March 28, 1983)

**Section 214.202 Dispersion Enhancement Techniques**

No owner or operator of an existing fuel combustion emission source shall comply with the emission standards of this Subpart by the use of dispersion enhancement techniques. Dispersion enhancement techniques shall include, but not be limited to, an intermittent control system or an increase of: stack height in excess of good engineering practice necessary to prevent downwash or fumigation conditions, stack diameter, exit gas velocity, or exit gas temperature, except as provided by Section 123 of the Clean Air Act (42 U.S.C.A. 7423) and regulations promulgated thereunder. Flue gas may be reheated where air pollution control equipment results in a reduction of flue gas temperature, provided that the degree of reheat does not exceed the temperature drop across such air pollution control equipment.

(Source: Amended at 7 Ill. Reg. 4219, effective March 28, 1983)

## SUBPART K: PROCESS EMISSION SOURCES

**Section 214.301 General Limitation**

Except as further provided by this Part, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

**Section 214.302 Exception for Air Pollution Control Equipment**

Section 214.301 shall not apply to processes designed to remove sulfur compounds from the flue gases of fuel combustion emission sources.

**Section 214.303 Use of Sulfuric Acid**

With the exception of fuel combustion emission sources and acid manufacturing, no person using sulfuric acid shall cause or allow the emission of sulfuric acid and/or sulfur trioxide from all other similar emission sources at a plant or premises to exceed:

a) 0.10 pound in any one hour period for sulfuric acid usage less than 1,300 tons per year (100 percent acid basis);

b) 0.50 pound per ton of acid used for sulfuric acid usage greater than or equal to 1,300 tons per year (100 percent acid basis).

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

## SUBPART O: PETROLEUM REFINING, PETROCHEMICAL AND CHEMICAL MANUFACTURING

### Section 214.381 Sulfuric Acid Manufacturing

a) No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any new sulfuric acid manufacturing plant to exceed 4.0 pounds of sulfur dioxide per ton of acid produced.

b) No person shall cause or allow the emission of sulfuric acid mist into the atmosphere from any process emission source to exceed 0.15 pounds of acid mist per ton of acid manufactured.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

### Section 214.382 Petroleum and Petrochemical Processes

a) Section 214.301 shall not apply to existing processes designed to remove sulfur compounds from the flue gases of petroleum and petrochemical processes.

b) No person shall cause or allow the emission of more than 1,000 ppm of sulfur dioxide into the atmosphere from any process emission source in the St. Louis (Illinois) major metropolitan area designed to remove sulfur compounds from the flue gases of petroleum and petrochemical processes.

c) The following limitations apply to any petroleum refinery in the Village of Roxana:

1) No person shall cause or allow the combustion of refinery flasher pitch containing more than 3.0% (three percent) sulfur by weight. This shall be demonstrated by daily sampling of refinery flasher pitch.

2) No person shall burn petroleum refinery fuel gas in any fuel gas combustion device if that refinery fuel gas contains more than 39 grains hydrogen sulfide per 100 dry standard cubic feet (893 mg/scm). This shall be demonstrated by sampling the refinery fuel gas once every eight hours, pursuant to the Tutwiler Procedure (Section 214.104(c)).

3) No person shall cause or allow the total emission of sulfur dioxide into the atmosphere from the following source groupings to exceed the following amounts:

A) All process heaters at distilling unit No. 1 - 459 lbs/hr (208 kg/hr).

B) All process heaters at distilling unit No. 2 - 1260 lbs/hr (571 kg/hr).

C) All gas plant process heaters - 159 lbs/hr (72.1 kg/hr).

D) All vacuum flasher unit heaters - 378 lbs/hr (171 kg/hr).

E) All process heaters at the alkylation, benzene extraction unit and catalytic feed hydrotreating units - 346 lbs/hr (157 kg/hr).

F) All boilers generating steam for general plant use - 2,400 lbs/hr (1,090 kg/hr).

G) All heaters serving the hydrocracker unit catalytic reformer No. 1, and the saturates gas plant - 1,660 lbs/hr (753 kg/hr).

H) All process heaters at the aromatics east process - 768 lbs/hr (348 kg/hr).

I) All catalytic cracking units - 3,430 lbs/hr (1,560 kg/hr).

J) All asphalt converters, distilling unit No. 1, the aromatics east process, all boilers generating steam for general plant use, and all gas plant process heaters - 2,710 lbs/hr (1,230 kg/hr).

d) Compliance with the emission limitations of subsections (b) and (c)(3) of this Section shall be demonstrated on a three-hour block average basis. Such demonstrations shall require, as a permit condition, that data as required by the Illinois Environmental Protection Agency (35 Ill. Adm. Code 201.161) be maintained in order to adequately determine the sulfur dioxide emission rate from each source operations group.

e) Sources in the Village of Roxana are not subject to the emission limitations of Section 214.162 when burning refinery flasher pitch or refinery fuel gas.

f) Individual process emission sources in the Village of Roxana are still subject to the emission limitation of Section 214.301 notwithstanding their inclusion in a source operations group.

g) Notwithstanding the provisions of 35 Ill. Adm. Code 201.102 of this Chapter, any physical change in any emission source subject to subsection (b), (c), (d), or (e) of this Section which alters the height of release, temperature or volumetric flow rate of the effluent gases of such source, or alters the diameter of the exit stack, shall be deemed a modification for the purposes of 35 Ill. Adm. Code 201.142 of this Chapter.

(Source: Amended at 12 Ill. Reg. 20778, effective December 5, 1988)

**Section 214.383 Chemical Manufacturing**

Section 214.301 shall not apply to existing hydrogen sulfide flares at a chemical manufacturing plant provided:

a) Said flares are operative on existing batch type processes; and

b) The hydrogen sulfide emissions being flared are not, as of September 11, 1975, passed through existing processes designed to remove sulfur compounds from the flue gases as provided in Section 214.382(a); and

c) The emission of sulfur dioxide into the atmosphere from said flares does not exceed 500 pounds per hour and 3500 pounds per eight-hour period; and

d) Provided, however, that if emission controls for said flares become economically reasonable and technically feasible the owner/operator of such hydrogen sulfide flares shall install such controls.

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)

## SUBPART X:UTILITIES

**Section 214.560 Scope**

a) This Subpart contains rules which modify the general sulfur emission rules of Subparts A through M as applied to a given industry or at a given site. General rules include:

1) Subparts B through I: Fuel combustion emission sources and incinerators;

2) Subparts K through M: Process emission sources.

b) These rules have been grouped for the convenience of the public; the scope of each is determined by its language and history. Rules placed in this Subpart include those which appear to be primarily directed at the following major industry groups: electric, gas and sanitary services.

(Source: Added at 10 Ill. Reg. 9806, effective May 20, 1986)

**Section 214.561 E. D. Edwards Electric Generating Station**

Sulfur dioxide emissions from Boiler Nos. 1, 2, and 3 at the Edwards Station may not exceed the limits listed in this Section. CILCO must determine compliance with these limits on a daily basis using the sulfur dioxide methodology of the Phase II Acid Rain Program set forth in 40 CFR 75.

a) The average sulfur dioxide emissions from Boiler Nos. 1, 2, and 3, as a group may not exceed 4.71 pounds per million British thermal units (lb/mmBtu) of actual heat input;

b) The average sulfur dioxide emissions from any one boiler may not exceed 6.6 lb/mmBtu of actual heat input; and

c) Sulfur dioxide emissions for all three boilers, as a group, may not exceed 34,613 pounds per hour, on a 24-hour average basis.

(Source: Amended at 27 Ill. Reg. 12101, effective July 11, 2003)

## APPENDIX C
## Method used to Determine Average Actual Stack Height and Effective Height of Effluent Release

Method used to determined $H_A$ and $H_E$:

$Q_H$ (btu/sec) = Heat emission rate as determined by method outlined below.

$\Delta$ H (feet) = Plume rise.

H = Physical height in feet, above grade of each stack, except that for purposes of this calculation the value used for such stack height shall not exceed good engineering practice as defined by Section 123 of the Clean Air Act and Regulations promulgated thereunder, unless the owner or operator of the source demonstrates to the Agency that a greater height is necessary to prevent downwash or fumigation conditions.

T (Degrees Rankine) = Exit temperature of stack gases from each source during operating conditions which would cause maximum emissions.

V (feet/sec) = Exit velocity of stack gases from each source under operating conditions which would cause maximum emissions.

D (feet) = Diameter of stack.

P = Percentage of total emissions expressed as decimal equivalents, emitted from each source. Example: 21% = 0.21. NOTE: the sum of $P_1 + P_2 ... + P_n = 1$. The emission values to be used are those which occur during operating conditions which would cause maximum emissions.

Step 1: Determine weighted average stack parameters utilizing the following formulae:

$$D = P_1 D_1 + P_2 D_2 + ... + P_n D_n$$

$$V = P_1 V_1 + P_2 V_2 + ... + P_n V_n$$

$$T = P_1 T_1 + P_2 T_2 + ... + P_n T_n$$

$$H_A = P_1 H_1 + P_2 H_2 + ... + P_n H_n$$

NOTE:

$P_1$, $D_1$, $V_1$, $T_1$, and $H_1$ are the percentage of total emissions, stack diameter, exit velocity of gases, exit temperature of stack gases, and physical stack height, respectively, for the first source; $P_2$, $D_2$, $V_2$, $T_2$, and $H_2$ are the respective values for the second source; similarly, $P_n$, $D_n$, $V_n$, $T_n$, and $H_n$ are the respective values for the nth source, where n is the number of the last source.

Step 2: Calculate heat emission rate utilizing the following formula and the weighted average stack parameters obtained in Step 1:

$$Q_H = 7.54 D^2 V \frac{(T - 515)}{T}$$

Step 3: Calculate plume rise utilizing the appropriate formula given below and the total heat emission rate obtained in Step 2:

$$\Delta H = \frac{2.58 (Q_H)^{0.6}}{(H_A)^{0.11}} \text{ for } QH \geq 6000 \text{ btu/sec.}$$

$$\Delta H = \frac{0.718 (Q_H)^{0.75}}{(H_A)^{0.11}} \text{ for } QH < 6000 \text{ btu/sec.}$$

Step 4: Calculate the weighted average facility effective height of effluent release utilizing the plume rise obtained in Step 3, the average stack height obtained in Step 1 and the formula given below:

$$H_E = H_A + \Delta H$$

Step 5: Calculate the total facility hourly emission limitation utilizing the weighted actual stack height obtained in Step 1, the effective stack height given in Step 4, and the following formula:

$$E = \frac{(H_A)^{0.11} (H_E)^2}{128}$$

(Source: Amended at 3 Ill. Reg. 5, p. 777, effective February 3, 1979)