ILLINOIS POLLUTION CONTROL BOARD
January 22, 2004

IN THE MATTER OF:)
)
CLEAN-UP PART III AMENDMENTS TO   )   R04-20
35 ILL. ADM. CODE PARTS 211, 218, AND)   (Rulemaking - Air)
219   )

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IN THE MATTER OF:)   R04-12
)   (Rulemaking - Air)
TECHNICAL CORRECTIONS TO   )   (Consolidated)
FORMULAS IN 35 ILL. ADM. CODE 214   )
"SULFUR LIMITATIONS"   )
)

Proposed Rule. Proposal For Public Comment.

ORDER OF THE BOARD (by A.S. Moore):

        The Board today accepts the rulemaking proposal of the Illinois Environmental
Protection Agency (Agency) in R04-20. The Agency proposes to amend the Board's air
pollution rules at 35 Ill. Adm. Code 211, 218, 219. The Agency describes its proposed
amendments as non-substantive corrections and updates.

        For purposes of hearing, the Board today consolidates the R04-20 rulemaking with R04-
12, a Board-initiated rulemaking proposal. The Board proposes to amend its air pollution rules
at 35 Ill. Adm. Code 214. The Board's proposed changes are needed to correct typographical
errors in formulas that appear to have occurred during re-codification.

        In this order, the Board will first discuss R04-20, then R04-12, and then consolidation of
the rulemakings for hearing. Lastly, the Board sets forth its proposed amendments in R04-12.

AGENCY PROPOSAL IN R04-20

        On January 6, 2004, the Board received a proposal from the Agency to amend the
Board's air pollution rules at 35 Ill. Adm. Code 211, 218, and 219. The Agency describes the
proposed amendments as non-substantive corrections and updates; "simply a 'clean-up'" that
will "reduce the burden" of, and "increase the flexibility" in, demonstrating compliance. Agency
Statement of Reasons at 1-2. According to the Agency, the proposed amendments focus on
volatile organic material (VOM) emissions in the Chicago ozone nonattainment area and Metro-
East St. Louis ozone area, as designated under the federal Clean Air Act. *Id*. at 2. The Board
finds that the Agency's rulemaking proposal in R04-20 satisfies the content requirements of 35
Ill. Adm. Code 102.202 and accordingly accepts the proposal for hearing.

BOARD PROPOSAL IN R04-12

R04-12 is a Board-initiated rulemaking proposal. The Board is proposing to correct technical errors in formulas that are in the Board's air pollution rules on sulfur limitations at 35 Ill. Adm. Code 214. The errors appear to have occurred when the Illinois Administrative Code was re-codified. The Board has not been to hearing in R04-12 and, until today, has not proposed rule language.

By way of background, in R04-10, the Agency had proposed to correct a typographical error in one section of Part 214. However, when the Board suggested that other similar errors in Part 214 be corrected, the Agency moved to withdraw its R04-10 proposal based on a lack of resources. The Agency stated that it planned to proceed with a general "clean-up" of Part 214 in late 2004, suggesting that all of the errors could be corrected at that time. On December 18, 2003, the Board granted the Agency's motion to withdraw the R04-10 rulemaking proposal. *See* Clean-Up Amendments to 35 Ill. Adm. Code Part 214, R04-10, slip op. at 1 (Dec. 18, 2003).

In its December 18, 2003 order, the Board stated that "the public will be better served if the rules are corrected sooner, rather than later when substantive changes are also proposed." Clean-Up Amendments, R04-10, slip op. at 1 (Dec. 18, 2003). To that end, the Board noted that it would open a docket and propose amendments to correct the typographical and similar errors in Part 214. *Id*. That docket is R04-12.

Set forth below are the Board's proposed changes to Part 214 for purposes of public comment and hearing. The Board notes that R04-12 is narrowly-tailored to make only the described technical corrections. Any other types of changes to Part 214 may be taken up when the Agency proposes its "clean-up" amendments.

CONSOLIDATION

For several reasons, the Board finds that consolidating R04-12 and R04-20 will promote efficiency without materially prejudicing any participants. First, the nature of the changes proposed in R04-12 is similar to that described by the Agency for the changes proposed in R04-20. Second, both rulemakings propose amendments to the Board air pollution rules. Third, both rulemaking proceedings are of the same type under Sections 27 and 28 of the Environmental Protection Act (Act) (415 ILCS 5/27, 28 (2002)), neither being a Section 28.5 Clean Air Act "fast-track" rulemaking (415 ILCS 5/28.5 (2002)). Finally, both R04-12 and R04-20 are in the same procedural posture, neither having been to hearing or first notice publication in the *Illinois Register*.

For purposes of hearing, the Board therefore consolidates the Agency-initiated rulemaking, R04-20, with the Board-initiated rulemaking, R04-12. The Board directs the hearing officer assigned to proceed consistent with this order and expeditiously under the rulemaking provisions of the Act (415 ILCS 5/27, 28 (2002)) and the Board's procedural rules (35 Ill. Adm. Code 102).

BOARD'S PROPOSED AMENDMENTS TO PART 214

Below are the Board's proposed amendments to Part 214 (R04-12) for purposes of public comment and hearing. Both the Board-initiated R04-12 proposed amendments and the Agency-initiated R04-20 proposed amendments may be obtained from the Clerk's Office and downloaded from the Board's Web site www.ipcb.state.il.us.

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

SUBPART A: GENERAL PROVISIONS

SUBPART B: NEW FUEL COMBUSTION EMISSION SOURCES

SUBPART C: EXISTING SOLID FUEL COMBUSTION EMISSION
SOURCES

SUBPART D: EXISTING LIQUID OR MIXED FUEL COMBUSTION
EMISSION SOURCES

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. 42204219, effective March 28, 1983; codified 7 Ill. Reg. 1357913597; 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; amended in R02-21 at 27 Ill. Reg. 12101, effective July 11, 2003; amended in R04-12 at _ Ill. Reg. _, effective _.

SUBPART D: EXISTING LIQUID OR MIXED FUEL COMBUSTION EMISSION SOURCES

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:

$$E = AX + BY + CZ$$

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

b)   Symbols in the equation mean the following:

E = allowable sulfur dioxide emission rate;

$\overline{AS}_S$ = solid fuel sulfur dioxide emission standard which is applicable;

$\overline{BS}_d$ = distillate oil sulfur dioxide emission standard determined from the table in subsection (d);

$\overline{CS}_R$ = residual fuel oil sulfur dioxide emission standard which is applicable;

$\overline{XH}_S$ = actual heat input from solid fuel;

$\overline{YH}_d$ = actual heat input from distillate fuel oil;

$\overline{ZH}_R$ = actual heat input from residual fuel oil;

c) 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 $\overline{XH}_S$;

2) From the burning of gaseous fuels produced by the gasification of distillate fuel oil shall be included in $\overline{YH}_d$;

3) From the burning of gaseous fuels produced by the gasification of residual fuel oil shall be included in $\overline{ZH}_R$;

4) From the burning of gaseous fuels produced by the gasification of any other liquid fuel shall be included in $\overline{ZH}_R$; 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 $\overline{ZH}_R$.

d) Metric or English units may be used in the equation of subsection (a) as follows:

Parameter	Metric	English
E	kg/hr	lbs/hr
$\overline{AS}_S$, $\overline{CS}_R$	kg/MW-hr	~~lbs/mmbtu~~lbs/Mbtu
$\overline{BS}_d$	0.46 kg/MW-hr	0.3 ~~lbs/mmbtu~~lbs/Mbtu
$\overline{XH}_S$, $\overline{YH}_d$, $\overline{ZH}_R$	MW	~~mmbtu/hr~~Mbtu/hr

(Source: Amended at _ Ill. Reg. _, effective _)

SUBPART E: AGGREGATION OF SOURCES OUTSIDE METROPOLITAN AREAS

Section 214.183   General Formula

a)   The general formula is:

$$\cancel{E = A\, X^B\, Y^C}$$

$$E = \frac{(H_A)^{0.11}(H_E)^2}{128} \quad \text{(in English units)}$$

$$E = 0.04347(H_A)^{0.11}(H_E)^2 \quad \text{(in Metric units)}$$

b)   Symbols used in the general formula mean the following:

   E =   Total allowable emission of sulfur dioxide (in lbs/hr or kg/hr) into the atmosphere in any one-hour period from all fuel combustion emission sources owned or operated by such person and located within a 1.6 km (1 mile) radius from the center point of any such emission source.

   $\cancel{X}H_A$ = Average actual stack height as determined by method outlined in Appendix C.

   $\cancel{Y}H_E$ = Effective height of effluent release as determined by method outlined in Appendix C.

c)   ~~The general formula may be used with either metric or English units as follows:~~

~~Parameter~~	~~Metric~~	~~English~~
~~E~~	~~kg/hr~~	~~lbs/hr~~
~~X, Y~~	~~m~~	~~ft~~
~~A~~	~~0.04347 kg/hr~~	~~0.007813 lbs/hr~~
~~B~~	~~0.11~~	~~0.11~~
~~C~~	~~2~~	~~2~~

(Source: Amended at _ Ill. Reg. _, effective _)

Section 214.184   Special Formula

a)   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 Pollution Control Board (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.

b)

~~E =   0.22222~~

$$E = 20,000\left(\frac{H_S}{300}\right)^2 \quad \text{(in English units)}$$

$$E = 0.4536 \times 20,000\left(\frac{H_S}{300}\right)^2 \quad \text{(in Metric units)}$$

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

(Note: $P_1 + P_2 ... P_n = 1$)

c)   As used in these equations, symbols mean the following:

E =   total emission of sulfur dioxide, (in ~~pounds per hour,~~lbs/hr or kg/hr) 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 (1.6 km) radius from the center point of any such emission source;

~~Pi, i = 1, 2,...,   n =   percentage of total emissions E emitted from source I divided by 100, and~~
~~Hi, i = 1, 2,...,   n =   physical height in feet above grade of stack i.~~

P_i=   (for i=1, 2, . . ., n) percentage or total emissions E emitted from source i expressed as decimal equivalents (e.g., 21% = 0.21), and

H_i=   (for i=1, 2, . . ., n) physical height (in feet or meters) above grade of stack i.

(Source: Amended at _ Ill. Reg. _, effective _)

SUBPART Q: PRIMARY AND SECONDARY METAL MANUFACTURING

Section 214.421   Combination of Fuels at Steel Mills in Metropolitan Areas

a)   Section 214.162 notwithstanding, 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 at a steel mill located in the Chicago or St. Louis (Illinois) major metropolitan area burning any solid, liquid or gaseous fuel, or any combination thereof, to exceed the allowable emission rate determined by the following equation:

$$\text{~~E = AW + BX + CY + DZ~~}$$

$$E = S_S H_S + S_d H_d + S_R H_R + S_G H_G$$

b)   Symbols in the equation mean the following:

$E =$ allowable sulfur dioxide emission rate;

~~A~~$S_S =$ solid fuel sulfur dioxide emission standard which is applicable;

~~B~~$S_d =$ distillate oil sulfur dioxide emission standard determined from the table in subsection (d);

~~C~~$S_R =$ residual oil sulfur dioxide emission standard which is applicable;

~~D~~$S_G =$ maximum by-product gas sulfur dioxide emissions which would result if the applicable by-product gas which was burned had been burned alone at any time during the 12 months preceding the latest operation, on or before March 28, 1983, of an emission source using any by-product gas.

~~W~~$H_S =$ actual heat input from solid fuel;

~~X~~$H_d =$ actual heat input from distillate fuel oil;

~~Y~~$H_R =$ actual heat input from residual fuel oil;

~~Z~~$H_G =$ actual heat input from by-product gases, such as those produced from a blast furnace.

c)   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 ~~W~~H_S;

2)   From the burning of gaseous fuels produced by the gasification of distillate fuel oil shall be included in ~~X~~H_d;

3)   From the burning of gaseous fuels produced by the gasification of residual fuel oil shall be included in ~~Y~~H_R; and

4)   From the burning of gaseous fuels produced by the gasification of any other liquid fuel shall be included in ~~Z~~H_G.

d)   Metric or English units may be used in the equation of subsection (a) as follows:

Parameter	Metric	English
E	kg/hr	lbs/hr
~~A~~S_S, ~~C~~S_R, ~~D~~S_G	kg/MW-hr	~~lbs/mmbtu~~lbs/Mbtu
~~B~~S_d	0.46 kg/MW-hr	0.3 ~~lbs/mmbtu~~lbs/Mbtu
~~W~~H_S, ~~X~~H_d, ~~Y~~H_R, ~~Z~~H_G	MW	~~mmbtu/hr~~Mbtu/hr

(Source: Amended at _ Ill. Reg. _, effective _)

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

Q ~~(Btu/sec)~~ = Heat emission rate (in btu/sec or Kcal/sec) as determined by method outlined below.

ΔH ~~(feet)~~ = Plume rise (in feet or meters).

H = Physical height (in feet or meters)~~,~~ 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 (in degrees Rankine or degrees Kelvin) from each source during operating conditions which would cause maximum emissions.

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

D ~~(feet)~~ = Diameter of stack (in feet or meters).

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.

~~X~~ H_A =Average actual stack height (in feet or meters).

~~Y~~H_E = Effective height of effluent release (in feet or meters).

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

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

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

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

$$\underline{H_A}X = P_1 H_1 + P_2 H_2 + ... + P_n H_n$$

NOTE: ~~P1, D1, V1, T1,~~ $\underline{P_1, D_1, V_1, T_1,}$ and ~~H1~~ $\underline{H_1}$ 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; ~~P2, D2, V2, T2,~~ $\underline{P_2, D_2, V_2, T_2,}$ and ~~H2~~ $\underline{H_2}$ are the respective values for the second source; similarly, ~~Pn, Dn, Vn, Tn,~~ $\underline{P_n, D_n, V_n, T_n,}$ and ~~Hn~~ $\underline{H_n}$ 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:

~~$Q + 7.54D2V (T - 515)$~~
~~$\overline{ T}$~~

$$\underline{Q_H = 7.54D^2V \frac{(T-515)}{T}} \quad \text{(in English units)}$$

$$\underline{Q_H = 67D^2V \frac{(T-286)}{T}} \quad \text{(in Metric units)}$$

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

~~$H = \quad \dfrac{2.58 (Q)0.6}{(X)0.11} \quad$ for Q   6000 btu/sec.~~

$$\underline{\Delta H = \frac{2.58(Q_H)^{0.6}}{(H_A)^{0.11}}} \quad \text{(in English Units for } Q_H \geq 6000 \text{ btu/sec)}$$

$$\underline{\Delta H = \frac{1.58(Q_H)^{0.6}}{(H_A)^{0.11}}} \quad \text{(in Metric Units for } Q_H \geq 1500 \text{ kcal/sec)}$$

~~$H = \quad \dfrac{0.718 (Q)0.75}{(X)0.11} \quad$ for Q   6000 btu/sec.~~

$$\underline{\Delta H = \frac{0.718(Q_H)^{0.75}}{(H_A)^{0.11}}} \quad \text{(in English Units for } Q_H < 6000 \text{ btu/sec)}$$

$$\Delta H = \frac{0.54(Q_H)^{0.75}}{(H_A)^{0.11}} \text{ (in Metric Units for } Q_H < 1500 \text{ kcal/sec)}$$

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:

~~Y = X + H~~

$$H_E = H_A + \Delta H$$

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:
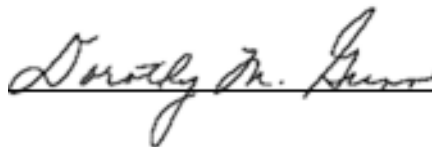
~~E = (X)0.11 (Y)2~~
~~128~~

$$E = \frac{(H_A)^{0.11}(H_E)^2}{128} \text{ (in English units)}$$

$$E = 0.04347(H_A)^{0.11}(H_E)^2 \text{ (in Metric units)}$$

(Source: Amended at _ Ill. Reg. _, effective _)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above order on January 22, 2004, by a vote of 5-0.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board