NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 7

SULFUR, INDUSTRIAL SOURCES

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7:27-7.1 DEFINITIONS

The following words and terms, when used in this Subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

"Adjusted stack height" means the stack height modified by either a stack height adjustment factor or a stack height adjustment in feet.

"Allowable emission" means the emission in any 60 minute period expressed in pounds computed as set forth in Section 2(r) (Control and prohibition of air pollution from sulfur compounds) of this Subchapter.

"Commercial fuel" means solid, liquid or gaseous fuels normally produced, manufactured, used or sold for the purpose of creating useful heat.

"Commissioner" means the State Commissioner of Environmental Protection who is the chief administrative officer of the State Department of Environmental Protection.

"Gases" means formless fluids which, under standard condition, occupy the space of enclosure and which can be changed to the liquid or solid state only by the combined effect of increased pressure and decreased temperature.

"Liquid particles" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Source operation" means any process or any identifiable part thereof emitting air contaminants into the outdoor atmosphere through one or more stacks or chimneys. For purposes of this definition identical processes shall be considered as separate source operations.

"Stack exit velocity" means the linear velocity in feet per second at which gases enter the outdoor atmosphere from a stack or chimney.

"Stack height" means the vertical distance measured in feet between the point of discharge from the stack or chimney into the outdoor atmosphere and the elevation of the land thereunder.

"Stack or chimney" means a flue, conduit or opening permitting particulate or gaseous emissions into the open air, or constructed or arranged for such purpose.

"Standard conditions" means 70 degrees Fahrenheit and one atmosphere pressure (14.7 psia or 760 mm Hg).

"Sulfur compounds" means all inorganic or organic chemicals having an atom or atoms of sulfur in their chemical structure.

"Sulfur dioxide (SO_2)" means a colorless gas at standard conditions which has the molecular formula SO_2.

"Sulfuric acid (H_2SO_4)" means a heavy, corrosive, oily, colorless, dibasic, strong acid having the molecular formula H_2SO_4.

"Sulfur trioxide (SO_3)" means a compound which has the molecular formula SO_3.

"Vapors" means the gaseous form of substances which, under standard conditions, are in the solid or liquid state and which can be changed to these states by either increasing the pressure or decreasing the temperature.

7:27-7.2 CONTROL AND PROHIBITION OF AIR POLLUTION FROM SULFUR COMPOUNDS

(a) No person shall cause, suffer, allow or permit sulfur compounds in the form of gases, vapors, or liquid particles to be discharged from any stack or chimney into the outdoor atmosphere except as provided in this Section.

(b) Whenever the discharge from a stack or chimney includes SO_2:

1. The concentration of SO_2 in the gases being discharged shall not exceed 2,000 ppm by volume at standard conditions except that for a period of two years following the effective date of this Subchapter, the concentration of SO_2 in the gases being discharged shall not exceed 3,000 ppm by volume at standard conditions.

2. The quantity of SO_2 which is discharged through any stack or chimney into the outdoor atmosphere in any 60-minute period shall not exceed the allowable emission as set forth in Subsection (q) of this Section and at any instant the maximum rate of emission expressed in pounds per hour shall not exceed twice the allowable emission.

(c) The provisions of Subsection (b)1 of this Section shall not apply to the discharge from:

1. Any stack or chimney whenever the total volume of gases discharged does not exceed 3,000 cubic feet per minute at standard conditions, and the quantity of SO_2 discharged in any 60-minute period does not exceed 50 pounds, and at any instant the maximum rate of emission of SO_2 does not exceed 100 pounds per hour.

2. Sulfur recovery plants which are engaged in recovering elemental sulfur from hydrogen sulfide. For such plants the concentration of SO_2 in the gases being discharged from a stack or chimney shall not exceed 15,000 ppm by volume at standard conditions.

(d) Any person responsible for the discharge of SO_2 through a stack or chimney into the outdoor atmosphere shall provide the facilities and necessary equipment and shall conduct stack tests using methods approved by the Department. Such tests shall include a determination of the SO_2 concentration, the total gas volume being discharged, and the gas temperature and pressure at the sampling point in the stack or chimney, and the data shall be recorded in a permanent log at least once each hour. These data shall be maintained for a period of not less than one year and shall be available for review by the Department.

(e) Whenever the person responsible for the discharge of SO_2 can present data to the Department showing that his emissions are well under the allowable emissions or that his process produces predictable concentrations and emission rates, he may apply to the Department for a waiver or modification of the stack testing requirement. For the purpose of this subsection, existing data may be offered as substantiating evidence for such waiver or modification. If a waiver or modification is approved by the Department, the Department shall notify the person of such approval in writing.

(f) The provisions of subsection (d) of this Section shall not apply whenever the total volume of gases discharged from a stack or chimney is less than 1,000 cubic feet per minute at standard conditions.

(g) Whenever the discharge from a stack or chimney includes SO_3 and H_2SO_4:

1. The combined concentration of SO_3 and H_2SO_4 in the gases being discharged, when converted and expressed as H_2SO_4, shall not exceed 10 milligrams per cubic foot at standard conditions; and

2. The combined quantity of SO_3 and H_2SO_4 discharged in any 60-minute period, when converted and expressed H_2SO_4, shall not exceed the allowable emission as set forth in subsection (r) of this Section and at any instant the maximum rate of emission expressed in pounds per hour shall not exceed twice the allowable emission.

(h) Any person responsible for the discharge of SO_3 and H_2SO_4 through a stack or chimney into the outdoor atmosphere shall, when requested by the Department, provide the facilities and necessary equipment for determining the combined quantity of SO_3 and H_2SO_4 being discharged from the stack or chimney and shall conduct stack tests using methods approved by the Department. Such tests may include a determination of the SO_3 and H_2SO_4 concentrations, the total gas volume being discharged, and the gas temperature and pressure at the sampling point in the stack or chimney, and the data shall be recorded in a permanent log at such time intervals as specified by the Department. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

(i) Whenever the discharge from a stack or chimney includes sulfur compounds in the form of gases, vapors, or liquid particles other than SO_2, SO_3 and H_2SO_4, the total quantity of sulfur in these sulfur compounds which is discharged in any 60-minute period shall not exceed the allowable emission as set forth in subsection (r) of this Section and the maximum rate of emission at any instant shall not exceed the allowable emission.

(j) Any person responsible for the discharge of sulfur compounds in the form of gases, vapors, or liquid particles, other than SO_2, SO_3 and H_2SO_4, through a stack or chimney into the outdoor atmosphere shall, when requested by the Department, provide the facilities and necessary equipment for determining the combined quantity of such sulfur compounds being discharged from the stack or chimney and shall conduct stack tests using methods approved by the Department. Such tests may include a determination of the sulfur concentrations, the total gas volume being discharged, and the gas temperature and pressure at the sampling point in the stack or chimney and the data shall be reported in a permanent log at such intervals as specified by the Department. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

(k) The provisions of this Subchapter shall not apply to:

1. The discharge of sulfur compounds in the form of gases, vapors, or liquid particles resulting from the combustion of commercial fuel; or

2. The discharge from any stack or chimney having the sole function of relieving pressure of gas, vapor, or liquid under abnormal emergency conditions.

(l) Where combustible sulfur compounds are burned at or beyond the exit of a stack or chimney, the products of combustion shall be exempt from the concentration limits of subsection (b)1 of this Section.

(m) Whenever the person responsible for the discharge of a sulfur compound in the form of gases, vapors, or liquid particles other than SO_2, SO_3, and H_2SO_4 believes that such sulfur compound does not contribute to air pollution to the degree represented by the allowable emission, he may submit data to the Department setting forth reasons and justifications for a less restrictive allowable emission. If the change is approved by the Department, the Department shall assign a revised allowable emission for such sulfur compound which shall be used for the purpose of this Subchapter.

(n) Any person responsible for the discharge of sulfur compounds in the form of gases, vapors, or liquid particles through a stack or chimney shall, upon request of the Department, provide in connection with such stack or chimney such sampling facilities and testing facilities, exclusive of instruments and sensing devices, as may be necessary for the Department to determine the quantity and concentration of such sulfur compounds which are or may be discharged through such stack or chimney. Such facilities may be either permanent or temporary at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction or safe practice.

(o) Whenever sulfur compounds in the form of gases, vapors, or liquid particles from one source operation are discharged through two or more stacks or chimneys, the total quantity that may be discharged from any one stack or chimney

shall not exceed the allowable emission permitted for that stack or chimney, nor shall the total quantity that may be discharged from all the stacks exceed the allowable emission that would be permitted from the single stack or chimney having the greatest allowable emission.

(p) Any person responsible for a source operation which discharges sulfur compounds in the form of gases, vapors, or liquid particles through a stack or chimney and who in the process of starting up or shutting down such operation anticipates discharges in excess of those allowable under this Subchapter shall file an affidavit which the Commissioner stating the following:

1. The name, address and telephone number of the person submitting affidavit; if such person is a legal entity, the name and address of the individual authorized to accept service of process on its behalf and the name of the officer in charge of the premises where the source operation is located;

2. The type of business or activity involved;

3. The general nature of the source operation and the proposed operating practice;

4. Duration of the period for which emissions or concentrations in excess of the allowable emission or concentrations can be expected and magnitude of such emissions or concentrations;

5. Frequency of start-up and shut-down;

6. Reasons why excessive emissions or concentrations cannot be avoided during the start-up and shut-down period.

(q) The Department may, for reasons set forth in the affidavit, authorize a waiver of the discharge requirements of this Subchapter; provided, however, that such waiver shall not apply to any period of operation other than that period set forth as process start-up and shut-down.

(r) The allowable emission for sulfur compounds in the form of gases, vapors, or liquid particles shall be computed as follows:

1. Establish the stack height;

2. Establish the stack exit velocity in feet per second;

3. Establish the temperature in degrees Fahrenheit at which the gases leave the stack.

4. The use of Tables I and II shall be as follows:

i. If the stack height is less than 200 feet, determine "Stack Height Adjustment Factor" from Table I and multiply by stack height to determine "Adjusted Stack Height in Feet."

ii. If stack height is 200 feet or greater, determine "Stack Height Adjustment in Feet" from Table II and add this value to or subtract this value from the actual stack height to determine "Adjusted Stack Height in Feet."

iii. Intermediate values shall be determined by interpolation.

5.- Locate the "Adjustad Stack Height" obtained from paragraph 4 of this Subsection along the left side of chart titled, "Allowable Emission for Sulfur Compounds." Draw a horizontal line across the chart to the point where this line intersects the line on the chart corresponding to the sulfur compound for which the allowable emission is to be determined.

6. Draw a vertical line from the point determined by paragraph 5 of this Subsection to the "Allowable Emission in Pounds per Hour" scale along the bottom of the chart. The point at which this line intersects the scale yields the "Allowable Emission in Pounds per Hour" for that sulfur compound.

TABLE I—STACK HEIGHT ADJUSTMENT FACTOR

STACK EXIT VELOCITY IN FT./SEC.	TEMPERATURE, DEGREES F., AT WHICH THE GASES LEAVE THE STACK								
	200°F or less	300°	400°	500°	600°	700°	800°	900°	1000° or greater
0	0.910	0.910	0.910	0.910	0.910	0.910	0.910	0.910	0.910
5	0.928	0.930	0.932	0.933	0.934	0.935	0.935	0.936	0.935
10	0.946	0.950	0.953	0.956	0.958	0.959	0.961	0.962	0.963
15	0.964	0.970	0.975	0.978	0.981	0.984	0.986	0.988	0.989
20	0.982	0.990	0.996	1.001	1.005	1.008	1.011	1.014	1.016
25	1.000	1.010	1.018	1.024	1.029	1.033	1.037	1.039	1.042
30	1.018	1.030	1.039	1.047	1.053	1.056	1.062	1.065	1.068
35	1.036	1.050	1.061	1.070	1.077	1.082	1.087	1.091	1.095
40	1.054	1.070	1.083	1.092	1.100	1.107	1.112	1.117	1.121
45	1.072	1.090	1.104	1.115	1.124	1.131	1.138	1.143	1.148
50 OR GREATER	1.090	1.110	1.126	1.138	1.148	1.156	1.163	1.169	1.174

TABLE II—STACK HEIGHT ADJUSTMENT IN FEET

STACK EXIT VELOCITY IN FT./SEC.	TEMPERATURE, DEGREES F., AT WHICH THE GASES LEAVE THE STACK								
	200°F or less	300°	400°	500°	600°	700°	800°	900°	1000° or greater
0	−18.00	−18.00	−18.00	−18.00	−18.00	−18.00	−18.00	−18.00	−18.00
5	−14.40	−13.99	−13.68	−13.44	−13.24	−13.08	−12.96	−12.82	−12.72
10	−10.80	− 9.99	− 9.37	− 8.88	− 8.48	− 8.16	− 7.88	− 7.65	− 7.44
15	− 7.20	− 5.98	− 5.06	− 4.32	− 3.72	− 3.24	− 2.82	− 2.47	− 2.16
20	− 3.60	− 1.97	− 0.74	+ 0.24	+ 1.04	+ 1.68	+ 2.24	+ 2.70	+ 3.12
25	0.00	+ 2.03	+ 3.58	+ 4.80	+ 5.80	+ 6.60	+ 7.30	+ 7.89	+ 8.40
30	+ 3.60	+ 6.04	+ 7.89	+ 9.36	+10.56	+11.52	+12.36	+13.05	+13.69
35	+ 7.20	+10.05	+12.20	+13.92	+15.32	+16.44	+17.42	+18.22	+18.96
40	+10.80	+14.06	+16.52	+18.48	+20.08	+21.36	+22.48	+23.40	+24.24
45	+14.40	+18.06	+20.84	+23.04	+24.84	+26.28	+27.54	+28.58	+29.52
50 OR GREATER	+18.00	+22.07	+25.15	+27.60	+29.60	+31.20	+32.60	+33.75	+34.80

NOTE FOR TABLES I AND II: EXTRAPOLATION BELOW 200°F, OR ABOVE 1000°F., OR ABOVE 50 FT. PER SEC., IS NOT PERMITTED.

ALLOWABLE EMISSION FOR SULFUR COMPOUNDS

N. J. Administrative Code
7:27-7.2