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A Compilation of Selected Air Pollution Emission Control Regulations and Ordinances

A COMPILATION

OF

SELECTED AIR POLLUTION

EMISSION CONTROL REGULATIONS AND ORDINANCES

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INTRODUCTION

This compilation contains selected sections of many emission control regulations and ordinances. It has been prepared to provide state and local air pollution control agencies, industries, and other interested people with selected examples of the many types of regulations and ordinances in use today. All sections of regulations and ordinances included have been copied directly from the original text of individual state and local laws.

The regulations and ordinances have been arranged in such a manner that each section of this report is a compilation of laws pertaining to a specific type of pollutant or pollutant source. These sections include Smoke Emissions and Equivalent Opacity Regulations, Regulations Pertaining to Particulate Emissions from Fuel Burning Plants, Regulations Pertaining to Particulate Emissions from Refuse-Burning Equipment, Regulations Pertaining to Particulate Emissions from Manufacturing Processes, Regulations Pertaining to Sulfur Compound Emission Control, Regulations Pertaining to Hydrocarbon Emission Control, Regulations Pertaining to Fluoride Emission Control, Regulations Pertaining to Motor Vehicle Emission Control, Regulations Pertaining to Odor Emission Control, and Zoning Ordinances.

The regulations and ordinances compiled were selected to represent the different methods of controlling emissions by law and to represent varying degrees of control.

The definitions used were for the most part taken directly from existing regulations and ordinances. Some were picked selectively to provide what we feel are very good definitions while others were picked because of their wide use by many states and communities.

DEFINITIONS

TYPICALLY INCLUDED IN

AIR POLLUTION ORDINANCES

DEFINITIONS TYPICALLY INCLUDED IN AIR POLLUTION ORDINANCES

(1) Aerosol. A dispersion or any suspension of small solid or liquid particles or any combination thereof in the air or other gaseous medium.

(2) Ashes. Includes cinders, fly ash or any other solid material resulting from combustion, and may include unburned combustibles.

(3) ASME. The American Society of Mechanical Engineers.

(4) ASTM. The American Society for Testing Materials.

(5) Air Contaminant. Any smoke, soot, fly ash, dust, cinders, dirt, noxious or obnoxious acids, fumes, oxides, gases, vapors, odors, toxic or radioactive substance, waste, particulate, solid, liquid or gaseous matter, or any other materials in the outdoor atmosphere.

(6) Air Pollution. The presence in the outdoor atmosphere of one or more air contaminants or combinations thereof in such quantities and of such duration that they are or may tend to be injurious to human, plant, or animal life, or property, or that interfere with the comfortable enjoyment of life or property or the conduct of business.

(7) Atmosphere. The air that envelops or surrounds the earth. Where air pollutants are emitted into a building not designed specifically as a piece of air pollution control equipment, such emission into the building shall be considered an emission into the atmosphere.

(8) Cinders. Particles not ordinarily considered as fly ash or dust because of their greater size, consisting essentially of fused ash and/or unburned matter.

(9) Cleaning Fires. The act of removing ashes from the fuel bed or furnace.

(10) Combustion Contaminants. Particulate matter discharged into the atmosphere from the burning of any kind of material containing carbon in a free or combined state.

(11) Combustible Refuse. Any combustible waste material containing carbon in a free or combined state other than liquids or gases.

(12) Condensed Fumes. Minute solid particles generated by the condensation of vapors from solid matter after volatilization from the molten state, or generated by sublimation, distillation, calcination, or chemical reaction when these processes create airborne particles.

(13) Domestic Refuse-Burning Equipment. Any refuse-burning equipment or incinerator used for a single family residence, or for two residences either in duplex or double house form, or for multiple-dwelling units in which such equipment or incinerator serves fewer than three apartments.

(14) Dusts. Minute solid particles released into the air by natural forces or by mechanical processes such as crushing, grinding, milling, drilling, demolishing, shoveling, conveying, covering, bagging, sweeping, etc.

(15) Dust-Separating Equipment. Any device for separating dust from the air or gas medium in which it is carried.

(16) Fly Ash. Particulate matter capable of being gas-borne or air-borne and consisting essentially of fused ash and/or burned or unburned material.

(17) Fuel. Any form of combustible matter - solid, liquid, vapor, or gas excluding combustible refuse.

(18) Fuel-Burning or Combustion Equipment or Device. Any furnace, fuel-burning equipment, or boiler used for the burning of fuel, or for the emission of products of combustion, or used in connection with any process which generates heat and may emit products of combustion.

(19) Fuel-Burning Equipment, Mechanical. Any fuel-burning or combustion equipment or device incorporating a device by means of which fuel is mechanically introduced from outside the furnace into the zone of combustion.

(20) Furnace. An enclosed space provided for the ignition and/or combustion of fuel.

(21) Incinerators. All devices intended or used for the destruction of garbage or other combustible refuse by burning.

(22) Low Volatile Solid Fuel. A solid fuel, the volatile content of which is 23% or less on an ash free and moisture free basis.

(23) Mist. A suspension of any finely-divided liquid in any gas or atmosphere.

(24) Multiple-Chamber Incinerator. Any article, machine, equipment, contrivance, structure or part of a structure, used to dispose of combustible refuse by burning, consisting of three or more refractory lined combustion furnaces in series, physically separated by refractory walls, interconnected by gas passage ports or ducts and employing adequate design parameters necessary for maximum combustion of the material to be burned. The refractories shall have a Pyrometric Cone Equivalent of at least 17, tested according to the method described in the American Society for Testing Materials, Method C-24.

(25) Odor. That property of an air contaminant that affects the sense of smell.

(26) Oil Burners. Any device for the introduction of vaporized or atomized fuel oil into a furnace.

(27) Oil-Effluent Water Separator. Any tank, box, sump or other container in which any petroleum or product thereof, floating on or entrained or contained in water entering such tank, box, sump or other container, is physically separated and removed from such water prior to out-fall, drainage, or recovery of such water.

(28) Open Fire. Any fire from which the products of combustion are emitted directly into the open air without passing through a stack or chimney.

(29) Particulate Matter. Any material, except uncombined water, that exists in a finely divided form as a liquid or solid at standard conditions.

(30) Person. Any person, firm, association, organization, partnership, business trust, corporation, company, contractor, supplier, installer, user or owner, or any state or local governmental agency or public district or any officer or employee thereof.

(31) Process Weight. The total weight of all materials introduced into a source operation, including solid fuels, but excluding liquids and gases used solely as fuels, and excluding air introduced for purposes of combustion.

(32) Process Weight Rate. A rate established as follows:

(a) For continuous or long-run steady-state source operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.

(b) For cyclical or batch source operations, the total process weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such a period.

Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this definition (32), the interpretation that results in the minimum value for allowable emission shall apply.

(33) Processes or Process Equipment. Any action, operation, or treatment embracing chemical, industrial, or manufacturing factors, such as heat treating furnaces, by-product coke plants, core-baking ovens, mixing kettles, cupolas, blast furnaces, open-hearth furnaces, heating and reheating furnaces, puddling furnaces, sintering plants, bessemer converters, electric steel furnaces, ferrous and non-ferrous foundries, kilns, stills, dryers, roasters, and equipment used in connection therewith, and all other methods or forms of manufacturing or processing that may emit smoke, particulate matter, or gaseous matter.

(34) Ringelmann Chart. The chart published and described in the U.S. Bureau of Mines Information Circular 7718, and on which are illustrated graduated shades of grey to black for use in estimating the light obscuring capacity of smoke.

(35) Smoke. Small gas-borne particles resulting from incomplete combustion, consisting predominantly, but not exclusively, of carbon, ash, and other combustible material.

(36) Smoke Unit. The number of "smoke units" is obtained by multiplying the smoke density in Ringelmann numbers by the time of occurrence in minutes. For the purpose of this calculation, a Ringelmann density reading is made at least once per minute during the period of observation. The sum of the Ringelmann density readings (made once per minute) during the period of observations would equal the number of smoke units.

(37) Soot. Agglomerated particles consisting mainly of carbonaceous material.

(38) Stack or Chimney. Any flue, conduit, or duct arranged to conduct an effluent to the open air.

(39) Stack Spray. A nozzle or series of nozzles installed in a stack above the breeching, used to inject wetting agents at high pressure to suppress the discharge of particulate matter from the stack.

(40) Stokers. Any mechanical device that feeds solid fuel uniformly onto a grate or hearth within a furnace.

(41) Unit Operation. Methods where raw materials undergo physical change; methods by which raw materials may be altered into different states, such as vapor, liquid, or solid without changing into a new substance with different properties and composition.

(42) Unit Process. Reactions where raw materials undergo chemical change; where one or more raw materials are combined and completely changed into a new substance with different properties and composition.

(43) Vapor. The gaseous form of a substance normally in the liquid or solid state.

(44) Volatile or Volatile Matter. The gaseous constituents of solid fuels as determined by the procedure defined in the ASTM method amended or revised to the current date.

SMOKE EMISSIONS

AND

EQUIVALENT OPACITY REGULATIONS

ALLEGHENY COUNTY, PENNSYLVANIA

SMOKE CONTROL ORDINANCE

(effective July 5, 1960)

1305. GENERAL

.1 The provisions of this section shall apply to all classes of processes and equipment covered by these Rules and Regulations.* Unless otherwise provided herein, the Director shall determine such classification.

.2 The Ringelmann Chart, hereby made a part of these Rules and Regulations by reference, shall be used for grading the appearance, density, or shade of smoke. The Smokescope may be used to determine the appearance, density, or shade of smoke as graded by the Ringelmann Chart.

.3 The production or emission of dense smoke within the County of Allegheny is prohibited. No person shall cause, suffer, or allow to be emitted into the open air from any fuel-burning equipment, internal combustion engine, premise, open fire, or stack, smoke the appearance, density, or shade of which is darker than No. 2 of the Ringelmann Chart.

1309.3 INCINERATORS OF ALL TYPES:

(b) Smoke emitted into the atmosphere from any incinerator shall be of an appearance, density, or shade lighter than No. 1 of the Ringlemann Chart.

*Classification groups include section 1306. entitled "Railroad Locomotives, Boats, and Other Vehicles,"section 1307. entitled "Power Plants, Heating Plants, and Domestic Heating Plants," section 1308. entitled "Steel and Allied Industries," and section 1309. entitled "Miscellaneous Pollutants from Combustion". Sections 1307., 1309., and 1308. are listed under the following three sections of this report, respectively.

CITY OF CHICAGO, ILLINOIS

AIR POLLUTION CODE

CHAPTER 17

(amended January 1, 1965)

17-22. Open fires other than those covered by section 17-31 of this code, diesel motor vehicles and all fuel burning, combustion or process equipment, incinerators or devices shall meet the requirements of section 17-23. (Amend. Coun. J. 7-1-63, p. 579.)

17-23. It shall be unlawful within the City of Chicago and within one mile of the corporate limits for any person, owner, agent, operator, firm or corporation to permit to cause, suffer or allow the emission of any smoke* from any source whatever of a density, shade or opacity equal to or greater than that described as #2 on the Ringelmann chart as published by the United States Bureau of Mines provided that the following exceptions to the provisions of this section shall be permitted for fuel burning equipment.

(1) For a period or periods aggregating 4 minutes in any 30 minutes of a density, shade or opacity equal to but not greater than that described as #2 on the Ringelmann chart.

(2) For a period or periods aggregating 4 minutes in any 60 minutes of a density, shade or opacity equal to but not greater than that described as #3 on the Ringelmann chart when building a new fire. (Amend. Coun. J. 7-1-63, p. 579.)

* Chicago definition of smoke is as follows: Smoke is small gas-borne particles other than water, that forms a visible plume in the air from a source of atmospheric pollution.

CITY OF CLEVELAND, OHIO

AIR POLLUTION CODE

ORDINANCE NO. 428-A-62

CHAPTER 5 - PROHIBITED EMISSIONS

(effective June 20, 1962)

Section 4.0501. SMOKE

No owner, occupant or person in charge, by himself, his agent or employee, shall cause, suffer or allow smoke in excess of the following limitations to be discharged from any stack or vent within the City of Cleveland.

Ringelmann Chart No.	Railroads and Steamships	Other Combustion Devices Except Incinerators	Incinerators
1	No limitation	No limitation	No limitation
2	No limitation	10 minutes in any 1 hour	Not allowed
3	RR-½ minute in any 4 minutes SS-6 minutes in any 1 hour	6 minutes in any 8 hour period	Not allowed
4	Not allowed	Not allowed	Not allowed
5	Not allowed	Not allowed	Not allowed

Section 4.0502. DUST OR FUME.

No owner, occupant or person in charge, by himself, his agent or employee, shall cause, suffer or allow any dust or fume having a color other than black to be discharged from any stack or vent within the City of Cleveland in excess of such density or opacity in shade as that designated as No. 2 on the Ringelmann Chart. When the presence of uncombined water is the sole reason for the failure to meet the limitations in this section, these limitations shall not apply.

COUNTY OF LOS ANGELES, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION IV. PROHIBITIONS

(amended June 1, 1965)

Rule 50. RINGELMANN CHART. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

a. As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines, or

b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (a) of this Rule.

CITY OF POUGHKEEPSIE, NEW YORK

AIR POLLUTION CONTROL ORDINANCE

(effective December 1, 1951)

IV. Applicability

A. Sources

Domestic installations; apartment house, office building, school, hotel, loft building, hospital and similar installations; stationery installations: railroad locomotives; building fresh fires: other stationery installations.
Regulated pursuant standards of Table I. /sec. 3/.

B. Specific Pollutants

1. Smoke - discharge or emission of smoke shade or density darker than that specified and for duration shown in Table I. /sec. 3/.

Ringelmann Chart or other charts of equivalent shades of grey incorporated into ordinance by reference.

TABLE I

TYPE OF INSTALLATION	LIMITING DENSITY, SHADE OR APPEARANCE OF SMOKE
A. Domestic installations primarily for heating and hot water, in one and two family dwellings.	Not darker than shade #1.
B. Installations, primarily for heating and hot water in apartment houses, office buildings, schools, hotels, loft buildings, hospitals and other installations of similar character.	Not darker than Shade #1 except that smoke not darker than Shade #3 is permitted for not more than a total of 4 minutes in any period of 30 minutes.
C. All other stationary installations except those included in Paragraph F hereof.	Not darker than Shade #2 except that smoke not darker than Shade #3 is permitted for not more than a total of 4 minutes in any period of 30 minutes.

D.	Railroad Locomotives.	Not darker than Shade #2 except that smoke not darker than Shade #3 is permitted for not more than a total of 1 minute in any period of 6 minutes for a locomotive in motion, or for not more than a total of 4 minutes in any period of 30 minutes for a locomotive not in motion.
E.	For building a wholly fresh fire in a cold fire box.	In railroad locomotives, not darker than Shade #3 is permitted for not more than 12 consecutive minutes in any period of 24 hours; in other installations, not darker than Shade #3 is permitted for not more than 20 consecutive minutes while such fire is being built.
F.	For installations using a fuel input in excess of 25,000,000 BTU per hour, the primary purpose of which is to provide standby and emergency facilities for maintaining essential public utility services.	Not darker than Shade #2 <u>except</u> that smoke not darker than Shade #3 is permitted for not more than a total of 10 minutes in any period of 30 minutes.

STATE OF NEW JERSEY

AIR POLLUTION CONTROL CODE

CHAPTER IV

(effective January 1, 1958)

Section 2. EMISSIONS PROHIBITED AND STANDARDS OF MEASUREMENT

2.1 No person shall cause, suffer, allow, or permit smoke from any fuel-burning equipment, the shade or appearance of which is darker than No. 2 of the Ringelmann Smoke Chart, to be emitted into the open air.

2.2 The provisions of Section 2.1 shall not apply to:

(a) Smoke emitted during the cleaning of a fire box or the building of a new fire, the shade or appearance of which is not darker than No. 3 of the Ringelmann Smoke Chart for a period or periods aggregating no more than 3 minutes in any 15 consecutive minutes.

(b) Smoke from locomotives the shade or appearance of which is equal to but not darker than No. 3 of the Ringelmann Smoke Chart for a period or periods aggregating no more than 30 seconds in any 3 consecutive minutes, or smoke of said density for a period or periods aggregating no more than 4 minutes in any 15 consecutive minutes when building a new fire.

(c) Smoke resulting from any fire ignited solely for the purpose of training or research in fire protection or prevention.

CITY OF NEW YORK, NEW YORK

AIR POLLUTION CONTROL CODE

ARTICLE 9. EMISSION STANDARDS

Sec. 9.03 EMISSION OF AIR CONTAMINANT; STANDARD SMOKE CHART*

(a) No person shall cause or permit the emission of an air contaminant of:

(1) A density which appears as dark or darker than No. 3 on the Standard Smoke Chart, or of an opacity which obscures vision to a degree equal to or greater than smoke of No. 3 density on the Standard Smoke Chart; or

(2) A density which appears as dark or darker than No. 2 on the Standard Smoke Chart, but less than No. 3 on said Chart, or of an opacity which obscures vision to a degree equal to or greater than smoke of No. 2 density on the Standard Smoke Chart, but less than No. 3 on said Chart, if such emission continues for longer than 2 minutes in the aggregate in any 60 minute period.

(3) A density which appears as dark or darker than No. 1 on the Standard Smoke Chart, but less than No. 2 on said Chart, or of such opacity as to obscure vision to a degree equal to or greater than smoke of No. 1 density on the Standard Smoke Chart, but less than No. 2 on said Chart, if such emission continues for longer than 4 minutes in the aggregate in any 60 minute period.

(b) The density or opacity of an air contaminant shall be measured at the point of its emission, except:

(1) When the point of emission cannot be readily observed, it may be measured at an observable point on the plume nearest the point of emission, or

(2) In the case of air contaminant emitted from a source outside of New York, it shall be measured after the plume crosses the jurisdictional boundary of New York City.

*The Standard Smoke Chart is the Ringelmann Chart, as published by the U.S. Bureau of Mines, photographically reduced to 1/18th in size for use in the field.

REGULATIONS

PERTAINING TO

PARTICULATE EMISSIONS FROM

FUEL-BURNING PLANTS

(Additional types of regulations are listed in the zoning ordinances of Porter County, Indiana and DuPage County, Illinois in the "Zoning Ordinances" section of this compilation)

ALLEGHENY COUNTY, PENNSYLVANIA

SMOKE CONTROL ORDINANCE

(effective July 5, 1960)

1305.3 (Listed under "Smoke Emission and Equivalent Opacity Regulations" section of this report.)

1305.4 (a) No person shall cause, suffer, or allow to be emitted into the atmosphere from any fuel-burning equipment or premise, or to pass a convenient measuring point near the stack outlet, particulate matter in the gases to exceed 0.65 lb. per 1,000 lb. of gases adjusted to 50 percent excess air in the products of combustion. The foregoing requirement shall be calculated in accordance with the American Society of Mechanical Engineers "Power Test Codes, Test Code for Dust Separation Apparatus, PTC-21-1941" procedure.

1307. POWER PLANTS, HEATING PLANTS, AND DOMESTIC HEATING PLANTS.

.1 The provisions of this section shall apply to power plants, heating plants, and domestic heating plants.

.2 The following exception to the provisions of Section 1305.3 and 1305.4 shall be permitted: when building a new fire, when manually cleaning a fire, when blowing tubes and flues, or when cleaning air pollution control equipment, in a power plant, heating plant, or domestic heating plant, smoke may be emitted of an appearance, density, or shade darker than No. 2 of the Ringelmann Chart, and particulate matter in excess of limitations may be emitted, for a period or periods aggregating not more than six (6) minutes in any sixty (60) minute period.

CITY OF CHICAGO, ILLINOIS

AIR POLLUTION CODE

CHAPTER 17

(amended January 1, 1964)

17-24. Subject to the provisions of Section 17-25, it shall be unlawful within the City of Chicago for any person owning or in charge of any fuel-burning, combustion or process equipment or device, or any portable boiler, to cause, suffer or allow the emission from any such source of any particulate matter except in conformity with the limits set forth as follows:

(1) The basic limitation on the average emission into the atmosphere of particulate matter from any single source of emission shall be 0.35 grains per cubic foot of gas measured at a temperature of 60 degrees Fahrenheit and a pressure of 30 inches of mercury, under steady conditions, provided that for emissions at levels 100 feet or more above grade, the basic limitation shall be increased by the amount of particulate matter of less than 10 microns in size, if any, up to a maximum increase of 0.03 $(H/100)^2$ grains per scf, where H is the height of discharge in feet above grade.

(2) The limitation on the emission of that portion of the particulate matter which is 44 microns in size or larger from any single such source shall be 0.21 grains per scf.

17-38. It shall be unlawful for any person to operate any surface burning type (hand fired) of combustion equipment with any solid fuel other than a low volatile solid fuel unless:

(1) The Director has issued a Certificate of Operation therefor in accordance with Section 17-55 or Section 17-60, authorizing the use of other than low volatile solid fuel with such equipment;

(2) The Director has approved the equipment or type of equipment in accordance with Section 17-44;

(3) The Director has issued an Allowable Fuel Certificate for such equipment in accordance with Sections 17-41, 17-42, and 17-43; or

(4) The Appeal Board has granted an individual variance for such equipment in accordance with Section 17-74.

The foregoing restrictions shall not apply with respect to the burning of combustible refuse in such equipment in accordance with rules and regulations issued by the Director.

17-39. A solid fuel containing volatile matter in excess of 23% on an ash free basis shall be considered a low volatile solid fuel provided it meets the same standards in regard to smoke production as a low volatile solid fuel, and subject to the following conditions in order to ascertain whether or not such standards are met:

Adequate supplies of such solid fuel shall be made available to the Director to conduct such reasonable tests as he shall deem necessary to determine that such fuel meets the standards herein before established. The reasonable expense of any such tests shall be borne by the person seeking the approval of such solid fuel.

The Director shall maintain and, upon request, furnish a list of brands or trade names of solid fuels which have been tested for conformity with the provisions of this chapter and which as a result of such tests have been approved.

17-40. Solid fuel, other than low volatile solid fuel, may be used or consumed only in mechanical combustion equipment or mechanically fired apparatus; except that after suitable inspections and tests have proven to the Director that any combination of surface burning type (hand-fired) of equipment and appurtenances and fuel can comply with the emission limitations established by or under this chapter, the Director shall approve the use of such combination of equipment and fuel.

CITY OF DETROIT, MICHIGAN

OFFICIAL AIR POLLUTION CONTROL CODE

ORDINANCE NO. 167-E

ARTICLE 2

(effective November 6, 1964)

Section 2.4A It shall be unlawful within the City of Detroit for any person, firm or corporation to permit the emission of any particulate matter from any source whatsoever in excess of the emission schedule listed below:

EMISSION SCHEDULE

Source of Emission		Maximum Allowable Emission pounds particulate per thousand pounds of exhaust gas (a) (g)	
Fuel Burning	Capacity Rating 1000# of steam/hr.	Design (b)	Operating (b)
Pulverized fuel fired	0 to 300	0.50 to 0.20 (c)	0.60 to 0.30 (c)
	300 and over	0.20	0.30
All other modes of fuel firing	0 to 100		0.65
	100 to 300		0.65 to 0.45 (c)
	300 to 800		0.45 to 0.30 (c)
	800 and over		0.30

(a) Fuel burning and incinerator emission limitations shall be corrected to 150 per cent total air.

(b) The operating limitation allows for gradual deterioration of equipment performance during extended periods of continuous operation where it is impractical to maintain design conditions for these extended periods. (See Regulation No. 1, Section 2.4 for further details on intent.)

(c) Emission limitation for specific ratings are determined by linear interpolation between the ranges shown.

(g) When wet collectors or scrubbers are utilized, that portion of water vapor in the exhaust gases which was added for collector or scrubber requirements shall be deleted from the total exhaust gases in calculating the particulate emission rate.

Supplemental Regulations

Section 2.4

Regulation No. 1 DESIGN AND OPERATING EMISSION LIMITATIONS

This Regulation clarifies the intent of Section 2.4A for those cases where both design and operating emission limitations are stipulated for a given operation.

The design emission standard shall be met when the system is field operated as close to design conditions as is reasonably feasible. In addition, before a permit is issued for the installation of a collector sufficient data will be required to be submitted to the Department in the form of tests, drawings, calculations, etc., to prove that when the collector is operated at design conditions the particulate loading will not exceed the design emission limitation.

The operating emission limitation is less stringent than the design emission limitation and recognizes that field operating conditions do not always meet design conditions and that this could cause a temporary degradation in over-all equipment performance. The more lenient operating emission standard shall not be used as a basis for design. It also shall not be used as a basis for reducing design collector efficiency to effectuate savings in operating cost.

Section 4.9

Regulation No. 1 COLLECTOR REQUIREMENT FOR SINGLE RETORT STOKER-FIRED BOILERS

New forced draft solid fuel fired boilers of less than 400 H. P. nominal rating and existing boilers in this category when stack or breeching is replaced shall be provided with a low draft loss collector or drop out box approved by the Bureau.

Explanation

While the proposed emission limitations of Section 2.4 would quite possibly make this requirement necessary it is felt that the above statement would simplify permit issuance and reduce the large amount of stack sampling that could be involved if emission limitations were the only requirement. It is intended to apply primarily to new single retort underfeed stoker fired plants and existing installations where practical.

COUNTY OF LOS ANGELES, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION IV. PROHIBITIONS

(amended June 1, 1965)

Rule 50. (Listed under "Smoke Emission and Equivalent Opacity Regulations" section of this report.)

Rule 53. (Amended 1-16-58) SPECIFIC CONTAMINANTS. A person shall not discharge into the atmosphere from any single source of emission whatsoever any one or more of the following contaminants, in any state or combination thereof, exceeding in concentration at the point of discharge:

a. (Does not pertain to this section. Listed under "Regulations Pertaining to Sulfur Compound Emission Control" section of this report.)

b. (Amended 1-16-58) Combustion Contaminants: 0.3 grain per cubic foot of gas calculated to 12 per cent of carbon dioxide (CO_2) at standard conditions. In measuring the combustion contaminants from incinerators used to dispose of combustible refuse by burning, the carbon dioxide (CO_2) produced by combustion of any liquid or gaseous fuels shall be excluded from the calculation to 12 per cent of carbon dioxide (CO_2).

Rule 62. Listed under "Regulations Pertaining to Sulfur Compound Emission Control" section of this report.

STATE OF NEW JERSEY

AIR POLLUTION CONTROL CODE

CHAPTER V

(effective July 1, 1958)

Section 2. CONTROL AND PROHIBITION OF FLY ASH

2.1 No person shall cause suffer, allow or permit fly ash caused by the combustion of solid fuel to be discharged from any stack or chimney into the open air in excess of the quantity set forth in the following table:

Heat in Fuel Burned British Thermal Units per Hour	Fly Ash Rate of Emission Pounds per Hour
1,000,000	1
100,000,000	100
400,000,000	330
1,000,000,000	750
2,000,000,000	1,365
3,000,000,000	1,850
4,000,000,000	2,260
5,000,000,000	2,640
6,000,000,000	2,950
7,000,000,000	3,200
8,000,000,000	3,410
10,000,000,000	3,750

For the purposes hereof, the heat in solid fuel burned shall be the aggregate heat content, based on the higher heating value, of all solid fuels whose products of combustion pass through such stack or chimney. For a heat content between any two consecutive heat contents stated in this table, the fly ash limitation shall be as determined by interpolation.

CITY OF NEW YORK, NEW YORK

AIR POLLUTION CONTROL CODE

ARTICLE 9. EMISSION STANDARDS

(effective October 1, 1964)

Section 9.09 EMISSION OF PARTICULATE MATTER FROM REFUSE BURNING EQUIPMENT, FUEL BURNING EQUIPMENT, OR EQUIPMENT USED IN A MANUFACTURING PROCESS: WEIGHT-RATE STANDARD.

No person shall cause or permit the emission of particulate matter from refuse burning equipment, fuel burning equipment, or equipment used in a manufacturing process if the emission from such equipment is in violation of the provisions of Section 9.03 or if the particulate matter emitted as measured in the flue exceeds the following weights:

(a) (Listed under "Regulations Pertaining to Particulate Emissions from Refuse Burning Equipment" section of this report.)

(b) In fuel burning equipment in which the preponderance of the particulate matter emitted is caused by the burning of fuel, 0.60 pounds for each million Btu per hour input if the equipment has a capacity rating of 10 million or less. If the capacity rating of the fuel burning equipment is more than 10 million, the amount of particulate matter which may be emitted for each million Btu input shall decrease as the capacity rating of the fuel burning equipment increases, as follows:

(1) no more than 0.46 pounds for each million Btu input from equipment having a capacity rating of 50 million;
(2) no more than 0.40 pounds for each million Btu input from equipment having a capacity rating of 100 million;
(3) no more than 0.30 pounds for each million Btu input from equipment having a capacity rating of 500 million;
(4) no more than 0.26 pounds for each million Btu input from equipment having a capacity rating of 1,000 million;
(5) no more than 0.23 pounds for each million Btu input from equipment having a capacity rating of 2,500 million;
(6) no more than 0.20 pounds for each million Btu input from equipment having a capacity rating of 5,000 million;
(7) no more than 0.19 pounds for each million Btu input from equipment having a capacity rating of 7,500 million;
(8) no more than 0.18 pounds for each million Btu input from equipment having a capacity rating of 10,000 million, or more.

The amount of particulate matter which may be emitted from fuel burning equipment having an intermediate capacity rating shall be determined by linear interpolation. If two

or more fuel burning units are connected to a single flue, the total capacity rating of all fuel burning units connected to the flue shall be the capacity rating for the purpose of computing the amount of particulate matter which may be emitted. If a single fuel burning unit is manifold to two or more flues the capacity rating of the single fuel burning unit shall be the capacity rating for the purpose of computing the amount of particulate matter which may be emitted.

(c) (Does not pertain to this section. Listed under "Regulations Pertaining to Particulate Emissions from Manufacturing Processes" section of this report.)

CITY OF ST. LOUIS, MISSOURI

AIR POLLUTION CONTROL

ORDINANCE NO. 50163

(approved January 24, 1961)

Section 11. Listed under "Regulations Pertaining to Sulfur Compound Emission Control" section of this report.

Section 14. EMISSION OF FLY ASH AND OTHER SOLID PARTICULATE MATTER REGULATED.

(a) The emission or escape into the open air of fly ash or other solid particulate matter resulting from the combustion of fuel within the city, or within one-half mile thereof pursuant to Section 71.780 Revised Statutes of Missouri, 1949, from any furnace or other combustion device for the burning of fuel, or from any chimney connected thereto, in quantities exceeding 0.85 pounds per 1000 lbs. of gases is prohibited and is hereby declared bo be a nuisance. Of this amount not to exceed 0.5 pounds per 1000 lbs. of gases shall be of such size as to be retained on a 325 mesh U. S. Standard sieve. These conditions are to be conformed to when the fuel-burning device is operating at full load and the excess air in the gases does not exceed fifty percent. The foregoing requirements shall be measured by the methods outlined in the Test Code for Dust Separating Apparatus of the American Society of Mechanical Engineers as now in force or as may be amended, which code is hereby made a part of this ordinance by reference and a copy thereof shall be on file in the office of the commissioner.

(b) Nothing in this section with respect to the amount of fly ash or other solid particulate matter which may be emitted, or which may escape, into the open air from any furnace or other combustion device shall in any manner be construed as authorizing or legalizing the creation or maintenance of a public nuisance as described in section fifteen of this ordinance.

COUNTY OF SAN BERNARDINO, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION III

(adopted August 5, 1958)

Rule 3.5 SPECIFIC CONTAMINANTS. A person shall not discharge into the atmosphere from any single source of emission whatsoever anyone or more of the following contaminants, in any state or combination thereof, exceeding in concentration at the point of discharge:

(a) (Does not pertain to this section. Listed under "Regulations Pertaining to Sulfur Compound Emission Control" section of this report.)

(b) (Does not pertain to this section.)

(c) (Does not pertain to this section. Listed under "Regulations Pertaining to Particulate Emissions from Refuse Burning Equipment" section of this report.)

(d) Other Combustion Contaminants: 0.4 grains per cubic foot of gas calculated to 12 per cent of carbon dioxide (CO_2) at standard conditions; except during the start of an operation or change in energy source, during the time necessary to bring the combustion process up to operating level.

SAN FRANCISCO BAY AREA, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

REGULATION 2

(revised 1962)

Division 5, Chapter 1

Sec. 5111.1 No person shall cause, let, permit, suffer, or allow any emission from any heat transfer operation which does not comply with the visible emission limitations in Section 3110, Chapter 1, Division 3, except as provided in Section 5111.3.

Sec. 5111.2 No person shall cause, let, permit, suffer, or allow the emission from any heat transfer operation of particles in sufficient number to cause annoyance to any other person, which particles are sufficiently large as to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This section 5111.2 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

Sec. 5111.3 The limitations of Section 5111.1 shall not apply to emissions resulting from soot-blowing on any oil-fired heat transfer operation, provided such emissions are not equal to or greater than Ringelmann No. 3 or an equivalent obscuration within the meaning of Sections 3110.1 and 3110.2; and provided further that the aggregate duration of such emissions during any twenty-four hour period does not exceed 6.0 minutes per billion Btu gross heating value of oil fuel burned during such twenty-four hours; and provided further that such operation uses fuel at a rate not less than 140 million Btu per hour.

Sec. 5112 PARTICULATE MATTER. No person shall cause, let, permit, suffer, or allow any emission from a heat transfer operation of particulate matter in excess of 0.30 grains per standard dry cubic foot of exhaust gas. For the purposes of this section 5112, the actual concentration measured shall be corrected to a concentration which the same quantity of particulate matter would constitute in the exhaust gas minus water vapor, corrected to standard conditions and containing 6% oxygen by volume. Calculation of this corrected concentration from the actual measured concentration shall follow the procedure given in Chapter 1, Division 8. Tests to determine compliance with this section 5112 shall be for not less than 50 minutes in any consecutive 60 minutes, or 90% of the time of actual source operation, whichever is less.

REGULATIONS

PERTAINING TO

PARTICULATE EMISSIONS FROM

REFUSE-BURNING EQUIPMENT

(Additional types of regulations are listed in the zoning ordinances of Porter County, Indiana and DuPage County, Illinois in the "Zoning Ordinances" section of this compilation)

ALLEGHENY COUNTY, PENNSYLVANIA

SMOKE CONTROL ORDINANCE

(effective July 5, 1960)

1309.3 INCINERATORS OF ALL TYPES:

(a) Incinerators shall completely consume not less than 95 percent of all combustible material charged into them, except that domestic gas-fired incinerators shall meet the standards given in the American Standards Association publication Z-21.6-1957, or latest revision thereof.

(b) Smoke emitted into the atmosphere from any incinerator shall be of an appearance, density, or shade lighter than No. 1 of the Ringelmann Chart.

(c) No person shall cause, suffer, or allow to be emitted into the atmosphere from any incinerator or pass a convenient measuring point near the stack outlet, fly ash in the gases to exceed 0.20 lb. per 1,000 lb. of gases.

CITY OF CINCINNATI, OHIO

AIR POLLUTION CONTROL

ORDINANCE NO. 119-1965

(passed March 24, 1965)

Division J. INCINERATORS

Sec. 2509-8. INCINERATOR MAINTENANCE AND OPERATION.

It shall be unlawful for any person to permit or cause foul or offensive odors, fumes, gases, fly ash or smoke in the maintenance or operation of an incinerator.

Odors shall be considered offensive when any odor similar to that of burning paper, garbage, or other cellulose material is emitted from the incinerator chimney and is detectable at a distance of more than 25 feet from the incinerator chimney or at a location of a citizen complaint whichever is a greater distance.

Exception: One period of not to exceed ten (10) minutes in any consecutive 24 hour period will be permitted for the purpose of bringing the incinerator up to the required discharge gas temperature.

Fly ash shall be considered offensive when the particulate matter in the combustion gases discharged from the chimney or at any convenient measuring point in the chimney or in the chimney connection from the incinerator to the chimney exceeds either criteria A or criteria B of this section.

Criteria A: .4 pounds of particulate matter per 1000 pounds of discharged gases adjusted to 12 per cent CO_2.

Criteria B: A discharge from the incinerator chimney of 500,000 particles per minute for incinerators located in residence districts; 750,000 particles per minute for incinerators located in business districts; and 1,000,000 particles per minute for incinerators located in industrial districts.

The method of determining criteria A shall be by approved stack testing procedure.

The method of determining criteria B, the number of particles discharged from the incinerator chimney, shall be the "adhesive surface method" and the procedure shall be as follows: Two-inch white strips of approved adhesive material shall be wrapped around a suitable holder approximately 2 3/4 inch in diameter and inserted in the discharge

gases at the chimney exit point or at any convenient measuring point in the chimney or beeching. The exposure of the adhesive surface to the discharge gases shall be for one minute or less. After exposure, the adhesive surface shall be removed to the laboratory. Approximately one square inch of adhesive surface having the greatest particle deposit shall be counted by approved microscope counting techniques using magnification of 14X and the average count of 10 random fields. "Particles caught per square inch of adhesive surface per minute" of exposure time are thus determined. "Particles per minute discharged per test" are determined by multiplying the"particles caught per square inch of adhesive surface per minute" times square inches of the chimney or breeching at the sampling point.

For purposes of criteria B, the number of particles discharged shall be the average of three consecutive tests taken not less than five minutes nor more than ten minutes separated in time from each other. The choice as to which set of three consecutive tests are used shall be at the discretion of the Air Pollution Control and Heating Engineer, and are intended to represent a period of high particulate matter discharge from the chimney.

CITY OF DETROIT, MICHIGAN

OFFICIAL AIR POLLUTION CONTROL CODE

ORDINANCE NO. 167-E

ARTICLE 2

(effective November 6, 1964)

EMISSION SCHEDULE

Source of Emission Incinerators (e) Use	Rating #/hr.	Maximum Allowable Emission pounds particulate per thousand pounds of exhaust[a][g]	
		Design[b]	Operating[b]
Residential Apartments	0 to 200	0.65	-
Residential Apartments	200 and over	0.30	-
Commercial & Industrial	0 to 400	0.65	-
Commercial & Industrial	400 and over	0.30	-
Municipal		0.30	-

[a] Fuel burning and incinerator emission limitations shall be corrected to 150 percent total air.

[b] The operating limitation allows for gradual deterioration of equipment performance during extended periods of continuous operation where it is impractical to maintain design conditions for these extended periods. (See Regulation No. 1, Section 2.4 for further details on intent.)

[e] These emission limitations do not apply to domestic incinerators (defined as having not over 5 cubic feet of storage capacity) which are covered by other sections of the ordinance.

[g] When wet collectors or scrubbers are utilized, that portion of water vapor in the exhaust gases which was added for collector or scrubber requirements shall be deleted from the total exhaust gases in calculating the particulate emission rate.

CITY OF NEW YORK, NEW YORK

AIR POLLUTION CONTROL CODE

ARTICLE 9. EMISSION STANDARDS

(effective October 1, 1964)

Sec. 9.09 EMISSION OF PARTICULATE MATTER FROM REFUSE BURNING EQUIPMENT, FUEL BURNING EQUIPMENT, OR EQUIPMENT USED IN A MANUFACTURING PROCESS; WEIGHT-RATE STANDARD.

No person shall cause or permit the emission of particulate matter from refuse burning equipment, fuel burning equipment, or equipment used in a manufacturing process if the emission from such equipment is in violation of the provisions of Section 9.03 or if the particulate matter emitted as measured in the flue exceeds the following weights:

(a) In refuse burning equipment, 0.65 pounds, for each thousand pounds of dry gases, adjusted to 50 per cent excess air or calculated to 13 per cent carbon dioxide, but in no event shall more than 250 pounds of particulate matter be emitted in any 60 minute period;

(b) (Does not pertain to this section. Listed under "Regulations Pertaining to Emissions from Fuel Burning Plants" section of this report.)

(c) (Does not pertain to this section. Listed under "Regulations Pertaining to Emissions from Manufacturing Processes" section of this report.)

SAN FRANCISCO BAY AREA, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

REGULATION 2

(revised 1962)

Division 4, Chapter 1

Section 4111.1 No person shall cause, let, permit, suffer, or allow any emission from any incineration operation or salvage operation which does not comply with the visible emission limitations in Section 3110, Chapter 1, Division 3.

Section 4111.2 No person shall cause, let, permit, suffer, or allow the emission from any incineration operation or salvage operation of particles in sufficient number to cause annoyance to any other person, which particles are sufficiently large as to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This section 4111.2 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

Section 4112.1 No person shall cause, let, permit, suffer, or allow any emission from any incineration operation of particulate matter in excess of a concentration of 0.20 grains per standard dry cubic foot of exhaust gas. For the purposes of this section 4112.1, the actual measured concentration of particulate matter in the exhaust gas shall be corrected to the concentration which the same quantity of particulate matter would constitute in the exhaust gas, minus water vapor, corrected to standard conditions, containing 6% oxygen by volume and as if no auxiliary fuel had been used. Calculation of this corrected concentration from the actual measured concentration shall be as given in Chapter 1, Division 8. Tests for determining compliance with this section 4112.1 shall be for not less than 50 minutes in 60 consecutive minutes, or 90% of the time of actual source operation, whichever is less (amended by Resolution No. 258, dated October 18, 1961)

Section 4113. Listed under "Regulations Pertaining to Hydrocarbon Emission Control" section of this report.

REGULATIONS

PERTAINING TO

PARTICULATE EMISSIONS FROM

MANUFACTURING PROCESSES

(Additional types of regulations are listed in the zoning ordinances of Porter County, Indiana and DuPage County, Illinois in the "Zoning Ordinances" section of this compilation)

ALLEGHENY COUNTY, PENNSYLVANIA

SMOKE CONTROL ORDINANCE

(effective July 5, 1960)

1308. STEEL AND ALLIED INDUSTRIES:

.1 The provisions of this article shall apply to blast furnaces, by-product coke plants, beehive coke ovens, open hearth furnaces, electric furnaces, sintering plants, basic oxygen steel furnaces, Bessemer converters, cupolas, heating and reheating furnaces, and air furnaces.

.2 Blast Furnaces:

(a) The provisions of Sections 1305.3 and 1305.4 shall not apply to blast furnaces.

(b) All blast furnaces shall be equipped with gas cleaning devices and so operated as to reduce the particulate matter in the gases discharged to the atmosphere after burning to 0.35 lb. or less per 1,000 lb. of gases.

(c) Excess blast furnace gas being bled to the atmosphere shall contain no more than 0.50 lb. of particulate matter per 1000 lb. of gases, and shall be burned as bled to the atmosphere.

(d) All iron blast furnaces shall be equipped with measuring devices which shall show a graphic record of the time and duration of all irregular movements of the burden, and of the time and duration of all openings of the blast furnace automatic relief valves, and such information shall be furnished to the Department as requested.

(e) The provisions of Sections 1308.2 (b) and 1308.2 (c) shall not apply during irregular movements of the furnace burden when it is necessary to open the automatic relief valves at the top of the furnace for safe operation.

(f) All persons responsible for the operation of blast furnaces within the County shall participate in a program of research to determine practical methods of further controlling the emission of air pollutants during irregular movements of the furnace burden. Reports indicating the progress of the research program shall be submitted annually by the Advisory Committee with recommendations to the Board of Health.

.3 By-Product Coke Plants:

(a) The provisions of Section 1305.3 shall apply to by-product coke ovens except as follows:

1. When charging a battery of coke ovens, smoke shall be permitted from such battery of an appearance, density, or shade darker than No. 2 of the Ringelmann Chart for a period or periods aggregating not more than twelve (12) minutes in any sixty (60) minute period.

2. When pushing coke from a battery of coke ovens, smoke shall be permitted from such battery of an appearance, density, or shade darker than No. 2 of the Ringelmann Chart for a period or periods aggregating not more than twelve (12) minutes in any sixty (60) minute period.

(b) Coke oven doors, frames, and ovens shall be so maintained that smoke or fumes darker than No. 2 of the Ringelmann Chart will not escape to the atmosphere.

(c) All persons responsible for the operation of by-product coke plants shall participate in a program of research to determine practical methods of further controlling the emission of air pollutants from such plants. Reports indicating the progress of the research program shall be submitted annually by the Advisory Committee with recommendations to the Board of Health.

.4 Beehive Coke Ovens:

(a) No beehive coke ovens shall be operated within the County.

.5 Open Hearth Furnaces, Electric Furnaces, and Sintering Plants:

(a) The provisions of Sections 1305.3 and 1305.4 shall not apply to open hearth furnaces, electric furnaces, and sintering plants.

(b) All open hearth furnaces, electric furnaces, and sintering plants constructed subsequent to the enactment of these Rules and Regulations shall be equipped with gas cleaning devices to reduce the particulate matter in the gas discharged to the atmosphere to 0.20 lb. or less per 1,000 lb. of gases.

(c) For all open hearth furnace plants, electric furnace plants, and sintering plants respectively, which were constructed prior to the enactment of these Rules and Regulations, a program for the continued installation of gas cleaning devices, or, alternatively, a program for the replacement of specified plant facilities shall be recommended by the Advisory Committee to the Board of Health. The program shall be submitted within such time as shall be fixed by the Board of Health. In each program for gas cleaning, the devices shall reduce the particulate matter in the gas discharged to the atmosphere to 0.20 lb. or less per 1,000 lb. of gases. After said program has been approved by the Board of Health, the owner of said equipment shall not be in violation of these Rules and Regulations so long as said program is complied with. Reports indicating the status of these gas cleaning programs shall be submitted annually by the Advisory Committee to the Board of Health.

(d) The provisions of Sections 1308.5 (b) and 1308.5 (c) shall not apply to electric furnaces when the gas collection system is necessarily disconnected from the furnace, as in charging and pouring.

(e) All persons responsible for the operations of open hearth furnaces, electric furnaces, and sintering plants within the County shall undertake or participate in a program of research to determine practical methods of further controlling the emission of air pollutants from such furnaces. Reports indicating the progress of these research programs shall be submitted annually by the Advisory Committee with recommendations to the Board of Health.

.6 Basic Oxygen Steel Furnaces:

(a) The provisions of Sections 1305.3 and 1305.4 shall not apply to basic oxygen steel furnaces.

(b) All basic oxygen steel furnace plants shall be equipped with gas cleaning devices to reduce the particulate matter in the gases discharged to the atmosphere to 0.20 lb. or less per 1,000 lb. of gases.

.7 Bessemer Converters:

(a) No new Bessemer converter shall be constructed within the County until equipment effecting air pollution control in accordance with the provisions of Section 1305.4 shall have been developed.

(b) The provisions of Sections 1305.3 and 1305.4 shall not apply to Bessemer converters in existence at the time of the enactment of these Rules and Regulations.

(c) All persons responsible for the operation of Bessemer converters shall undertake or participate in a program of research to determine practical methods of controlling the emission of air pollutants from such Bessemer converters. Reports indicating the progress of the research program shall be submitted annually with recommendations by the Advisory Committee to the Board of Health.

.8 Cupolas:

(a) All new cupolas constructed within the County shall be equipped with gas cleaning devices and so operated as to comply with the provisions of Section 1305.3 and to reduce the particulate matter in the gases discharged to the atmosphere to 0.50 lb. or less per 1,000 lb. gases.

(b) The provisons of Sections 1305.3 and 1305.4 shall not apply to cupolas in existence at the time of the enactment of these Rules and Regulations.

(c) All persons responsible for the operation of cupolas within the County shall undertake to participate in a program of research to determine practical methods of further controlling the emission of air pollutants from cupolas. Reports indicating the status of the research shall be submitted annually by the Advisory Committee with recommendations to the Board of Health.

.9 Heating and Reheating Furnaces:

(a) The following exception to the provisions of Section 1305.3 shall be permitted in connection with the operation of a heating or reheating furnace: smoke shall be permitted of an appearance, density, or shade darker than No. 2 of the Ringelmann Chart for a period or periods aggregating not more than six (6) minutes in any sixty (60) minute period.

(b) No person shall cause, suffer, or allow to be emitted into the open air from any heating or reheating furnace, or to pass a convenient measuring point nearest the stack outlet, particulate matter in the gases to exceed 0.30 lb. per 1,000 lb. of gases.

.10 Air Furnaces:

(a) The following exception to the provisions of Section 1305.3 shall be permitted in connection with the operation of an air furnace: smoke shall be permitted of an appearance, density, or shade darker than No. 2 of the Ringelmann Chart for a period or periods aggregating not more than six (6) minutes in any sixty (60) minute period.

(b) No person shall cause, suffer, or allow to be emitted into the open air from any air furnace, particulate matter in the gases to exceed 0.50 lb. per 1,000 lb. of gases.

CITY OF BELOIT, WISCONSIN

CITY PLANNING AND ZONING

CHAPTER X

(revised April 25, 1962)

Section 10.08: M-1 and M-2 INDUSTRIAL DISTRICTS:

In the M-1 and M-2 Industrial Districts all Commercial and Industrial uses permitted shall comply with the following table of standards and requirements:

I. Nuisance Standards:

A. Air Pollution

1. Smoke, fumes, mist, vapor similar air contaminant from any source whatsoever shall not be discharged into the atmosphere for a period or periods aggregating more than 10 minutes in any one hour which is:

a. Darker in shade than that designated on the U.S. Bureau of Mines Ringelmann Chart as: #1 (District M-1) #2 (District M-2)

b. Of such opacity as to obscure vision to a degree equivalent to #1 of the Ringelmann Chart.

2. Dust, lint, fumes, or other particulate matter resulting from industrial or commercial processes or operations:

a. When emitted from chimneys, stacks, exhaust ducts, vents or other openings shall not exceed the maximum allowable discharge per hour shown in the following table:

Process weight per hour (See definition Section)	Maximum allowable discharge per hour Industrial Districts M-1	M-2
100#	0.46#	No definite maximum
500#	1.77#	allowable discharge
1,000#	2.80#	is established for
2,500#	4.64#	M-2 zone. However,
5,000#	6.67#	existing industries
10,000#	10.00#	shall not construct
20,000#	16.19#	new facilities which
40,000#	28.30#	would emit particu-
60,000# or more	40.00#	late at a higher rate

of discharge than their existing facilities and further no industry may emit particulate matter which is so noxious or offensive as to effect the continuation, extension or establishment of other lawful industries or businesses in its neighborhood.

b. When resulting from unenclosed operations such as quarrying, storage yards and similar outdoor operations, shall be so controlled that particulate matter does not normally blow onto adjacent property.

METROPOLITAN DADE COUNTY, FLORIDA

POLLUTION CONTROL ORDINANCE

ORDINANCE NO. 63-14

(adopted April 23, 1963)

Section 3.02 PARTICULATE MATTER.

1. No person shall cause, let, permit, suffer or allow the emission in any one hour from any source whatsoever, particulate matter in total quantities in excess of the amount shown in the following Table.

ALLOWABLE RATE OF EMISSION BASED ON PROCESS WEIGHT RATE

Process weight rate		Rate of emission	Process weight rate		Rate of emission
Lb/Hr	Tons/Hr	Lb/Hr	Lb/Hr	Tons/Hr	Lb/Hr
100	0.05	0.551	16,000	8.00	16.5
200	0.10	0.877	18,000	9.00	17.9
400	0.20	1.40	20,000	10.	19.2
600	0.30	1.83	30,000	15.	25.2
800	0.40	2.22	40,000	20.	30.5
1,000	0.50	2.58	50,000	25.	35.4
1,500	0.75	3.38	60,000	30.	40.0
2,000	1.00	4.10	70,000	35.	41.3
2,500	1.25	4.76	80,000	40.	42.5
3,000	1.50	5.38	90,000	45.	43.6
3,500	1.75	5.96	100,000	50.	44.6
4,000	2.00	6.52	120,000	60.	46.3
5,000	2.50	7.58	140,000	70.	47.8
6,000	3.00	8.56	160,000	80.	49.0
7,000	3.50	9.49	200,000	100.	51.2
8,000	4.00	10.4	1,000,000	500.	69.0
9,000	4.50	11.2	2,000,000	1,000.	77.6
10,000	5.00	12.0	6,000,000	3,000.	92.7
12,000	6.00	13.6			

To use this table take the process weight rate (Lb/Hr. or Tons/Hr.). Then find this figure on the table, opposite is the maximum number of pounds of contaminants which may be discharged into the atmosphere in any one hour.

2. The limitation expressed herein shall not require the reduction of particulate matter concentration, based on source gas volume, below the concentration specified in the following Table for such volume; provided, that, for the purposes of this section, the person responsible for the emission may elect to substitute a volume from the following Table in which any volume of gases passing through and leaving an air pollution abatement operation may be substituted for the source gas volume of the source operation served by such air pollution abatement operation, provided such air pollution abatement operation emits no more than forty percent (40%) of the weight of particulate matter entering thereto; and provided further that such substituted volume shall be corrected to standard conditions and to a moisture content no greater than that of any gas stream entering such air pollution abatement operation, and provided further that the burden of showing the source gas volume or other volume substituted, therefore, including all of the factors which determine such volume and the methods of determining and computing such volume, shall be on the person seeking to come within the provision of this section.

MINIMUM CONCENTRATION TO BE REQUIRED

Source gas volume, SCFM	Concentration GR/SCF	Source gas volume, SCFM	Concentration GR/SCF
7,000 or less	0.100	140,000	0.038
8,000	0.096	160,000	0.036
9,000	0.092	180,000	0.035
10,000	0.089	200,000	0.034
20,000	0.071	300,000	0.030
30,000	0.062	400,000	0.027
40,000	0.057	500,000	0.025
50,000	0.053	600,000	0.024
60,000	0.050	800,000	0.021
80,000	0.045	1,000,000 or more	0.020
100,000	0.042		
120,000	0.040		

Interpolation of the data in this table shall be based on linear interpolation between adjacent values.

CITY OF DETROIT, MICHIGAN

OFFICIAL AIR POLLUTION CONTROL CODE

ORDINANCE NO. 167-E

ARTICLE 2

(effective November 6, 1964)

EMISSION SCHEDULE

Source Of Emission	Maximum Allowable Emission pounds particulate per thousand pounds of exhaust gas (a), (g)	
	Design (b)	Operating (b)
Ferrous Cupola		
Production	0.10	0.25
Jobbing		0.40
Steel Manufacturing		
Open hearth Furnaces	0.10	0.20
Basic Oxygen Furnaces	0.10	0.20
Electric Furnaces (d)	0.10	0.20
Sintering Plants	0.15	0.20
Blast Furnaces		0.20
Blast Furnaces (excess gas bled to atmosphere)		0.50
Heating & Reheating Furnaces		0.30

(a) Fuel burning and incinerator emission limitations shall be corrected to 150 per cent total air.

(b) The operating limitation allows for gradual deterioration of equipment performance during extended periods of continuous operation where it is impractical to maintain design conditions for these extended periods. (See Regulation No. 1, Section 2.4 for further details on intent.)

(d) These emission limitations shall not apply to electric furnaces when the gas collection system needs to be disconnected due to technical infeasibility, as may be encountered during charging, refining in a reducing slag, and pouring.

(g) When wet collectors or scrubbers are utilized, that portion of water vapor in the exhaust gases which was added for collector or scrubber requirements shall be deleted from the total exhaust gases in calculating the particulate emission rate.

Section 2.4A

REGULATION NO. 2
DIFFERENTIATION BETWEEN JOBBING AND PRODUCTION FOUNDRIES

Cupolas used in a jobbing foundry are the same as those used in a production foundry and will vary in size only according to the quantity of iron melted per hour.

However, the cupolas in a jobbing foundry will be run intermittently for just long enough at one time to pour the molds that are ready on the foundry floor, job by job. This might be for a 2 to 4 hour period per day for any number of days per week.

Whereas the production foundry cupolas will melt continuously to pour a succession of molds that are constantly being prepared to receive this continuous flow of iron. This could become 8 hours, 16 hours, or 24 hours per day for any number of days per week.

REGULATION NO. 3
COLLECTOR REQUIREMENTS FOR PRODUCTION CUPOLAS

The intent of the design emission limitation of 0.1#/1000# of gas applying to production ferrous foundry cupolas is to require the installation of high efficiency collectors capable of collecting the fine metallic fume typical of emissions from this source. Presently available equipment suitable for this application is a well designed baghouse or a high pressure drop Venturi scrubber of equivalent efficiency. Other types of collectors will be considered on their individual merit and upon submission of adaquate proof that they are capable of achieving equal efficiencies.

The operating limit of 0.25#/1000# of gas is intended to provide only for short time unavoidable variations from design conditions and for gradual deterioration of equipment during normal continuous operation. Deliberate or intentional operation of equipment at less than its intended design efficiency is considered to be a violation of this Ordinance.

REGULATION NO. 4
COLLECTOR REQUIREMENTS FOR JOBBING SHOP CUPOLAS

This Regulation is for the purpose of clarifying the intent of the emission limitation of 0.4#/1000# of gas applying to jobbing shop cupolas.

High efficiency cyclone type collectors or other types of collectors not less efficient are considered acceptable and capable of meeting this requirement.

Should the operation of this equipment, when properly applied, operated and maintained and served by an adequate stack, meet all Ordinance requirements except the applicable emission limitation, this limitation is to be re-evaluated.

COUNTY OF LOS ANGELES, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION IV. PROHIBITIONS

(amended June 1, 1965)

RULE 54. DUST AND FUMES. A person shall not discharge in any one hour from any source whatsoever dust or fumes in total quantities in excess of the amount shown in the following table: (see next page)

To use the following table, take the process weight per hour as such is defined in Rule 2(j). Then find this figure on the table, opposite which is the maximum number of pounds of contaminants which may be discharged into the atmosphere in any one hour. As an example, if A has a process which emits contaminants into the atmosphere and which process takes 3 hours to complete, he will divide the weight of all materials in the specific process, in this example, 1,500 lbs. by 3 giving a process weight per hour of 500 lbs. The table shows that A may not discharge more than 1.77 lbs. in any one hour during the process. Where the process weight per hour falls between figures in the left hand column, the exact weight of permitted discharge may be interpolated.

TABLE

Process Wt/hr(lbs)	Maximum Weight Disch/hr(lbs)	Process Wt/hr(lbs)	Maximum Weight Disch/hr(lbs)
50	.24	3400	5.44
100	.46	3500	5.52
150	.66	3600	5.61
200	.85	3700	5.69
250	1.03	3800	5.77
300	1.20	3900	5.85
350	1.35	4000	5.93
400	1.50	4100	6.01
450	1.63	4200	6.08
500	1.77	4300	6.15
550	1.89	4400	6.22
600	2.01	4500	6.30
650	2.12	4600	6.37
700	2.24	4700	6.45
750	2.34	4800	6.52
800	2.43	4900	6.60
850	2.53	5000	6.67
900	2.62	5500	7.03
950	2.72	6000	7.37
1000	2.80	6500	7.71
1100	2.97	7000	8.05
1200	3.12	7500	8.39
1300	3.26	8000	8.71
1400	3.40	8500	9.03
1500	3.54	9000	9.36
1600	3.66	9500	9.67
1700	3.79	10000	10.0
1800	3.91	11000	10.63
1900	4.03	12000	11.28
2000	4.14	13000	11.89
2100	4.24	14000	12.50
2200	4.34	15000	13.13
2300	4.44	16000	13.74
2400	4.55	17000	14.36
2500	4.64	18000	14.97
2600	4.74	19000	15.58
2700	4.84	20000	16.19
2800	4.92	30000	22.22
2900	5.02	40000	28.3
3000	5.10	50000	34.3
3100	5.18	60000 or more	40.0
3200	5.27		
3300	5.36		

STATE OF NEW JERSEY

AIR POLLUTION CONTROL CODE

CHAPTER VII

(effective October 1, 1964)

Section 2. CONTROL AND PROHIBITION OF AIR POLLUTION FROM SOLID PARTICLES

2.1 No person shall cause, suffer, allow or permit solid particles to be discharged from any stack or chimney into the outdoor atmosphere in excess of the allowable emission as provided herein.

2.2 Whenever the discharge from any stack or chimney includes coarse solid particles which consist of a single material, the allowable emission of coarse solid particles shall be the basic emission as determined from Section 2.15 modified by the effect factor for the material being discharged as determined from Section 2.4.

2.3 Whenever the discharge from any stack or chimney includes coarse solid particles which consist of two or more materials, the allowable emission of coarse solid particles for each material shall be the basic emission as determined from Section 2.15 modified by the effect factor for the respective material as determined from Section 2.4; and the allowable emission of coarse solid particles for the combined materials from such stack or chimney shall be either the sum of the allowable emission for the individual materials or the allowable emission computed for an effect factor of one (1), whichever is the lesser.

2.4 The effect factor for coarse solid particles is as follows:

Material	Effect Factor
(a) All materials not specifically listed hereunder.	1.0
(b) Elements and their compounds on the basis of the element contained therein.	
(none assigned)	
When a compound (material) contains two or more elements, the effect factor of the element having the lowest effect factor shall apply.	
(c) Specific materials.	
(none assigned)	

2.5 Whenever the discharge from any stack or chimney includes fine solid particles which consist of a single material, the allowable emission of fine solid particles shall be the basic emission determined from Section 2.16 modified by the effect factor for the material being discharged as determined from Section 2.7.

2.6 Whenever the discharge from any stack or chimney includes fine solid particles which consist of two or more materials, the allowable emission of fine solid particles for each material shall be the basic emission as determined from Section 2.16 modified by the effect factor for the respective material as determined from Section 2.7 and the allowable emission of fine solid particles for the combined materials from such stack or chimney shall be either the sum of the allowable emissions for the individual materials or the allowable emission computed for an effect factor of one (1), whichever is the lesser.

2.7 The effect factor for fine solid particles is as follows:

Material	Effect Factor
(a) All materials not specifically listed hereunder.	1.0
(b) Elements and their compounds on the basis of the element contained therein.	
Antimony	0.9
Arsenic	0.9
Barium	0.9
Beryllium	0.003
Cadmium	0.2
Chromium	0.2
Cobalt	0.9
Copper	0.2
Hafnium	0.9
Lead	0.3
Phosphorous	0.2
Selenium	0.2
Silver	0.1
Tellurium	0.2

Thallium	0.2
Uranium (Solu)	0.1
Uranium (Insol)	0.4
Vanadium	0.2

Whe. a compound (material) contains two or more elements, the effect factor of the element having the lowest effect factor shall apply.

(c) Specific materials.

Alpha-naphthyl-thio urea	0.5
Lead arsenate	0.3
Lithium hydride	0.04

2.8 Whenever the person responsible for the discharge of solid particles believes that a specific compound of an element listed in either Section 2.4(b) or Section 2.7(b) does not contribute to air pollution to the degree represented by the assigned effect factor, he may submit data to the Department setting forth reasons and justification for a less restrictive effect factor for the specific compound in question. If the change is approved by the Department, the Department shall, upon approval of the Commission, assign a revised effect factor which shall be used for the purpose of this chapter.

2.9 Whenever solid 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 emission that would be permitted from the single stack or chimney having the greatest allowable emission.

2.10 In any process wherein solid fuel is burned without direct contact with process material, Chapter V shall govern the allowable emission from the burning of solid fuel and Chapter VII shall govern the allowable emission from the source operation.

2.11 The provisions of this chapter shall not apply to:

(a) Smoke as defined and regulated under Chapter IV of this Code.

(b) Combustion of solid fuel as defined and regulated under Chapter V of this Code.

(c) Incinerators designed and operated for the destruction of refuse.

2.12 Upon the request of the Department, any person discharging solid particles through a stack or chimney shall submit to the Department, on forms provided by the Department, information regarding height of such stack, distance from stack to nearest property line, nature of source operation and such other information as the Department may require relative to the emission of solid particles.

2.13 Whenever the person responsible for any stack or chimney believes that the effective stack height is greater than the stack height, he may calculate the plume rise and submit his data on forms provided by the Department. If the plume rise is approved by the Department, the effective stack height may be used in lieu of the stack height.

2.14 Any person responsible for the emission of solid particles through a stack or chimney from source operations 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 nature and quantity of solid particles which are or may be discharged as the result of source operations. 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.

2.15 The basic and allowable emissions for coarse solid particles shall be computed as follows:

Step 1 Establish stack height or effective stack height if plume rise is approved.

Step 2 Determine the distance from the stack to the nearest property line.

Step 3 Divide result of Step 2 by result of Step 1, this is the distance from stack to nearest property line in stack heights. Locate this value on the scale along the left side of chart for Basic Emission for Coarse Solid Particles.

Step 4 Locate the line on the chart representing the stack height or effective stack height determined from Step 1; interpolate if necessary.

Step 5 Draw a horizontal line across chart from the value determined by Step 3 to the point where this line intersects the line determined by Step 4.

Step 6. Draw a vertical line from the point determined by Step 5 to the basic emission scale at the bottom of the chart. The point at which this line intersects the scale yields the basic emission in pounds per hour.

Step 7 Multiply the basic emission by the effect factor assigned under Section 2.4. The result yields the allowable emission for coarse solid particles.

2.16 The basic and allowable emissions for fine solid particles shall be computed as follows:

Step 1 Establish stack height or effective stack height if plume rise is approved.

Step 2 Determine distance from the stack to nearest property line.

Step 3 Divide result of Step 2 by result of Step 1, this is the distance from stack to nearest property line in stack heights. Locate this value on the scale along the left side of chart for Basic Emission for Fine Solid Particles.

Step 4 Locate the line on the chart representing the stack height or effective stack height determined from Step 1; interpolate if necessary.

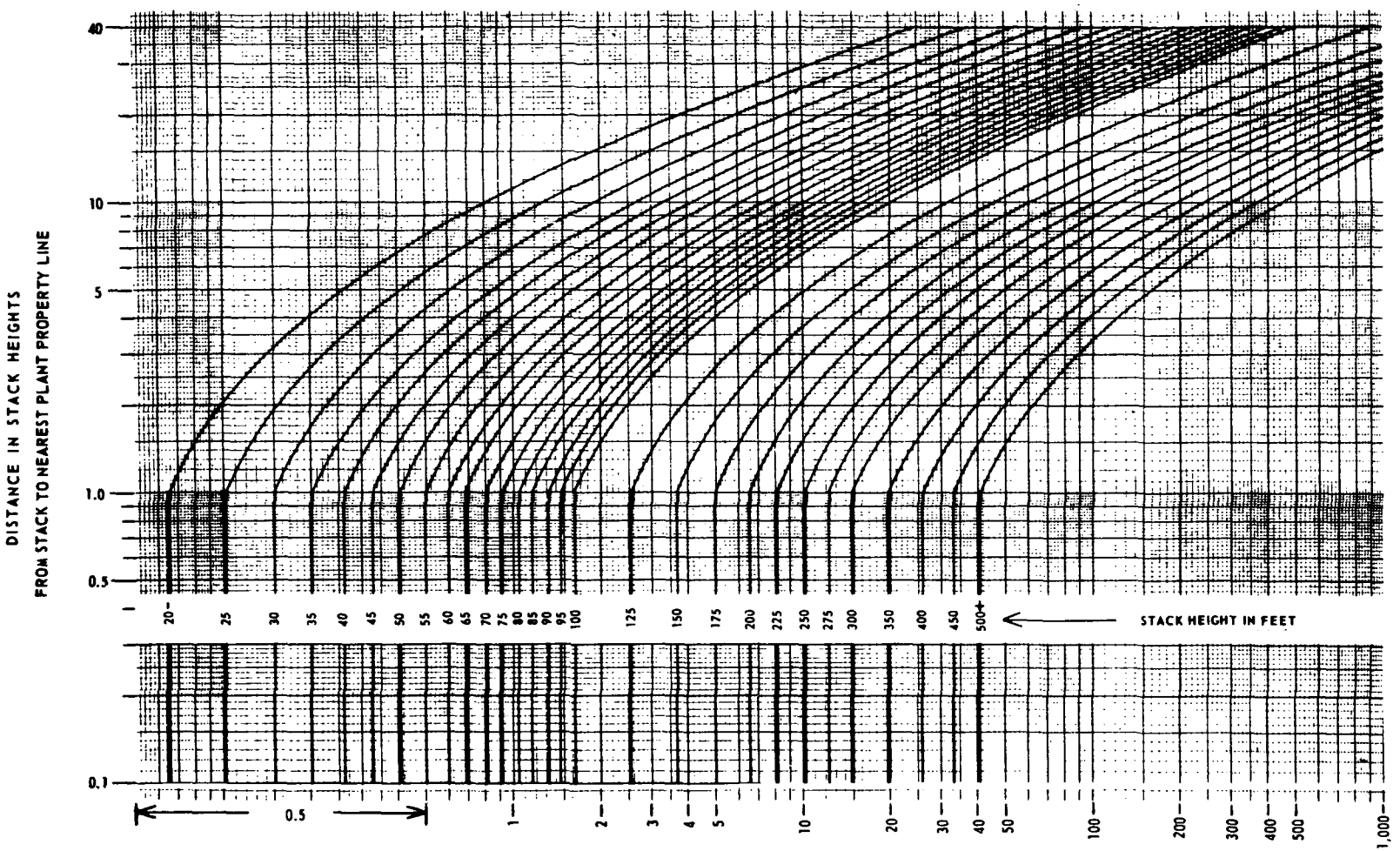
Step 5 Draw a horizontal line across chart from the value determined by Step 3 to the point where this line intersects the line determined by Step 4.

Step 6 Draw a vertical line from the point determined by Step 5 to the basic emission scale at the bottom of the chart. The point at which this line intersects the scale yields the basic emission in pounds per hour.

Step 7 Multiply the basic emission by the effect factor assigned under Section 2.7. The result yields the allowable emission for fine solid particles.

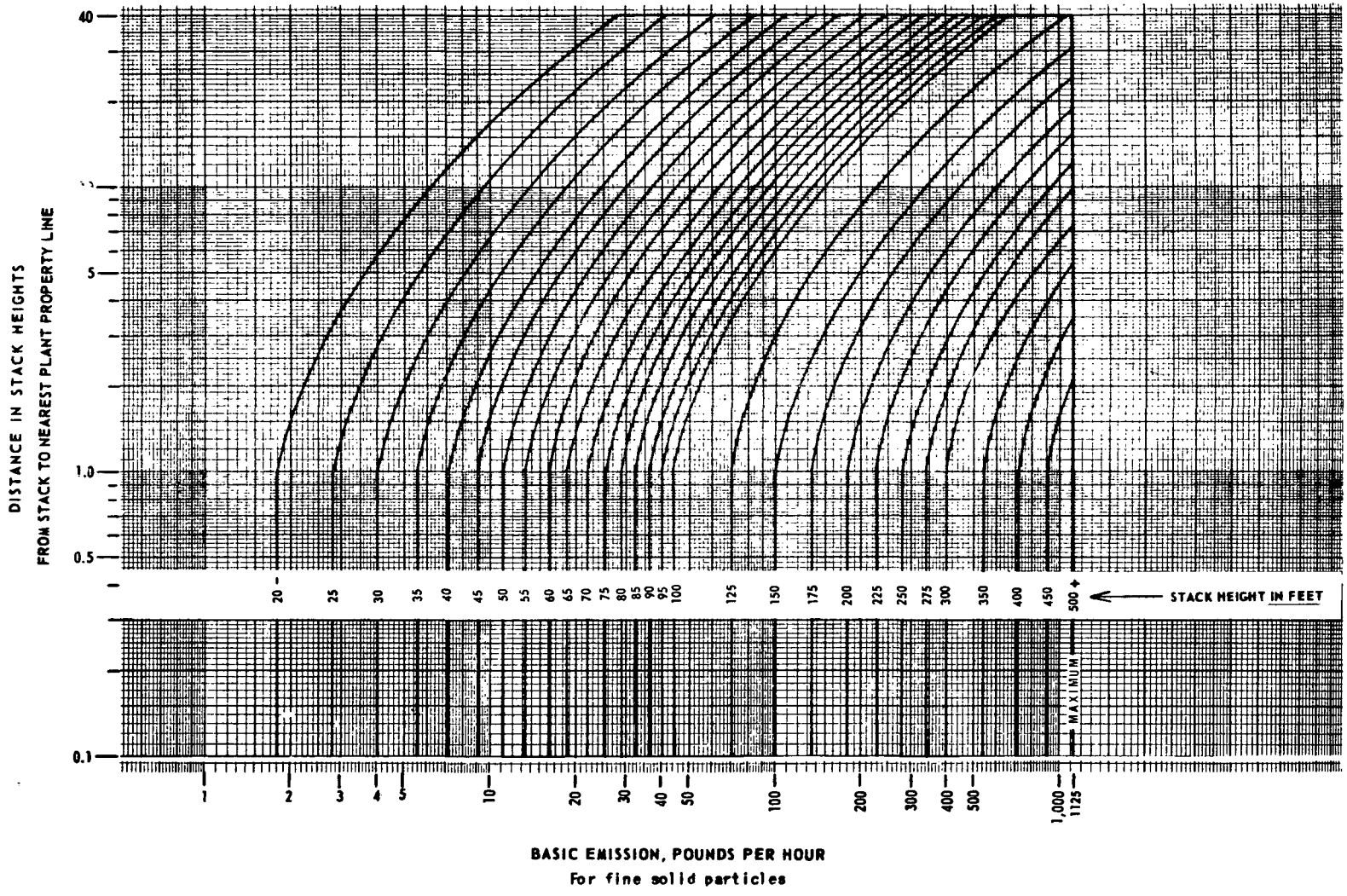
Note: Coarse solid particles are defined as solid particles having a size equal to or greater than 44 microns and solid particles when such particles are contained in or on liquid particles.

Fine solid particles are defined as solid particles, including fumes, having a size less than 44 microns.



BASIC EMISSION, POUNDS PER HOUR
For coarse solid particles

N. J. AIR POLLUTION CONTROL CODE
Chapter VII, Section 2.15
BASIC EMISSION FOR COARSE SOLID PARTICLES
Chart No. 1



N. J. AIR POLLUTION CONTROL CODE
Chapter VII, Section 2.16
BASIC EMISSION FOR FINE SOLID PARTICLES

Chart No. 2

CITY OF NEW YORK, NEW YORK

AIR POLLUTION CONTROL CODE

ARTICLE 9. EMISSION STANDARDS

(effective October 1, 1964)

Sec. 9.09 EMISSION OF PARTICULATE MATTER FROM REFUSE BURNING EQUIPMENT, FUEL BURNING EQUIPMENT, OR EQUIPMENT USED IN A MANUFACTURING PROCESS; WEIGHT-RATE STANDARD

No person shall cause or permit the emission of particulate matter from refuse burning equipment, fuel burning equipment, or equipment used in a manufacturing process if the emission from such equipment is in violation of the provisions of Section 9.03 or if the particulate matter emitted as measured in the flue exceeds the following weights:

(a) (Does not pertain to this section. Listed under "Regulations Pertaining to Particulate Emissions from Refuse Burning Equipment" section of this report.)

(b) (Does not pertain to this section. Listed under "Regulations Pertaining to Particulate Emissions from Fuel Burning Plants" section of this report.)

(c) In equipment used in a manufacturing process, 0.5 pounds for each 100 pounds or less of process weight per hour. If the process weight per hour is more than 100 pounds, the amount of particulate matter which may be emitted in any 60 minute period shall decrease for each pound of process weight as the process weight per hour increases, as follows:

(1) no more than 1.46 pounds for each 500 pounds of process weight per hour;

(2) no more than 2.30 pounds for each 1,000 pounds of process weight per hour;

(3) no more than 6.70 pounds for each 5,000 pounds of process weight per hour;

(4) no more than 10.80 pounds for each 10,000 pounds of process weight per hour;

(5) no more than 20.00 pounds for each 25,000 pounds of process weight per hour;

(6) no more than 31.80 pounds for each 50,000 pounds of process weight per hour;

(7) no more than 43.00 pounds for each 75,000 pounds of process weight per hour;

(8) no more than 50.00 pounds for each 100,000 pounds or more of process weight per hour, except that if the equipment was installed before October 1, 1964 and the process weight per hour exceeds 100,000 pounds then the amount of particulate matter which may be emitted in any 60 minute period shall be no more than 92.00 pounds for each 250,000 pounds of process weight per hour, no more than 145.00 pounds for each 500,000 pounds of process weight per hour, no more than 192.00 pounds for each 750,000 pounds of process weight per hour, and no more than 235.00 pounds for each 1,000,000 pounds or more of process weight per hour; but in no event shall more than 33 pounds be emitted in any 60 minute period in light manufacturing districts as provided by the Zoning Resolution of the City of New York.

The amount of particulate matter which may be emitted for any intermediate amount of process weight per hour shall be determined by linear interpolation.

COUNTY OF SAN BERNARDINO, CALIFORNIA

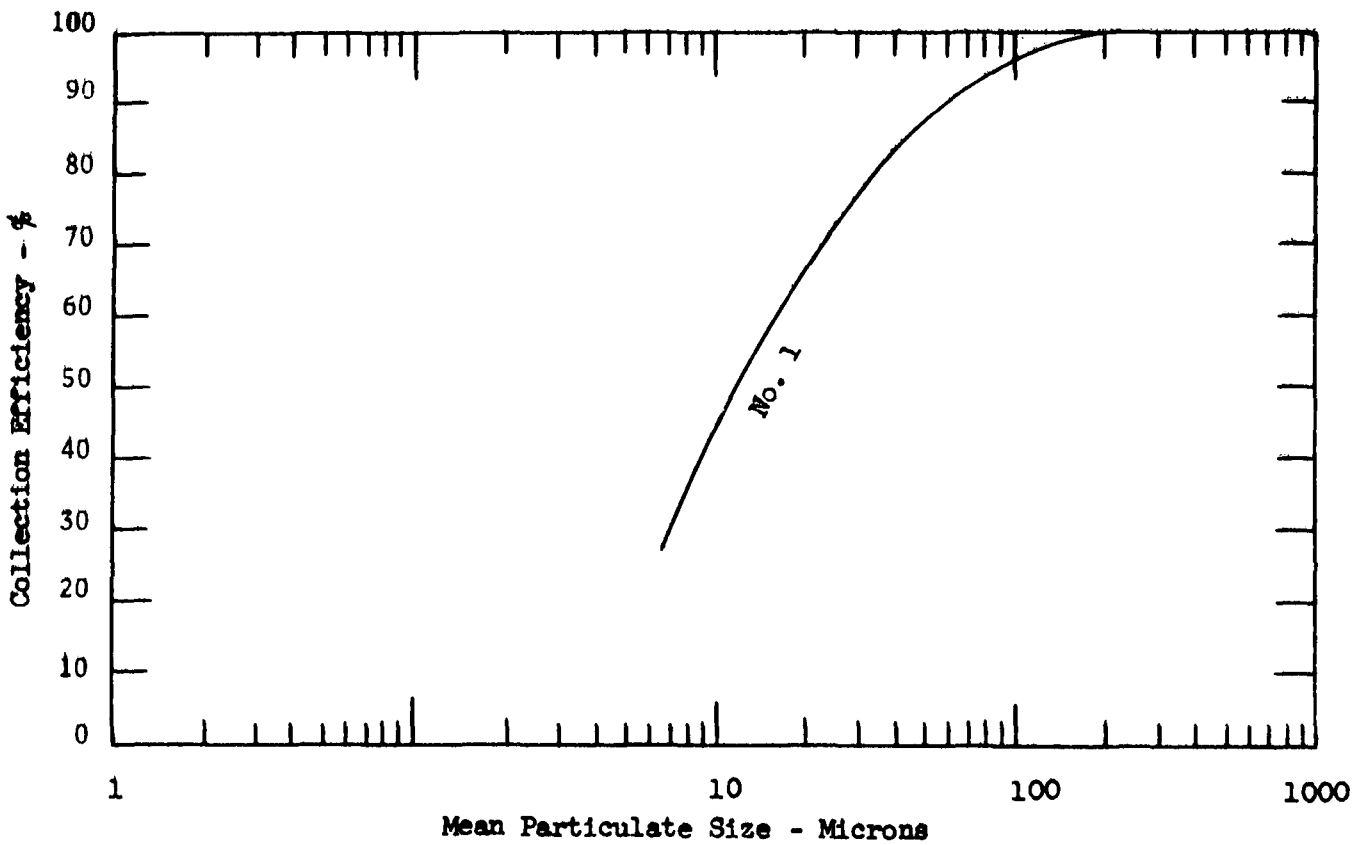
AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION III

(adopted August 5, 1958)

Rule 3:6 (Amended 11-6-61) DUST, FUMES AND PARTICULATE MATTER. A person shall not discharge into the atmosphere in any one hour from any source or single processing unit whatsoever, dust, fumes or particulate matter in quantities in excess of the limitations as shown by Curve No. 1 of Graph No. 3 of the Rules and Regulations adopted August 5, 1958. All such processes shall in addition to compliance with this Rule be controlled by Rules 3:2, 3:3, 3:4 and 3:5. It is hereby further declared to be the policy of the Control Board that this rule shall remain in effect for an indefinite period of time pending completion of a research project designed to obtain scientific data upon which to formulate a permanent, reasonable rule for control of non-toxic dust, fumes or particulate matter.



SAN FRANCISCO BAY AREA, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

REGULATION 2

(revised 1962)

Division 6, Chapter 1

Section 6111.1 No person shall cause, let, permit, suffer, or allow any emission from any general combustion operation or general operation which does not comply with the visible emission limitations in section 3110, Chapter 1, Division 3.

Section 6111.2 No person shall cause, let, permit, suffer, or allow the emission from any general combustion operation of particles in sufficient number to cause annoyance to any other person, which particles are sufficiently large as to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This section 6111.2 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

Section 6112.1 No person shall cause, let, permit, suffer, or allow the emission from any general operation or general combustion operation of particulate matter from any emission point in a concentration in excess of 0.30 grain per standard dry cubic foot of exhaust gas volume.

Section 6112.2 Except as provided in sections 6112.3 and 6113 no person shall cause, let, permit, suffer, or allow the emission from any general operation or general combustion operation of particulate matter from any emission point at a rate in excess of that specified in Table 2 for the process weight rate allocated to such emission point.

Section 6112.3 The limitations established by section 6112.2 shall not require the reduction of particulate matter concentration, based on the source gas volume, below the concentration specified in Table 3 for such volume; provided that, for the purposes of this section 6112.3, the person responsible for the emission may elect to substitute a volume determined according to the provisions of section 6112.4; and provided further that the burden of showing the source gas volume or other volume substituted therefore,including all of the factors which determine such volume and the methods of determining and computing such volume, shall be on the person seeking to come within the provisions of this section 6112.3.

TABLE 2

ALLOWABLE RATE OF EMISSION BASED ON PROCESS WEIGHT RATE[a,b]

Process Weight Rate		Rate of Emission	Process Weight Rate		Rate of Emission
Lb/Hr	Tons/Hr	Lb/Hr	Lb/Hr	Tons/Hr	Lb/Hr
100	0.05	0.551	16,000	8.00	16.5
200	0.10	0.877	18,000	9.00	17.9
400	0.20	1.40	20,000	10.	19.2
600	0.30	1.83	30,000	15.	25.2
800	0.40	2.22	40,000	20.	30.5
1,000	0.50	2.58	50,000	25.	35.4
1,500	0.75	3.38	60,000	30.	40.0
2,000	1.00	4.10	70,000	35.	41.3
2,500	1.25	4.76	80,000	40.	42.5
3,000	1.50	5.38	90,000	45.	43.6
3,500	1.75	5.96	100,000	50.	44.6
4,000	2.00	6.52	120,000	60.	46.3
5,000	2.50	7.58	140,000	70.	47.8
6,000	3.00	8.56	160,000	80.	49.0
7,000	3.50	9.49	200,000	100.	51.2
8,000	4.00	10.4	1,000,000	500.	69.0
9,000	4.50	11.2	2,000,000	1,000.	77.6
10,000	5.00	12.0	6,000,000	3,000.	92.7
12,000	6.00	13.6			

[a]Sections of major importance with reference to this table are sections 2024, 2027, 3213, 3214, and 6112.2.

[b]Interpolation of the data in this table for process weight rates up to 60,000 lb/hr shall be accomplished by use of the equation $E = 4.10\ P^{0.67}$, and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lb/hr shall be accomplished by use of the equation;

$E = 55.0\ P^{0.11} - 40$, where E = rate of emission in lb/hr and

P = process weight rate in tons/hr.

Section 6112.4 Any volume of gases passing through and leaving an air pollution abatement operation may be substituted for the source gas volume of the source operation served by such air pollution abatement operation, for the purposes of section 6112.3, provided such air pollution abatement operation emits no more than 40% of the weight of particulate matter entering thereto; and provided further that such substituted volume shall be corrected to standard conditions and to a moisture content no greater than that of any gas stream entering such air pollution abatement operation.

TABLE 3

MINIMUM CONCENTRATION TO BE REQUIRED [a,b]

Source Gas Volume, SCFM	Concentration GR/SCF	Source Gas Volume, SCFM	Concentration GR/SCF
7,000 or less	0.100	140,000	0.038
		160,000	0.036
8,000	0.096	180,000	0.035
9,000	0.092		
10,000	0.089	200,000	0.034
20,000	0.071	300,000	0.030
30,000	0.062	400,000	0.027
40,000	0.057	500,000	0.025
50,000	0.053	600,000	0.024
60,000	0.050	800,000	0.021
80,000	0.045	1,000,000 or more	0.020
100,000	0.042		
120,000	0.040		

[a] Sections of major importance with reference to this table are: Sections 2024, 2030, 6112.3, and 6112.4.

[b] Interpolation of the data in this table shall be based on linear interpolation between adjacent values.

CHAPTER 2.

Section 6200 Emissions from the following listed source operations shall be subject to this section 6200, to sections 3211, 3213, and 3214, and to all of Division 7, and to no other part of this regulation, provided that such emissions are minimized by the best modern practices, methods and concepts which may, from time to time, be reasonably applied. This section 6200 shall not require such source operations to meet emission limits more restrictive than the limits which would otherwise apply to such operations under other provisions of this regulation.

Section 6210 Electric furnaces during charging; and the doors of open hearth steel furnaces during charging.

Section 6211 Water-quenching of incandescent coke upon discharge from coke ovens, provided that this exception shall apply to such operations only after every reasonable effort has been made to minimize emissions by improving the quality of quench water.

Section 6212 Transfer of molten metals or of molten metallurgical slags.

Section 6213 Emissions from transfer ladles resulting from additions of solid materials for improving ferrous metal properties.

Section 6214 Coke ovens.

Section 6215 Emissions during a change to or a change from the use of gas supplied on an interruptible service contract by a public utility.

Section 6216 Operations which are performed solely for the movement of solid materials.

Section 6217 Material stock piles.

Section 6218 Blasting.

Section 6219 Coal-fired Hoffman-type brick-making kilns in existence on May 4, 1960.

Section 6220 Orchard heaters purchased before March 31, 1961, during emergency use to protect crops against frost damage. This exception shall terminate July 4, 1965. (Amended by Resolution No. 258, dated October 18, 1961)

REGULATIONS

PERTAINING TO

SULFUR-COMPOUND-EMISSION CONTROL

METROPOLITAN DADE COUNTY, FLORIDA

POLLUTION CONTROL ORDINANCE

ORDINANCE NO. 63 - 14

ARTICLE III

(adopted April 23, 1963)

Section 3.03 SULFUR DIOXIDE.

1. No person shall cause, let, permit, suffer or allow any emission of sulfur dioxide which results in ground level concentrations of sulfur dioxide at any given point in excess of 1.0 ppm (volume) in a 20-minute period of any hour and average exposure shall not exceed 0.1 ppm (volume) of sulfur dioxide in any 8-hour period. These limitations shall not apply to ground level concentrations occurring on the property from which such emission occurs, provided such property, from the emission point to the point of any such concentration is controlled by the person responsible for such emission.

2. Except as provided in Subsection 1 above, no person shall cause, let, permit, suffer or allow the emission of gas containing sulfur dioxide in excess of 2000 ppm (volume). All sampling of exhaust gases shall be conducted following techniques designated by the Pollution Control Officer. For purposes of this section, all sulfur present in gaseous compounds containing oxygen shall be deemed to be present as sulfur dioxide, and analyses of samples taken to determine the amount of sulfur dioxide in exhaust gases shall be made as specified by the Air Pollution Control Officer. Tests for determining compliance with this section shall be for at least 15 consecutive minutes or 90 percent of the time of actual source operation, whichever is less.

COUNTY OF LOS ANGELES, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION IV. PROHIBITIONS

(amended June 1, 1965)

RULE 53. (Amended 1-16-58) SPECIFIC CONTAMINANTS. A person shall not discharge into the atmosphere from any single source of emission whatsoever any one or more of the following contaminants, in any state or combination thereof, exceeding in concentration at the point of discharge:

a. Sulphur Compounds calculated as sulphur dioxide (SO_2): 0.2 per cent, by volume.

b. (Does not pertain to this section. Listed under "Regulations Pertaining to Particulate Emissions from Fuel Burning Plants" section of this report.)

RULE 62. (Amended 3-16-61) SULFUR CONTENTS OF FUELS. A person shall not burn within the Los Angeles Basin at any time between May 1 and September 30, both dates inclusive, during the calendar year 1959, and each year thereafter between April 15 and November 15 both inclusive, of the same calendar year, any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions, or any liquid fuel or solid fuel having a sulfur content in excess of 0.5 per cent by weight.

The provisions of this rule shall not apply to:

a. The burning of sulfur, hydrogen sulfide, acid sludge or other sulfur compounds in the manufacturing of sulfur or sulfur compounds.

b. The incinerating of waste gases provided that the gross heating value of such gases is less than 300 British thermal units per cubic foot at standard conditions and - the fuel used to incinerate such waste gases does not contain sulfur or sulfur compounds in excess of the amount specified in this rule.

c. The use of solid fuels in any metallurgical process.

d. The use of fuels where the gaseous products of combustion are used as raw materials for other processes.

e. The use of liquid or solid fuel to propel or test any vehicle, aircraft, missile, locomotive, boat or ship.

f. The use of liquid fuel whenever the supply of gaseous fuel, the burning of which is permitted by this rule, is not physically available to the user due to accident, act of God, act of war, act of the public enemy or failure of the supplier.

RULE 62.1 (Adopted 1-14-64) A. A person shall not burn within the Los Angeles Basin at any time between the days of November 16 of any year and April 14 of the next succeeding calendar year, both dates inclusive, any fuel described in the first paragraph of Rule 62 of these Rules and Regulations.

b. The provisions of this Rule do not apply to:

(1) Any use of fuel described in Subsections a, b, c, d, e, and f of said Rule 62 under the conditions and for the uses set forth in said Subsections.

(2) The use of liquid fuel during a period for which the supplier of gaseous fuel, the burning of which is not prohibited by this Rule, interrupts the delivery of gaseous fuel to the user.

c. Every holder of, and every applicant for a permit to operate fuel-burning equipment under these Rules and Regulations shall notify the air pollution control officer in the manner and form prescribed by him, of each interruption in and resumption of delivery of gaseous fuel to his equipment.

CITY OF NEW YORK, NEW YORK

AIR POLLUTION CONTROL CODE

ARTICLE 9 - EMISSION STANDARDS

(effective October 1, 1964)

Section 9.07 EMISSION OF SULFUR COMPOUNDS FROM EQUIPMENT USED IN A MANUFACTURING PROCESS: VOLUME STANDARD

No person shall cause or permit the emission of air contaminant from equipment used in a manufacturing process if the air contaminant emitted as measured in the flue contains sulfur compounds, calculated as sulfur dioxide, of more than 2,000 parts per million.

Section 13.03 SULFUR CONTENT OF FUEL RESTRICTED

No person shall cause or permit the use, or, if intended for use in New York City, the purchase, sale, offer of sale, storage or transportation, of:

(a) Fuel oil Grade No. 2, as classified by the American Society for Testing and Materials, which contains more than 1.0% of sulfur by weight; or

(b) Solid fuel on a dry basis or residual fuel oil which contains more than the following percentages of sulfur by weight:

(1) For a period of one year after the effective date of this Code, 3.0 per cent;

(2) For a period of one year beginning one year after the effective date of this Code, 2.8 per cent;

(3) For a period of three years beginning two years after the effective date of this Code, 2.5 percent;

(4) Thereafter, 2.2 per cent.

CITY OF ST. LOUIS, MISSOURI

AIR POLLUTION CONTROL

ORDINANCE NO. 50163

(approved January 24, 1961)

Section 11. IMPORTATION, SALE, TRANSPORTATION, USE OR CONSUMPTION OF CERTAIN COALS PROHIBITED.

(a) It shall be unlawful for any person to import, sell, offer for sale, expose for sale, exchange, deliver or transport for use and consumption in the city, or to use or consume in the city, any coal containing in excess of 23 percent volatile matter on a dry basis except in sizes which will pass through a two-inch circular opening or its equivalent. Any such coal containing in excess of 12 percent ash or 2 percent sulfur on a dry basis as mined, before importation, sale, transportation, or use in the city, shall have been cleaned by a process known as washing, so that it shall contain no more than 12 percent ash on a dry basis, and such coal can be used or consumed only in approved mechanical fuel-burning equipment. The term "washing" as used in this paragraph, is meant to include purifying, cleaning or removing impurities from coal by mechanical process, regardless of the cleaning medium used. The provisions of this paragraph shall not apply to any coal with a volatile content of 23 percent or less on a dry basis.

SAN FRANCISCO BAY AREA, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

REGULATION 2

(revised 1962)

DIVISION 3, CHAPTER I

Section 3121 No person shall cause, let, permit, suffer, or allow any emission of sulfur dioxide which results in ground level concentrations of sulfur dioxide at any given point in excess of 1.5 ppm (volume) for 3 consecutive minutes or any of the limits specified in Columns 2,3 4, and 5 of Table 1. Section 3121 shall not apply to the ground level concentrations occurring on the property from which such emission occurs, provided such property, from the emission point to the point of any such concentration, is controlled by the person responsible for such emission.

Section 3122 Except as provided in Section 3123, no person shall cause, let, permit, suffer, or allow the emission of gas containing sulfur dioxide in excess of 2000 ppm (volume). All sampling of exhaust gases shall follow the techniques prescribed in Chapter 2, Division 8. For purposes of this section 3122, all sulfur present in gaseous compounds analyses of samples taken to determine the amount of sulfur dioxide in exhaust gases shall be made as specified in Chapter I, Division 9. Tests for determining compliance with this section 3122 shall be for not less than 15 consecutive minutes or 90 percent of the time of actual source operation, whichever is less.

Section 3123 Emissions exceeding the limits established in Section 3122 shall not constitute a violation of that section provided that all requirements of this section 3223, to wit, sections 3123.1 through 3123.9, inclusive, are satisfied.

Section 3123.1 Such emissions shall not result in ground-level concentrations of sulfur dioxide exceeding the limits established by section 3121.

Section 3123.2 The person responsible for such emissions shall have notified the control officer in writing, prior to such emission, of his intent to operate under the provisions of section 3123. Such notice shall include information as to the location of all significant emission points, the location of the monitoring stations specified in sections 3123.3 and 3123.4, and the nature of the source operations related to each such emission.

Section 3123.3 Such person shall provide at least three recording sulfur dioxide monitoring stations located in the area surrounding the source, which stations shall be operated in accordance with the specifications of Chapter 4, Division 8.

Section 3123.4 Such person shall provide at least one recording meteorological station equipped to record wind speed and wind direction.

Section 3123.5 Such person shall provide the necessary care and maintenance services so that the instruments will function properly and adequately record sulfur dioxide exposures in the area.

Section 3123.6 Such person shall provide to the control officer a summary of the data obtained from such instruments during each calendar month. Such summary shall be in such form and detail as will show the degree of compliance with section 3121, and the time, location, extent, and duration of any recorded violation of the provisions of section 3121; shall include data giving the total mass rate of emission of sulfur dioxide from the emission points specified in section 3123.2, and a detailed report of instrument performance and maintenance; and shall be submitted within the calendar month immediately succeeding the recording of the data.

Section 3123.7 Such person shall keep for a period of at least one year all records gathered as a result of this section 3123, and shall make these available to the control officer at his request.

Section 3123.8 Such person shall examine at the time of each instrument maintenance check and in any case at intervals of no greater than every seven days instrument records taken pursuant to the requirements of this section 3123 to determine compliance with Columns 2 and 3, Table 1, section 3121. At intervals no greater than every forty days, such person shall examine such instrument records to determine compliance with Columns 4 and 5, Table 1, section 3121. Any recorded violation of section 3121 shall be reported to the control officer within the next normal working day after such examinations.

Section 3123.9 Whenever the records indicate that a violation of section 3121 has occurred the person responsible for such emission must furnish evidence that proper action has been taken to prevent recurrence, or a violation of section 3123 will be deemed to have occurred and emission will be regulated by section 3122. When instrument records are not adequate to show compliance with section 3121 the control officer may specify the schedule to be followed for producing a satisfactory record history.

TABLE 1

MAXIMUM ALLOWABLE SULFUR DIOXIDE
GROUND-LEVEL LIMITS*

Conc. (c)	Total Cumulative Daily Exposure Duration (t) in Hours		Total Cumulative Monthly Exposure Duration (t) in Hours	
	Between Sunrise and Sunset	Between Sunrise and next Succeeding Sunrise	During Hours Between Sunrise and Sunset	Any Time During Month
Column 1	Column 2	Column 3	Column 4	Column 5
1.51 or over	0.05	0.10	1.00	2.00
1.5	0.62	1.24	4.40	8.80
1.4	0.67	1.34	5.10	10.20
1.3	0.73	1.46	5.90	11.80
1.2	0.80	1.60	6.90	13.80
1.1	0.89	1.78	8.30	16.60
1.0	1.00	2.00	10.0	20.00
0.9	1.14	2.28	12.4	24.80
0.8	1.33	2.66	15.6	31.20
0.7	1.60	3.20	20.4	40.80
0.6	2.00	4.00	27.8	55.60
0.5	2.67	5.34	40.0	80.00
0.4	4.00	8.00	62.5	125.00
0.3	8.00	16.00	111.0	222.00
0.2 or less	No limit	No limit	No limit	No limit

*Interpolation of Columns 2, 3, 4, and 5 shall be based on the formulas:

$$t = \frac{0.8}{c - 0.2}, \quad t = \frac{1.6}{c - 0.2}, \quad t = 10/c^2, \text{ and } t = 20/c^2 \text{ respectively;}$$

where c is the concentration of SO_2 in ppm (volume) and t is the time of SO_2 exposure in hours, and c can vary only between a maximum of 1.5 ppm (volume) and a minimum of 0.2 ppm (volume).

COUNTY OF SARASOTA, FLORIDA

AIR POLLUTION CONTROL RESOLUTION

PROHIBITIONS

(effective December 31, 1959)

Section 8 SPECIFIC CONTAMINANTS

No person shall discharge into the atmosphere any one or more of the following contaminants, in any state, or combination thereof exceeding in concentration at the point of discharge:

Sulphur Compounds (calculated as SO_2 0.2 percent by volume).

Solid Products of Combustion 0.4 grains per cubic foot of gas calculated to 12 percent of carbon dioxide (CO_2).

REGULATIONS

PERTAINING TO

HYDROCARBON-EMISSION CONTROL

COUNTY OF LOS ANGELES, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION IV - PROHIBITIONS
(amended June 1, 1965)

RULE 56. (Amended 1-16-58) STORAGE OF PETROLEUM PRODUCTS. A person shall not place, store or hold in any stationary tank, reservoir or other container of more than 40,000 gallons capacity any gasoline or any petroleum distillate having a vapor pressure of 1.5 pounds per square inch absolute or greater under actual storage conditions, unless such tank, reservoir or other container is a pressure tank maintaining working pressures sufficient at all times to prevent hydrocarbon vapor or gas loss to the atmosphere, or is designed and equipped with one of the following vapor loss control devices, properly installed, in good working order and in operation:

a. A floating roof, consisting of a pontoon-type or double-deck type roof, resting on the surface of the liquid contents and equipped with a closure seal, or seals, to close the space between the roof edge and tank wall. The control equipment provided for in this paragraph shall not be used if the gasoline or petroleum distillate has a vapor pressure of 11.0 pounds per square inch absolute or greater under actual storage conditions. All tank gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

b. A vapor recovery system, consisting of a vapor-gathering system capable of collecting the hydrocarbon vapors and gases discharged and a vapor-disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.

c. Other equipment of equal efficiency, provided such equipment is submitted to and approved by the Air Pollution Control Officer.

RULE 59. (Amended 1-16-58) OIL EFFLUENT WATER SEPARATOR. A person shall not use any compartment of any single or multiple oil-effluent water separator which compartment receives effluent water containing 200 gallons a day or more of any petroleum product or mixture of petroleum products from any equipment processing, refining, treating, storing or handling kerosine or other petroleum product of equal or greater volatility than kerosine, unless such compartment is equipped with one of the following vapor loss control devices, properly installed, in good working order and in operation:

a. A solid cover with all openings sealed and totally enclosing the liquid contents. All gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

b. A floating roof, consisting of a pontoon-type or double-deck type roof, resting on the surface of the liquid contents and equipped with a closure seal, or seals, to close the space between the roof edge and container wall. All gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

c. A vapor recovery system, consisting of a vapor gathering system capable of collecting the hydrocarbon vapors and gases discharged and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.

d. Other equipment of equal efficiency, provided such equipment is submitted to and approved by the Air Pollution Control Officer.

This rule shall not apply to any oil-effluent water separator used exclusively in conjunction with the production of crude oil.

For the purpose of this rule, "kerosine" is defined as any petroleum product which, when distilled by ASTM standard test Method D 86-56, will give a temperature of 401° F. or less at the 10 per cent point recovered.

RULE 61. (Amended 3-14-63) GASOLINE LOADING INTO TANK TRUCKS AND TRAILERS. A person shall not load gasoline into any tank truck or trailer from any loading facility unless such loading facility is equipped with a vapor collection and disposal system or its equivalent, properly installed, in good working order and in operation.

When loading is effected through the hatches of a tank truck or trailer with a loading arm equipped with a vapor-collecting adaptor, a pneumatic, hydraulic or other mechanical means shall be provided to force a vapor-tight seal between the adaptor and the hatch. A means shall be provided to prevent liquid gasoline drainage from the loading device when it is removed from the hatch of any tank truck or trailer, or to accomplish complete drainage before such removal.

When loading is effected through means other than hatches, all loading and vapor lines shall be equipped with fittings which make vapor-tight connections and which close automatically when disconnected.

The vapor disposal portion of the system shall consist of one of the following:

a. A vapor-liquid absorber system with a minimum recovery efficiency of 90 per cent by weight of all the hydrocarbon vapors and gases entering such disposal system.

b. A variable vapor space tank, compressor, and fuel gas system of sufficient capacity to receive all hydrocarbon vapors and gases displaced from the tank trucks and trailers being loaded.

c. (Amended 3-14-63) Other equipment of at least 90 per cent efficiency, provided such equipment is submitted to and approved by the Air Pollution Control Officer.

This rule shall not apply to the loading of gasoline into tank trucks and trailers from any loading facility from which not more than 20,000 gallons of gasoline are loaded in any one day.

For the purpose of this rule, any petroleum distillate having a Reid vapor pressure of four pounds or greater shall be included by the term "gasoline."

(Amended 12-4-58) For the purpose of this rule, "loading facility" means any aggregation or combination of gasoline loading equipment which is both (1) possessed by one person, and (2) located so that all the gasoline loading outlets for such aggregation or combination of loading equipment can be encompassed within any circle of 300 feet in diameter.

RULE 65. (Amended 6-1-65) GASOLINE LOADING INTO TANKS. A person shall not after January 1, 1965, load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in Rule 56, or is a pressure tank as described in Rule 56.

The provisions of the first paragraph of this rule shall not apply to the loading of gasoline into any tank having a capacity of less then 2,000 gallons which was installed prior to the date of adoption of this rule nor to any underground tank installed prior to the date of adoption of this rule where the fill line between the fill connection and tank is offset.

Any person operating or using any gasoline tank with a capacity of 250 gallons or more installed prior to the date of adoption of this rule shall apply for a permit to operate such tank before January 1, 1965. The provisions of Rule 40 shall not apply during the period between the date of adoption of this rule and January 1, 1965, to any gasoline tank installed prior to the date of adoption of this rule provided an application for permit to operate is filed before January 1, 1965.

A person shall not install any gasoline tank with a capacity of 250 gallons or more unless such tank is equipped as described in the first paragraph of this rule.

For the purpose of this rule, the term "gasoline" is defined as any petroleum distillate having a Reid vapor pressure of 4 pounds or greater.

For the purpose of this rule, the term "submerged fill pipe" is defined as any fill pipe the discharge opening of which is entirely submerged when the liquid level is 6 inches above the bottom of the tank. "Submerged fill pipe" when applied to a tank which is loaded from the side is defined as any fill pipe the discharge opening of which is entirely submerged when the liquid level is 18 inches above the bottom of the tank.

(Adopted 6-1-65) The provisions of this rule do not apply to any stationary tank which is used primarily for the fueling of implements of husbandry, as such vehicles are defined in Division 16 (Section 36000, et seq.) of the Vehicle Code.

COUNTY OF SAN BERNARDINO, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

RULES AND REGULATIONS

REGULATION III

(adopted August 5, 1958)

RULE 3:7 STORAGE OF PETROLEUM PRODUCTS. A person shall not place, store or hold in any stationary tank reservoir or other container of more than 40,000 gallons capacity any gasoline or any petroleum distillate having a vapor pressure of 1.5 pounds per square inch absolute or greater under actual storage conditions, unless such tank, reservoir or other container is a pressure tank maintaining working pressures sufficient at all times to prevent hydrocarbon vapor or gas loss to the atmosphere, or is designed and equipped with one of the following vapor loss control devices, properly installed, in good working order and in operation:

(a) A floating roof, consisting of a pontoon-type or double-deck type roof, resting on the surface of the liquid contents and equipped with a closure seal, or seals, to close the space between the roof edge and tank wall. The control equipment provided for in this paragraph shall not be used if the gasoline or petroleum distillate has a vapor pressure of 11.0 pounds per square inch absolute or greater under actual storage conditions. All tank gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

(b) A vapor recovery system, consisting of a vapor gathering system capable of collecting the hydrocarbon vapors and gases discharged and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.

(c) Other equipment of equal efficiency, provided such equipment is submitted to and approved by the Air Pollution Control Officer.

SAN FRANCISCO BAY AREA, CALIFORNIA

AIR POLLUTION CONTROL DISTRICT

REGULATION 2

(revised 1962)

Division 4, Chapter 1

Section 4113 HYDROCARBONS AND CARBONYLS. No person shall cause, let, permit, suffer, or allow the emission from any incineration operation or salvage operation of an exhaust gas containing a concentration of more than 50 ppm (vol) of total hydrocarbons, or a concentration of more than 50 ppm (vol) of total carbonyls. For purposes of this section 4113, the actual measured concentrations of hydrocarbons and carbonyls in the exhaust gas shall be corrected to concentrations which the same quantities of hydrocarbons and carbonyls would constitute in the exhaust gas minus water vapor, corrected to standard conditions, containing 6% oxygen by volume, and as if no auxiliary fuel had been used. Calculation of this corrected concentration from the actual measured concentration shall be as given in Chapter 1, Division 8. For the purposes of this section 4113, total hydrocarbons shall be the sum of the concentrations in ppm (vol) of the individual concentrations of C_2 and higher saturated and unsaturated hydrocarbons, as measured by gas chromatography as described in Chapter 4, Division 9. Total carbonyls shall include aldehydes and ketones determined as described in Chapter 5, Division 9, and calculated as formaldehyde, each carbonyl group being deemed equivalent to one molecule of formaldehyde. Tests for determining compliance with this section 4113 shall be for not less than 15 consecutive minutes or 90% of the time of actual source operation, whichever is less.

REGULATIONS

PERTAINING TO

FLUORIDE-EMISSION CONTROL

STATE OF FLORIDA

AIR POLLUTION CONTROL

COMMISSION RULES

(revised January 20, 1965)

CHAPTER 28-3

28-3.03 Emission levels. - Gaseous or water soluble fluorides.

(1) In order to reduce the fluoride concentration in the atmosphere of the Polk-Hillsborough Air Pollution Control District, the maximum quantity of fluorides emitted by any installation or plant shall be determined on the following basis:

The allowable quantity of fluoride expressed in pounds per day shall be calculated by multiplying the unit emission of 0.6 pound fluoride (as F^-) per ton of P_2O_5 or equivalent times the tons of P_2O_5 or equivalent attained in the maximum sustained 24-hour production mentioned in Section (2) below.

$$\frac{\text{(0.6 pound Fluoride (as } F^-\text{)}}{\text{Ton } P_2O_5 \text{ or equivalent}} \times \text{Production (Tons of } P_2O_5 \text{ or equiv. per day)} = \text{Allowable Quantity Fluoride (lb./Day).}$$

The above formula shall be used to determine maximum allowable quantity of fluorides emitted by any installation or plant. The basis for the above calculations shall be the phosphoric acid reactor section production. Where calcined or defluorinated phosphate rock is produced, the calculations for these unit operations only shall be based on the P_2O_5 equivalent produced.

(2) Each person shall, within thirty (30) days after the effective date of these regulations, notify the Board in writing of the maximum sustained twenty-four (24) hour production capacity achieved in his phosphoric acid manufacturing, calcination and/or defluorination facilities prior to May 1, 1964. The maximum allowable quantity calculated by the formula provided in 28-3.03 (1), supra, shall constitute the total quantity of gaseous and/or water soluble fluorides which may be emitted by each installation or plant, except in those cases of specific trade products commonly known as normal phosphate, superphosphate or normal superphosphate operation shall not emit gaseous and/or water soluble fluorides (F^-) in excess of thirty (30) pounds per operating day.

(3) Within thirty (30) days after receipt of the maximum sustained twenty-four (24) hour production capacity information, the Board

shall notify each person in writing of the maximum allowable total fluoride emissions that will be permitted such person.

(4) The maximum allowable fluoride emission as assigned above shall be attained not later than one year by an installation or plant in existence on the effective date of these rules, after receipt of assignment from the board.

(5) The Board may require, from time to time, information concerning points of emission and quantities of fluorides anticipated to be released therefrom.

(6) Any material fed to or product made from fluoride-bearing compounds not included in these regulations shall be assigned an emission limit consistent with 28-3.03(1) and 28-3.03(2)(a) and/or the chemical, physical and environmental conditions prevailing at the time.

(7) Compliance with the above emission standards shall be ascertained by means of source sampling; the Board may do ambient air sampling, filter paper, vegetative, or other recognized methods of sampling to provide such supplemental information as it may desire to verify source sampling and/or to determine conditions existing within the Polk-Hillsborough Air Pollution Control District.

General Authority 403.09(2)(b) FS Law Implemented 403.02(3), 403.09(2)(b), 403.10(3) FS
History.- Revised 1-20-65

28-3.04 Construction; alteration; expansion.-

(1) Existing installations. No person shall materially alter or add to any existing installation or plant emitting gaseous or water soluble fluorides unless it can be demonstrated to the satisfaction of the Board that such alterations or additions will not increase the total fluoride output above the maximum daily emission figure furnished them by the Board.

(2) New construction. No person shall construct or operate any installation or plant after the effective date of these rules which, through its operation, may emit air contaminants, until a maximum allowable daily emission level of air contaminants has been assigned and a permit to construct has been obtained from the Board. The unit emissions, expressed as pounds of fluoride per ton of P_2O_5 or equivalent, and which shall not exceed 0.4 (four-tenths) pounds shall be developed by the Board, taking into consideration the following:

(a) The latest advances in the technology of air pollution control, (b) the lowest value attained by any operating plant manufacturing similar products, (c) existing levels of air pollution in the district, and (d) location of installation. For such new installations or plants the maximum allowable emission shall be calculated by multiplying the unit emission times the expected production capacity of the installation or plant as designed.

General Authority 403.09(2)(b) FS Law Implemented 403.02(3), 403.09(2)(b), 403.10(3) FS
History.-Revised 1-20-65

REGULATIONS

PERTAINING TO

MOTOR-VEHICLE-EMISSION CONTROL

STATE OF CALIFORNIA

Title 17. Public Health
Chapter 5. Sanitation (Environmental)
Subchapter 5. Air Sanitation

(adopted October 23, 1964)

Article 2. Standards for Motor Vehicle Emissions

30520. Exhaust Emissions.* (a) The standards of emissions of motor vehicle exhaust contaminants are:

Hydrocarbons - 275 parts per million by volume as hexane (0.165 moke percent carbon atoms.)
Carbon Monoxide - 1.5 percent by volume.

However, effective January 1, 1970, the standards of emissions of motor vehicle exhaust are:

Hydrocarbons - 180 parts per million by volume as hexane
Carbon Monoxide - 1.0 percent by volume.

(b) Exhaust gas concentrations shall be adjusted to a dry exhaust volume containing 15 percent by volume of carbon dioxide plus carbon monoxide. However, effective January 1, 1970, the exhaust gas concentrations shall be adjusted by the ratio of

$$15 \,/\, \left[1/2(\%CO) + \%CO_2 + 10(\%\text{Hydrocarbon})\right] .$$

(c) Hydrocarbons are defined as the organic constituents of vehicle exhausts as measured by a hexane-sensitized nondispersive infrared analyzer or by an equivalent method.

(d) Carbon monoxide shall be measured by a nondispersive infrared analyzer or by an equivalent method.

(e) The standards refer to a composite sample representing the driving cycle described as follows:

*Mandatory control on all new cars as of January 1, 1966.

Table I[2]

Condition	Rate of Speed Change mph/sec.	Percent of Total Time	Percent of Total Sample Volume
Idle ----------	--	15.0	4.2
Cruise			
20 mph ----------	--	6.9	5.0
30 mph ----------	--	5.7	6.1
40 mph ----------	--	2.7	4.2
50 mph ----------	--	0.7	1.5
Acceleration			
0-60 mph ---------	3.0	1.1	5.9
0-25 mph ---------	2.2	10.6	18.5
15-30 mph ---------	1.2	25.0	45.5
Deceleration			
50-20 mph --------	1.2	10.2	2.9
30-15 mph --------	1.4	11.8	3.3
30- 0 mph --------	2.5	10.3	2.9
		100.0	100.0

[1] Some hydrocarbons, for example methane, ethane, propane, n-butane and acetylene, are not considered sufficiently reactive to produce photochemical smog effects. The Department is working on methods which measure the reactive organic compounds in exhaust and will restate the hydrocarbon standard in terms of reactive hydrocarbons when methods and data satisfactory to the Department are developed.

[2] If other test cycles are used, they must represent urban driving and the emissions must be relatable to the composite sample from the driving modes described in Table I.

30530. Crankcase Emissions. (a) The standard for motor vehicle crankcase emissions is:

Hydrocarbons - 0.1 percent by weight of the supplied fuel.

(b) The standard refers to a composite sample representing the modes of engine operation described as follows:

Mode of Operation	Percent of Total Time
Idle	19
30 mph - 16 inch mercury manifold vacuum	37
30 mph - 10 inch mercury manifold vacuum	11
30 mph - 2 inch mercury manifold vacuum	8
Deceleration	25

30550. Fuel Tank Emissions. The standard for fuel tank emissions of hydrocarbon is:

Hydrocarbon - 6 grams per day[1]

[1] The standard refers to emissions in a 24-hour day when the minimum temperature is 60° F. and the maximum is 90° F., and when the fuel tank is between one-fourth and one-half full, averaging three-eighths full. The standard was developed from data obtained when fuels averaging a Reid Vapor Pressure of approximately 9 were used, and when hydrocarbon emissions were collected in condensing traps at dry ice temperature. Equivalent methods and other conditions may be used if approved by the Department of Public Health.

30560. Carburetor Hot Soak Emissions. The standard for carburetor hot soak emissions is:

Hydrocarbon - 2 grams per soak[1]

[1]The standard refers to emissions from the carburetor of an automotive engine operated to an equilibrium coolant temperature of 180° F. minimum and when the ambient air temperature is from 85 to 95° F. minimum. The soak duration is one hour. The standard was developed from data obtained when fuels averaging a Reid Vapor Pressure of approximately 9 were used in the test vehicles, and when hydrocarbon emissions were collected in condensing traps at dry ice temperature. Equivalent methods and other conditions may be used if approved by the Department of Public Health.

(Note: Sections 30550 and 30560 shall become effective January 1, 1970, at which time the State shall accept control devices for approval procedures.)

STATE OF NEW YORK

DEPARTMENT OF HEALTH

AIR POLLUTION CONTROL BOARD

(adopted March 22, 1963)

CRITERIA *

1. The crankcase ventilation system shall prevent the emission to the atmosphere of at least 80% of the blowby shown as the 6th population decile in Table 1.

2. The crankcase ventilation system shall be so designed that it will have no adverse effect on engine operation or vehicle performance.

3. The crankcase ventilation system shall not cause oil loss from the crankcase.

4. The crankcase ventilation system shall operate in a safe manner.

5. The crankcase ventilation system must operate in such a manner so as not to create excessive heat, noise, or odor.

6. Installation of the crankcase ventilation system shall not contribute to a noxious or toxic effect in the ambient air.

7. The crankcase ventilation system shall be constructed of materials adequate for preventing corrosion, erosion, fatigue, and wear, and must be thermally stable under the conditions of use and be resistant to gasoline, oil, and other materials present in engines and ambient air (including ozone and oxides of nitrogen) so as to assure durability.

8. The crankcase ventilation system shall operate efficiently for a minimum of 12,000 miles with normal maintenance.

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* Summarized herein. More extensive material is included in the full criteria.

TABLE 1

Engine Class[b]	Test Condition	Formula Air ACFM[a] @ 110° F 30" Hg	Formula Blowby, ACFM[a] @ 110° F, 30" Hg (For 6th population decile)
a	Idle	--	0.13
	16"	10	0.32
	10"	15	0.49
	2"	23	0.72
b	Idle	--	0.27
	16"	23	0.62
	10"	37	0.96
	2"	55	1.41
c	Idle	--	0.57
	16"	30	1.25
	10"	47	1.93
	2"	71	2.84
d	Idle	--	0.80
	16"	36	1.89
	10"	57	2.91
	2"	86	4.29
e	Idle	--	0.65
	16"	45	1.71
	10"	70	2.64
	2"	104	3.88
f	Idle	--	0.48
	16"	53	1.48
	10"	82	2.30
	2"	122	3.38

3/22/63

[a] Average CFM

[b] See attached Table 2 for engine class description

TABLE 2

Class	Engine Displacement
a	Under 140 cubic inches
b	140 - 200 cubic inches
c	200 - 250 cubic inches
d	250 - 300 cubic inches
e	300 - 375 cubic inches
f	Over 375
g	Motor vehicles which, because of unusual engine design, require special crankcase emission controls regardless of engine displacement.

REGULATIONS
PERTAINING TO
ODOR-EMISSION CONTROL

See "Zoning Ordinance" section of this report for more effective means of odor control.

CITY OF CHICAGO, ILLINOIS

AIR POLLUTION CODE

CHAPTER 17

(amended January 1, 1965)

17-26. It shall be unlawful within the City of Chicago and within one mile of the corporate limits for any person, owner, agent, operator, firm or corporation to permit to cause, suffer or allow the discharge, emission or release into the atmosphere from any source whatsoever of such quantities of soot, fly ash, dust, cinders, dirt, oxides, gases, vapors, odors, toxic or radioactive substances, waste, particulate, solid, liquid or gaseous matter or any other materials in such place, manner or concentration as to constitute atmospheric pollution.* (Amend. Coun. J. 7-1-63, p. 579.)

*Atmospheric pollution is defined as the discharging from stacks, chimneys, exhausts, vents, ducts, openings, buildings, structures, premises, open fires, portable boilers, vehicles, processes or any source, of any smoke, soot, fly ash, dust, cinders, dirt, noxious or obnoxious acids, fumes, oxides, gases, vapors, odors, toxic or radioactive substances, waste, particulate, solid, liquid or gaseous matter, or any other materials in such place, manner or concentration as to cause injury, detriment, nuisance, or annoyance to the public, or to endanger the health, comfort, repose, safety or welfare of the public, or in such a manner as to cause or have a natural tendency to cause injury or damage to business or property.

CITY OF CLEVELAND, OHIO

AIR POLLUTION CODE

ORDINANCE NO. 428 - A - 62

(effective June 20, 1962)

Section 4.0507. NUISANCE--GASES, FUMES AND OTHER POLLUTION.

No owner, occupant or person in charge, by himself, his agent or employee, shall cause, suffer or allow the emission of poisonous, obnoxious, pungent or ill smelling gases, fumes or other air pollutants from any stack or from any other source in the City of Cleveland so as to cause a nuisance. Such nuisance may be summarily abated by the Commissioner of Air and Stream Pollution or his duly authorized representative. Such abatement shall be in addition to the penalty hereinafter provided.

ZONING ORDINANCES

(Incorporate both odor and particulate control)

6.3-2 SIZE LIMITATIONS

The emission from all sources within any lot area of particulate matter containing more than 10 per cent by weight of particles having a diameter larger than 44 microns is prohibited.

6.3-3 MAXIMUM WEIGHT OF EMISSION

The total emission weight of particulate matter from all fuel-burning, combustion, or process equipment or devices within the boundaries of any lot shall not exceed those values given in Table 6. In addition, the dust loading of gas leaving an air pollution source, when measured in accordance with the provisions of ASME PTC 27 - Determining Dust Concentrations in a gas Stream, 1957 edition, shall not exceed 0.35 grains per cubic foot of gas (S.T.P.). For combustion processes this measurement shall be computed at 50 percent excess air.

TABLE 6.
PERFORMANCE STANDARDS BY CONTROL ZONE

ZONE 1

Includes all Residential and Business Districts and the M1 Manufacturing District*, as established and defined in the Cook County Zoning Ordinance.

SMOKE DENSITY	In Zone 1, the emission of more than 20 smoke units per hour per stack is prohibited, including smoke of a density in excess of Ringelmann No. 2. However, once during any six-hour period each stack may emit up to 35 smoke units - not to exceed Ringelmann No. 2, - when blowing soot or cleaning fires. Only during fire-cleaning periods, however, shall smoke of Ringelmann No. 3 be permitted, and then for not more than four (4) minutes per period.
PARTICULATE MATTER	The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of one pound per acre of lot area during any one hour, after deducting from the gross hourly emission per acre the correction factor set forth in the following table:

* M1, M2, M3, and M4 Manufacturing Districts represent Restricted Manufacturing District, General Manufacturing District, Heavy Manufacturing District, and Motor Freight Terminal District, respectively. These classifications zone the various types of industry into specific land areas.

Allowance for Height of Emission*

Height of Emission Above Grade (Feet)	Correction (Pounds Per Hour Per Acre)
50	0.01
100	0.06
150	0.10
200	0.16
300	0.30
400	0.50

* Interpolate for intermediate values not shown in table.

ZONE 2

Includes the M2 and M4 Manufacturing Districts, as established and defined in the Cook County Zoning Ordinance.

SMOKE DENSITY

In Zone 2, the emission of more than 50 smoke units per hour per stack is prohibited, including smoke of a density in excess of Ringelmann No. 2. However, once during any three-hour period each stack may emit up to 62 smoke units - not to exceed Ringelmann No. 2 - for blowing soot and for cleaning fires. Only during fire-cleaning periods, however, shall smoke of a density of Ringelmann No. 3 be permitted, and then for not more than four (4) minutes per period.

PARTICULATE MATTER

The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of three (3) pounds per acre of lot area during any one hour, after deducting from the gross hourly emission per acre the correction factor set forth in the following table:

Allowance for Height of Emission*

Height of Emission Above Grade (Feet)	Correction (Pounds Per Hour Per Acre)
50	0
100	0.5
150	0.8
200	1.2
300	2.0
400	4.0

* Interpolate for intermediate values not shown in table.

ZONE 3

Includes the M3 Manufacturing District as established and defined in the Cook County Zoning Ordinance.

SMOKE DENSITY	In Zone 3, the emission of more than 76 smoke units per hour per stack is prohibited, including smoke of an intensity greater than Ringlemann No. 2. However, once during any two-hour period each stack may emit up to 92 smoke units - not to exceed Ringelmann No. 2 - for blowing soot and for cleaning fires. Only during fire-cleaning periods, however, shall smoke of a density of Ringelmann No. 3 be permitted, and then for not more than six(6) minutes per period.
PARTICULATE MATTER	The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of eight (8) pounds per acre during any one hour, after deducting from the gross hourly emission per acre the correction factor set forth in the following table:

Allowance for Height of Emission*

Height of Emission Above Grade (Feet)	Correction (Pounds Per Hour Per Acre)
50	0
100	0.5
150	1.5
200	2.4
300	4.0
400	8.0

* Interpolate for intermediate values not shown in table.

ARTICLE VIII — NOXIOUS AND ODOROUS MATTER

8.1 GENERAL

The emission of noxious and odorous matter in such manner or quantity as to be detrimental to or endanger the public health, comfort, or welfare is prohibited.

8.2 ODOR-PERFORMANCE STANDARDS

8.2-1 In addition to the requirements of Section 8.1, odorous matter shall meet the requirements of Table 8, below.

TABLE 8.

EMISSION OF ODOROUS MATTER

By Control Zone

ZONE 1

Includes all Business Districts and the M1 Manufacturing District, as established and defined in the Cook County Zoning Ordinance.

The emission of matter in such quantities as to be readily detectible as odorous matter at any point along lot lines is prohibited.

ZONE 2

Includes the M2 and M4 Manufacturing Districts, as established and defined in the Cook County Zoning Ordinance.

The emission of matter in such quantities as to be readily detectable as odorous matter at any point along district boundary lines when diluted in ratio of one volume of odorous air to four (4) volumes of clean air is prohibited.

ZONE 3

Includes the M3 Manufacturing District, as established and defined in the Cook County Zoning Ordinance.

The emission of matter in such quantities as to be readily detectible as odorous matter at any point along district boundary lines when diluted in ratio of one volume of odorous air to twenty (20) volumes of clean air is prohibited.

8.2-2 The odor of growing trees, shrubs, plants, flowers, grass, and cut grass left in place shall not be considered odorous within the meaning of this ordinance.

8.2-3 Odors, smoke, and fumes incidental to domestic gardening, such as fertilizers and insecticides (but not compost piles) shall not be considered odorous or noxious within the meaning of this ordinance.

E. PERFORMANCE STANDARDS - SMOKE AND PARTICULATE MATTER

Any use established in a Manufacturing District* shall be so operated as to comply with the performance standards governing smoke and particulate matter set forth hereinafter for the district in which such use shall be located. No use already established on the effective date of this ordinance shall be so altered or modified as to conflict with, or further conflict with, the performance standards governing smoke and particulate matter established hereinafter for the district in which such use is located.

In addition to the performance standards specified hereinafter, the emission of smoke or particulate matter in such manner or quantity as to endanger or to be detrimental to the public health, safety, comfort, or welfare is hereby declared to be a public nuisance and shall henceforth be unlawful.

For the purpose of grading the density of smoke the Ringelmann Chart published and used by the United States Bureau of Mines shall be employed. The emission of smoke or particulate matter of a density greater than No. 2 on the Ringelmann Chart is prohibited at all times except as otherwise provided hereinafter.

The emission, from all sources within any lot area, of particulate matter containing more than ten percent by weight of particles having a particle diameter larger than 44 microns is prohibited.

Dust and other types of air pollution, borne by the wind from such sources as storage areas, yards, roads and the like within lot boundaries, shall be kept to a minimum by appropriate landscaping, paving, oiling, fencing, or acceptable means. Emission of particulate matter from such sources in excess of the weight limitations specified hereinafter is prohibited.

1. Smoke - M1 District.

a. The emission of more than ten smoke units** per hour per stack is prohibited, including smoke of a density in excess of Ringelmann No. 2. However, during one one-hour period in each 24-hour day, each stack may emit up to 20 smoke units when blowing soot or cleaning fires. Only during fire-cleaning periods, however, shall smoke of Ringelmann No. 3 be permitted, and then for not more than four minutes.

*M1 and M2 Manufacturing District represent two zones of different restrictions, whereby any industry may be placed in either district, providing that it can meet the zone restrictions, as listed below.

**See Definition Section at the beginning of this report.

b. The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of one pound per acre of lot area during any one hour, after deducting from the gross hourly emission per acre the correction factors set forth in Tables 2, 3, and 4, below, for height, velocity and temperature of emission, respectively. Determination of the total net rate of emission of particulate matter within the boundaries of any lot shall be made as follows:

(1) Determine the maximum emission in pounds per hour from each source of emission and divide this figure by the number of acres of lot area - thereby obtaining the gross hourly rate of emission in pounds per acre.

(2) From each gross hourly rate of emission derived in (1), above, deduct the appropriate correction factor (interpolating as required) for height, velocity, and temperature of emission set forth in Tables 2, 3, and 4, thereby obtaining the net rate of emission in pounds per acre per hour from each source of emission.

(3) Add together the individual net rates of emission derived in (2) above, to obtain the total net rate of emission from all sources of emission within the boundaries of the lot. Such total shall not exceed one pound per acre of lot area during any one hour.

TABLE 2

ALLOWANCE FOR HEIGHT OF EMISSION*

Height of Emission Above Grade (Feet)	Correction (Pounds per Hour per Acre)
50	0.01
100	0.06
150	0.10
200	0.16
300	0.30
400	0.50

* Interpolate for intermediate values not shown in table.

TABLE 3

ALLOWANCE FOR VELOCITY OF EMISSION*

Exit Velocity (Feet per Second)	Correction (Pounds per Hour per Acre)
0	0
20	0.03
40	0.09
60	0.16
80	0.24
100	0.50

* Interpolate for intermediate values not shown in table.

TABLE 4

ALLOWANCE FOR TEMPERATURE OF EMISSION*

Temperature of Emission (Degrees Fahrenheit)	Correction (Pounds per Hour per Acre)
200	0
300	0.001
400	0.002
500	0.003
1,000	0.01
1,500	0.04
2,000	0.10

* Interpolate for intermediate values not shown in table.

2. Smoke - M2 District.

a. The emission of more than 20 smoke units per hour per stack is prohibited, including smoke of a density in excess of Ringelmann No. 2. However, during four one-hour periods in each 24-hour day each stack may emit up to 30 smoke units, twice for blowing soot and twice for cleaning fires. During fire-cleaning periods only, smoke of a density of Ringelmann No. 3 shall be permitted and then not for more than four minutes per period.

b. The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of three pounds per acre of lot area during any one hour, after deducting from the gross hourly emission per acre the correction factors set forth in Tables 5, 6, and 7, below, for height, velocity, and temperature of emission respectively. Determination of the total net rate of emission of particulate matter within the boundaries of any lot shall be made as follows:

(1) Determine the maximum emission in pounds per hour from each source of emission and divide this figure by the number of acres of lot area - thereby obtaining the gross hourly rate of emission in pounds per acre.

(2) From each gross hourly rate of emission derived in (1) above, deduct the appropriate correction factor (interpolating when necessary) for height, velocity, and temperature of emission set forth in Tables 5, 6, and 7, which follow, thereby obtaining the net rate of emission in pounds per acre per hour from each source of emission.

(3) Add together the individual net rates of emission derived in (2) above, to obtain the total net rate of emission within the boundaries of the lot. Such total shall not exceed three pounds per acre during any one hour.

TABLE 5

ALLOWANCE FOR HEIGHT OF EMISSION*

Height of Emission Above Grade (Feet)	Correction (Pounds per Hour per Acre)
50	0
100	0.5
150	0.8
200	1.2
300	2.0
400	4.0

* Interpolate for intermediate values not shown in table.

TABLE 6

ALLOWANCE FOR VELOCITY OF EMISSION*

Exit velocity (Feet per Second)	Correction (Pounds per Hour per Acre)
0	0
20	0.3
40	0.8
60	1.2
80	1.6
100	2.4

* Interpolate for intermediate values not shown in table.

TABLE 7

ALLOWANCE FOR TEMPERATURE OF EMISSION*

Temperature of Emission (Degrees Fahrenheit)	Correction (Pounds per Hour per Acre)
100	0
200	0
300	0.005
400	0.01
500	0.02
1,000	0.10
1,500	0.30
2,000	1.0

* Interpolate for intermediate values not shown in table.

G. PERFORMANCE STANDARDS - ODORS

Any use established in a Manufacturing District shall be so operated as to comply with the performance standards governing odorous materials, set forth hereinafter for the district in which such use shall be located. No use already established on the effective date of this ordinance shall be so altered or modified as to conflict with, or further conflict with, the performance standards governing odorous materials established hereinafter for the district in which such use is located.

1. Odors - M1 District. The emission of odorous matter in such quantities as to be readily detectable at any point along lot lines or as to produce a public nuisance or hazard beyond lot lines is prohibited.

2. Odors - M2 District. The emission of odorous matter in such quantities as to be readily detectable at any point along lot lines when diluted in the ratio of one volume of odorous air to four or more volumes of clean air, or as to produce a public nuisance or hazard beyond lot lines in prohibited.

COUNTY OF PORTER, INDIANA

1959 ZONING ORDINANCE

Ordinance No. 1959-1

SECTION 17

A. A Light Industrial Use is one which creates a minimum amount of nuisance outside the plant; is conducted entirely within enclosed buildings, does not use the open area around such buildings for storage of raw materials or manufactured products or for any other industrial purpose other than transporting goods between buildings; provides for enclosed loading and unloading facilities; and such use conforms to the following performance standards.

1. Smoke - The emission of more than ten (10) smoke units per hour per stack and emissions in excess of Ringelmann No. 2 are prohibited. However, once during any 24 hour period for soot blowing, process purging and fire cleaning, each stack shall be permitted an additional ten (10) smoke units, during which time smoke up to and including Ringelmann No.3 is permitted.

2. Particulate Matter - The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of one pound per hour per acre, of which no more than ten percent (10%) by weight of particles larger than 44 microns (325 mesh) shall be allowed. Determination of the total net rate of emission shall be made as follows:

a. Determine the maximum emission in pounds per hour from each source of emission and divide this figure by the number of acres of lot area - thus obtaining a gross hourly emission rate per acre.

b. Deduct from the gross rate derived above, the appropriate correction factors for height of stack and stack velocity as listed in Tables I and II, thus obtaining the net rate of emission in pounds per hour per acre of each source.

c. Add together the individual rates of emission derived above of each source to obtain the total net rate of emission from all sources within the boundaries of the lot. Dust and other types of air pollution, borne by the wind from such sources as storage areas, yards, roads and the like within lot boundaries, shall be kept to a minimum by appropriate landscaping, paving, oiling, fencing, or other acceptable means.

3. Odor - No activity or operation shall permit odors to be released which shall be detectable at the lot line.

TABLE I

ALLOWANCE FOR HEIGHT OF EMISSION*

Height of Emission Above Grade (Feet)	Correction (Pounds per Hour per Acre)
50	0.01
100	0.06
150	0.10
200	0.16
300	0.30
400 and above	0.50

* Interpolate for intermediate values.

TABLE II

ALLOWANCE FOR VELOCITY OF EMISSION*

Exit Velocity Up (Feet per Second)	Correction (Pounds per Hour per Acre)
0	0
20	0.03
40	0.09
60	0.16
80	0.24
100 and above	0.50

* Interpolate for intermediate values.

4. Toxic and noxious materials - The emission of toxic and noxious materials shall not exceed the quantities determined by the following formula:

$$Q = 36\ Cx^2 \qquad \text{where}$$

Q is the maximum permitted quantity of toxic material emitted in the four hour period having the greatest average concentration (cubic feet): C is the threshold limit value for toxic materials in industry (parts per million by volume) as set forth in "Threshold Limit Values for Toxic Materials in Industry", 1955, issued by the Indiana State Board of Health, Division of Industrial Hygiene;
x is the nearest distance in thousands of feet of the stack, vent, flue or other discharge point to a Residence or Business District boundary line $\frac{(\text{ ft. })}{1000}$.

When C is given as milligrams per cubic meter, multiply this figure by 0.061, place it in the above formula and obtain Q in pounds permitted in four hours. If the material is emitted from open piles, ponds, tanks, areas, etc. the maximum permitted concentration measured at a Residence District boundary line shall be 10 per cent of the threshold limit value C.

5. Glare and Heat - Does not pertain to this report.

6. Vibration - Does not pertain to this report.

7. Noise - Does not pertain to this report.

8. Fire Hazards - Does not pertain to this report.

B. A General Industrial Use is one which requires both buildings and open area for manufacturing, fabricating, processing, extraction, heavy repairing, dismantling, storage or disposal of equipment, raw materials, manufactured products or wastes, and land and/or buildings in this District shall be used so as to comply to the following performance standards.

1. Smoke - The emission of more than thirty (30) smoke units per hour per stack and emissions in excess of Ringelmann No. 2 are prohibited. However, once during any six hour period, for soot blowing, process purging and fire cleaning, each stack shall be permitted an additional ten (10) smoke units, during which time smoke up to and including Ringelmann No. 3 is permitted.

2. Particulate Matter - The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of three pounds per hour per acre, of which no more than ten per cent (10%) by weight of particles larger than 44 microns (325 Mesh) shall be allowed. Determination of the total net rate of emission shall be made as follows:

a. Determine the maximum emission in pounds per hour from each source of emission and divide this figure by the number of acres of lot area - thus obtaining a gross hourly emission rate per acre.

b. Deduct from the gross rate derived above, the appropriate correction factors for height of stack and stack velocity as listed in Tables IV and V, thus obtaining the net rate of emission in pounds per hour per acre of each source.

c. Add together the individual rates of emission derived above of each source to obtain the total net rate of emission from all sources within the boundaries of the lot. Dust and other types of air pollution, borne by the wind from each sources as storage areas, yards, roads and the like within lot boundaries, shall be kept to a minimum by appropriate landscaping, paving, oiling, fencing or other acceptable means. Emission of particulate matter from such sources in excess of the weight limitations specified herein is prohibited.

3. Odor - No activity or operation shall permit odors to be released which shall be detectable at any Residence District boundary line. In addition, such odor, when measured at the lot line, shall be rendered undetectable by mixing one volume of the odorous air with four volumes of clean air.

4. Toxic and noxious materials - The emission of toxic and noxious materials shall not exceed the quantities determined by the following formula:

$$Q = 90\ Cx^2 \qquad \text{where}$$

Q is the maximum permitted quantity of toxic material emitted in the four hour period having the greatest average concentration (cubic feet).
C is the threshold limit value for toxic materials in industry (parts per million by volume) as set forth in "Threshold Limit Values for Toxic Materials in Industry", 1955, issued by the Indiana State Board of Health, Division of Industrial Hygiene.

TABLE IV

ALLOWANCE FOR HEIGHT OF EMISSION*

Height of Emission Above Grade (Feet)	Correction (Pounds per Hour per Acre)
50	0.02
100	0.12
150	0.20
200	0.32
300	0.60
400	1.00
500 and above	1.50

* Interpolate for intermediate values.

TABLE V

ALLOWANCE FOR VELOCITY OF EMISSION*

Exit Velocity Up (Feet per Second)	Correction (Pounds per Hour per Acre)
0	0
20	0.06
40	0.18
60	0.32
80	0.48
100 and above	1.00

* Interpolate for intermediate values.

x is the nearest distance in thousands of feet of the stack, vent, flue or other discharge point to a Residential or Business Distric boundary line $\frac{(\text{ ft. })}{1000}$.

When C is given as milligrams per cubic meter, multiply this figure by 0.061, place it in the above formula and obtain Q in pounds permitted in four hours. If the material is emitted from open piles, ponds, tanks, areas, etc. the maximum permitted concentration measured at a Residence District boundary line shall be 25 per cent of the threshold limit value C.

5. Glare and Heat - Does not pertain to this report.

6. Vibration - Does not pertain to this report.

7. Noise - Does not pertain to this report.

8. Fire Hazard - Does not pertain to this report.

9. Water Pollution - Does not pertain to this report.

C. A Heavy Industrial Use is one which requires both buildings and open area for manufacturing, fabricating, processing, extraction, heavy repairing, dismantling, storage or disposal of equipment, raw materials, manufactured products or wastes and one which will comply with the following performance standards.

1. Smoke - The average emission of more than ninety (90) smoke units per hour per stack, for all smoke stacks on the lot, and emission of smoke in excess of Ringelmann No. 3 are prohibited. However, this restriction shall not apply to fire building, soot blowing, process purging and fire cleaning which will be permitted once during any two hour period, except that where there are more than ten (10) smoke stacks on a lot, this provision will apply to not more than twenty (20) per cent of such stacks at any one time.

2. Particulate Matter - The rate of emission of particulate matter from all sources within the boundaries of any lot shall not exceed a net figure of six (6) pounds per hour per acre, of which no more than sixty (60) per cent by weight of particles larger than 44 microns (325 mesh) shall be allowed. Determination of the total net rate of emission shall be made as follows:

a. Determine the emission in pounds per hour from each source of emission and divide this figure by the number of acres of lot area - thus obtaining a gross hourly emission rate per acre.

b. Deduct from the gross rate derived above, the appropriate correction factors for height of stack and stack velocity as listed in Tables VII and VIII, thus obtaining the net rate of emission in pounds per hour per acre of each source.

c. Add together the individual rates of emission derived above of each source to obtain the total net rate of emission from all sources within the boundaries of the lot. Dust and other types of air pollution, borne by wind from such sources as storage areas, yards, roads and the like within lot boundaries, shall be kept to a minimum by appropriate landscaping, paving, oiling, fencing or other acceptable means. Emission of particulate matter from such sources in excess of the weight limitations specified herein is prohibited.

3. Odor - No activity or operation shall permit odors to be released which shall create a nuisance at a Residence District boundary.

4. Toxic and noxious material - The emission of toxic and noxious materials shall not produce concentrations exceeding 30% of the threshold limit value for toxic materials in industry (parts per million by volume) as set forth in "Threshold Limit Values for Toxic Materials in Industry", 1955, issued by the Indiana State Board of Health, Division of Industrial Hygiene, at a Residence or Business District boundary.

5. Glare and Heat - Does not pertain to this report.

6. Noise - Does not pertain to this report.

7. Fire Hazards - Does not pertain to this report.

8. Water Pollution - Does not pertain to this report.