ORDINANCE NO. 1546

AN ORDINANCE to amend and reordain Chapter 31 of the Code of the City of Alexandria, Virginia, 1963, as amended; which Chapter 31 relates to SMOKE CONTROL AND PROVIDES PENALTIES FOR VIOLATIONS.

THE CITY COUNCIL OF ALEXANDRIA HEREBY ORDAINS:

Section 1. That chapter 31 of the Code of the City of Alexandria, Virginia, 1963, as amended, be and the same hereby is amended and reordained to read as follows:

CHAPTER 31

SMOKE CONTROL

Sec. 31-1. Short title.

This chapter shall be known and may be cited as the "Smoke Control Code" of the City of Alexandria, Virginia.

Sec. 31-2. Definitions.

Unless otherwise expressly stated or the context clearly indicates a different intention, the following terms shall, for the purpose of this chapter, have the meanings indicated in this section:

Air Contaminant. Dust, fumes, gas, mist, smoke, vapor, odor or particulate matter or any combination thereof present in the atmosphere.

Air Pollution. The presence in the outdoor atmosphere of one or more air contaminants or any combination thereof, in sufficient quantities and of such characteristics and duration as is or is likely to be injurious to public welfare, to the health of human, plant or animal life, or to property, or which interferes with the enjoyment of life and property.

Boiler-Heating Surface. All boiler surfaces in contact with hot gases.

Breeching. Any smoke flue or connection leading from a boiler or furnace to a stack.

Control Equipment. Any equipment which has the function of controlling the emissions from a process, fuel-burning, or refuse-burning equipment and thus reduces the creation of, or the emission of air contaminants into the atmosphere, or both.

Director. The Director of the Department of Public Health or his duly authorized agent.

Division. The Division of Smoke Control.

Engineer. The Smoke Control Engineer, appointed pursuant to chapter 31 of the Code of the City of Alexandria, Virginia, 1963, as amended, or his duly authorized agent.

Equivalent Direct Radiation. One square foot of equivalent direct radiation (E.D.R.) shall be considered equal to the heat emission of two hundred forty B.T.U. per hour for steam and one hundred fifty B.T.U. per hour for hot water.

Fuel Agreement. A written agreement entered into between the owner of a building or plant and the city by the engineer whereby such owner, in consideration of the issuance of a permit for the installation or replacement of a certain boiler or furnace, agrees to burn only certain specified fuels.

Fuel-burning Equipment. Any equipment, device or contrivance and all appurtenances thereto, including ducts, breechings, fuel feeding equipment, ash removal equipment, combustion controls, stacks and chimneys, used primarily but not exclusively, to burn any fuel for the purpose of indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion.

Heating Boiler. Any boiler carrying not over fifteen pounds steam or thirty pounds water pressure or temperatures not exceeding two hundred fifty degrees Fahrenheit.

Horsepower. The rated boiler horsepower, to be figured on the basis of ten square feet of boiler heating surface per horsepower. One boiler horsepower shall be considered equal to one hundred forty square feet of equivalent direct steam radiation of two hundred twenty-four square feet of water radiation.

Incinerator. Any equipment, device, or contrivance used for the destruction of garbage, rubbish or other wastes by burning, and all appurtenances thereof.

Nuisance. Environmental conditions, intermittent or continuous, produced or correctible by human agency, prejudicial to reasonable enjoyment of health, comfort or safety by any individual or causing injury or damage to persons, property or the conduct of business.

Opacity. The state of a substance which renders it partially or wholly impervious to rays of light. Opacity as used in this chapter refers to the obscuration of an observer's view.

Particulate Matter. Material, other than uncombined water, which is or has been suspended in air or other gases and is a liquid or a solid at standard conditions of temperature (68° Fahrenheit) and pressure (14.7 pounds per square inch absolute).

Person. Any individual, partnership, firm, public or private corporation, association, subdivision or agency of the state, or any other legal entity.

Power Boiler. Any boiler carrying over fifteen pounds steam pressure.

Process Weight. The total amount of all material introduced into an industrial operation, including fuels and air introduced for purposes of combustion.

Process Weight per hour.

(1) For continuous or long-term operation: the total process weight for the entire period of operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.

(2) For batch operation: the total process weight for a period which covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such period.

Ringelmann Smoke Chart. A chart for grading the appearance, density, or shade of smoke, as published, with instructions for use, by the U. S. Bureau of Mines in Information Circular 8333, dated May 1967. Any other method for grading smoke which is approved by the Director and the Engineer as the equivalent of the Ringelmann Chart may be substituted therefor.

Salvage Operation. Any operation conducted in whole or in part for the salvaging or reclaiming of any product or material.

Smoke. Small gas-borne particles, other than water, in sufficient number to be observable.

Source. Any physical arrangement, condition or structure which may emit air contaminants.

Stack. Any chimney or smoke stack or other structure whether made of brick, tile, concrete, metal or other material or a combination of any of these materials, intended for the emission of the products of combustion.

Sec. 31-3. Division of Smoke Control; Engineer.

There is hereby created a Division of Smoke Control in the Department of Building and Mechanical Inspections. There shall be a smoke control engineer appointed by the City Manager to hold office at the pleasure of the City Manager. The compensation of said engineer shall be fixed from time to time by the City Council. The person so appointed shall be an engineer qualified by education, training and experience in the theory and practice of the design, construction and operation of steam boilers, furnaces, and burning equipment, incinerators, control equipment and the abatement and prevention of smoke contaminants, air contaminants and air pollution. Said engineer shall head the Division of Smoke Control.

The smoke control engineer shall be charged with the general duty of administering the Division of Smoke Control, of seeing that the purposes of this chapter are carried out and observed, and of enforcing the provisions of this chapter.

The director shall at all times be available to the engineer for consultation and help and the engineer shall at all times be available to the director for consultation and help.

The engineer and the director shall whenever possible coordinate their activities to the end that the air resources of the City are preserved, protected and improved and air pollution is regulated, prevented, abated and controlled.

Sec. 31-4. Reporting of Information.

Persons engaged in operations which may result in air pollution shall, if so required, file with the engineer reports containing information as to: (1) location and description of source; (2) rate, duration and composition of contaminant emission; and (3) such other information as the engineer may require.

Sec. 31-5. Inspections.

Any duly authorized officer, employee, or representative of the engineer or the director may, when granted permission by the owner or some person with reasonably apparent authority to act for the owner, enter and inspect any property, premises or place at any reasonable time for the purpose of investigating or testing either an actual or suspected source of air pollution, or air contaminants, or of ascertaining the state of compliance with this chapter and regulations enforced pursuant thereto. When permission is refused or cannot be obtained, a proper warrant shall be obtained.

Sec. 31-6. Installation Permit.

It shall be unlawful for any person to construct, reconstruct, install, replace, alter or change any furnace, stoker, oil burner, gas burner, boiler, water heater, oven, incinerator, stack flue or smoke regulation or prevention appliance, fuel-burning equipment or other equipment capable of emitting air contaminants until and unless he shall have obtained an installation permit from the engineer.

Permits shall not be required for the following:

a. Oil-fired fuel-burning equipment burning No. 1 fuel oil when U. L. listed equipment is used in row dwellings, single family dwellings and two family dwellings as such dwellings are defined in subsections (24), (25), and (26) of section 42-1 of The Code of the City of Alexandria, Virginia, 1963, as amended.

b. Gas-fired fuel-burning equipment when A.G.A. listed equipment is used in row dwellings, single family dwellings and two family dwellings as such dwellings are defined in subsections (24), (25), and (26) of section 42-1 of The Code of the City of Alexandria, Virginia, 1963, as amended.

c. The construction, reconstruction, repair or use of an interior fireplace of residential character for the residential-type uses of heat, light or display.

d. Minor repairs or alterations which in no way alter or change the character of a unit or appliance, which are purely for maintenance and which do not result in air pollution or air contaminants.

e. Boilers, combustion apparatus and stacks of locomotives and steamboats, but this exception shall in no way excuse or relieve other violations of this chapter.

f. Kitchen ranges and water heaters which do not burn solid or liquid fuel or which have a tank with less than 100 gallons capacity.

g. Temporary equipment not permanently installed in a stationary building or structure for use not to exceed sixty days, provided no such use may be carried on during an air pollution alert.

Applications for permits shall be made to the engineer on forms to be provided. Such drawings, specifications and other information as will give the engineer complete knowledge of the installation or replacement shall accompany the applications. Failure to give such information, the required drawings or required specifications shall be ground for refusal of a permit.

If the proposed installation or replacement conforms to the requirements of this chapter, and if proper provision is made for the control and prevention of smoke, air pollution, and air contaminants, and if the required fee has been paid, the engineer shall issue the permit; otherwise the permit shall be refused. Any such application shall be considered and acted upon with dispatch, and in no case shall action be deferred for a longer period than two weeks.

In the event a permit is refused, the applicant shall have the right to appeal to the Smoke Control Board as hereinafter provided.

Sec. 31-7. Period within which work under installation, etc., permit to be started.

Work on any proposed installation or replacement or on the whole project of which a proposed installation or replacement is a part shall be substantially started within six months of the time the permit provided for in section 31-6 of this code is issued; otherwise the permit shall lapse and be void at the expiration of six months from the date of issuance thereof.

Sec. 31-8. Inspection certificates.

It shall be unlawful for any person to use or cause to be used any new, reconstructed, replaced, altered or remodeled furnace, stoker, oil burner, gas burner, boiler, water heater, oven, incinerator, fuel-burning equipment, stack, flue or smoke regulation device, control equipment or prevention appliance unless and until he shall have first obtained a certificate of inspection indicating that the smoke control engineer has inspected the installation or replacement and is satisfied that the provisions of this chapter have been complied with and that proper provision for the control and prevention of smoke, air pollution, and air contaminants has been made. The provisions of this paragraph, however, shall not apply to water heaters which do not burn solid or liquid fuel or to water heaters of any kind which have a tank of less than one hundred gallons capacity.

Boilers, combustion apparatus, and stacks of locomotive and steamboats are excepted from the provisions of the foregoing paragraph, but such exception shall in no way excuse or relieve a violation of other sections of this chapter or the City Code.

Kitchen ranges and water heaters which do not burn solid or liquid fuel or which have a tank with less than one hundred gallons capacity are excepted from the first paragraph of this section, but such exception shall in no way excuse or relieve a violation of other sections in this chapter or the City Code.

Certificates shall not be required for the following:

a. Oil-fired fuel-burning equipment burning No. 1 fuel oil when U. L. listed equipment is used in row dwellings, single family dwellings and two family dwellings as such dwellings are defined in subsections (24), (25), and (26) of section 42-1 of The Code of the City of Alexandria, Virginia, 1963, as amended.

b. Gas-fired fuel-burning equipment when A.G.A. listed equipment is used in row-dwellings, single family dwellings and two family dwellings as such dwellings are defined in subsections (24), (25), and (26) of section 42-1 of The Code of the City of Alexandria, Virginia, 1963, as amended.

If the installation or replacement conforms to the requirements of this chapter, and if proper provision is made for the control and prevention of smoke, air pollution and air contaminants, and the required fee has been paid, the engineer shall issue the certificate; otherwise, the certificate shall be refused.

In case the certificate is refused, right of appeal from the decision of the engineer shall lie to the Smoke Control Board as hereinafter provided.

c. The construction, reconstruction, repair or use of an interior fireplace of residential character for the residential-type uses of heat, light or display.

Sec. 31-9. Effect of issuance of permit or certificate.

Issuance by the engineer of any installation permit or any inspection certificate for the construction, reconstruction, installation, replacement, alteration, or change of any furnace, stoker, oil burner, gas burner, boiler, water heater, oven, incinerator, fuel-burning equipment, stack, flue or smoke regulation or control equipment or prevention appliance shall not exempt or excuse any person from a violation of other sections of this chapter or the City Code.

The issuance of any such permit or certificate shall in no way be construed to indicate approval of the strength or safety of any installation or replacement or of any project of which such installation or replacement is a part; and the issuance of any such permit or certificate shall in no way indicate approval of things and matters covered by other laws.

Sec. 31-10. Fees for permits and certificates.

Five-tenths of one per cent of the actual installation costs, including labor and material, plus the following fees shall be paid to the City Collector before any permit as provided for in Section 31-6 of this chapter or certificate as provided for in Section 31-8 of this chapter is issued:

Installations, building or projects	Permit	Certificate
Heating boilers, each:		
(furnaces, water heaters)		
Less than 1,200 sq. ft. of steam	$1.00	$2.00
1,200 to 5,000 sq. ft. of steam	2.00	3.00
5,001 to 25,000 sq. ft. of steam	3.00	4.00
Over 25,000 sq. ft. of steam	4.00	5.00
Power boilers, each:		
(furnaces, etc.)		
Less than 50 hp	1.00	2.00
50 to 250 hp	2.00	3.00
251 to 500 hp	3.00	4.00
501 to 1,000 hp	7.00	8.00
Over 1,000 hp	8.00	12.00

Sec. 31-11. Compliance with chapter.

Installations, replacements or apparatus for which a permit is required under the provisions of section 31-6 of this chapter shall conform to the requirements of sections 31-12 through 31-30 of this chapter.

Sec. 31-12. Boiler rooms; storage, etc., of fuels.

a. The boiler room shall be of sufficient height to allow for the installation of boilers of sufficient capacity to carry the full required load and having ample combustion space in the boiler furnace. Sufficient head room shall be provided for installation of a breeching of proper design and to allow for accessibility to manholes and valves connected to boiler.

b. Sufficient floor space shall be provided to allow for the proper operation of the boiler, including the use of shovel and firing tools, removal of boiler tubes and making necessary repairs, cleaning boiler tubes, furnace firebox, combustion chambers and to allow for easy access to furnace doors and other openings in and about walls of boiler settings or furnaces and for cleaning and removal of soot and ash from the breeching and stack.

c. Two exits, properly located, shall be provided to allow egress in case of emergency.

d. The fuel storage space shall be partitioned off from the boiler room proper and be located so as not to interfer with the efficient operation of the boiler. Where a different kind of coal is required for a water heater, provision shall be made for separate storage. There must be a satisfactory place for delivering coal and removing ashes from the building so that dirt and dust may be kept to a minimum.

e. Provision shall be made to permit the unrestricted admission to the boiler room of a sufficient amount of air to secure smokeless combustion of the fuel and to properly ventilate the room in which the fuel-burning equipment is located.

Sec. 31-13. Boilers generally.

a. Power boilers shall be equipped with underfeed stoker apparatus to burn pulverized coal or with oil burners or gas burners; which in any case shall be approved by the engineer unless owner of building or plant enters into a fuel agreement. No such agreement shall be made for boilers having more than two hundred fifty square feet of heating surface.

b. Heating boilers having an equivalent direct radiation rating of more than one thousand two hundred square feet of steam radiation or one thousand eight hundred square feet of water radiation shall be equipped with underfeed stoker, apparatus to burn pulverized coal, oil burner or gas burner, which in any case shall be approved by the engineer unless owner of building or plant enters into a fuel agreement. No such agreement shall be made for boilers having more than five thousand square feet of steam radiation or the equivalent.

c. Heating boilers having an equivalent direct radiation rating of less than one thousand two hundred square feet of steam radiation or of one thousand eight hundred square feet of water radiation shall burn coke or anthracite or shall be equipped with underfeed stoker, oil burner or gas burner approved by the engineer.

d. Low-pressure steam boilers, when mechanically fired, shall be equipped with a low-water cut-off or similar arrangement, located so as to automatically cut off the fuel supply in case the water level falls to a point not lower than the bottom of the water glass. The water-gauge glass shall be set in accordance with A.S.M.E. Code for low pressure heating boilers.

e. Gravity feed, magazine boilers designed exclusively for the burning of coke or anthracite may be installed in all sizes, subject to the requirements and approval of the engineer.

f. Every boiler shall be constructed and installed in accordance with the provisions of this chapter, and the Boiler Code of the American Society of Mechanical Engineers, sections I to VII, inclusive, and Amendments and Interpretations thereto, made and approved by the council of the Society to date. Every boiler shall bear the A.S.M.E. symbol and number, and the Manufacturers Data Report form shall be provided when requested.

Sec. 31-14. Vertical fire-tube boilers.

Vertical fire-tube boilers shall be installed only upon entrance into a fuel agreement unless such boilers are equipped with oil or gas burners. Only one boiler of this type containing not more than two hundred fifty square feet of heating surface shall be permitted in a plant.

Sec. 31-15. Scotch marine boilers.

Scotch marine boilers shall be installed only upon entering into a fuel agreement unless such boilers are equipped with oil or gas burners. If equipped with oil burner, a Dutch oven shall be provided. An underfeed stoker may be permitted where it is specially designed for this type of boiler. When hand fired only one boiler of this type containing not more than two hundred square feet of heating surface shall be permitted in a plant.

Sec. 31-16. Clearance around boilers.

a. All boilers or boiler setting shall have at least three feet clear space on each side, in the rear and in front of oil burner or stoker; except, that in existing buildings, this may be reduced by the engineer, if after inspection it is found that it is impractical to obtain such clearances. In addition, sufficient space must be provided to remove boiler tubes.

b. Where replacement or additional installations of boilers are made in buildings existing as of April 18, 1944, the minimum height of the boiler room shall be such as to provide not less than six inches clear space above the highest point of any valve or other fitting when it is at maximum opening, or stems and levers at their greatest height. In new or reconstructed buildings, not less than four feet shall be provided between the top of the boiler proper and the ceiling or other obstruction.

Sec. 31-17. Stokers.

a. Underfeed stokers shall have minimum furnace heights as follows:

Rating - Square feet steam radiation	1,000 to 2,499	2,500 to 6,999	7,000 to 10,999	11,000 to 13,999	14,000 to 17,499	17,500 to 20,999	21,000 to 25,000
Equivalent horsepower	10-18	19-50	51-80	81-100	101-125	126-150	151-175
			Inches				
Compact type	36	42	48	54	60	66	72
L.F.B. type	48	54	60	66	72	78	84
H.R.T.	--	42	48	54	60	66	72
Cast Iron	36	42	48	54	60	66	--

In using this table, take rated boiler horsepower or radiation, whichever is larger.

b. All dimensions are from the stoker dead plate (or dump grate) to the crown sheet (or equivalent) of the boiler. On down draft boilers, the water grates shall be considered the equivalent of the crown sheet, unless they are removed.

c. The above figures are considered to be minimum dimensions and shall be increased wherever the boiler is to carry an overload or has peak-load conditions to be met.

d. Stokers designed for anthracite will be given special ruling.

e. Horizontal water tube heating boilers in sizes up to twenty-five thousand square feet of steam radiation shall, when horizontally baffled, have the same setting heights as compact type boilers; when vertically baffled, they shall have the same setting heights as locomotive firebox type boilers. For boilers above twenty-five thousand square feet, use table below.

f. The minimum furnace heights of all other types and sizes of water tube boilers equipped with underfeed stokers, to be operated up to one hundred fifty per cent rating, shall be as follows:

Measurement of Setting Height	Type of Boiler	Multiple Retort Min.	Multiple Retort Pref. Min.	Single Retort Min.	Single Retort Pref. Min.
		Ft.In.	Ft.In.	Ft.In.	Ft.In.
Floor line to bottom of header above stoker	Horizontal, all sizes	11-0	13-0	9-0	11-0
Floor line to center of mud drum	Inc. H.M.D. all sizes	7-6	8-6	6-6	8-6
Floor line to top of mud drum	Inc. V.M.D. all sizes	6-0	7-0	5-0	7-0
Floor line to center of mud drum	Vert. H.M.D. all sizes	3-6	5-0	3-6	5-0
Floor line to top of mud drum	Vert. V.M.D. 150 h.p.	4-6	5-0	4-6	5-0
Floor line to top of mud drum	Vert. V.M.D. 250 h.p.	5-6	6-0	5-6	6-0
Floor line to top of mud drum	Vert. V.M.D. 500 h.p.	6-0	6-6	6-0	6-6

g. For power boilers equipped with underfeed stokers, to be operated at more than one hundred fifty per cent rating, a special ruling shall be obtained from the engineer. The design of all stoker installations shall be submitted to the engineer for approval.

h. Stokers shall be installed so that the bottom of the boiler water leg will be suitably protected. Boiler doors shall be of sufficient size and so located that ash and clinker can be easily removed without disturbing the fuel bed.

i. On all stoker installations, a clean-out door shall be provided in the breeching and at the base of the stack and an accessible damper in the breeching fitted with a handle and quadrant or the equivalent, arranged so that it can be clamped in position and be conveniently operated.

j. When stokers are rated in terms of coal fed per hour or square feet of equivalent direct steam radiation, such rating shall be based on nut and slack coal with a heat content taken as not greater than fourteen thousand B.T.U's per pound for bituminous coal and twelve thousand and four hundred B.T.U.'s for buckwheat anthracite, with a combined boiler and stoker efficiency of not to exceed sixty per cent for stoker capacities up seventy-five pounds of coal per hour and not to exceed sixty-five per cent for stoker capacities over seventy-five pounds per hour.

A certified rating sheet based on the above, together with all other necessary information, shall be supplied for every stoker, subject to the approval of the engineer.

An allowance of not less than thirty-five per cent shall be provided for piping and pickup.

k. The rating of any stoker shall not be less than the rating of the boiler with which it is to be installed; except, that where the boiler is to be operated in excess of its rating, the stoker shall be of sufficient capacity to adequately carry such over-rating.

Sec. 31-18. Pulverized coal.

When pulverized coal is to be used as fuel, the required combustion space for all boilers up to five hundred horsepower and having refractory walls, shall be determined on the basis of a maximum heat liberation of twenty thousand B.T.U.'s per cubic foot of combustion space per hour. For larger boilers and other types of walls, maximum heat liberation shall be determined for each individual case. An acceptable method of collecting fly ash from the stacks or breeching of all pulverized coal plants shall be provided. The design of all pulverized coal installations shall be submitted to the engineer for approval.

Sec. 31-19. Oil.

a. When oil is to be used as a fuel, the required combustion space for power boilers up to five hundred horsepower shall be determined on a basis of a maximum heat liberation of thirty thousand B.T.U.'s per cubic foot of combustion space per hour. For larger boilers, special ruling shall be obtained from the engineer.

b. The required combustion space for heating boilers shall be determined on the basis of a maximum heat liberation of twenty-five thousand B.T.U.'s per cubic foot of combustion space per hour. For specially designed boilers, the combustion space shall be determined according to the individual design of the equipment.

c. All oil burners installed shall be approved by the National Board of Fire Underwriters to burn the grade of oil which will be used. Design of all oil-burner installations using Nos. 2, 4, 5, or 6 fuel oil shall be submitted to the engineer for approval.

d. Where oil of grade five or six is to be used, provision shall be made for heating and automatically maintaining the temperature of the oil at not less than one hundred eighty degrees Fahrenheit. Electric preheaters shall be provided for starting when there is not steam available.

Sec. 31-20. Net load.

a. "Net load" shall be construed to mean all radiation used for heating purposes, exclusive of piping, and reduced to the equivalent of direct cast-iron radiation in a temperature of seventy degrees Fahrenheit, which shall be calculated on a basis of two hundred forty B.T.U.'s per square foot per hour for steam and one hundred fifty B.T.U.'s per square foot per hour for water.

b. Any generator, coil in firebox, indirect heater or other device attached to a boiler used for heating water for domestic purposes shall be included in net load and shall be calculated in equivalent direct radiation in accordance with the rules of the Heating and Piping Contractors National Association, as shown in their Net Load Recommendations Manual.

c. The net load capacity of heating boilers shall be the net load recommendations of the Heating and Piping Contractors National Association, revised and amended to date.

d. The equivalent direct radiation rating of cast-iron boilers shall be obtained by adding not less than thirty-five per cent to the net load rating; for steel heating boilers the equivalent direct radiation ratings as determined by the Code of the Steel Heating Boiler Institute shall be used.

Sec. 31-21. Stacks generally.

a. Power boilers having more than one hundred twenty square feet of boiler heating surface shall have a stack of sufficient height or shall have an induced draft fan to give a minimum draft of 0.20 inches of water over the fire in the furnace under normal working conditions. No such stack shall be less than forty feet above the ground line, unless gas is used as fuel.

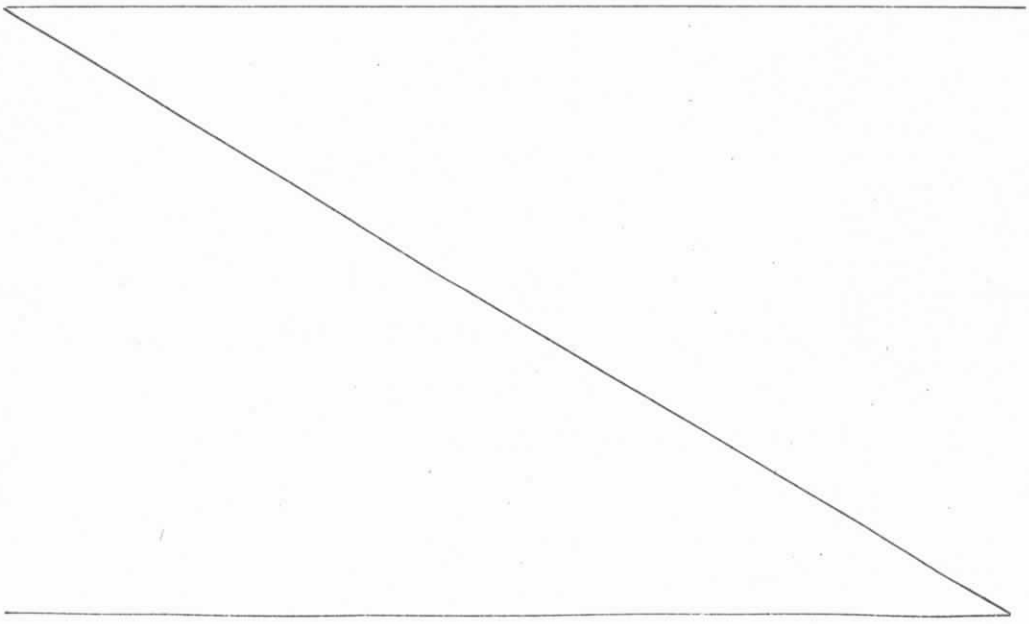
b. Size and height of stacks for power boilers shall be based on approved chimney practice, taking into consideration draft losses in boiler and breeching.

c. Heating plants having boilers with a net load rating of more than one thousand two hundred square feet of steam radiation or one thousand eight hundred square feet of water radiation, shall have a minimum draft of 0.15 inches of water over the fire in the furnace under peak load conditions.

d. With the exception of gas fired boilers or heaters, the following table shall in general be used as a guide. Stack sizes are inside dimensions and plans should be so marked. The sizes given are for one boiler and are minimum.

e. Where boiler capacity is in excess of ratings shown in table, stack shall be figured on the same basis as for power boilers.

f. If it is impractical to obtain the height of stack as indicated, an induced draft fan may be used, subject to the approval of the smoke regulation engineer provided the discharge from the stack will not become a nuisance to neighboring buildings.



STACK TABLE FOR HEATING BOILERS

Rectangular flue lining Boiler rating square feet of radiation E.D.R.		Actual inside dimensions	Standard flue lining	Round flue Actual inside diameter	Minimum height above grate
Steam to	Water to	Inches	Inches	Inches	Feet
450	720	8x12	8 1/2x13	10	35
800	1,280	12x12	13x13	12	35
1,000	1,600	12x16	13x18	15	40
1,500	2,400	16x16	18x18	18	40
2,000	3,200	18x18	20x20	18	45
2,500	4,000	17x21	20x24	20	50
3,000	4,800	21x21	24x24	22	55
3,500	5,600	21x21	24x24	22	55
4,000	6,400	22x22		24	60
5,000	8,000	24x24		26	60
6,000	9,600	26x26		28	65
7,000	11,200	26x28		28	65
8,000	12,800	28x28		30	70
9,000		30x30		32	70
10,000		32x32		34	75
12,500		34x34		38	75
15,000		36x36		40	80
17,500		38x38		42	85
20,000		40x40		44	90
25,000		42x42		46	100

Height shall be increased if the breeching is more than ten feet long or has more than one bend exclusive of fly ash collector.

For each additional boiler, there shall be added not less than seventy-five per cent of the area and ten feet to the height as given in the above table.

g. The inside walls of each stack shall be smoketight, vertical, free from offsets, or constrictions, and have a cleanout opening with a tightly fitted door. All stacks shall conform to the requirements of the Building Code.

h. The top of any stack shall extend sufficiently above the roof of the building, of which it is a part, and shall extend above or be far enough away from any nearby building to prevent downdrafts or the creation of a nuisance by the discharge of smoke or the gases of combustion.

i. Where a stack existing as of April 18, 1944, is located so that it will constitute a nuisance to the occupants of a building about to be built, the owner of the new building shall be required either to extend the existing stack or make other provisions to meet the approval of the engineer.

j. Boilers or furnaces located in separate rooms or buildings shall each have a separate stack or flue lining in the stack.

k. The tops of boiler stacks shall not be covered with caps or screens.

l. Stacks shall be as nearly square or round as possible. Where the stack is rectangular or oval in cross section, the greatest dimension shall not exceed twice the smallest.

m. The stack shall be of sufficient height and cross sectional area to provide the necessary draft for the proper operation of the boiler and shall comply with all requirements of the Building Code.

n. The top of the stack shall be of a height in relation to adjoining buildings so that the gases discharged will not become a nuisance to adjacent buildings and so that downdrafts will be prevented.

o. A clean-out door shall be provided at the base of the stack.

p. The stack shall be so located in reference to the boiler as to permit of a well-designed breeching of adequate area and having a minimum number of bends or turns and with the shortest practicable length.

Sec. 31-22. Breeching; fly ash collectors.

Breechings and fly ash collectors shall comply with the following provisions of this section:

a. Breechings shall be as nearly square or round as possible. Where the breeching is rectangular or oval in cross section the greatest dimension shall not exceed twice the smallest. The minimum radius of all bends shall not be less than the width of breeching at point where bend occurs.

b. Breeching shall be as short and straight, free from bends or curves, drops below horizontal, or other restrictions, as possible.

c. Where a separate water heater is to be provided, the breeching may be connected directly to the stack, but above the entrance of the boiler breeching.

d. Every breeching shall be provided with sufficient clean-out openings having tightly fitted doors, and of sufficient size so that all parts of breeching may be easily cleaned.

e. The draft loss in the breeching shall be taken into consideration in the design of the boiler plant and stack.

f. A layout of the breeching shall accompany the application for a permit.

g. Fly ash collectors shall be installed in the breeching of all heating boilers equipped with stokers and burning bituminous coal. The collector shall be installed near the stack. It shall have a vertical baffle interposed in the gas stream in such a way as to cause the gas stream to be directed down into the collector and then up to the stack opening. The free area through the collector shall be at least one third greater than the area of the breeching. The collector shall have a large pocket for storing the fly ash and a gate or valve at the bottom for conveniently clearing the pocket. The collector design shall be approved by the smoke regulation engineer. Commercial manufactured fly ash collectors may be used if approved by the smoke regulation engineer.

Fly ash collectors shall be installed in the breeching of all coal fuel power boilers. The design of such collectors shall be approved by the engineer.

Sec. 31-23. Smoke indicators.

All fuel-burning plants installed after April 18, 1944, and having more than three hundred square feet of boiler heating surface or its equivalent shall be equipped with smoke indicators, mirrors or similar devices, approved by the engineer to enable the firemen easily to observe smoke conditions from the boiler room at all times, unless the top of the stack is readily visible to the firemen. This provision shall apply to all boilers when new oil burners or mechanical stokers are installed. Where oil of grade five or six is to be used, a smoke alarm shall be provided.

Sec. 31-24. Warm-air furnaces.

All warm-air furnaces shall comply with the following provisions of this section:

a. Warm-air furnaces having seven square feet or more of grate surface shall be equipped with an oil or gas burner approved by the engineer unless the owner of building or plant signs a fuel agreement.

b. Warm-air furnaces having less than seven square feet of grate surface shall be equipped with an oil or gas burner approved by the engineer.

c. Heating plants having warm-air furnaces with a total of seven square feet or more of grate surface shall have a stack of sufficient height to give a minimum draft of 0.15 inches of water over the fire in the furnace under normal working conditions.

Sec. 31-25. Water heaters.

Water heaters shall be equipped with a gas or oil burner.

Sec. 31-26. Incinerators.

All incinerators shall comply with the following provisions of this section:

a. Incinerator design shall be approved by the engineer. Each incinerator shall have a stack separate from that of the boiler or furnace.

b. The stack of any incinerator shall terminate in a substantially constructed spark arrester made so as to project above the top of the stack and having openings not larger than one-fourth of an inch.

Sec. 31-27. Package steam generators.

Packaged steam generators, consisting of a boiler and burner, equipped with all controls designed as a unit, with all the air for combustion mechanically introduced and having a mechanical draft, may be approved for installation subject to the following specific requirements and all other applicable requirements of this Code and other ordinances of the City:

a. The use of solid fuel in such units is prohibited.

b. Each boiler and burner shall be an integral unit complete with all the necessary controls and ready for operation when service connections are made.

c. Each unit shall be completely assembled and tested by the unit manufacturer before shipment, and a record of such operating test shall be provided.

d. Each unit shall be built in accordance with the American Society of Mechanical Engineers' Boiler Code and shall include protection against ignition failure, flame failure, excess pressure, excess flue gas temperature, low water and furnace explosion, and shall provide accessibility for inspection and cleaning.

e. Each unit shall be approved by the Underwriter's Laboratories or other nationally recognized inspection board or laboratory, and shall bear a metal plate permanently attached indicating such approval and specifying the grades of oil for which the burner is approved.

f. Each unit shall have a metal plate permanently attached giving the manufacturer's name, the model or size number of the unit and the guaranteed output of the boiler in pounds of steam per hour as determined by tests conducted in accordance with the American Society of Mechanical Engineers' Power Test Code. The duration of the test shall not be less than four hours.

g. In any case in which a unit has not been approved by the division of smoke

regulation prior to the receipt of the application for a permit, the applicant shall submit the manufacturer's installation and service manual, drawings and specifications including heating surface, and record of the American Society of Mechanical Engineer's performance tests for each unit proposed to be installed.

The sizes of stacks shall be as shown in the following table. In all other respects, stacks shall conform to all the provisions of section 31-21 of this Code.

TABLE

Horse Power Manufacturer's Ratings	Round Stack Diameter Inches	Square Stack Firebricklined Inches Inside	Square Stack Standard Flue Lining Inches
10	12		13 x 13
15	12		13 x 13
20	12		13 x 13
30	12		13 x 13
40	14		18 x 18
50	14		18 x 18
60	14		18 x 18
70	16		18 x 18
80	16		18 x 18
100	18		18 x 18
125	18		18 x 18
150	20		20 x 20
200	24	22 x 22	
250	24	22 x 22	
300	28	26 x 26	
350	28	26 x 26	
400	32	30 x 30	
450	32	30 x 30	
500	32	30 x 30	

Stack heights shall not be less than forty-five feet above ground level for power boilers and thirty-five feet for heating boilers, but consideration shall be given to the location of the stack in reference to other buildings, as provided in Section 31-21n of this Code. Steel stack and breeching shall be welded throughout.

The engineer is hereby authorized to make such investigations and inspections as may, in his discretion, be necessary to assure that any such generator is built and will operate in compliance with the requirements of this Section.

Sec. 31-28. Visible emission standard for installation permits and inspection certificates.

Installation permits and inspection certificates shall not be issued for any equipment, subject to the provisions of this chaper, which discharges into the outdoor atmosphere any air contaminant which is: 1) darker in shade than that designated as No. 2 on the Ringelmann Smoke Chart or 2) of such opacity as to obscure an observer's view to a degree greater than does smoke designated as No. 2 on the Ringelmann Smoke Chart; provided however that if a person can show to the satisfaction of the director that an emission of air contaminants contains less than 0.10 pound of particulate matte per 1,000 pounds of dry exhaust gas, adjusted to 12 per cent carbon dioxide for fuel-burning equipment or 50% excess air for incinerators, this limitation shall not apply.

Sec. 31-29. Particulate emission standard for installation permits and inspection certificates.

a. Installation permits and inspection certificates shall not be issued for any equipment, subject to the provisions of this chapter, which discharges into the outdoor atmosphere or passes a convenient measuring point near the stack outlet, particulate matter in the flue gases to exceed 0.60 pound per 1,000,000 B.T.U.'s per hour total input for installations using less than ten million B.T.U.'s per hour total input. For installations using greater than ten million B.T.U.'s per hour total input, Figure 1. will be used to determine the allowable particulate emission limitation.

b. Installation permits and inspection certificates shall not be issued for any fuel-burning equipment, subject to the provisions of this chapter, which have visible emissions in excess of that permitted by section 31-28, which emit particulate matter in excess of that permitted by section 31-29 or have odors arising from the installation which are observable beyond the premises on which the installation is located.

c. Installation permits and inspection certificates shall not be issued for any incinerator or premises subject to the provisions of this chapter, that emits into the outdoor atmosphere or passes a convenient measuring point near the stack outlet particulate matter to exceed 0.65 pound per 1,000 pounds of the flue gas, adjusted to 50 per cent excess air and calculated as if no auxiliary fuel has been used.

d. The maximum allowable emission of particulate matter from any source whatever except fuel-burning equipment and incinerators shall be determined from Table 1. Where the process weight per hour falls between two values in the table, the maximum weight discharged per hour shall be determined by linear interpolation. When the process weight is in excess of 60,000 pounds per hour, there shall not be discharged in any one hour from any source whatsoever particulate matter in excess of 0.066 per cent of the process weight per hour.

e. Stack emission test for particulate matter shall be undertaken by generally recognized standards or methods of measurement. Methods found in the A.S.M.E. Test Code for Dust Separating Apparatus, PTC 21-1941, the A.S.M.E. Test Code for Determing Dust Concentrations in Gas Streams, PTC 27-1957, and the Los Angeles County Source Testing Manual shall be used.

Sec. 31-30. Gas, vapor, and odor standard for installation permits and inspection certificates.

Installation permits and certificates shall not be issued for any equipment, subject to the provisions of this chapter, which causes, suffers, or allows any emissions of gases, vapors or odors beyond the property line from which such emissions occur, to be in sufficient quantities and of such characteristics and duration as is or is likely to be injurious to the public welfare, to the health of human, plant or animal life, or to property, or which interferes with the enjoyment of life and property.

Sec. 31-31. Operation of equipment.

a. General. Any equipment that may produce air pollutants or air contaminants shall not be operated or maintained in such a manner that a nuisance is created. Nothing in this section of this chapter relating to regulation of emission of air contaminants shall in any manner be construed as authorizing or permitting the creation or maintenance of a nuisance.

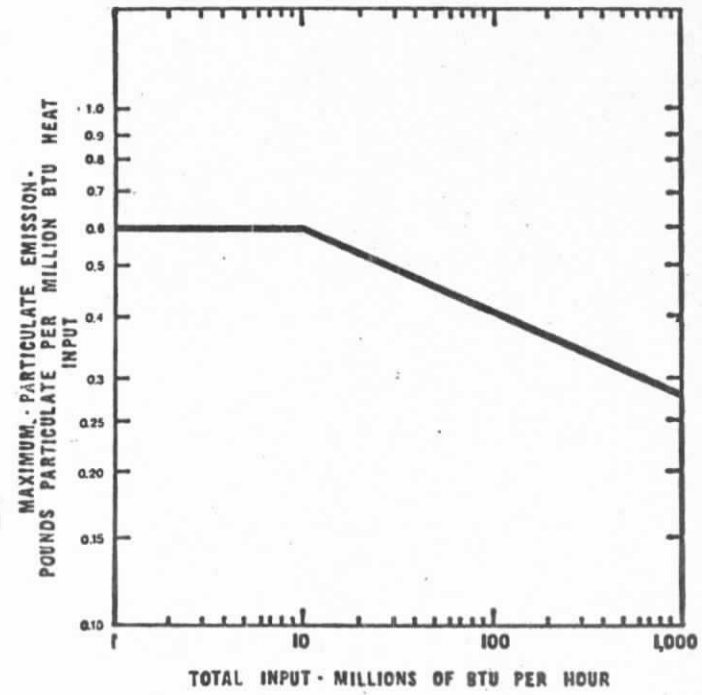
b. Malfunction of equipment. Emissions exceeding any of the limits established in this chapter as a direct result of unusual conditions in or malfunction of any incinerator or any process, fuel-burning, or control equipment or related operating equipment beyond the control of the person owning or operating such equipment shall not be deemed to be in violation of this section, provided that the owner or operator advises the engineer within forty-eight hours of the circumstances and outlines a corrective and preventive program acceptable to the engineer.

TABLE 1

Process Wt/hr (lbs)	*Maximum Weight Disch/hr (lbs)*	*Process Wt/hr (lbs)*	*Maximum Weight Disch/hr (lbs)*
50	0.24	3400	5.44
100	0.46	3500	5.52
150	0.66	3600	5.61
200	0.85	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	1.85	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	10.00
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	28.30
3000	5.10	50000	34.30
3100	5.18	60000	40.00
3200	5.27		
3300	5.36		

Figure - 1

MAXIMUM EMISSION OF PARTICULATE MATTER FROM FUEL BURNING INSTALLATIONS



c. Circumvention. No person shall build, erect, install or use any article, equipment or other contrivance the sole purpose of which is to conceal an unlawful emission without resulting in a reduction in the total release of air pollutants or air contaminants into the atmosphere.

Sec. 31-32. Enforcement procedure, engineer.

Whenever the engineer has reason to believe that a violation of any provision of this chapter, or a rule or regulation issued pursuant thereto has occurred, he may give notice of such violation to the person or persons failing to comply with this chapter, ordering them to do so. Such notice shall be put in writing, include a statement of the reasons why it is being issued, allow a specified reasonable time to commence the performance of any such act it directs, and allow a specified reasonable time to complete such performance and be served upon the person or persons. Such notice shall be deemed properly served if a copy thereof is delivered personally, or if he is not found at the premises involved, by mailing a copy thereof by certified mail to the premises involved and posting a copy thereof in a conspicuous place in or about the premises affected by the notice.

If any person served with a notice pursuant to this section does not:

a. Within the specified time after serving upon him such notice commence compliance with the directions thereof, or

b. Within the specified time after serving upon him such notice complete such compliance, or

c. Within ten days after such service perfect an appeal to the Smoke Control Appeal Board, he shall be guilty of a violation of the provisions of this chapter.

In lieu of such notice the engineer may initiate appropriate action for the recovery of a penalty or restraint or both.

Sec. 31-33. Voluntary compliance.

Nothing in this chapter shall prevent the engineer from making efforts to obtain voluntary compliance through warning, conference or any other appropriate means.

Sec. 31-34. Authority of engineer to enter into fuel agreements.

The engineer is hereby empowered and authorized to make and enter into, on behalf of the City, fuel agreements with owners of buildings, plants, installations or replacements whereby such owner in consideration of a permit being issued for the installation or replacement agrees to burn only certain specified fuels.

Sec. 31-35. Smoke Control Appeal Board.

There is hereby created and established a Smoke Control Appeal Board, herein sometimes referred to as the "board", which shall consist of the director of public works, an assistant city manager designated by the city manager and a resident of the City having some knowledge of control equipment or fuel-burning equipment and boilers. The resident member shall be appointed by the City Council for a term of three years.

The Smoke Control Board shall elect its chairman from its membership. All members of the board shall be entitled to vote and its decisions shall be determined by a majority vote of the members present. A quorum of three members present is required before the board may take any official action and all official decisions shall be by at least a majority vote. All meetings of the board shall be open to the public and a full and impartial hearing shall be granted on all appeals. Insofar as reasonably possible, all hearings shall be informal and free from technical rules of law and evidence. When voting on any questions, the determination may be made by secret ballot but no proxy shall be allowed at any time. The board shall keep minutes of its proceedings and all findings, decisions and orders shall be reduced to writing and entered as a matter of public record in the office of the City Manager. In matters concerning the procedure for meetings not covered by this chapter, the board

may establish its own rules; provided that they are not contrary to the spirit of this chapter.

Sec. 31-36. Appeals to Board.

Any person refused a permit, refused a certificate or affected by any notice or order which has been issued in connection with the enforcement of any provision of this chapter, other than an emergency order, may request and shall be granted a hearing on the matter by the board; provided that such person shall within ten days after refusal or service of notice or order, file in the office of the City Manager a signed written notice of appeal, requesting a hearing and setting forth a brief statement of the reasons therefor. Upon receipt of such notice of appeal, the assistant city manager on the board shall promptly notify the board, and the board shall set a time and place for such hearing and shall give the person appealing and the engineer notice thereof. The board shall schedule hearings for and determine such appeals as promptly as practicable. Appeals to the board shall not be made in matters in which a penalty or restraint proceeding has been instituted.

After such hearing the board may affirm, amend, modify or withdraw the refusal, notice or order appealed from. The decision of the board shall constitute an order and any person who shall fail, refuse or neglect to comply with any such order shall be guilty of violating the provisions of this chapter.

Sec. 31-37. Appeals to board in emergencies.

Any person affected by any order which has been issued in connection with the enforcement of Section 31-39 of this chapter may request and shall be granted a hearing on the matter by the board; provided that such person shall, within seventy-two hours after service of an order, request the engineer to schedule an appeal. Upon receipt of such request, the engineer shall forthwith notify the board and the board shall forthwith set a time and place for such hearing and shall give the person appealing and the engineer notice thereof. Appeals to the board shall not be made in matters in which a penalty or restraint proceeding has been instituted.

After such hearing the board may affirm, amend, modify or withdraw the order appealed from. The decision of the board shall constitute an order and any person who shall fail, refuse or neglect to comply with any such order shall be guilty of violating the provisions of this chapter.

Sec. 31-38. Appeals from board decision.

The decision of the board shall in all cases be final; except that any appellant or party directly aggrieved by a decision of the board may, provided he does so within thirty days after the rendering of such decision, appeal to a court of record of competent jurisdiction for a further review, and the findings of fact of such board shall be conclusive and such review shall be limited solely to errors of law and whether or not the decision of the board is arbitrary and constitutes an abuse of discretion. The court may accordingly affirm, reverse or modify the decision of the board.

Sec. 31-39. Emergency procedure.

Notwithstanding the provisions of this chapter or any other provision of law, if the engineer finds that any person is violating this chapter and that such violation creates an emergency which requires immediate action to protect the public health or safety, the engineer shall order such person to reduce or discontinue immediately the violation and such order shall be complied with immediately. Such order shall be deemed properly served if a copy thereof is delivered personally, or if the person involved is not found, by mailing a copy thereof by certified mail to the person involved at the premises involved and his business and residence address, if known, and by posting a copy thereof in a conspicuous place in or about the premises affected. Upon service of any such order, the engineer, if requested by the person so ordered, within seventy-two hours after service, shall schedule an appeal before the board. Any person who shall fail,