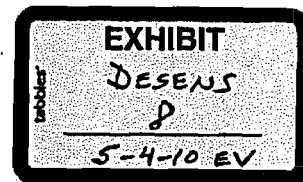


State of New York
DEPARTMENT OF STATE)

Plaintiffs' Exhibit
LNX 5364

Plaintiffs' Exhibit
ECR 5014

IT IS HEREBY CERTIFIED, *that* the attached is a true copy of Industrial
Code Rule No. 12 as filed with the New York State Department of State on
August 1, 1958 to be effective November 1, 1958.



WITNESS my hand and the official seal of the
Department of State at the City of Albany,
this first day
of May one thousand
nine hundred and ninety.

A handwritten signature in cursive script, appearing to read "Philip S. Shapiro".

Secretary of State

Industrial Code Rule No. 12—Removal of Dust, Gases and Fumes

Industrial Code Rule No. 12, as revised and redesignated May 12, 1954 and filed May 13, 1954 (pages 535 and 536, tenth supplement), repealed June 21, 1956; effective October 1, 1956; filed August 7, 1956. Statutory authority §§ 27-a, 28, 29, 200 and 299, Labor Law.

Industrial Code Rule No. 12—Control of Air Contaminants

(Adopted June 21, 1956; effective October 1, 1956; filed August 7, 1956.
Statutory authority §§ 27-a, 28, 29, 200 and 299, Labor Law)

12-1. Application. This rule applies to all processes and operations releasing or disseminating air contaminants in any workroom or work space except such processes or operations as are within the application of:

Industrial Code Rule No. 4—Relating to Bakeries and Confectioneries.

Industrial Code Rule No. 11—Relating to Milling Industry and Malt House Elevators.

Industrial Code Rule No. 23—Rule Relating to Protection of Persons Employed in the Erection, Repair and Demolition of Buildings or Structures.

Industrial Code Rule No. 27—Relating to Construction, Equipment, Maintenance and Operation of Laundries.

Industrial Code Rule No. 29—Relating to Dry Dyeing Plants and Dry Cleaning Plants.

Industrial Code Rule No. 32—Relating to Spray Coating of Motor Vehicles.

Industrial Code Rule No. 33—Relating to Control of Silica Dust in Rock Drilling.

Industrial Code Rule No. 34—Relating to Control of Silica Dust in Stone Crushing Operations.

Industrial Code Rule No. 35—Relating to Control of Silica Dust in Stone Cutting and Stone Finishing Industry.

Industrial Code Rule No. 38—Relating to Radiation Protection.

It applies also to all employees engaged in such processes or operations and to their employers.

12-2. Responsibility of employers. Every employer shall observe and effect compliance with the provisions of this rule relating to prevention of air contamination and to providing, installing, operating and maintaining control or protective equipment, and shall instruct his employees as to the hazards of their work, the use of such control or protective equipment and their responsibility for complying with this rule.

12-3. Responsibility of employees. Every employee shall use the control and protective equipment provided for his protection.

12-4. Existing equipment. Control equipment installed prior to October 1, 1956 in accordance with the provisions of the law and the industrial code then in effect, and which is so maintained, is exempt from all other or different provisions of this rule while such maintenance continues.

12.5. Plans and specifications. 1. Upon the filing of plans and specifications for the installation or extension of any ventilating system pursuant to an order of the commissioner issued under section 299 subdivision 5 of the Labor Law, such plans and specifications shall be filed in triplicate together with such other information as the commissioner may require for his examination and acceptance.

2. Any employer subject to this rule, or his authorized agent, may if he so desires submit to the commissioner for his examination and recommendations the plans and specifications of any air contaminant control method or apparatus. If such plans are submitted, they shall be submitted in triplicate with three copies of all specifications necessary to provide complete details on the location and size of all hoods, mains, branch ducts, fans, motors and other apparatus and the kind of work for which they are to be used. Upon receipt of such plans and specifications the commissioner shall examine the same and make such recommendations as may be indicated.

12.6. Definitions. As used herein or in connection with this rule the following terms mean:

1. **Abbreviations.**
c.f.m.—cubic feet per minute.
f.p.m.—feet per minute.
2. **Abrasive blasting operation.** The process of blasting metal or other materials by means of abrasive for the purpose of removing sand, rust, scale, paint or other substances; or to produce certain etches or finishes; or otherwise to change the physical characteristics of the material.
3. **Acceptable.** In compliance with the spirit and intent of this rule, and after inspection by the commissioner, satisfactory to him as so complying.
4. **Air cleaning device.** Any device for separating the air contaminants from air which has been collected through an exhaust system.
5. **Air contaminants.** Air-borne substances such as dusts, fibres, fumes, gases, mists, vapors or other impurities.
6. **Air mover.** Any device which produces forced air flow: such as a fan, ejector, natural draft stack and the like.
7. **Approved.** In respect to a device or material—in compliance with a subsisting resolution of approval adopted by the board. In respect to action by the board—made the subject of a resolution of approval.
8. **Board.** The Board of Standards and Appeals of the state of New York.
9. **Branch pipe.** The connection from a hood, booth or enclosure to its first junction with another pipe.
10. **Commissioner.** The industrial commissioner of the state of New York.
11. **Confined space.** Interior of tanks, boilers and other unventilated spaces.
12. **Control equipment.** Any equipment used to prevent air contamination or reduce or remove air contaminants.
13. **Dangerous air contaminants.** Air contaminants in quantities tending to injure the health of employees or create a substantial fire or explosion hazard.
14. **Dilution ventilation.** Any ventilation system other than local exhaust ventilation.
15. **Exhaust system.** A ventilating system operating under negative pressure for the control of air contaminants.

16. *Fibres.* Particles produced by handling, cutting, stripping, spinning or weaving of cotton, wool, fur, asbestos or other organic or inorganic material constituted of thread-like or slender elements.
17. *Local exhaust ventilation.* Any system of ventilation for exhausting air contaminants at the source of generation.
18. *Main.* Pipes or ducts which extend directly from the air mover and to which branch ducts or pipes are connected.
19. *Mechanical ventilation.* Any system designed to introduce air into or remove air from any workroom or space by means of an air mover.
20. *Open surface tank operation.* Any operation involving the immersion of materials into liquids or vapors of liquids for the purpose of cleaning or altering the surface character, the subsequent removal from the liquid or vapor and the draining and drying of such materials, e.g., washing, electroplating, anodizing, pickling, quenching, dyeing, tanning, dressing, bleaching, degreasing, alkaline cleaning, stripping, etc.
21. *Personal respiratory protective equipment.* A respirator or other device worn for the purpose of preventing the wearer from inhaling harmful amounts of air contaminants.
22. *Practicable.* Capable of being done without disturbing essential associated functions or structural elements.
23. *Recirculation.* The return of part or all of the exhaust air to any space occupied by employees.
24. *Shall.* The word "shall" is always mandatory.
25. *Tumbling process.* Any process in which articles, pieces or parts are placed in a rotating barrel, drum, mill or cage for the purpose of removal of rust, scale, debris or dust as well as for the purpose of smoothing, polishing, burnishing or cleaning by means of agitation.

12-7. *Prevention.* All processes and operations where practicable shall be so conducted or controlled as to prevent avoidable creation of air contaminants.

12-8. *General control requirements.* Dangerous air contaminants shall be removed or controlled as prescribed in this rule or by means or methods approved by the board.

12-9. *General control methods.* One or more of the following methods shall be used to prevent, remove, or control dangerous air contaminants:

1. Substitution of a material which does not produce air contaminants;
2. Local exhaust ventilation at the source of generation of the air contaminant;
3. Dilution ventilation in any work space in which air contaminants are generated or released;
4. Application of water or other wetting agent to prevent air contaminants;
5. Other methods approved by the board.

12-10. *Specific control requirements.*

12-10.1. *Grinding and polishing wheels, etc.* Grinding, polishing, buffing, scratch-bruising, operations and in abrasive cutting-off wheel and grinding or polishing belt strap operations generating dangerous air contaminants shall be provided with local exhaust ventilation and an air-cleaning device.

Exceptions:

1. Wet grinding, with other than sand stone wheels and wet polishing and buffing operations if enclosures are provided which prevent splash

or dispersion of liquids, abrasive compounds or mists into the workroom.

2. Intricate and precision grinding discs or wheels not over one inch in diameter.

3. Grinding or polishing of articles and instruments made of gold and platinum.

4. Intermittent tool grinding operations used for shop purposes only.

12-10.2. *Woodworking machines.* Woodworking operations generating dangerous air contaminants shall be provided with local exhaust ventilation and an air-cleaning device.

12-10.3. *Miscellaneous machines.* The following machines, apparatus, operations or equipment generating dangerous air contaminants shall be controlled as provided in article 12-9:

1. Cutting, sanding, dressing, polishing, buffing, snagging or similar operations on plastics, leather, glass, rubber, mother-of-pearl, ivory, nuts, and like material.

2. Picking or garnetting fibrous substances or shoddies.

12-10.4. *Melting apparatus.* Vessels operated at or in excess of the temperature of volatilization* of such metals, alloys or compounds as antimony, beryllium, cadmium, lead, selenium or tellurium, together with the combustion chamber, which generate dangerous air contaminants shall be provided with local exhaust ventilation. Vessels used for melting or cleaning such metals, alloys or compounds together with the combustion chamber shall be provided with local exhaust ventilation when operated in such a manner as to generate dangerous air contaminants. *Exception:* . . . Portable receptacles or apparatus which have no fixed location.

12-11. *Operation and maintenance.*

12-11.1. *Operation.* Control equipment shall be operated in conformity with this rule.

12-11.2. *Repair and cleaning.* Control equipment and cleaning devices shall be maintained in good repair and clean condition and be so located as to afford ready and safe access for servicing. The machinery, equipment, and working area shall be kept in a clean and orderly condition with all unnecessary dust, spillage and debris removed at frequent intervals so as to maintain good housekeeping.

12-11.3. *Grounding.* Control equipment including hoods, ducts, air movers, motors, and cleaning devices, which is used for exhausting any material which constitutes a fire or explosion hazard shall be effectively grounded electrically. Resistance to ground shall not exceed 25 ohms.

12-12. *Isolation or segregation of operations.* All processes or operations releasing or disseminating dangerous air contaminants shall be isolated, enclosed or otherwise segregated insofar as practicable.

12-13. *Separation of different processes creating a hazard.*

12-13.1. *Separate exhaust systems.* Where processes generate different air contaminants which could, if intermixed, result in a fire or explosion hazard, such contaminants shall be exhausted by separate systems so as to eliminate such possibility.

12-13.2. *Ignition.* Processes or operations using or generating air contaminants which may constitute a fire or explosion hazard shall be protected from sources of ignition.

12-14. *Personal respiratory protective equipment.*

12-14.1. *Use.* Personal respiratory protective equipment shall not be used in lieu of other control methods, except for protection of employees in emer-

* So in original. Apparently should be "volatilization".

gencies and in the repair, maintenance, or adjustment of equipment or processes, or upon specific approval by the board.

12-14.2. *Approval.* Personal respiratory protective equipment shall be of a type approved by the board for the particular class of substance or substances constituting the air contaminant.

12-14.3. *Maintenance.* Personal respiratory protective equipment shall be stored in air-tight containers or cabinets or in an uncontaminated area. Equipment shall be cleaned, serviced and repaired to maintain it in effective working condition and it shall be sterilized before use by any person other than the last wearer.

12-15. *Goggles, masks and shields.* All employees exposed to air contaminants tending to injure or irritate the eyes shall be provided with and shall wear either safety goggles, close-fitting chemical goggles or an effective face mask or shield. An employee requiring prescription lenses in the normal performance of his work, shall be supplied with goggles designed to fit over his regular spectacles or prescription goggles shall be provided in lieu of the foregoing.

12-16. *Protective clothing.* All employees exposed to air contaminants which tend to cause skin irritation or skin diseases, or which can be absorbed through the skin in amounts tending to injure the health, shall be provided with appropriate clean, protective clothing, such as coveralls, coats, headgear, gloves, sleeves or aprons as needed or where suitable, or skin-protective preparations.

12-17. *Sanitary facilities.* Proper facilities for flushing the skin and body members shall be provided where employees are exposed to corrosive air contaminants.

12-18. *Requirements for exhaust systems.*

12-18.1. *Components and air flow.* An exhaust system shall include either:

- a. Hoods, booths or enclosures of proper design at points of generation or release of air contaminants, connected by means of pipe, duct or other conduit to air movers and, where necessary, air-cleaning devices; or
- b. Other means of proper design, for directing the flow of air contaminants from the points of generation or release to air movers and, where necessary, air-cleaning devices.

c. The air flow into each hood, booth or enclosure and the capacity of the air mover shall be sufficient to maintain controlling velocities.

12-18.2. *Capacity.* The capacity of an exhaust system shall be calculated on the basis that all hoods, booths and enclosures connected to the system are open except when otherwise specifically permitted by the commissioner upon his finding that a split system provides the required control.

12-18.3. *Discharge from exhaust systems.* The point of discharge of any exhaust system shall be located so as to prevent or minimize the entry or re-entry of contaminated air into any work place.

12-18.4. *Recirculation.* Discharge air which contains dangerous air contaminants shall not be recirculated.

12-18.5. *Maintenance of air flow.* The required air velocity and rate of air flow through a hood, booth, enclosure or other point of ventilation shall be maintained at all times when the machine or process to which ventilation is applied is in operation or use.

12-18.6. *Make-up air.* Air inlets or air supply systems shall be provided for the admission of make-up air to replace that removed by an exhaust system, as follows:

- a. The air supply shall enter the workroom in such manner that no employee in a normal working position is subject to a draft of air having a temperature of more than 10°F below the general temperature of the room or a greater velocity than 200 feet per minute.

Subject to this requirement, windows, doors and other building openings

may be used in place of special air inlets. Make-up air shall not be taken from any location where it is contaminated by discharge from exhaust ducts, stacks or other plant effluents.

12-18.7. *Design of hoods, booths or enclosures.* Every hood, booth or enclosure shall be designed, constructed and located, where practicable, so that the air contaminants will fall, be projected or drawn in the direction of air flow.

12-18.8. *Construction of hoods, booths or enclosures.* a. *Heavy abrasive concentrations.* Hoods, booths or enclosures made of metal shall be at least two gauges heavier than the gauge required for piping connected thereto. If made of other materials, they shall be of equivalent strength and rigidity.

b. *Gases, fumes, vapors and light dusts.* Hoods, booths or enclosures shall be at least the same gauge as the piping connected thereto.

12-18.9. *Piping-design of systems handling dust.*

12-18.9.1. *Pipe joints.* 1. All joints and seams shall be soldered, welded or otherwise sealed to make them tight. *Exception:* Pipes on exterior of buildings on discharge side of air movers.

2. Longitudinal lap joints or seams in metal pipe, except when of welded construction, shall be double locked or lapped one inch and riveted with rivet centers of not more than three inches. Sheet metal screws may be used when nonfibrous material is handled.

3. Lap joints shall be made so that the outlet end of one length fits into the inlet end of the next length in the direction of air flow. The minimum length of lap shall be $1\frac{1}{4}$ inches and rivets shall be provided at not more than $4\frac{1}{2}$ -inch centers. There shall be not less than four rivets in any such lap joint. Sheet metal screws may be used when nonfibrous material is handled.

4. Spot welds may be used in place of rivets in equal numbers.

5. Joints of material other than metal shall be of equivalent strength and rigidity.

12-18.9.2. *Telescopic joints.* Telescopic joints shall be constructed so that the pipe connected to the hood extends into the outer pipe at least one pipe diameter, but not less than six inches, when fully extended. The end of the outer pipe shall have a reinforcing band or bead. The fixed member shall be firmly supported.

12-18.9.3. *Branch pipe junctions to mains.* 1. Every branch pipe shall be connected to the main pipe at the side or top and at an angle not exceeding 45 degrees and shall incline in the direction of air flow at junction to the main. Branch pipes shall not project into the main, and shall junction with the main in the tapered section as close as practicable to the larger end of the section. "Shoe" or special fittings are acceptable where space limitations prevent compliance with the above.

2. Not more than one branch pipe shall enter the main at the same plane of intersection, except at the terminal, or where the branch pipes enter at an angle of 30 degrees or less.

12-18.9.4. *Transformation pieces.* Transformation pieces shall be tapered so that the length of the taper shall be not less than five times the difference between the diameters of the smaller and the larger pipes. Transformation pieces shall increase in area by the amount necessary to maintain the required air velocity, and shall be of the same gauge of metal as the larger size of pipe.

12-18.9.5. *Elbows and bends.* 1. Round elbows shall have a center line radius equal to two times the pipe diameter wherever available space permits.

2. In place of the above, rectangular elbows, venturi-shaped elbows or other bends of equivalent low-resistance design may be used.

3. All 90-degree bends or elbows six inches or less in diameter shall be made of not less than five pieces or equivalent prefabricated construction. All 90-degree bends or elbows more than six inches in diameter shall be made of not less than seven-piece construction. Obtuse angles, bends or elbows shall be pieced proportionately.

4. Elbows and bends shall be of metal not less than two gauges heavier than the piping connected thereto.

12-18.9.6. *Cleanout openings.* 1. Cleanout openings, spaced not more than 20 feet apart on pipes which are larger than 12 inches in diameter or 12 feet apart on smaller diameter pipes, shall be provided in all horizontal runs and shall always be provided at bends and pipe junctions.

2. Cleanout openings shall be of a size that will permit ready access to the interior of the pipe and shall offer no obstruction to air flow. Removable caps shall be installed at all terminal ends. When piping is constructed with flanged joints for purposes of cleaning, inspection openings shall be provided in such piping in place of regular cleanouts.

3. Pipe reinforcing shall be done on the outside of the pipe.

12-18.9.7. *Dampers and gates.* The use of dampers, gates, or orifices is prohibited in an exhaust system except for the purpose of balancing the air flow in the system. If so used, they shall be riveted or permanently fastened to prevent any further manipulation.

12-18.9.8. *Pipe supports.* 1. Horizontal runs of pipe, including branch pipes extending more than three feet shall be securely supported and fastened to some substantial portion of the building structure or to permanent supports. Such supports shall not be over 12 feet on centers for 8-inch or smaller pipes and 20 feet on centers for pipes larger than 8-inch diameter and in any case shall be sufficient to carry the weight of the system if plugged with material.

Exception: Thick-wall welded pipe may be spaced on such centers as will be structurally safe.

2. Vertical runs of branch pipes shall be supported securely.

12-18.9.9. *Pipe location.* Piping shall be located so as not to cause a fire hazard, shall be accessible for inspection and maintenance and shall be protected against external damage.

12-18.9.10. *Materials of construction.* 1. Pipes or ducts shall be constructed of not less than the following gauges of steel or iron, plain hot rolled or galvanized:

Pipe Diameter		U. S. Standard Gauge of Metal	
	Highly abrasive matter and long hour usage (over 30% use factor).	Highly abrasive matter and short hour usage (under 30% use factor). Mild abrasive matter and long hour usage.	Mild abrasive matter and short hour usage.
Up to 4"	22	24	24
Over 4" to 8" incl.	20	22	24
Over 8" to 18" incl.	18	20	22
Over 18" to 30" incl.	16	18	20
Over 30"	14	16	18

2. Where a flexible section of piping is necessary, flexible noncollapsible piping shall be used and its length shall be kept to a minimum.

3. Other materials used for the construction of piping, ducts, hoods, booths and enclosures shall be of a type approved by the board.

12-18.9.11. *Air flow requirements.* 1. The system shall be so designed as to provide the required air flow in every branch pipe. Means shall be designed to provide a substantially uniform air velocity through each branch.

2. The branch and main pipe size shall be based on an air velocity sufficient to transport the substances collected by the hoods, booths or enclosures, except where an oversize main or plenum system is used with acceptable means of refuse-removal therefrom.

3. Branch pipe connections to hoods, booths and enclosures shall be shaped to minimize the orifice and resistance losses due to the flow of air into the system.

12-18.10. *Piping-design of systems handling fumes, gases and vapors.*

12-18.10.1. *Design and operation.* The piping system shall be designed, constructed, maintained and operated to insure the flow of the volume of exhaust air required to protect employees from exposure to dangerous air contaminants.

12-18.10.2. *Materials of construction.* 1. Pipes or ducts shall be constructed of not less than the following U. S. Standard gauges of steel or iron, plain hot rolled or galvanized:

Duct Diameter	Gauge	Rectangular Duct	Gauge
Up to 5"	26	Maximum Dimension	
Over 5" to 29"	24	4" to 30"	24
over 29" to 39"	22	over 30" to 60"	22
over 39" to 49"	20	over 60" to 90"	20
over 49"	18	over 90"	18

2. Pipes for corrosive fumes, gases or vapors shall be constructed of, or coated with, materials of corrosion resisting properties.

3. Other materials used for the construction of piping, ducts, hoods, booths and enclosures shall be of equivalent strength and rigidity.

12-19. Air movers.

12-19.1. *General.* Every exhaust system shall be connected to an air mover which shall maintain the required rate of air flow in all parts of the exhaust system. Such air mover shall be of a type and size suitable for handling the air contaminant to be exhausted. Where practicable, the air mover shall be located beyond the air-cleaning equipment so as to handle clean air. The commissioner may require the submission to him of the manufacturer's performance data for the air mover.

12-19.2. *Capacity.* The operating characteristics of the air mover shall be such as to create the required rate of air flow when operating against the total resistance pressure of the exhaust system. When requested by the commissioner, the design calculation of the exhaust system shall be submitted to him.

12-19.3. *Connection to system.* In all exhaust systems, except when the air mover draws from a plenum chamber, such air mover shall be connected to the inlet pipe by a split sleeve or draw band not less than 18 inches long securely fitted to prevent air leakage. This provision, however, does not apply when the air mover has an inspection door or when the air mover is located at the end of the system or otherwise may be readily disconnected from the system for inspection.

12-19.4. *Fire and explosion.* Air movers handling air containing flammable or explosive dusts, gases, or vapors shall have nonferrous moving parts.

12-20. Air cleaning devices.

12-20.1. *Requirements.* Every exhaust system handling dust or fibres shall be provided with an air-cleaning device to remove air contaminants before discharge to outer air. Exhaust systems handling fumes, gases, mists or vapors shall be so arranged that discharged air contaminants will not re-enter the workroom.

12-20.2. *Removal of debris.* Collected materials shall be removed and disposed of at such intervals as may be necessary to maintain the equipment at the required operating efficiency. Safe and ready means shall be provided for such removal and disposal.

12-21. Air flow and branch pipe requirements.

12-21.1. *Stationary grinding, polishing, etc.* Stationary grinding, polishing, buffing and scratch-brushing operations subject to article 12-10. shall be provided with local exhaust ventilation operating at not less than the rates specified in the following table:

SIZE OF WHEEL OR DISC 1 Diameter in inches Width, inches		Minimum rate of air flow through hood in c.f.m.
1. GRINDING AND ABRASIVE CUTTING-OFF WHEELS		
Up to 9.....not over 1½		220
Over 9 to 16.....not over 2		300
Over 16 to 19.....not over 3		500
Over 19 to 24.....not over 4		610
Over 24 to 30.....not over 5		850
Over 30 to 36.....not over 6		1200
2. BUFFING, POLISHING, AND SCRATCH BRUSHING WHEELS (NOTE 1)		
Up to 9.....not over 2		300
Over 9 to 16.....not over 3		500
Over 16 to 19.....not over 4		610
Over 19 to 24.....not over 5		740
Over 24 to 30.....not over 6		1040
3. HORIZONTAL SINGLE SPINDLE DISC GRINDERS		
Up to 12.....—		220
Over 12 to 19.....—		390
Over 19 to 30.....—		610
Over 30 to 36.....—		850
4. HORIZONTAL DOUBLE SPINDLE DISC GRINDERS		
Up to 19 inc.....—	1 pipe	610
Over 19 to 25 inc....—	1 pipe	850
Over 25 to 30 inc....—	1 pipe	1200
Over 30 to 53 inc....—	2 pipes	1770 (Note 2)
Over 53 to 72 inc....—	4 pipes	6250
5. VERTICAL SINGLE SPINDLE DISC GRINDERS (Not covered)		
Up to 20 inc.....2 pipes		610
(Note 2)		
Over 20 to 30 inc....2 pipes		1490
Over 30 to 53 inc....4 pipes		3530
Over 53 to 72 inc....5 pipes		6010

Notes applying to the above tables:

Note 1. "Polishing wheels" means "made-up" hard wheels faced with abrasive.

Note 2. One branch pipe may be used wherever two or more branch pipes are required provided the cross-sectional area of the single branch pipe is equal to the combined cross-sectional area of the required number of branch pipes and the air flow into the encircling hood is substantially uniform at all points.

SIZE OF WHEEL OR DISC Diameter in inches (Contd.)	Width, inches (Contd.)	Minimum rate of air flow through hood in c.f.m. (Contd.)
6. VERTICAL SINGLE SPINDLE DISC GRINDERS (More than half covered)		
Up to 20 inc.....	1 pipe	500 (Note 3)
Over 20 to 30 inc..	2 pipes (Note 2)	780
Over 30 to 53 inc..	2 pipes (Note 2)	1770
Over 53 to 72 inc..	2 pipes (Note 2)	3140
7. GRINDING AND POLISHING BELTS AND STRAPS		
.....	Up to 3	220
.....	3 to 5	300
.....	5 to 7	390
.....	7 to 9	500
.....	9 to 11	610
.....	11 to 13	740

Notes applying to the above tables:

Note 2. One branch pipe may be used wherever two or more branch pipes are required provided the cross-sectional area of the single branch pipe is equal to the combined cross-sectional area of the required number of branch pipes and the air flow into the encircling hood is substantially uniform at all points.

Note 3. "Half covered" means a minimum covering of not less than 50 percent of the open area over the top of the grinding wheel.

Note 4. Local exhaust ventilation of high speed machinery shall provide such higher rates of air flow as may be necessary to control the contaminants. The Commissioner shall advise on the minimum rates of air flow required in such case.

12-21.2. Other stationary grinding, polishing, buffing, and scratch-brushing operations. 1. For wheels of greater width than given in the above tables the minimum rate of ventilation shall be not less than that specified for wheels of equal grinding surface area.

2. For wheels of greater surface area than that given in the above tables, the minimum air volume shall be increased at the rate of 30 cfm to each 20 square inches of wheel surface area.

3. Grinding or polishing belts and straps wider than 13 inches shall be ventilated at a rate of not less than 50 cfm per inch of width.

4. For any wheel or belt strap not specifically listed, the rate of ventilation shall be in proportion to the above requirements.

5. An air volume of 200 cfm may be used for jewelry or dental buffing where wheels six inches or less in diameter are used and for surface grinders, cutter grinders, and similar tool room machines.

6. Swing frame grinders shall be provided where practicable with a booth which shall be ventilated at a rate of not less than 150 cfm per square foot of open area.

12-21.3. Hood and enclosure design. 1. Local exhaust hoods which are used as protection hoods in grinding operations shall be constructed in accordance with article 18-22 of Industrial Code Rule No. 19.

2. Portable or flexible shaft tools used for grinding, buffing, polishing and sanding operations, where subject to article 12-10, shall be conducted with hoods of one of the following types where practicable:

1. A downdraft grille of adequate size with respect to the work processed with exhaust ventilation of not less than 150 cfm of gross open area.

Note 4 does not specifically apply to any of the requirements of the table appearing on pages 721 and 722 but apparently has been included for general information.

2. A booth or enclosure ventilated at a rate not less than 100 cfm per square foot of gross open area.

3. A suction hood of sufficient size and capacity to maintain a velocity in the direction of the hood of not less than 100 fpm at the point of operation when it is most remote from the hood. Wherever practicable, the hood shall be located in the direction of dust throw.

Exception: Occasional portable and flexible shaft grinding, polishing, buffing and sanding operations which are not regular shop production operations.

12-21.4. *Woodworking and miscellaneous.* 1. Woodworking and miscellaneous operations creating dangerous air contaminants shall be provided with local exhaust ventilation at rates not less than hereafter specified.

2. The air volumes and number of branches required for woodworking and miscellaneous machinery subject to this rule shall be not less than those shown hereafter.

Air volume cfm	Branch pipe diameter inches
200	3
350	4
440	4½
550	5
660	5½
800	6
1100	7
1400	8
1800	9
2200	10
3100	11

A. *Self-feed table rip saws:* 350 cfm for bottom hood and 350 cfm for saw hood.

Note: For closed chain saw use 550 cfm for saw hood.

B. *All other rip, table mitre, sving and variety saws.*

Up to 12-inch diameter: 350 cfm

Over 12-inch to 16-inch diameter: 440 cfm

Over 16-inch diameter: 550 cfm

Dado heads—any diameter: 550 cfm

C. *Gang circular saws.* Ventilation rate shall be such as to provide the required control.

D. *Band saws and resaws.*

Up to 2-inch blade: 350 cfm each for cutting hood and lower wheel enclosure. Where wheel diameter is 16 inches or less—350 cfm in single hood.

Over 2-inch to 3-inch-wide blade: 550 cfm for cutting hood and 350 cfm for lower wheel enclosure.

Over 3-inch to 4-inch-wide blade: 800 cfm for cutting hood and 550 cfm for lower wheel enclosure.

Over 4-inch to 5-inch-wide blade: 1100 cfm for cutting hood and 550 cfm for lower wheel enclosure.

Over 5-inch-wide blade: 1400 cfm for cutting hood and 550 cfm for lower wheel enclosure.

E. *Disc sanders.*

Up to 12-inch-diameter disc: one branch with 350 cfm.

Over 12-inch to 18-inch-diameter disc: one branch with 440 cfm.

Over 18-inch to 24-inch-diameter disc: one branch with 550 cfm.

Over 26-inch to 32-inch-diameter disc: two branches each with 350 cfm.

Over 32-inch to 38-inch-diameter disc: one branch with 350 cfm and one branch with 550 cfm.

Over 38-inch-diameter disc: one branch with 550 cfm and two branches with 350 cfm each.

F. *Multiple drum sanders* (Drums over the table).

Up to 31-inch-wide drum: one branch per drum with 550 cfm.

Over 31-inch to 49-inch-wide drum: one branch per drum with 800 cfm.

Over 49-inch to 67-inch-wide drum: one branch per drum with 1100 cfm.

Over 67-inch-wide drum: one branch per drum with 1400 cfm.

Use 350 cfm for brush. Fewer branches may be used as long as total branch pipe air volume is not reduced.

G. *Multiple drum sanders* (Drums under the table).

Up to 31-inch-wide drum: one branch per drum with 350 cfm.

Over 31-inch to 49-inch-wide drum: one branch per drum with 550 cfm.

Over 49-inch to 67-inch-wide drum: one branch per drum with 800 cfm.

Over 67-inch-wide drum: one branch per drum with 1100 cfm.

Use 350 cfm on brush. Fewer branches may be used as long as total branch pipe air volume is not reduced.

H. *Single drum and spindle sanders.*

Up to 50 square inches of sanding surface: 200 cfm.

Over 50 to 200 square inches of sanding surface: 350 cfm.

Over 200 to 400 square inches of sanding surface: 440 cfm.

Over 400 to 700 square inches of sanding surface: 550 cfm.

Over 700 to 1400 square inches of sanding surface: 800 cfm.

Over 1400 to 2400 square inches of sanding surface: 1100 cfm.

On drums of more than 2400 square inches of sanding surface a branch of a size determined as follows: $d = 0.133 \sqrt{a}$, where d = branch diameter in nearest standard size and a = square inches of sanding surface.

On long drums of small diameter, air volumes mentioned above should be divided into two or more branches at least equalling in volume that of the single volume specified.

I. *Horizontal belt or edge sanders.*

Up to 6-inch-wide belt: 440 cfm for drive pulley and 350 cfm for idler pulley.

Over 6-inch to 9-inch-wide belt: 550 cfm for drive pulley and 350 cfm for idler pulley.

Over 9-inch to 14-inch-wide belt: 800 cfm for drive pulley and 440 cfm for idler pulley.

Over 14-inch-wide belt: 1100 cfm for drive pulley and 550 cfm for idler pulley.

Where more than one belt is used, the air volumes specified shall be required for each belt. Where a common hood is used for more than one belt, a volume of not less than the sum of the volumes specified shall be used.

Where the belt direction is reversible, the volume for the idler pulley shall be the same as specified for the drive pulley.

J. *Vertical belt sanders* (rear belt and both pulleys enclosed).

Up to 6-inch-wide belt: 550 cfm.

Over 6-inch to 10-inch-wide belt: 800 cfm.

Over 10-inch to 16-inch-wide belt: 1100 cfm.

Over 16-inch-wide belt: 1400 cfm.

- K. *Jointers.*
Up to 6-inch-wide knives: 350 cfm.
Over 6-inch to 12-inch-wide knives: 550 cfm.
Over 12-inch to 20-inch-wide knives: 800 cfm.
Over 20-inch-wide knives: 1100 cfm.
- L. *Single planers.*
Up to 20-inch maximum working width: 800 cfm.
Over 20-inch to 26-inch maximum working width: 1100 cfm.
Over 26-inch to 32-inch maximum working width: 1400 cfm.
Over 32-inch to 38-inch maximum working width: 1800 cfm.
Over 38-inch maximum working width: 2200 cfm.
- M. *Double planers.*
Up to 20-inch maximum working width: 800 cfm for upper head and 550 cfm for lower head.
Over 20-inch to 26-inch maximum working width: 1100 cfm for upper head and 800 cfm for lower head.
Over 26-inch to 32-inch maximum working width: 1400 cfm for each head.
Over 32-inch to 38-inch maximum working width: 1800 cfm for upper head and 1400 cfm for lower head.
Over 38-inch maximum working width: 2200 cfm for upper head and 1400 cfm for lower head.
- N. *Moulders, matchers and sizers.*
Up to 4-inch maximum size: 350 cfm for each side head, 550 cfm for each side head, 550 cfm for top head and 800 cfm for bottom head.
Over 4-inch to 6-inch maximum size: 680 cfm for each side head, 800 cfm for top head and bottom head each.
Over 6-inch to 8-inch maximum size: 800 cfm for each side head, 1100 cfm for top head, 800 cfm for bottom head.
Over 8-inch maximum size: 800 cfm for each side head, 1400 cfm for top head and bottom head each.
Where profiler is used, provide additional volume not less than that specified for top head.
- O. *Sash stickers.*
One 4-inch branch on each head.
- P. *Wood shapers.*
Up to 1 horsepower per spindle: 350 cfm per spindle.
Over 1 to 3 horsepower per spindle: 550 cfm per spindle.
Over 3 to 5 horsepower per spindle: 800 cfm per spindle.
Over 5 to 7½ horsepower per spindle: 1100 cfm per spindle.
Over 7½ horsepower per spindle: 1400 per spindle.
Where one continuous hood includes two or more spindles, the air volume required for the hood may be based on a volume per spindle of 250 cfm less than specified above, but in no case less than 350 cfm per spindle.
- Q. *Tenoners.*
Top and bottom tenon heads: 550 cfm for each head.
Cope and dado heads: 550 cfm for each head.
Cut-off saws up to 12-inch-diameter saw: 350 cfm.
Over 12-inch-diameter saw: 550 cfm.
- R. *Automatic lathes.*
350 cfm per foot of cutting length where hood is stationary.
Branch pipes shall be located to provide effective air removal over full face of hood.
- S. *Pulley pockets:* 550 cfm.

T. Pulley stiles: 550 cfm.

U. Hogs.

Up to 1 ton of refuse per hour: 1600 cfm.

Over 1 ton of refuse per hour: air volume to be based on 50 cfm per pound of refuse conveyed.

Note 1: Use branch and main velocity of not less than 4500 fpm.

Note 2: A separate exhaust system should be provided but additional separator is not required if separator used for other wood-working equipment is adequate.

V. Floor sweeps. The area of branches to floor sweeps with covers which are kept closed when not in use need not be included in computing total air volume.

W. The air volume exhausted for any machine not specifically listed in this rule shall be not less than 350 cfm and the hood shall be so arranged that an inward flow of air into the ventilating system is maintained during the operation of the machine at not less than 4500 fpm.

X. Portable sanders shall conform to the requirements for portable grinders (section 12-21.3, paragraph 2).

12-22. Open surface tank operations.

12-22.1. Open surface tank operations. Open surface tank operations creating dangerous air contaminants shall be provided with ventilation to remove such contaminants.

12-22.2. Classes of operations. For the purpose of this rule open surface tank operations are classified into 10 classes as follows:

Class I. Electroplating and anodizing operations involving: Chromium, arsenic, tin from alkaline baths, deplating; cyanide solutions of copper, brass, bronze, zinc, cadmium.

Class II. Electroplating operations involving: Cyanide solutions of silver, gold; acid or neutral solutions of copper, zinc, nickel, lead.

Class III. Metal pickling or stripping operations using sulphuric or hydrochloric acid.

Class IV. Metal pickling operations using nitric or hydrofluoric acid.

Class V. Alkaline cleaning and other water solutions and water operated at a temperature of over 180° F.

Class VI. Alkali cleaning solutions operated at a temperature of 180° F. and under.

Class VII. Solvent cleaning processes using flammable solvents having an open cup flash point above 100° F.

Class VIII. Solvent cleaning processes using flammable solvents having an open cup flash point of 100° F and under.

Class IX. Solvent cleaning processes using nonflammable solvents except when used only occasionally and kept covered when not in use.

Class X. Solvent cleaning processes using mixture of flammable and nonflammable solvents.

12-22.3. Air flow requirements. 1. Dilution ventilation shall be provided at the following rates for the class operation involved:

1. Either mechanical or natural ventilation amounting to 30 cfm per square foot of open tank surface area in all rooms in which class II, VI or VII operations are conducted.

2. Either mechanical or natural ventilation amounting to 50 cfm per square foot of open tank surface area in all rooms where class III operations are conducted.

2. Local exhaust ventilation shall be provided for class I, IV, V, VIII, IX and X operations and may be used in lieu of dilution ventilation for all other classes of operations.

12-22.1 *Local exhaust ventilation.* Local exhaust ventilation shall be by means of one of the following: 1. Enclosing hood; 2. Overhead canopy; 3. Lateral.

12-22.5 *Enclosing hood exhaust.* An enclosing hood shall project over the entire tank and be fixed in position in such location that the head of the employee in all his normal working positions is in front of the hood opening. The hood shall be rigidly constructed and provided with exhaust ventilation capable of creating an air velocity of not less than 100 fpm through the hood opening.

12-22.6 *Overhead canopy exhaust.* An overhead hood shall project over the entire tank, shall be located as close to the tank as possible consistent with the operation performed and may be open on three or more sides. The hood shall be provided with exhaust ventilation capable of creating an air velocity of not less than 100 fpm through all openings between the bottom edges of the hood and the top edges of the tank nearest thereto.

12-22.7 *Lateral exhaust.* 1. A lateral exhaust hood shall cause essentially horizontal air movement over the tank towards the hood, shall project over the tank as far as practicable and shall be provided with an air flow not less than that specified in the following table:

CFM, SQ. FT. OF TANK SURFACE AREA FOR TANK WITH ONE LONG SIDE AGAINST WALL OR PARTITION OR WITH EQUIVALENT BAFFLE*

Class	Tank width in feet		
	Ratio: Tank length in feet		
	0 — 0.24	0.25 — 0.49	0.50 — 1.0
I	100	125	150
II	50	60	75
III	75	95	110
IV	75	95	110
V	50	60	75
VI	75	95	110
VII	50	60	75
VIII	75	95	110

* For free-standing tanks, i.e. without baffle, increase the rate 25 percent except for class VII, VIII, IX or X tanks equipped with effective condenser.

2. *Exhaust slots.* Where exhaust manifolds with slots flush with the inside of the tank lining and extending the full length of the tank side are used:

1. Every tank 24 inches or less in width shall be provided with an exhaust slot at least one inch, and not more than three inches in width on at least one of the longer sides.

2. Every tank over 24 inches in width shall be provided with at least two such slots, one along each of the two longer sides.

3. The manifold shall be so constructed or baffled as to provide an average distribution of air flow.

12-22.8 *Freeboard.* The level of the vapors in any class IX tank shall be kept below the top edge of the tank by a distance equal to at least one-half the tank width or 36 inches, whichever is less.

12-22.9 *Heating.* 1. *External heating source.* No external source of heating shall be used for class VII, VIII or X operations.

2. *Gas.* Where gas is used as fuel for heating class IX tanks, the combustion chamber shall be tight construction, except for necessary combustion and flue openings. Mechanically ventilated flues shall be independent of the

exhaust duct. Natural draft flues shall be provided with draft diverters. All flues shall be constructed of corrosion-resistant material.

3. *Electric.* Electric heating units for tanks of class IX operations shall be constructed of materials resistant to the tank contents and shall be constructed and installed so as to prevent hot spots.

4. *Thermostatic control.* Every tank of a class IX operation containing a heated liquid shall be provided with two thermostats, one of which shall be connected to control or shut off the source of heat when the contents reach a temperature not higher than 20°F in excess of the boiling point of the solvent in its uncontaminated state and the other of which shall be located above the vapor zone and be adjusted to shut off the source of heat when the temperature in the zone of the thermostat is 125°F or above.

12-22.10. *Control means other than ventilation.* 1. If tank covers or surface depressive agents are used as the control method, they shall be so used as to give effective control throughout the entire operating cycle of the tank.

2. When heat is added to the workroom to prevent the condensation of water vapor evaporated from open tanks into mist, such additional heat shall be so controlled that it does not raise the wet-bulb temperature in the lower six feet of the workroom above 80°F.

12-22.11. *Drying and draining.* 1. Booths and tunnels in which products removed from class VII or VIII tanks are dried shall be constructed of incombustible material and provided with exhaust ventilation capable of producing an air flow of not less than 100 f.p.m. into all openings. The rate of ventilation shall be such as to maintain the solvent concentration below 25 percent of the lower explosive limit.

2. All products after immersion in either class IX or X solvents shall be held in the vapor zone of the tank and shall not be withdrawn from the tank until the product reaches the vapor temperature as evidenced by the stopping of vapor condensation on the product.

3. When excess solvent on products removed from class VII, VIII, IX and X tanks continues to drip from the product after removal of the product to a location away from the tank, such location shall be provided with means to drain the dripped solvent continuously either to the tank or a suitable solvent container and, where required by the provisions of Article 12-8, shall be provided with a ventilating hood, booth or enclosure.

12-22.12. *Condensers.* Class IX tanks shall be equipped with condensing or cooling surfaces consisting of pipes, coils, water jackets or any combination thereof located on at least two sides in the upper portion of the tank above the solvent liquid level. Water, refrigerant or other cooling media shall be circulated through the condenser whenever the tank is in operation.

12-22.13. *Cleanout doors.* Tanks or machines used for solvent cleaning and having a surface vapor area of more than two square feet shall be equipped with suitable cleanout or sludge doors located near the bottom of each tank or still. Such doors shall be so designed and gasketed that there is no leakage of solvent when closed.

12-22.14. *Solvent transfer.* 1. Transfer of class VIII solvents from drums to tanks shall be by means of a hose or pipe leading to the bottom of the tank being filled. Such drums and tanks shall be effectively grounded electrically.

2. Class VIII, IX or X solvents shall not be stored or transferred in uncovered vessels.

12-22.15. *Inspection and maintenance.* 1. Before cleaning the interior of any tank, the contents shall be drained off and the cleanout doors, if any, shall be opened. All pockets in tanks or pits where vapors may collect shall be ventilated and cleared.

2. Floors and platforms around tanks shall be maintained in accordance with Industrial Code Rule No. 15.

12-22.16. *Welding.* No work requiring welding or open flame shall be done near any solvent cleaning equipment unless such equipment has first been thoroughly cleared of solvents and their vapors.

12-22.17. *Personal protection.* All employees working in and around open surface tank operations shall be instructed as to the hazards of the work and the precautions to be taken.

12-22.18. *Special precautions for cyanide.* 1. When rinse, acid and cyanide tanks are so installed and used that any of them may be contaminated with cyanide or acid, such tanks shall be provided with local exhaust ventilation.

2. Cyanide tanks shall not be provided with drains or overflows which will allow the tank contents to mix with liquid drained from other tanks either on the floor or in floor drains.

3. Cyanide salts shall be stored in closed containers in a locked enclosure and the floor of the enclosure shall be raised above any floor on which acid carboys are stored.

12-23. *Tumbling processes.*

12-23.1. *General provisions.* Tumbling processes creating dangerous air contaminants shall be provided with means to remove or control such contaminants at the point of generation.

12-23.2. *Air flow requirements.* Tumbling mills, drums, cages or barrels not within the above exception shall be placed in an enclosure which shall be ventilated at a rate of not less than 75 c.f.m. per square foot of horizontal area of the enclosure. Air velocity through openings into the enclosure shall be not less than 400 f.p.m.

Exception: The above does not apply to mills, drums, cages or barrels which are completely enclosed during rotation and disseminate air contaminants only when being charged or discharged. Means shall be provided to control such contaminants.

12-24. *Abrasive blasting operations.*

12-24.1. *General provisions.* Abrasive blasting operations creating dangerous air contaminants shall be enclosed as completely as practicable and shall be provided with a local exhaust system to remove the air contaminants.

Exception: Outdoor abrasive cleaning operations where the operator is furnished with and wears an approved air-line respirator.

12-24.2. *Classification.* Abrasive blasting rooms in which an operator is employed shall be classified as follows:

1. *Class I.* Rooms in which natural sand is used as an abrasive or is otherwise introduced into the operation.

2. *Class II.* Rooms in which materials other than natural sand are used as the abrasive and the material being blasted is free of natural sand.

12-24.3. *Air flow requirements.* Abrasive blasting equipment shall be provided with local exhaust ventilation in accordance with the following requirements for the various types of equipment:

1. *Class I* rooms having a length to width ratio of 2 to 1 or less shall be provided with down draft ventilation of not less than 80 f.p.m. over the entire projected floor area of the room and shall be exhausted downward through exhaust openings along at least two sides of the room. The lowest point of such openings shall be not more than 10 inches above the floor line. *Class I* rooms having a ratio of length to width in excess of 2 to 1 shall be ventilated either as above or by means of longitudinal ventilation of not less than 100 f.p.m.

2. *Class II* rooms shall be ventilated in the same manner as *Class I* rooms except that ventilation shall be provided at 40 f.p.m. and 50 f.p.m. respectively.

3. Abrasive blasting rooms and tunnels shall be provided with an air velocity of at least 300 f.p.m. through all openings into the enclosure.

12-24.4. *Rotary abrasive blasting tables.* Rotary abrasive blasting tables shall be enclosed and local exhaust ventilation shall be provided to maintain air velocities of not less than 500 f.p.m. through all openings when curtains are in place.

12-24.5. *Abrasive blasting barrels.* Abrasive blasting barrels shall be provided with local exhaust ventilation to maintain air velocities of not less than 500 f.p.m. through all openings.

12-24.6. *Abrasive blasting hand cabinets.* Abrasive blasting hand cabinets shall be provided with local exhaust ventilation to maintain air velocities of not less than 500 f.p.m. through all openings.

12-24.7. *Abrasive blasting equipment.* 1. Abrasive cleaning equipment shall be constructed to resist abrasion and all joints and connections shall be dust-tight.

2. Openings for admission and removal of air shall be of sufficient area and so located that the air flow in the room, cabinet or device will be adequately distributed and will remove the air contaminants created.

3. Openings for admission of air shall be provided with baffles to prevent effectively the escape of abrasives into the general room air.

4. Doors and inspection ports shall be sealed to prevent the escape of air contaminants while the equipment is in operation.

5. Pits and hoppers connected to abrasive cleaning equipment shall be sealed to the equipment and shall be dust-proof except at such openings as are necessary.

6. Mechanical conveyors shall be enclosed and connected to the exhaust system.

12-24.8. *Operation.* Approved air respiratory protective equipment of the supplied air shall be used by workers employed in abrasive blasting rooms or tunnels.

12-24.8.1. *Air supply.* Air furnished to air line respiratory equipment shall be clean.

12-25. *Crushing, milling, screening, mixing and conveying.*

12-25.1. *General provisions.* Crushing, milling, screening, mixing and conveying processes creating dangerous air contaminants shall be enclosed and provided with local exhaust ventilation to remove or control the air contaminants at the point of generation where practicable.

12-25.2. *Air flow requirements.*

12-25.2.1. *Crushers and mills.* The air flow through hoods or enclosures used to control air contaminants created by crushing and milling processes shall be such as to provide minimum air velocities through openings as follows:

Light weight dusts: 75 f.p.m.

All other: 200 f.p.m.

12-25.2.2. *Screens.* The air flow through openings of enclosures of screens used to control air contaminants created by screening operations shall be such as to provide minimum air velocities as follows:

Light concentration sand: 50 f.p.m.

Light weight dusts: 200 f.p.m.

Exception: Screens within tight enclosures.

12-25.2.3. *Mixers.* The air flow through mixer hoods or enclosures used to control air contaminants shall be a minimum of 150 f.p.m. through necessary working or feed openings.

12-25.2.4. *Elevators.* The air flow through openings of bucket elevators shall be a minimum of 150 f.p.m.

Exception: Enclosures of tight construction may be maintained under negative pressure.

12-25.2.5. *Conveyor belts.* Exhaust hoods at loading and discharge points of conveyor belts shall be provided with following minimum rates of air flow:

<i>Belt Speed</i>	<i>Air Flow</i>
Up to 200 f.p.m.	150 f.p.m.
Over 200 f.p.m.	200 f.p.m.

Where contaminants are released from belts at points other than loading and discharge points belt wipers, enclosure or other control methods shall be provided to prevent dissemination of air contaminants.

12-25.2.6. *Screw or spiral conveyors.* Such conveyors shall be covered with tight covers and exhaust hoods providing a minimum air flow of 150 f.p.m. shall be provided at feed or discharge openings.

12-25.2.7. *Storage bins.* Storage bins shall be constructed and ventilated to prevent the escape of air contaminants during any stage of the operation.

12-25.2.8. *Bagging machines.* Where practicable bagging machines shall be enclosed as completely as possible and ventilated at a minimum rate of 100 c.f.m. per square foot of open area in the enclosure for paper bag filling and 200 c.f.m. per square foot of open area for cloth bag filling. Exhausted collecting hoppers shall be provided and so located in relation to the bagging machine as to catch any spilled material. Where the above methods are not as practicable other control ventilation methods capable of preventing air contaminants may be substituted.

12-25.2.9. *Filling of barrels and containers.* Barrels and containers other than bags shall be filled in such a manner that air contaminants discharged from the barrel or container are prevented by exhaust ventilation or enclosure or a combination thereof from being disseminated into the workroom.

12-25.3. *Branch pipe requirements.* Branch pipes required for the ventilation of crushing, milling, screening, mixing, conveying and bagging processes shall be sized to maintain transport velocity or a velocity of 2500 f.p.m., whichever is greater.

12-26. *Welding, brazing, flame cutting and metallizing.*

12-26.1. *General requirements.* Welding, brazing, flame cutting and metallizing operations creating dangerous air contaminants shall be provided with local exhaust ventilation to control such contaminants.

12-26.2. *Classes of operations.*

Class I. Operations in confined spaces involving toxic metals including but not limited to antimony, beryllium, cadmium, lead, mercury, selenium or tellurium, or involving fluorine or any alloy, compound or flux containing any one or combination thereof.

Class II. Operations in confined spaces involving metals, alloys or compounds other than those listed in class I.

Class III. Operations in unconfined spaces involving metals, alloys or compounds listed in class I.

Class IV. Operations in unconfined spaces involving metals, alloys or compounds listed in class II.

12-26.3. *Protection of operators.*

12-26.3.1. *Class I requirements.* Every employee performing any class I operation shall be furnished and shall use an approved air-line respirator or supplied air helmet, and the confined space shall be ventilated at a minimum rate of 600 c.f.m. per operator inside the enclosure.

12-26.3.2. *Class II requirements.* In every class II operation the confined space shall be ventilated at a minimum rate of 100 c.f.m. per square

foot of floor area inside the enclosure, or every employee required to work within the confined space shall be furnished and shall use an approved air-line respirator or supplied air helmet.

12-26.3.3. *Class III requirements.* Protection of employees performing class III operations is required at all times when portable equipment is used in flame cutting or welding lead, or other metal plated or otherwise coated with cadmium, zinc, lead or lead containing compounds. Other class III operations shall be provided with protection of a type required by article 12-9. Where conformance to such provisions is not practicable the employer shall furnish and the employee shall wear an approved respirator, any other provision of this rule notwithstanding.

12-26.3.4. *Class IV requirements.* Every class IV operation at a fixed location as part of a production process shall be provided with local exhaust ventilation where practicable. All other class IV operations shall be provided with dilution ventilation.

Exceptions: The following class IV operations are excepted from the above requirements: 1. Spot welding; 2. operations which are not usual shop practices; 3. out-of-door operations.

12-26.4. *Local exhaust ventilation for welding, etc.* Local exhaust ventilation shall be by one of the following means:

1. Fixed or movable hoods located as near as practicable to the operation with a rate of air flow sufficient to maintain a velocity in the direction of the hood of 100 f.p.m. at the welding arc when the hood is at its most remote distance from the arc. The air volume and duct size required to maintain the velocity when a properly flanged hood (i.e., a flange width equal to one-half the connecting duct diameter but not less than three inches) is at various distances from the arc shall be as follows:

Distances	Volume required (C.F.M.)	Duct diameter
4" to 6"	150	2½" to 3½"
6" to 8"	275	3½" to 4½"
8" to 10"	425	4½" to 5½"
10" to 12"	600	5½" to 6"

*Add 20 percent to required air volume for unflanged hood.

2. An enclosure closed on top and open on not more than two sides in which the welding is done and which shall be provided with an air flow sufficient to maintain a minimum inward velocity of 50 f.p.m. through all open areas of the enclosure.

12-27. Exhaust gases from motor vehicles operating in confined areas.

12-27.1. *General provisions.* Confined areas in which motor vehicles are operated and releasing dangerous air contaminants shall be provided with means to remove or control the fumes, gases or vapors released or disseminated.

12-27.2. *Ventilation of servicing locations.* Each servicing location shall be provided with a duct which is part of an exhaust system discharging out-of-doors. The inlet end shall either slip over the tail pipe of the engine of the equipment being serviced or shall be provided with a hood large enough to slip over the tail pipe or any deflector attached thereto. Ventilation shall be provided at a rate acceptable to the commissioner but in no case shall the air flow be less than 100 c.f.m. and the flexible pipe diameter less than three inches.

Exception: For servicing locations handling not more than two vehicles a duct system conforming to the following may be substituted for a mechanical exhaust system:

1. The inlet end of the duct shall fit tightly over the tail pipe of the engine being serviced, and

2. The duct length shall not exceed 20 feet, and
3. The duct diameter shall be of the same diameter as the tail pipe to which it is connected, and
4. The duct outlet shall terminate out-of-doors, and
5. The duct shall be constructed and maintained gastight.

12-27.3. *Capacity of capped tail pipe exhaust systems.* Systems having up to four branches provided with automatic closing devices shall have a capacity equal to the total number of branches. Systems having more than four branches provided with automatic closing devices shall have a capacity equal to four branches plus 50 percent of the capacity of the number of branches in excess of four.

12-27.4. *Capacity of uncapped tail pipe exhaust systems.* Where tail pipe branches are open when not in use, the capacity of the system shall be based on the total number of branches connected to the system.

12-28. *Severability.* If any provision of this rule or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of this rule which can be given effect without the invalid provision or application and to this end the provisions of this rule are declared to be severable.

12-29. *Maximum allowable concentrations—evidence of dangerous air contaminants.* The existence of air contaminants consisting of or deriving from the substances named in the following table in relative quantities greater than those set forth as to each substance shall constitute prima-facie evidence that such contaminants are dangerous air contaminants. Prima-facie evidence as to whether other air contaminants or other concentrations than those set forth in the following table constitute dangerous air contaminants by reason of their existence in quantities tending to injure the health of employees shall include in opinion by a physician to that effect as a matter of sound clinical judgment.

A. Gases and Vapors

Substance	Parts per million
Acetaldehyde	200
Acetic acid	10
Acetic anhydride	5
Acetone	1000
Acrolain	0.5
Acrylonitrile	20
Allyl alcohol	5
Allyl propyl disulfide	2
Ammonia	100
Amyl acetate	200
Amyl alcohol (isoamyl alcohol)	100
Aniline	5
Arsine	0.05
Benzene (benzol)	35
Benzyl chloride	1
Bromine	1
Butadiene	1000
Butanone (methyl ethyl ketone)	250
Butylacetate	200
Butyl alcohol	100
Butyl amine	5

* So in original. Apparently should be "end".

A. Gases and Vapors—(Contd.)

Substance	Parts per million
Butyl cellosolve	200
Butyl mercaptan	10
Carbon dioxide	5000
Carbon disulfide	20
Carbon monoxide	100
Carbon tetrachloride	25
Cellosolve	200
Cellosolve acetate	100
Chlorine	1
Chlorine trifluoride	0.1
Chlorobenzene* (monochlorobenzene)	75
Chloroform	100
1-chloro-1-nitropropane	20
Chloroprene	25
Cresol (all isomers)	5
Cyclohexane	400
Cyclohexanol	100
Cyclohexanone	100
Cyclohexene	400
Cyclopropane	400
Diacetone alcohol	50
Diborane	0.1
o-Dichlorobenzene	50
Dichlorodifluoromethane	1000
1, 1-Dichloroethane	100
1, 2-Dichloroethylene	200
Dichloroethyl ether	15
Dichloromonofluoromethane	1000
1, 1-Dichloro-1-nitroethane**	10
Dichlorotetrafluoroethane	1000
Difluorodibromoethane	100
Diethylamine	25
Diisobutyl ketone	50
Dimethylaniline	5
Dimethylsulfate	1
Dioxan (diethylene dioxide)	100
Ethyl acetate	400
Ethyl alcohol (ethanol)	1000
Ethylamine	25
Ethyl benzene	200
Ethyl bromide	200
Ethyl chloride	1000
Ethyl ether	400
Ethyl formate	100
Ethyl mercaptan	250
Ethyl silicate	100
Ethylene chlorohydrin	5
Ethylene diamine	10
Ethylene dibromide	25
Ethylene dichloride	100

* So in original. Apparently should be "chlorobenzene".

** So in original. Apparently should be "nitroethane".

A. Cases and Vapors—(Contd.)

Substance	Parts per million
ethylene imine	5
ethylene oxide	100
uric acid	0.1
urotrichloromethane	1000
acetaldehyde	5
acetal	5
acetyl alcohol	200
acoline	500
acetone	500
acetic acid	500
acetic anhydride	100
acetic oxide	100
acetic peroxide	1
hydrogen bromide	5
hydrogen chloride	5
hydrogen cyanide	10
hydrogen fluoride	3
hydrogen peroxide	1
hydrogen selenide	0.05
hydrogen sulfide	20
dine	1
phosphoric acid	25
propylamine	5
ethyl oxide	50
ethyl acetate	200
ethyl acetylete	1000
ethyl alcohol	200
ethyl bromide	20
ethyl cellosolve	25
ethyl cellosolve acetate	25
ethyl chloride	100
ethyl isobutyl carbinol (methyl amyl alcohol)	25
ethyl mercaptan	50
ethylal (dimethoxymethane)	1000
ethyl chloroform	500
ethylcyclohexane	500
ethylcyclohexanol	100
ethylcyclohexanone	100
ethyl formate	100
ethylene chloride	500
aphtha* (coal tar)	200
aphtha* (petroleum)	500
nickel carbonyl	0.001
Nitroaniline	1
nitrobenzene	1
nitroethane**	100
nitrogen dioxide	5
nitroglycerin	0.5
nitromethane	100

* So in original. Apparently should be "naphtha".

** So in original. Apparently should be "nitroethane".

A. Gases and Vapors—(Contd.)

<u>Substance</u>	<u>Parts per million</u>
2-Nitropropane	50
Nitrotoluene	5
Octane	500
Ozone	0.1
Pentane	1000
Pentanone	200
Perchloromethyl mercaptan	0.1
Perchloroethylene	200
Phenol	5
Phenylhydrazine	6
Phosgene (carbonyl chloride)	1
Phosphine	0.05
Phosphorus trichloride	0.5
Propyl acetate	200
Propyl alcohol (isopropyl alcohol)	400
Propyl ether (isopropyl ether)	500
Propylene dichloride	75
Propylene imine	25
Pyridine	10
Quinone	0.1
Stibine	0.1
Stoddard solvent	500
Styrene monomer (phenyl ethylene)	200
Sulfur hexafluoride	1000
Sulfur monochloride	1
Sulfur dioxide	10
Sulfur pentafluoride	0.025
p-Tertiary butyl toluene	10
1, 1, 2, 2-Tetrachloroethane	5
Tetra hydrofuran	75
Tetranitromethane	1
Toluene	200
o-Toluidine	5
Trichloroethylene	200
Trifluoromonobromo methane	1000
Turpentine	100
Vinyl chloride (chloroethane)	500
Xylene	200

B. Toxic Dusts, Fumes and Mists

<u>Substance</u>	<u>Milligrams per Cubic Meter</u>
Aldrin	0.25
Ammate	15
Antimony	0.5
Arsenic	0.5
Barium (soluble compounds)	0.5
Cadmium	0.1
Calcium arsenate	0.3
Chlordane	2.0

II. Toxic Dusts, Fumes and Mists—(Contd.)

	Milligrams per Cubic Meter
chlorinated diphenyl oxide	0.5
chlorodiphenyl	1
chromic acid and chromates as Cr O ₃	0.1
crag herbicide	15
canide as C ₂ N ₂	5
4-0 (2, 4-dichlorophenoxyacetic acid)	10
DT (2, 2-bis (p-chlorophenyl)-1, 1, 1-trichloroethane)	2
feldrin	0.25
nitrotoluene	1.5
nitro-o-cresol	0.2
PN (ethyl-p-nitrophenyl thiono benzene phosphonate)	0.5
erro vanadium dust	1
fluoride	2.5
hydroquinone	2
iron oxide fume	15
cad	0.15
cad arsenate	0.2
indane	0.5
magnesium oxide fume	15
salithon	15
manganese	6
methoxychlor	15
mercury	0.1
polybenzene (soluble compounds)	5
polybenzene (insoluble compounds)	15
organo mercurials (as mercury)	0.01
anthion	0.1
pentachloronaphthalene	0.5
pentachlorophenol	0.5
phosphorus (yellow)	0.1
phosphorus pentachloride	1
phosphorus pentasulfide	1
peric acid	0.1
cerium compounds (as Se)	0.1
sodium hydroxide	2
sulfuric acid	1
FDP (tetraethyl dithiono pyrophosphate)	0.2
slurium	0.1
EPP (tetraethyl pyrophosphate)	0.05
eryl (2, 4, 6-trinitrophenyl-methylnitramine)	1.5
titanium dioxide	15
trichloronaphthalene	5
nitrotoluene	1.5
vanium (soluble compounds)	0.05
vanium (insoluble compounds)	0.25
vanadium (V ₂ O ₅ dust)	0.5
vanadium (V ₂ O ₅ fume)	0.1
zinc oxide fume (as Zn)	15
zincium	5

C. Mineral Dusts

<i>Substance</i>	<i>Million Particles per Cubic Foot*</i>
Alundum	50
Asbestos	5
Carborundum (silicon carbide)	50
Dust (nuisance, no free silica)	50
Mica (below 5% free SiO_2)	20
Portland cement	50
Talc	20
Silica: <i>Class I</i> (below 5% free SiO_2)	50
<i>Class II</i> (5% to 50% free SiO_2)	20
<i>Class III</i> (above 50% free SiO_2)	5
Slate (below 5% free SiO_2)	50
Soapstone (below 5% free SiO_2)	20
Total dust (below 5% free SiO_2)	50

*Note: Using the light field low-power method of counting as described in U. S. Public Health Report 47 No. 12, March 18, 1932 pp. 869-872 or its equivalent, and a standard-type impinger or other equivalent instrument for taking atmospheric dust samples.

Industrial Code Bulletin No. 18—Lighting of Factories and Mercantile Establishments

Industrial Code Rules Nos. 50, 51, 52 and 53, in effect January 1, 1945 (pages 565 to 568, inclusive, volume 3, official compilation), repealed October 18, 1956; effective October 18, 1956; filed December 5, 1956. Statutory authority §§ 27-a, 28 and 29, Labor Law.

Industrial Code Rule No. 20—Automatic Sprinkler Systems

(Adopted April 13, 1956; effective August 1, 1956; filed May 22, 1956. Former Industrial Code Rule No. 20, titled "Automatic Sprinkler Systems", as retitled and redesignated May 12, 1954 (page 538, tenth supplement, repealed April 18, 1956; effective August 1, 1956; filed May 22, 1956. Statutory authority §§ 27-a, 28, 29, 260 and 280, Labor Law)

20-1. Application

This rule applies throughout the state of New York, except in the city of New York, to automatic sprinkler systems which are specified or required by the provisions of the Labor Law and the Industrial Code, and which are, or are proposed to be, installed in pursuance of an intent to comply with such provisions. It does not apply in any way to any other sprinkler systems.

Where a partial sprinkler system covering a hazardous section or other area is installed for limited protection to provide opportunity for safe exit from a building, such installation shall be governed by the standards herein required insofar as the commissioner may require.

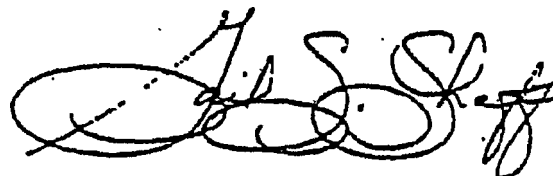
State of New York
DEPARTMENT OF STATE

EXHIBIT

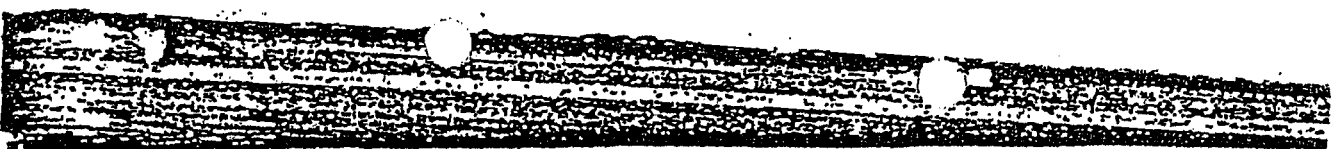
CCF-210

It is hereby Certified, That the attached is a true copy
of Title 12 NYCRR Part 12 filed with the New York State
Department of State on August 1, 1958 and effective
November 1, 1958.

Witness my hand and the official seal of the
Department of State at the City of
Albany, this sixteenth day
of February one thousand
nine hundred and eighty-nine



Secretary of State



THIRTEENTH OFFICIAL SUPPLEMENT

TO THE

OFFICIAL COMPILATION

OF

CODES, RULES AND REGULATIONS

OF THE

STATE OF NEW YORK

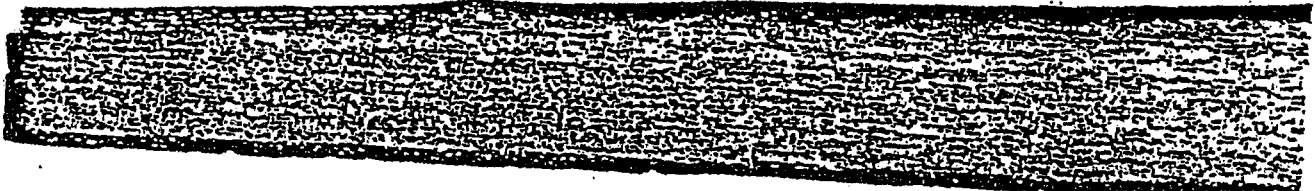
January 1, 1957 to December 31, 1958. Inclusive

CAROLINE K. SIMON

Secretary of State

VOLUME 1

1961



liquids are being applied or stored at least one hand fire extinguisher approved for the control of flammable liquid fires. Extinguishers containing carbon tetrachloride, methyl bromide or other toxic material are prohibited for this usage. In addition there shall be at least one approved extinguisher for each 2,500 square feet of floor area so located that a person shall not have to travel more than 50 feet to reach the nearest extinguisher. Extinguishers shall be easily accessible and protected from injury.

12-27. Evidence of dangerous air contaminants. The existence of air contaminants consisting of or deriving from the substances named in the following table in relative quantities greater than those set forth as to each substance shall constitute prima facie evidence that such contaminants are dangerous air contaminants. Prima facie evidence as to whether other air contaminants or lesser concentrations than those set forth in the following table constitute dangerous air contaminants by reason of their existence in quantities tending to injure the health of employees shall include an opinion by a physician to that effect as a matter of sound clinical judgment.

Gases and Vapors

A. Substance	Parts per Million	A. Substance	Parts per Million
Acetaldehyde	200	Chlorobenzene	
Acetic acid	10	(monochlorobenzene)	75
Acetic anhydride	5	Chloroform	100
Acetone	1000	1-Chloro-1-nitropropane	20
Acrolein	0.5	Chloroprene	25
Acrylonitrile	20	Cresol (all isomers)	5
Allyl alcohol	5	Cyclohexane	400
Allyl propyl disulfide	2	Cyclohexanol	100
Ammonia	100	Cyclohexanone	100
Amyl acetate	200	Cyclohexene	400
Amyl alcohol (isoamyl alcohol)	100	Cyclopropane	400
Aniline	5		
Arsine	0.05	Diacetone alcohol	50
		Diborane	0.1
Benzene (benzol)	25	o-Dichlorobenzene	50
Benzyl chloride	1	Dichlorodifluoromethane	1000
Bromine	1	1, 1-Dichloroethane	100
Butadiene	1000	1, 2-Dichloroethylene	200
Butanone		Dichloroethyl ether	15
(methyl ethyl ketone)	250	Dichloromonofluoromethane	1000
Butyl acetate	200	1, 1-Dichloro-1-nitroethane	10
Butyl alcohol	100	Dichlorotetrafluoroethane	1000
Butyl amine	5	Diethylamine	25
Butyl cellosolve	200	Difluorodibromomethane	100
Butyl mercaptan	10	Diisobutyl ketone	50
Carbon dioxide	5000	Dimethylaniline	5
Carbon disulfide	20	Dimethylsulfate	1
Carbon monoxide	100	Dioxane (diethylene dioxide)	100
Carbon tetrachloride	25		
Cellosolve	200	Ethyl acetate	400
Cellosolve acetate	100	Ethyl alcohol (ethanol)	1000
Chlorine	1	Ethylamine	25
Chlorine trifluoride	0.1	Ethyl benzene	200
		Ethyl bromide	200

A. Substance	Parts per Million	A. Substance	Parts Mil
Ethyl chloride	1000	Naptha* (coal tar)	
Ethyl ether	400	Naptha* (petroleum)	
Ethyl formate	100	Nickel carbonyl	
Ethyl mercaptan	250	p-Nitroaniline	
Ethyl silicate	100	Nitrobenzene	
Ethylene chlorohydrin	5	Nitroethane	
Ethylene diamine	10	Nitrogen dioxide	
Ethylene dibromide	25	Nitroglycerin	
Ethylene dichloride	100	Nitromethane	
Ethylene imine	5	2-Nitropropane	
Ethylene oxide	100	Nitrotoluene	
Fluorine	0.1	Octane	
Fluorotrichloromethane	1000	Ozone	
Formaldehyde	5	Pentane	
Furfural	5	Pentanone	
Furfuryl alcohol	200	Perchloromethyl mercaptan	
Gasoline	500	Perchloroethylene	
Heptane	500	Phenol	
Hexane	500	Phenyldiazine	
Hexanone	100	Phosgene (carbonyl chloride)	
Hexone	100	Phosphine	
Hydrazine	1	Phosphorus trichloride	
Hydrogen bromide	5	Propyl acetate	
Hydrogen chloride	5	Propyl alcohol	
Hydrogen cyanide	10	(isopropyl alcohol)	
Hydrogen fluoride	3	Propyl ether	
Hydrogen peroxide	1	(isopropyl ether)	
Hydrogen selenide	0.05	Propylene dichloride	
Hydrogen sulfide	20	Propylene imine	
Iodine	1	Pyridine	
Isophorone	25	Quinone	
Isopropylamine	5	Stibine	
Mesityl oxide	50	Stoddard solvent	
Methyl acetate	200	Styrene monomer	
Methyl acetylene	1000	(phenyl ethylene)	
Methyl alcohol	200	Sulfur dioxide	
Methyl bromide	20	Sulfur hexafluoride	
Methyl cellosolve	25	Sulfur monochloride	
Methyl cellosolve acetate	25	Sulfur pentafluoride	
Methyl chloride	100	p-Tertiary butyl toluene	
Methyl isobutyl carbinol		1, 1, 2, 2 Tetrachloroethane	
(methyl amyl alcohol)	25	Tetrahydrofuran	
Methyl mercaptan	50	Tetranitromethane	
Methylal		Toluene	
(dimethoxymethane)	1000	o-Toluidine	
Methyl chloroform	500	Trichloroethylene	
Methylcyclohexane	500	Trifluoromonobromomethane	
Methylcyclohexanol	100	Turpentine	
Methylcyclohexanone	100	Vinyl chloride (chloroethene)	
Methyl formate	100	Xylene	
Methylene chloride	500		

* See in original. Apparently should be "Naptha".

Toxic Dusts, Fumes and Mists

B. Substance	Milligrams per Cubic Meter	B. Substance	Milligrams per Cubic Meter
Aldrin	0.25	Malathion	15
Ammate	15	Manganese	6
Antimony	0.5	Mercury	0.1
Arsenic	0.5	Methoxychlor	15
		Molybdenum	
Barium (soluble compounds)	0.5	(soluble compounds)	5
Cadmium	0.1	Molybdenum	
Calcium arsenate	0.5	(insoluble compounds)	15
Chlordane	2	Organic mercurials	
Chlorinated diphenyl oxide	0.5	(as mercury)	0.01
Chlorodiphenyl	1		
Chromic acid and chromates		Parathion	0.1
as CrO ₃	0.1	Pentachloronaphthalene	0.5
Crag herbicide	15	Pentachlorophenol	0.5
Cyanide as CN	5	Phosphorus (yellow)	0.1
2, 4-D, 2, 4-dichlorophenoxy-		Phosphorus pentachloride	1
acetic acid	10	Phosphorus pentasulfide	1
DDT 2, 2-bis-4-p-chlorophenyl		Picric acid	0.1
1, 1, 1-trichloroethane	1	Selenium compounds (as Se)	0.1
Dieldrin	0.25	Sodium hydroxide	2
Dinitrotoluene	1.5	Sulfuric acid	1
Dinitro-o-cresol	0.2		
EPN (ethyl-p-nitrophenyl		TEDP (tetraethyl dithiono	
thiono benzene phosphonate)	0.5	pyrophosphate	0.2
Ferro vanadium dust	1	Tellurium	0.1
Fluoride	2.5	TEPP (tetraethyl	
		pyrophosphate	0.05
Hydroquinone	2	Tetryl (2, 4, 6-trinitro-	
Iron oxide fume	15	phenylmethylamine)	1.5
		Titanium dioxide	15
Lead	0.20	Trichloronaphthalene	5
Lead arsenate	0.2	Trinitrotoluene	1.5
Lindane	0.5		
Magnesium oxide fume	15	Vanadium (V ₂ O ₅ dust)	0.5
		Vanadium (V ₂ O ₅ fume)	0.1
		Zinc oxide fume (as Zn)	15
		Zirconium	5

Mineral Dusts

C. Substance	Million Particles per Cubic Foot*
Asbestos	5
Dust (nuisance, no free silica)	50
Mica (below 5% free SiO ₂)	20
Portland cement	50
Silica: Class I (below 5% free SiO ₂)	50
Class II (5% to 50% free SiO ₂)	20
Class III (above 50% free SiO ₂)	5
Slate (below 5% free SiO ₂)	50
Soapstone (below 5% free SiO ₂)	20
Talc	20
Total dust (below 5% free SiO ₂)	50

* Note: Using the light field low-power method of counting as described in U. S. Public Health Report 47 No. 12, March 15, 1932, pp. 669-672 or its equivalent, and a standard type impinger or other equivalent instrument for taking atmospheric dust samples.

12-28. Approved devices or materials. Any device or material the board has approved pursuant to section 27a of the Labor Law for complying with this rule may be so used as if by this rule specifically listed any other general or special provision of this rule notwithstanding.

12-29. Severability. If any provision of this rule or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this rule which can be effect without the invalid provisions or applications and to this effect provisions of this rule are declared to be severable.

Industrial Code Rule No. 14—Construction, Installation, Inspection and Maintenance of Steam Boilers

14.5. Qualification and commissioning of inspectors.

14-5.1. (As amended November 18, 1958; effective November 18 filed November 25, 1958. Statutory authority §§27-a, 28, 29 and 204 Law). Upon recommendation of the examining board, a certificate of competency and commission as an inspector of steam boilers shall be issued by the industrial commissioner to persons at least 25 years of age who are the employ of insurance companies, who successfully pass a written examination as to their knowledge of the construction, installation and maintenance of steam boilers and their appurtenances. Candidates taking examinations must have had five years of practical satisfactory experience in boiler making, boiler installation and inspection, or boiler shop, or operation and maintenance of steam boilers. Technical education in proportion to its value, be given credit as equivalent to experience to exceed two years. Such examinations shall be conducted by an examining board appointed by the industrial commissioner, which shall be composed of one representative of each of the following interests: boiler manufacturers, insurance companies, operating engineers, Bureau of Inspection of the Department of Labor and such others as the industrial commissioner may designate.

