

**Bulletin No. 205**

**STATE OF OHIO**

**THE INDUSTRIAL COMMISSION AND THE  
DEPARTMENT OF INDUSTRIAL RELATIONS**

**SPECIFIC SAFETY REQUIREMENTS  
COVERING OPERATIONS OF  
AND CONDITIONS IN  
FOUNDRIES**

**Adopted by the Industrial Commission of Ohio and Issued  
as a General Order Effective May 1, 1931, with  
Excerpts from the Law and Constitution.**



**THE INDUSTRIAL COMMISSION OF OHIO**

**W. T. BLAKE, Chairman**

**JAS. A. WHITE, Vice Chairman - - - G. H. COFFINBERRY**

**RALPH KLAPP, Secretary**

**THE DEPARTMENT OF INDUSTRIAL RELATIONS**

**GEO. A. STRAIN,  
Director**

**NELSON HOVEY,  
Asst. Dir. and Legal Advisor**

Reprint 1944





**STATE OF OHIO**  
**THE INDUSTRIAL COMMISSION AND THE**  
**DEPARTMENT OF INDUSTRIAL RELATIONS**

**SPECIFIC SAFETY REQUIREMENTS**  
**COVERING OPERATIONS OF**  
**AND CONDITIONS IN**  
**FOUNDRIES**



Effective May 1, 1931

**THE INDUSTRIAL COMMISSION OF OHIO**

**G. L. COFFINBERRY, Chairman**

**R. W. MORSE, Vice Chairman - - - - - W. T. BLAKE**

**JOHN W. KEEFE, Secretary**

**DEPARTMENT OF INDUSTRIAL RELATIONS**

**ALBERT A. WOLDMAN, Director**

**DIVISION OF FACTORY AND BUILDING INSPECTION**

**WALTER J. RITTER, Chief**

Reprint 1949



**THE F. J. HEER PRINTING CO.**  
**COLUMBUS, OHIO**

1949

**BOUND AT THE STATE BINDERY**



## **PERSONNEL OF THE GENERAL ADVISORY COMMITTEE ON CODES**

### **Chairman:**

### **REPRESENTING EMPLOYERS**

J. M. Woltz, Youngstown Sheet & Tube Co., Youngstown, Ohio.  
Jos. S. Ruble, H. K. Ferguson Co., Cleveland, Ohio.  
E. E. Noble, The Cleveland Electric Illuminating Co., Cleveland, Ohio.  
Thos. R. Jones, The Harris-Seybold-Potter Co., Cleveland, Ohio.  
C. F. Lumb, American Encaustic Tiling Co., Zanesville, Ohio.  
S. W. Tener, American Steel & Wire Co., Cleveland, Ohio.  
Geo. K. Smith, Sunday Creek Coal Co., Columbus, Ohio.  
W. L. Schneider, The B. F. Goodrich Co., Akron, Ohio.  
D. P. Hess, Timken Roller Bearing Co., Canton, Ohio.

### **REPRESENTING EMPLOYEES**

T. J. Donnelly, Secretary, The Ohio Federation of Labor, Columbus, Ohio.  
John W. Jockel, Secretary, The Ohio State Conference of Brick Layers,  
Cleveland, Ohio.  
W. T. Roberts, The United Mine Workers of America, Bellaire, Ohio.  
David Howe, The Boot and Shoe Workers, Cincinnati, Ohio.  
John F. Schmid, The Central Ohio Conference Board of Molders Union,  
Salem, Ohio.  
John E. Breidenbach, The International Brotherhood of Electrical Work-  
ers, Dayton, Ohio.  
George Barrett, Secretary, The Belmont Trades Assembly, Bellaire, Ohio.  
Arnold Bill, Secretary, The Ohio State Council of Carpenters, Cleveland,  
Ohio.  
O. B. Chapman, President, The Ohio State Conference of Painters, Dayton,  
Ohio.  
R. B. Ackerman, The Brotherhood of Locomotive Firemen and Engineers,  
Galion, Ohio.  
W. M. Rea, The Amalgamated Association of Street and Electric Railway  
Employees, Cleveland, Ohio.  
**Secretary to Committee:**  
Harry L. Sain, Supt. Division of Safety & Hygiene, Industrial Commis-  
sion, Columbus, Ohio.

## **PERSONNEL OF FOUNDRY CODE COMMITTEE**

### **Chairman:**

### **REPRESENTING EMPLOYERS**

Geo. Thompson, The Thompson-Owens Corporation, Toledo, Ohio.  
W. W. Sherman, The Electric Auto-Lite Company, Fostoria, Ohio.  
R. R. Simonton, The Ensign Foundry Company, Toledo, Ohio.  
E. Leary, The Cincinnati Steel Casting Company, Cincinnati, Ohio.  
A. C. Cook, The Carnegie Steel Company, Youngstown, Ohio.  
J. W. Beall, The Ohio Steel Foundry Company, Lima, Ohio.  
A. H. Kramer, The Advance Foundry Company, Dayton, Ohio.

### **REPRESENTING EMPLOYEES**

John F. Schmid, Molder, 116 Euclid Ave., Salem, Ohio.  
Jerry Galvin, Molder, 605 W. Norman Ave., Dayton, Ohio.  
Robt. T. McCoy, Molder, Box 699, Cincinnati, Ohio.  
Ed Stenger, 3116 Highland Ave., Cincinnati, Ohio.  
Geo. W. Haas, 1783 E. 11th St., Cleveland, Ohio.



## EXCERPTS FROM LAW AND CONSTITUTION

**Duties of Employer** (Sec. 6030-1 G. C.). Every employer shall, without cost to employees, provide such reasonable effective devices, means and methods as shall be prescribed, by the Industrial Commission of Ohio, to prevent the contraction by his employees of illness or disease incident to the work or process in which such employees are engaged.

**Duties of Employer** (Sec. 871-15 G. C.). Every employer shall furnish employment which shall be safe for the employees therein and shall furnish a place of employment which shall be safe for the employees therein, and frequenters thereof, and shall furnish and use safety devices and safeguards, and shall adopt and use such methods and processes, follow and obey orders and prescribe hours of labor reasonably adequate to render such employment and places of employment safe, and shall do everything reasonably necessary to protect the life, health, safety and welfare of such employees and frequenters.

**Duties of Employer** (Sec. 871-16 G. C.). No employer shall require, permit or suffer any employee to go or be in any employment or place of employment which is not safe, and no such employer shall fail to furnish, provide and use safety devices and safeguards, or fail to obey and follow orders or to adopt and use methods and processes reasonably adequate to render such employment and place of employment safe, and no employer shall fail or neglect to do every other thing reasonably necessary to protect the life, health, safety and welfare of such employees or frequenters, and no such employer or other person shall hereafter construct or occupy or maintain any place of employment that is not safe.

**Duties of Employees** (Sec. 871-17 G. C.). No employee shall remove, displace, damage, destroy or carry off any safety device or safeguard furnished or provided for use in any employment or place of employment, nor interfere in any way with the use thereof by any other person, nor shall any such employee interfere with the use of any method or process adopted for the protection of any employee in such employment or place of employment, nor fail or neglect to follow and obey orders and to do every other thing reasonably necessary to protect the life, health, safety and welfare of such employees and frequenters.

**Penalties** (Sec. 871-43 G. C.). If any employer, employee or other person shall violate any provision of this act or shall do any act prohibited by this act or shall fail or refuse to perform any duty lawfully enjoined, within the time prescribed by the Commission for which no penalty has been specifically provided, or fail, neglect or refuse to obey any lawful order given or made by the Commission, or any judgment or decree made by any court in connection with the provisions of this act, for each such violation, failure or refusal such employer or other person shall be fined not less than fifty dollars nor more than one thousand dollars for the first offense and not less than one hundred nor more than five thousand dollars for each subsequent offense.

**Penalties** (Sec. 871-44). Every day during which any person, persons or corporations, or any officer, agent or employee thereof shall fail to observe and comply with any order of the Commission, or to perform any duty enjoined by this act shall constitute a separate and distinct violation of such order or said section as the case may be.

**Penalties** (Const. Art. II, Sec. 35.). For the purpose of providing compensation to workmen and their dependents for death, injuries or occupational disease,



occasioned in the course of such workmen's employment, laws may be passed establishing a state fund to be created by compulsory contribution thereto, by employers, and administered by the state, determining the terms and conditions upon which payment shall be made therefrom. Such compensation shall be in lieu of all other rights to compensation, or damages, for such death, injuries, or occupational disease, and any employer who pays the premium or compensation provided by law, passed in accordance herewith, shall not be liable to respond in damages at common law or by statute for such death, injuries or occupational disease. Laws may be passed establishing a board which may be empowered to classify all occupations, according to their degree of hazard, to fix rates of contribution to such fund according to such classification, and to collect, administer and distribute such fund, and to determine all rights of claimants thereto. Such board shall set aside as a separate fund such proportion of the contributions paid by employers as in its judgment may be necessary, not to exceed one per centum thereof in any year, and so as to equalize, in so far as possible, the burden thereof, to be expended by such board in such manner as may be provided by law for the investigation and prevention of industrial accidents and diseases. Such board shall have full power and authority to hear and determine whether or not an injury, disease or death resulted because of the failure of the employer to comply with any specific requirement for the protection of the lives, health or safety of employees, enacted by the General Assembly or in the form of an order adopted by such board, and its decision shall be final; and for the purpose of such investigations and inquiries it may appoint referees. **When it is found, upon hearing, that an injury, disease or death resulted because of such failure by the employer, such amount as shall be found to be just, not greater than fifty nor less than fifteen per centum of the maximum award established by law, shall be added by the Board to the amount of the compensation that may be awarded on account of such injury, disease, or death, and paid in like manner as other awards, and, if such compensation is paid from the state fund, the premium of such employer shall be increased in such amount, covering such period of time as may be fixed, as will recoup the state fund in the amount of such additional award, notwithstanding any and all other provisions in this constitution.**

**Orders Prima Facie Reasonable** (Sec. 871-25). All orders of the Industrial Commission of Ohio in conformity with law shall be in force and shall be prima facie reasonable and lawful; and all such orders shall be valid and in force and prima facie reasonable and lawful until they are found otherwise in an action brought for that purpose pursuant to the provisions of Section 871-38 G. C., or until altered or revoked by the Commission.

**Salamanders** (Sec. 12798-6). Whoever uses or causes or permits to be used an open salamander or coke burner or other outfit or receptacle of any kind in which charcoal, coke, coal or any other fuel or combustible substance is burned or in process of combustion so as to give off obnoxious (noxious) gas or gases detrimental to health, in any enclosed residence or enclosed building under construction while a person or persons work or are employed therein without providing a proper pipe, chimney or enclosure to carry said gases from said open salamander, coke burner, outfit or receptacle to the outside of said enclosed building or residence shall be guilty of a misdemeanor, and on conviction for the first offense shall be fined not more than one hundred dollars, and for a second or subsequent offense shall be fined not less than one hundred dollars nor more than two hundred dollars, and in each case he shall stand committed until such fine and the costs are paid or until he is otherwise discharged by due process of law.



STATE OF OHIO  
THE INDUSTRIAL COMMISSION  
AND  
THE DEPARTMENT OF INDUSTRIAL RELATIONS

---

SPECIFIC SAFETY REQUIREMENTS  
COVERING OPERATIONS OF  
AND CONDITIONS IN FOUNDRIES

---

The specific requirements herein are formulated, compiled and issued in compliance with Sections 871-25, 871-26 and 871-34, inclusive, of the General Code of Ohio, authorizing the Industrial Commission to make, adopt, publish and enforce safety orders, rules and regulations and to prescribe what safety devices, safeguards or other means that are best adapted for the reasonable protection of employees in every place of employment.

By virtue of the above authority vested in the Industrial Commission of Ohio, the following resolution was adopted on the 14th day of February, A. D. 1931, to wit:

BE IT RESOLVED by the Industrial Commission of Ohio, that the code of Specific Safety Requirements following herein, titled and known as Specific Safety Requirements covering Operations of and Conditions in Foundries be, and the same hereby is, adopted and issued as a general order; that on the 1st day of April, A. D. 1931, publication was made in pamphlet form for distribution on demand and that said code of Specific Safety Requirements shall be in full force and effect from and after the 1st day of May, A. D. 1931, as provided by law.

THE INDUSTRIAL COMMISSION OF OHIO,  
WELLINGTON T. LEONARD,  
THOMAS M. GREGORY,  
L. E. NYSEWANDER.

Attest: THOMAS A. EDMONDSON,  
Secretary.





# **SPECIFIC SAFETY REQUIREMENTS COVERING OPERATIONS OF AND CONDITIONS IN FOUNDRIES**

## **PURPOSE**

Sec. 1. The purpose of this code is to provide reasonable safety for life, limb and health of employees in foundries.

Purpose of  
Code.

## **SCOPE**

Sec. 2. The provisions of this code shall apply to foundry operations incidental to the production of castings, and all other operations pertaining thereto; to ventilation, light and heat in foundry establishments and all parts thereof; and to toilets, toilet rooms, wash rooms, locker rooms and all sanitary conditions in connection therewith. Specific requirements of other codes adopted by the Industrial Commission of Ohio or enacted by the General Assembly shall apply, as any or all of them may be applicable, in any and all matters not specifically covered by this code.

Scope of  
Code.

## **DEFINITIONS**

Sec. 3. For the purposes of this code the following definitions shall apply. Terms not herein defined shall be understood as having their usual and ordinary meaning unless a different meaning is plainly required by the context:

Application of  
definitions.

1. A "foundry" shall mean a place where iron, steel, copper, tin, zinc, lead, aluminum or compositions containing any of the baser metals are melted and poured into molds for the making of castings.

2. The term "entrances or exits" as used in this code shall mean passages for common use between the foundry and open air, provided for employees, during working hours.

3. The term "gangway" as used in this code shall mean well defined passageways dividing or bordering the working floors of foundries, but not the spaces between molds.

4. The term "aisle" as used in this code shall mean a passageway between molds, leading from the gangway.

5. The term "molding floor" shall mean that space or area allotted to and occupied for the setting or putting up of molds.

6. The term "pouring floor" shall mean the molding floor when molten metal is poured on the same floor where molds are prepared, or any distinctively separate space or location to which molds are conveyed for pouring purposes.

7. The term "cellar" when used in this code shall mean a room or building which is one-half ( $\frac{1}{2}$ ) or more of its height below the level of the curb or the ground adjoining the building excluding area-ways.

8. The term "basement" when used in this code shall mean a room or a building which is more than one-half ( $\frac{1}{2}$ ) of its height above the level of the curb, or the ground adjoining the building, excluding area-ways.

9. The term "employer" as used herein shall mean and include the person, firm, corporation, agent, manager, representative or other person having control or custody of any foundry employment or of any employee.

10. The term "employee" as used herein shall mean and include every person who may be required or directed by any employer to engage in any foundry employment or to go, or work, or be at any time in such place of employment.

11. The term "suitable" when used herein shall mean fitting and capable of being applied or put into use under the conditions of construction, installation or the operation employed.

12. The term "substantial" when used herein shall mean construction of such strength, of such material and of such workmanship that the object or thing referred to will withstand all reasonably expected wear, usage or shock to which it may be subjected.



### SAFETY REQUIREMENTS

Sec. 4. The safety devices herein required shall be of such material and construction as will provide protection to employees engaged in foundry operations. **Safety devices, construction.**

Sec. 5. Except as otherwise provided in this code, the employer shall furnish the safety devices herein required for the protection of employees. (See Secs. 6330-1, 871-15, 871-16, 871-17, 871-43, 871-44 G. C. and Sec. 35, Art. II Const. page 3 of this code.) **Employer shall furnish safety devices.**

Sec. 6. Every employee in every foundry shall use the safety devices furnished for his protection. (See Secs. 871-16, 871-43, 871-44 G. C. page 3 of this code.) **Employee shall use safety devices.**

Sec. 7. No employee shall remove, displace, damage, destroy or otherwise make ineffective any safety device or safeguard furnished or provided by the employer as required by this code, nor interfere in any way with the use of such protective device or safeguard by any other employee. (See Secs. 871-17, 871-43 G. C. page 3 of this code.) **Removal of safety devices, etc., prohibited.**

### BASEMENT AND CELLAR FOUNDRIES

Sec. 8. No foundry shall be located or operated in a basement unless the ceiling shall be at least fourteen (14) feet in height, measured from the floor surface to the lowest point of the ceiling or roof. Not more than fifty (50) per cent of the basement building shall be below the adjacent ground level on two or more sides. Grading or excavating may be done to reduce the ground level to requirements herein specified, provided the boundary lines of such graded or excavated area at the grade level shall be not less than twelve (12) feet back and away from the walls or sides of such foundry building. **Specifications for basement foundries.**

Sec. 9. No foundry shall be located or operated in a cellar. **Cellar foundries prohibited.**

### ENTRANCES TO FOUNDRIES

Sec. 10. Entrances to foundries shall be protected from November first to April first of each year by a covered vestibule, either stationary or movable, which shall be so constructed as to eliminate drafts and of such dimensions as to answer ordinary purposes such as the passage of wheel- **Entrance covered by vestibule; construction.**

barrows, industrial trucks, tractors and small industrial cars. (See section 1028-1 G. C. providing exits.)

Exception as to cars, locomotives, etc.; time to remain open.

Sec. 11. The provisions of section ten (10) shall not apply to entrances used for railroad or industrial cars handled by locomotives or motors, for traveling cranes, horse drawn vehicles or automobiles. These entrances may remain open only for such time as is necessary for the ingress or egress of such cars, trucks, cranes, horse drawn vehicles or automobiles.

Prohibition as to smoke.

Sec. 12. No locomotive emitting smoke or gases shall be permitted to remain inside the foundry during working hours.

Same.

Sec. 13. Locomotive cranes emitting smoke shall not be permitted to remain in the foundry during working hours a period of more than five (5) consecutive minutes, unless coke containing less than one (1) per cent of sulphur is used for fuel.

### GANGWAYS AND AISLES

Good condition and free of obstruction where molten metal handled.

Sec. 14. Gangways and aisles in which molten metal is being handled shall, during the progress of pouring, be kept in good condition, uniformly smooth, clear of obstructions and free from undue dampness.

Other gangways smooth and unobstructed.

Sec. 15. Gangways other than those used for carrying molten metal, shall be kept uniformly smooth at all times and in such condition as will afford an unobstructed passageway for men and materials.

Floors covered with sand.

Sec. 16. The floors of gangways and aisles constructed of brick or concrete shall be covered with a float finish of sand not to exceed one-half ( $\frac{1}{2}$ ) inch in depth, during the time of carrying, handling and pouring of molten metal.

Floor construction near tracks.

Sec. 17. The floor of gangways immediately adjoining industrial tracks where employees frequently pass shall be constructed of a material of substantial character and shall be flush with the top of the rails.

Continuous aisle, etc., space maintained.

Sec. 18. Where it is necessary to occupy a portion of the gangway or aisle space in the preparation of molds, continuous gangway or aisle space of the width hereinafter specified, shall be provided during working hours.



Sec. 19. The width of a gangway or aisle as herein-after specified shall be construed to mean the clear distance between molds, posts, partitions or other obstructions on one side of the gangway or aisle and similar objects on the other.

Width of gangway or aisle defined.

#### Width of Gangways

Sec. 20. Gangways where molten metal is carried exclusively in truck ladles, shall be not less than twenty-four (24) inches wider than the extreme width of the truck ladle.

Width truck ladle gangways.

Sec. 21. Gangways where molten metal is carried in crucibles by not more than two (2) men per crucible and poured into molds placed on one or both sides of the gangway, shall be not less than three (3) feet wide.

Width 2 men per crucible.

Sec. 22. Where crucibles of molten metal are carried by more than two (2) men per crucible and poured into molds placed on one or both sides, the gangway shall be not less than four (4) feet wide.

Width more than 2 men per crucible.

Sec. 23. Gangways where molten metal is carried in hand or bull ladles by not more than two (2) men per bull ladle and poured into molds placed on one side of the gangway, shall be not less than three (3) feet wide.

Width 2 men per ladle.

Sec. 24. Gangways where molten metal is carried in hand or bull ladles by not more than two (2) men per bull ladle and poured into molds placed on both sides of the gangway, shall be not less than four (4) feet wide.

Width 2 men per ladle poured on both sides.

Sec. 25. Gangways where molten metal is carried in hand or bull ladles by more than two (2) men per bull ladle shall be not less than five (5) feet wide.

Width more than 2 men per ladle.

Sec. 26. Gangways where molten metal is carried in crane, trolley or sulky ladles, shall be of such width as will permit employees to safely handle and empty the ladles.

Width crane, trolley or sulky ladle.

#### Width of Aisles

Sec. 27. Aisles where molten metal is carried in hand or bull ladles, or in crucibles, and poured into molds on individual floors by not more than two men per ladle or crucible, shall be not less than eighteen (18) inches wide, except where molds alongside the aisle are more than

Width pouring on individual floors, not more than 2 men; exception.

eighteen (18) inches above the aisle level, the aisle in such case shall be not less than twenty-four (24) inches wide.

Width when  
poured by  
more than  
2 men.

Sec. 28. Aisles where molten metal is carried in hand or bull ladles, or in crucibles, and poured into molds on individual floors by more than two men per ladle or crucible, shall be not less than three (3) feet wide.

Width, crane,  
trolley or truck  
ladle.

Sec. 29. Aisles where molten metal is carried and poured into molds on individual floors by crane, trolley or sulky ladles shall be of such width as will permit employees to safely handle and empty the ladles.

### MAINTENANCE AND INSPECTION

Floor slope to  
drain from  
base.

Sec. 30. The floor immediately surrounding the cupola shall slope and drain away from the base.

Open fires may  
be used, when.

Sec. 31. Open fires may be used for the purpose of drying molds or cores, if fuel containing less than one (1) per cent of sulphur is used.

Shields for  
ladles.

Sec. 32. Shields shall be provided between the shank and the ladle for all single hand ladles.

Fire resisting  
covers for ladles.

Sec. 33. A sufficient number of fire resisting covers shall be available for use in covering bull ladles.

Shields for  
slag spouts.

Sec. 34. Slag spouts shall be equipped with shields for protection against the spattering of slag.

Dry ladles  
before use.

Sec. 35. Molten metal shall not be poured into ladles without the ladles having been first thoroughly dried.

Daily inspection by users.  
Monthly inspection by employer.

Sec. 36. Ladles, trolleys and trolley tracks, shanks, tongs, chains, cables, straps, ropes, slings and yokes, skimmers and slag hoes used in foundry operations shall, prior to their use, be inspected daily as to their safety, by the men preparing and using the same, and in addition a regular inspection as to their safety shall be made once a month by a man designated by the employer for that purpose.

Monthly visual  
inspection of  
chains, etc.;  
record.

Sec. 37. A monthly visual inspection shall be made of the chains and cables on counterweights in connection with drying ovens, and records of such inspections shall be kept on file for inspection by duly authorized officers of the Department of Industrial Relations or the Industrial Commission.



Sec. 38. All counterweights shall be encased to the full extent of the travel of the weights. Counterweights encased.

Sec. 39. Tools or other equipment known or found upon inspection to be defective shall not be used while in such condition. Defective tools shall not be used.

Sec. 40. Foundry materials and equipment shall be placed in a stable, orderly way, on level and substantial foundations and arranged in order as to size and type. Stacking materials or equipment.

Sec. 41. Trunnions on flasks shall be designed for the loads they are to handle and constructed with a factor of safety of at least ten (10) including bolts where they are used. The diameter of the button shall be equal to the diameter of the groove plus one and one-half times the diameter of the sling used to handle the flask. Inside corners shall be well filleted and in order to prevent the sling slipping off or riding the button, the radius of the corner between groove and button shall be approximately equal to the radius of the sling used, the remainder of the inside edge of the button to be straight. Trunnions, design and construction.

Sec. 42. All fireways or pits connected with drying ovens, when built in the floor, shall be at all times protected by either a substantial protective cover or a guard rail conforming to the requirements of the Ohio General Safety Standards Code. Fireways or pits, how guarded.

Sec. 43. All trap doors shall be guarded, when open, either by standard guard rails or watchmen and all pits shall be properly covered or railed, when not in use. All casting pits shall be free from water and abnormal dampness. Trap door shall be guarded; pits free from water.

Sec. 44. All passageways and stairways shall be lighted so that objects and stair treads therein may be readily discerned. Inclined runways and stairways, charging decks and platforms shall be guarded by rails conforming with the provisions of the Ohio General Safety Standards Code. Lighting stairways and passageways. Guarding.

Sec. 45. Galleries where molten metal is poured into molds, shall be provided with solid leak-proof floors and partitions of molten metal resistive material. The partitions shall be not less than three (3) feet six (6) inches high and installed on the open side of such gallery. Galleries, leak-proof. Height of partitions.

Worm gear on  
ladle, when  
required.

Sec. 46. All ladles pouring from the lip, of two thousand (2000) pounds or greater capacity, shall be equipped with a worm geared device for tilting the same.

Center of  
gravity of  
ladles; lock-  
ing device.

Sec. 47. All crane, truck and trolley pouring ladles shall be so constructed that the center of gravity shall be below the bail when filled with molten metal and shall be equipped with a locking device to prevent premature overturning.

High explosives,  
protection  
when used.

Sec. 48. The use of high explosives is absolutely prohibited on the foundry premises unless effective protection is provided in accordance with the requirements of the Ohio Explosive Laws. This section shall not apply to fuels.

Breaking cast-  
ings inside  
foundry  
prohibited.

Sec. 49. The breaking of castings or scrap by the use of a drop inside the foundry during the regular working hours, is prohibited.

Shield against  
flying frag-  
ments.

Sec. 50. Where a drop is used for the breaking of castings or scrap outside of the foundry, a permanent shield of two (2) inch planking or equivalent protection shall be provided. Such shield shall be of sufficient height to protect employees, working in the vicinity, from injury by flying fragments of metal.

Riding loads,  
hooks, etc., pro-  
hibited; excep-  
tion.

Sec. 51. The riding on crane loads, crane chains, ropes, cables, hooks, buckets, clam shells, slings, blocks or other attachments shall not be permitted. The employer shall post notices to this effect. Where it is known to be the safest method to reach places difficult and dangerous of access by other means, or where an emergency exists, employees may be hoisted or conveyed to such places upon the crane equipment.

Chains, slings,  
hooks, etc., shall  
be raised or  
guarded.

Sec. 52. Crane chains, slings, ropes, cables and hooks shall be hoisted so as to clear all obstructions within their path when the crane is in motion or crane chains, slings, ropes, cables and hooks shall be guarded by a chainman walking beneath.

#### DEVICES WORN FOR PROTECTION

Protection when  
cleaning cast-  
ings.

Sec. 53. Employees engaged in cleaning castings with air or sand blast shall wear respirators, hoods or helmets adapted to the work to be done. Gauntlets and aprons shall



also be provided when necessary for protection of employees engaged in such work.

Sec. 54. Employees removing pots containing molten metal from furnaces or otherwise handling the same, shall be provided with suitable protection for head, eyes and legs. Employees engaged in such operations shall also wear suitable and substantial shoes furnished by themselves.

Protection removing pots of molten metal.

Sec. 55. When the eyes of employees are liable to injury from dust, flying chips, or molten metal, they shall wear suitable safety goggles.

Goggles required, when.

Sec. 56. When the dust arising from cleaning operations is liable to cause injury to the health of employees, they shall wear suitable respirators.

Respirators, when required.

Sec. 57. When sulphuric, muriatic or other acids are used in foundry operations, acid resisting gloves, boots, aprons and goggles shall be worn by employees handling such acids.

Protection when handling acid.

Sec. 58. Employees engaged in welding or burning operations by means of an oxyacetylene or other gas torch shall wear suitable safety goggles; and when engaged in similar operations by means of an electric arc, employees shall be provided with shields or shall wear suitable helmets.

Welding or burning operations, protection when engaged in.

Sec. 59. Employees engaged in tapping or stopping up cupolas, shall wear suitable leggings and shall also wear suitable goggles fitted with non-shatterable lenses.

Protection when tapping or stopping cupolas.

## VENTILATION

### Removal of Smoke, Steam, Gases and Dust

Sec. 60. Where smoke, steam, gases or dust arising from any of the operations in the foundry are injurious to health or eyes and where a natural circulation of air does not carry off such smoke, steam, gases or dust, there shall be installed and operated, hoods, ventilators, fans or other means of ventilation of sufficient capacity to do so. Four air changes an hour shall be considered adequate ventilation.

Removal of dust, smoke, gases, etc.

Four air changes per hour adequate

Sec. 61. Where castings are cleaned or chipped in molding or casting rooms, there shall be provided suitable screens, partitions or other effective means to protect em-

When screens, partitions, etc., required in cleaning; exceptions.

ployees against flying chips and excessive dust. All castings shall, where practicable, be cleaned or chipped in rooms separated from rooms used for other purposes.

NOTE: This requirement shall not apply if mechanical contrivances are used which will effectively remove the dust and particles arising therefrom.

When exhaust systems required.

Sec. 62. Where tumbler mills are used, exhaust systems shall be installed to effectively carry off the dust arising from the cleaning of castings. This does not prohibit the use of a water barrel for the purpose of cleaning castings.

Where sand blast operations carried on.

Sec. 63. Sand blast operations shall be carried on in the open air or in a separate room provided for that purpose. Such room shall be provided with an exhaust system that will effectively remove the dust, or sand blast machines of such construction shall be used as will mechanically remove the dust and prevent its escaping into the room. The milling of cupola cinders, when done inside of the foundry, shall be carried on by an exhaust-mill or water mill.

Milling cupola cinders.

Where blowing out cores shall be done.

Sec. 64. No cores shall be blown out of castings with air unless such work is done in the open air or in an exhausted dust-proof enclosure provided for that purpose.

Fumes, gases, smoke from drying ovens, removal.

Sec. 65. Where fumes, gases and smoke are emitted from drying ovens in such quantities as to be injurious to the health or eyes of the employees, hoods and ducts or exhaust fans or other means for their removal, shall be provided over the doors of such ovens.

When means other than hoods or ducts may be used.

Sec. 66. Hoods and ducts will not be required where they would interfere with the operations of traveling cranes, but other effective means shall be provided for the removal of such fumes, gases and smoke.

## HEATING AND LIGHTING

Artificial light provided, when.

Sec. 67. Where light is insufficient to properly light the foundry, artificial light of sufficient power shall be provided.

Use of hand torches, when prohibited.

Sec. 68. The use of hand torches or other lamps that emit injurious smoke or gases is prohibited.

Minimum temperature in foundry.

Sec. 69. A minimum temperature of fifty-five (55) degrees Fahrenheit shall be provided and maintained in every foundry during working hours.



Sec. 70. The use of the open salamander, or stoves of that type, for heating purposes during working hours is prohibited.

Open salamander, stove, etc., prohibited, when.

### SANITATION AND COMFORT

Sec. 71. Suitable facilities shall be provided for drying the clothing of such employees as may be found necessary, and may be located in the wash room, the locker room or in a room used exclusively for that purpose.

Clothing, facilities for drying.

Sec. 72. Where water and sewer facilities are available, inside sanitary water closets shall be provided in every foundry and for each sex according to the following table:

Inside sanitary closets, number required.

(a)

<i>No. of Persons</i>	<i>No. of Closets</i>	<i>Ratio</i>
1 to 10	1	(1 for 10)
11 to 25	2	(1 for 12½)
26 to 50	3	(1 for 16-2/3)
51 to 80	4	(1 for 20)
81 to 125	5	(1 for 25)

(b) For every unit of forty-five (45) or fractional part thereof in excess of one hundred and twenty-five (125) persons employed, one additional water closet shall be provided.

Additional closets.

Sec. 73. In every foundry where water closets or privy accommodations are located outside of the foundry, the passageway leading from the foundry to the said water closets or privy accommodations shall be so constructed that the employees in passing thereto or therefrom shall not be exposed to outside atmosphere and such passageways, water closets and privy accommodations shall be properly heated during cold weather.

Outside closets. Passageway leading to. Heating.

Sec. 74. In every foundry there shall be provided one urinal. Where more than thirty (30) or less than eighty (80) males are employed, two urinals shall be provided, and thereafter one additional urinal shall be provided for every eighty (80) males employed or fractional part thereof. At least two (2) linear feet of trough or slab urinal shall be considered the equivalent of one urinal.

Urinals, number required.

Wash basins,  
number re-  
quired.

Sec. 75. Wash basins with an adequate supply of hot and cold water shall be supplied according to the following table:

(a)

<i>No. of Persons</i>	<i>No. Wash Basins</i>	<i>Ratio</i>
1 to 8	1	(1 for 8)
9 to 16	2	(1 for 8)
17 to 30	3	(1 for 10)
31 to 45	4	(1 for 11¼)
46 to 65	5	(1 for 13)

Additional  
basins.

(b) For each additional twenty-five (25) employees at least one additional wash basin shall be provided. Twenty (20) linear inches of sink shall be considered the equivalent of one wash basin.

Wash rooms,  
including  
shower bath.  
required.

Sec. 76. Wash rooms where ten (10) to thirty (30) men are employed, shall be provided with at least one shower bath with an ample supply of hot and cold water, and for every additional thirty (30) men one additional shower bath shall be provided. Where men are employed in shifts the same ratio of shower baths shall be provided for each shift of employees.

Lockers, indi-  
vidual, re-  
quired.

Sec. 77. Individual type of lockers at least three (3) feet six (6) inches in height and one (1) foot by one (1) foot inside measurement, with hinged door arranged for locking, shall be provided for employees and shall be placed either in the washroom or in a room adjoining and opening into the washroom. The number of lockers shall be determined by the Industrial Commission of Ohio.

Number, dimen-  
sions, construc-  
tion, location.

Ventilation,  
lighting and  
heating.

Sec. 78. All washrooms and locker rooms shall be well lighted and ventilated, kept in a clean and sanitary condition at all times and when in use shall be maintained at a temperature of not less than seventy (70) degrees Fahrenheit.

Sanitary foun-  
tains or cups  
required.

Sec. 79. Sanitary drinking fountains or individual drinking cups shall be provided throughout the foundry by the employer.

General sani-  
tary rules  
apply.

Sec. 80. The general sanitary rules of the Industrial Commission of Ohio shall apply in all matters not specifically covered in Sections 71 to 79 inclusive.



## WOMEN EMPLOYED IN FOUNDRIES

Sec. 81. Where rooms in which core ovens are located adjoin rooms where cores are made by females, and where the making and the baking of cores are simultaneous operations and the process generates injurious gases, fumes, smoke or excessive heat, a partition shall be constructed between such rooms, of fire-resistive material, and there shall be in such partition only such openings as are required by the nature of the operations.

Removal of gases, fumes, smoke, etc., from room where women employed; partitions.

Sec. 82. Where such partitions are required, all openings between the oven room and the room in which the females are employed shall be vestibuled with either a revolving device or double doors which shall be self-closing or any other self-closing device equally effective. Such devices shall be kept in such condition that gases, fumes and smoke shall be effectively trapped.

Openings between rooms, vestibuled, etc.

Sec. 83. No female employed in any foundry shall be permitted to handle cores which have a temperature of more than one hundred and ten (110) degrees Fahrenheit.

Maximum temperature of cores handled by women.

Sec. 84. No female employed in a core making room shall lift any object exceeding twenty-five (25) pounds in weight unless she uses mechanical means by which her physical effort is limited to twenty-five (25) pounds.

Maximum weight lifted by women.

## FIRST AID

Sec. 85. The following provisions shall be made for first aid, to be used in case of injury, until a regular physician takes charge:

First aid required.

(a) A metal cabinet of sufficient size, enameled and constructed so as to be dust tight, shall be located on the wall of a room, other than the workrooms of the establishment, in which to keep the supplies, which shall be kept up at least to the amounts as shown below, except a period of forty-eight hours may lapse while the supply is being replenished, following an accident.

Cabinet; construction, location.

1 Tourniquet

1 Roll of absorbent cotton—1-lb. size

1 dozen rolls of gauze in cartons—1 yard size

1 dozen 3-inch gauze bandages

Minimum amount of supplies.

- 1 dozen 1-inch gauze bandages
- 3 jars of a recognized ointment for burns—1 lb. size, or
- 3 pints of a recognized oil for burns—1 pint size
- 1 dozen individual gauze dressing packets
- 1 dozen individual ampules of U. S. P. tincture of iodine or mercurochrome or an antiseptic of equal properties
- 1 pair of scissors
- 1 dozen safety pins

Broken packages; requirements.

(b) When any of the above packages are broken and unused dressing material remains, the same shall not be replaced in the cabinet for first aid use unless the same is sterilized and resealed or placed in air tight containers.

Blanket required; dimensions.

(c) A blanket 72" x 90" shall be provided, and provisions made to carry a patient and to place the said patient in a reclining position. Some person should be acquainted with the use of the above supplies and a notice showing the names and telephone numbers of a competent physician, hospital and ambulance should be located near the first aid cabinet.

Telephone numbers, etc.

Above provisions not required, when.

(d) The above provisions will not be required where a plant hospital, dressing room or dispensary with supplies in excess of the above is maintained, and where a competent trained person is regularly employed, to supervise such plant hospital.

#### Additional Specific Requirements For

#### BRASS FOUNDRIES

Brass foundry defined.

Sec. 86. For the purpose of this code a brass foundry is a place where brass, aluminum, copper, tin, zinc or compositions of the baser metals are melted and poured into sand molds in the making of castings.

Removal of dust, gases, fumes, etc. Foundry rules apply.

Sec. 87. The rules relative to dust, smoke, gases or fumes, ventilation, sanitation, heat, light, gangways and aisles, safety appliances, cleaning rooms, wash rooms, drying and locker accommodations and first aid as specified for foundries, shall apply to brass foundries.



Sec. 88. Where the natural circulation of air does not carry off the fumes, gases, smoke, steam or dust, non-ferrous melting furnaces shall be separated from the molding room by an enclosure of fire-resistive material. Such enclosure shall be provided with sufficient ventilation to carry all fumes, gases, smoke, steam and dust to the outer air. Six (6) changes of air per hour shall be considered adequate for such enclosure.

Artificial ventilation required when.

Sec. 89. When upright stationary melting furnaces are placed in a pit and are wholly or partly below the floor level, such pit opening shall be covered with a steel or iron grating composed of members of such cross section as will sustain a load of two hundred (200) pounds per square foot, with a factor of safety of two (2). Said grating shall be level with the crown plate of the furnace or furnaces.

Pit opening shall be covered; construction.

Sec. 90. When upright stationary melting furnaces are placed wholly above the floor level there shall be a clearance of at least three (3) feet between any two units.

Clearance when furnace above floor.

Sec. 91. When upright stationary melting furnaces are placed wholly above the floor level they shall be provided with fire-resistive platforms with standard guard rails. Said platforms shall extend along the front and sides of the furnace or furnaces and shall be capable of sustaining a load of two hundred (200) pounds per square foot with a factor of safety of two (2) and shall be not less than three (3) feet wide.

Fire-resistive platform and guard rails required; construction.

Sec. 92. When the combined weight of metal, crucible and shank is more than two hundred (200) pounds, the same shall be removed from the furnace and deposited on the floor by mechanical means.

When mechanical means used for lifting.

Sec. 93. When smoke finish is desired on molds made on benches or tubs, smoke-boxes which shall effectively trap the smoke, shall be used. Such boxes shall be connected with flues to the outer air.

Smoke-boxes, when required.

Sec. 94. Where molders work side by side, a space at least five (5) feet wide shall be allowed for each man, and a clear space of three (3) feet shall be provided back of each man.

Clearance where molders work side by side.

Natural light  
from two  
sides.

Sec. 95. Brass foundries shall be provided with natural light from at least two sides or from at least one side and skylights.

Dirt shall not be  
riddled in room.

Sec. 96. Gangway dirt and floor scrapings shall not be riddled in the room where other workmen are employed at the time, unless they are handled so as to prevent excessive dust arising therefrom.

Stoves protected  
by guard rail.  
Portable, how  
connected.

Sec. 97. Stoves used for drying molds, when located in the rooms used by workmen, shall be protected by a guard rail of fire-resistive material. Where portable gas stoves are used for drying molds they shall be fitted with non-collapse hose.

Construction  
of brass  
foundry.

Sec. 98. No brass foundry shall hereafter be constructed with a clearance of less than fourteen (14) feet between the lowest point of the ceiling or roof deck and the floor.



## INDEX

	SEC.	PAGE
Adoption of Code, resolution.....		5
Date when effective.....		5
Advisory Committee, General personnel of.....		2
Air changes, four per hour required.....	60	15
"Aisle" defined, item 4.....	3	8
Aisles, etc. ....	14-19	10-11
Application of Code.....	2	7
Aprons, handling acid, cleaning castings.....	53, 57	14, 15
"Basement" defined, item 8.....	3	8
Basement foundry, location, etc.....	8	9
Boots for employees handling acid.....	57	15
"Brass Foundry" defined.....	86, 88	20, 21
Clearance, molders working back to back.....	94	21
Construction of brass foundry.....	98	22
Dirt shall not be riddled in rooms.....	96	22
Pit openings shall be covered.....	89	21
Castings, breaking inside and outside of foundry; protec- tion .....	49-50	14
Cleaning, goggles, etc., required.....	53, 55	14, 15
Screen and partitions, when required.....	61	15
Where cleaned .....	61	15
Ceilings, height of.....	8, 98	9, 22
"Cellar" defined, item 7.....	3	8
Foundry shall not be located nor operated in.....	9	9
Chains and cables, monthly visual inspection of; record..	37	12
Riding of, prohibited; exceptions.....	51	14
Clothing, facilities for drying.....	71	17
Purpose of .....	1	7
Cores, maximum temperature handled by women.....	83	19
Core Ovens, separated from room where women employed	81-84	19
Blowing out where done.....	64	16
Partitions separating, construction.....	81	19
Openings in, vestibuled.....	82	19
Removal of gases, fumes, etc.....	82	19
Core Rooms, provisions relating to, where women em- ployed, etc. ....	81, 84	19
Counterweights, encasement of.....	38	13
Crane chains swinging or dangling, clearance.....	52	14
Riding of, prohibited; exceptions.....	51	14
Crucibles—		
Aisles for, width.....	27	11
Gangways for, width.....	21, 22	11
Removing from furnace.....	92	21
Cupola cinders, milling of.....	63	16
Cupolas, protection when tapping or stopping.....	59	15
Floors around, shall slope away from base.....	30	12

	SEC.	PAGE
Defective equipment, employees shall not use.....	39	13
Definitions .....	3	7
Devices worn for protection—Head, eyes, feet and legs, removing pots of molten metal.....	54	15
Drinking water, sanitary fountain or cups required.....	79	18
Drop Balls, restriction on use.....	49, 50	14
Drying oven, hoods or fans required over.....	65	16
Dust removal of, sand blast operations.....	60-66	15-16
Duties and penalties imposed by law upon employee, em- ployer .....		3
“Employee” defined, item 10.....	3	8
Devices worn by, for protection.....	53-59	14-15
Duties and penalties imposed upon.....		3
Safety devices furnished shall be used by.....		3
Removal of or interference with use of, prohibited		3
“Employer” defined, item 9.....	3	8
Duties and penalties imposed upon.....		3
Safety devices shall be furnished by.....	5	9
“Entrance or exit” defined, item 2.....	3	7
Entrance to foundry shall be vestibuled; construction.....	10	9
Exception as to locomotives, cars, etc.....	11	10
Time to remain open.....	11	10
Equipment—		
Daily inspection of.....	36	12
Defective, use of prohibited.....	39	13
Monthly inspection .....	36, 37	12
Stacking or piling.....	40	13
Excessive heat, fumes, gases, etc., removal of.....	81	19
Exhaust or water mill, where used.....	63	16
Exhaust systems, where required.....	62	16
Explosives, restrictions on use of high.....	48	14
Fires, open, may be used for drying molds, when.....	31	12
Fireways, guard requirements.....	42	13
First Aid.....	85	19-20
Flasks, trunnions on, specifications.....	40-41	13
Floor around cupola, slope of, from base.....	30	12
Adjacent to industrial tracks.....	17	10
Aisles and gangways when covered with sand.....	16	10
Flying fragments, shield required.....	50	14
“Foundry” defined, item 1.....	3	7
Fumes, gases, smoke, removal of from drying ovens.....	65	16
General provisions, removal of gases, fumes, etc.....	60	15
Hoods, fans and ventilation required.....	60	15
Other means may be used when.....	66	16
Removal of, where women are employed.....	81	19
Furnaces—		
Clearance when wholly above floor.....	90	21
Non-ferrous melting, separated from molding room....	88	21



	SEC.	PAGE
Platform and guard rails required when above floor..	91	21
Removal of crucibles from.....	92	21
Galleries, material and construction.....	45	13
"Gangway" defined, item 3.....	3	7
Gangways, width of, defined.....	19	11
All shall be kept smooth and unobstructed.....	14, 15	10
Continuous gangway space required.....	18	10
Good condition required where molten metal handled..	14	10
Width of, where molten metal handled and poured....	20-26	11
Gases, fumes, smoke, dust, etc., removal of required.....	60-66, 87	15-16, 20
Core rooms where women are employed.....	81	19
Gas torch or oxyacetylene welding, protection required....	58	15
General Advisory Committee, personnel.....		2
Gloves, handling acid, etc.....	57	15
Goggles, chips, dust, cleaning, handling molten metal, etc.	53, 55, 58	14, 15
Guard rails required on stairs, runways, decks, platforms	44	13
Heating, minimum of 55° maintained.....	69	16
Hoods, fans, ventilators, when required.....	60-66	15-16
Hoods or helmets, cleaning operations.....	53	14
Hose, portable stoves fitted with non-collapsible.....	97	22
Inspection daily and monthly of equipment.....	36	12
Monthly visual, of chains and cables; record.....	37	12
Ladles, crane, hand truck and trolley equipment and construction .....	47	14
Aisles and gangways for, width.....	26, 27	11
Covers for bull ladles required.....	33	12
Drying of, before pouring molten metal.....	35	12
Hand or bull, aisles and gangways for.....	23, 24, 25, 27, 32	11-12
Sulky, aisles for, etc.....	26, 29	11-12
Worm-gear on, required when.....	46	14
Lamps and torches emitting injurious gases, prohibited....	68	16
Lifting by female employees; limitation of weight.....	84	19
Light, artificial, when required.....	67, 95	16, 22
Natural required on at least two sides, brass foundries	95	22
Lighting stairways and passageways.....	44	13
Lip-pouring ladles equipment.....	46	14
Lockers, individual required.....	77	18
Arrangement, dimension, construction, number.....	77	18
Room ventilated and heated.....	78	18
Locking device on ladle to prevent premature overturning.	47	14
Locomotive cranes emitting smoke, regulation.....	13	10
Locomotive emitting smoke in foundries, regulation.....	12	10
Material or equipment, stacking.....	40	13
Molders, clearance when working back to back.....	94	21
"Molding floor" defined, item 5.....	3	8
Molten metal, width of gangways and aisles where poured	20-29	11, 12
Devices worn for protection of employees handling....	53-59	14, 15
Natural light required on two sides of brass foundry.....	95	22
Orders of Commission prima facie reasonable.....		4
Ovens, hoods to remove fumes and gases.....	65	16

	SEC.	PAGE
Partitions, height of, on open side of galleries.....	45	13
Cleaning castings, when required.....	61	15
Construction of .....	45	13
Passageways and stairways, lighting.....	44	13
Penalties and duties imposed upon employee and employer..		3
Pits, guarding requirements, free from water, etc.....	43	13
Pits, openings shall be covered; construction.....	89	21
Place of employment—		
Employer shall furnish safe, for employees.....		3
Employer shall not permit employees in unsafe.....		3
Platform, furnace above floor equipped with.....	91	21
Construction; guard rails.....	91	21
“Pouring floor” defined, item 6.....	3	8
Protection of entrances.....	10	9
Exceptions .....	11	10
Purpose of code .....	1	7
Removal of dust, fumes, gases, smoke, etc.....	60-66	15, 16
Respirators, cleaning operations.....	53, 56	14, 15
Ropes, cables, chains, loads, etc., riding prohibited; ex- ceptions .....	51	14
Runways, stairways, decks, platforms, guarding.....	44	13
Safeguards—Safety Devices—		
Construction and material.....	4	9
Interference with use of, prohibited.....	7	3
Removal of, or making ineffective, prohibited.....	7	3
Sand blast operations, where carried on.....	63	16
Sanitary rules, general, shall apply.....	79	18
Sanitation and Comfort—		
Basins, wash, number required.....	75	18
Bath, showers in washroom.....	76	18
Closets, inside, number required.....	72	17
Heating required .....	73	17
Outside, construction of.....	73	17
Passageway leading to, construction.....	73	17
Washrooms, required .....	76	18
Shower bath provisions.....	76	18
Ventilated and heated.....	78	18
Screens and partitions, where required.....	61	15
Partitions separating core room from core ovens.....	81	19
Material and construction .....	81	19
Openings in, vestibuled.....	82	19
Shoes to be provided by employee.....	54	15
Single shank ladles, provided with shield.....	32	12
Slag spouts, shields for.....	34	12
Smoke, gases, fumes, dust, etc., removal of.....	60-66	15, 16
Where women are employed.....	81	19
Smoke-boxes, when required; construction.....	93	21
Stairways and passageways, lighting, guard rails, etc.....	44	13
Stoves or open salamanders, use of prohibited.....	70	17
Portable fitted with non-collapsible hose.....	97	22



	SEC.	PAGE
Protected by guard rails, when.....	97	22
"Substantial" defined, item 12.....	3	8
"Suitable" defined, item 11.....	3	8
Temperature, minimum of 55° maintained.....	69	16
Cores, maximum, handled by females.....	83	19
Tools, defective shall not be used.....	39	13
Tracks, floors adjoining, specifications.....	17	10
Trap doors, open, shall be guarded.....	43	13
Trunnions on flasks, specifications for.....	41	13
Tumbler mills, dry, dust exhaust provisions.....	62	16
Urinals, number required, additional.....	74	17
Ventilation—Heating .....	78	18
Air changes, four per hour adequate.....	60	15
Artificial required, when.....	60, 88	15, 21
Water or exhaust mill, where used.....	63	16
Welding or burning operations, protection required.....	58	15
Weight, when mechanical means required for lifting.....	92	21





List of Bulletins of the Division of Factory and Building Inspection of the  
Department of Industrial Relations.

- Bulletin No. 101. Administration.  
102. Theaters and Assembly Halls.  
103. Schools.  
104. Standard Devices.  
105. Churches.  
106. Hospitals and Homes.  
107. Hotels and Apartments.  
108. Public Garages.  
109. Workshops, Factories, Mercantile and Office Buildings.
- Bulletin No. 301. Compulsory Education, Child and Female Labor Laws.  
302. Eight Hour Public Work Laws.  
303. Mattress Laws.  
304. Fireworks Law.  
305. Hours and Prevailing Wages on Public Improvements in Building and Construction Industry.
- Bulletin No. 201. Laws Governing Factory and Building Inspection.  
Issued by the Division of Safety and Hygiene  
202. Building and Construction Work.  
203. General Safety Standards.  
204. Fire Drills in Factories and Lofts.  
205. Foundries and Core Rooms.  
206. Woodworking Machinery.  
207. Metalworking Machinery.  
208. Polishing and Grinding.  
209. Blowers and Exhausters.  
210. Steel Mills.  
211. Potteries.  
212. Explosive Laws.  
213. Laundries—Dry Cleaning and Dyeing Establishments.  
214. Pressure Piping and Mechanical Refrigerating Systems.