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OCCUPATION HAZARDS AND DIAGNOSTIC SIGNS

A GUIDE FOR MEDICAL EXAMINERS

Regarding Impairments to be Looked for in Hazardous Occupations

METROPOLITAN LIFE INSURANCE COMPANY

INTRODUCTION

Some occupations have injurious effects on the physical condition of those engaged in them. Those who work with poisons, such as lead, arsenic, mercury, picric acid, etc., or those who have been exposed for a long period to dust, heat or humidity may be impaired seriously as the result of their work. In many cases their condition is not manifest to the doctor; a more careful examination is required to determine whether the occupation has had the anticipated effect. The recognition of the more serious of these effects is important to the Medical Examiner when forming a judgment as to the insurability of the risk.

The Examiner should be careful to see if any of the usual diagnostic signs of poisoning, dust, heat or other exposure are in evidence. In the case of those exposed to lead—such as employees in storage battery plants, white lead workers, paint mixers, etc.—the blue line on the gum, the pale, sallow appearance and the trembling fingers are significant as indications of chronic lead poisoning. Physical symptoms and conditions which ordinarily may be passed by, become important when considered in this way in relation to the particular occupation.

Furthermore, it is often necessary to keep in mind not only the present occupation, but the former one as well. Foremen and supervisors applying for insurance may no longer be exposed to the hazards of their industry, but careful examination may reveal the presence of the effects of the previous occupation from which they have risen.

In the following list four major hazards are considered, namely: dust, heat, moisture and poisons. Long exposure to these usually leaves definite physical signs which the Examiner can discover. We have given for each hazard the various symptoms to be looked for and the more common industries, occupations and processes where such hazards are met. It is hoped that the Examiners will give occupation findings their proper weight in the formation of judgments regarding physical condition.

Health Hazards	Symptom, Condition or Disease to Look for	Industries, Processes and Occupations Which Cause Such Exposure
A. DUST		
Mechanically or chemically irritating, or infectious dust.	Chronic catarrh of the respiratory and digestive tracts; inflammatory condition of the eye, ear, nose and throat; ulceration of the nasal passage; fibrosis; tuberculosis.	Marble and stone, mining, phosphate, pyramid, asbestos, textile, alkali, button, etc., industries; grinding, sand blasting, polishing, cutting, shipping, buffing, mixing materials in rubber, glass, pottery and chemical industries; sorting of rags, file making, comb making, etc.
B. HEAT		
Including cold and variations in temperature.	Anemia, general debility, catarrh, colds,* rheumatism, stiff joints, lumbago, Bright's disease, skin eruptions, cancer, fibroids, premature old age, cataracts, retinitis, conjunctivitis.	Iron and steel mills, smelteries, foundries, metal-working plants, glass factories, electro-chemical works, laundering, glue manufacturing, sugar refining, bakeries, confection making, ice manufacturing, kilns in potteries, color works, etc.; tempering and annealing, canning and preserving (hot steam process); dining car workers, cooks, stokers, firemen, stillmen, blacksmiths, furnace tenders.
C. HUMIDITY		
Including moisture, wet, dampness, etc.	Disease of the respiratory passages, neuralgia and rheumatic affections.	Pulp and paper mills, tanneries, felt batting (wet processes), textile industries (especially cotton), furniture (glue department), sugar refining (filtering process), canneries, oilcloth and linoleum (drying rooms); gluing, clay working, plaster of Paris working, steam vulcanizing, paint manufacturing (color department), dyeing and cleaning.
D. POISONS		
1. Ammonia.	Irritation of the mucous membranes and chronic bronchial catarrh, edema of the lungs.	Coke ovens, gas plants, ammonia gas collection and ammonium compounds making, ice manufacture, refrigerator plants, mirror silvering.
2. Amyl Acetate.	Nervous symptoms and palpitation of the heart.	Lacquering, enameling, bronzing, gilding, leather matching, patent leather making, wiring for incandescent lamps and oilcloth manufacturing; polishers and buffers.
3. Aniline Oil.	Profound anemia, slowing of the pulse, disordered nervous symptoms, cyanosis, spasmodic muscular pains.	Manufacture of aniline oil, paints, colors, dyestuffs, explosives, photographic materials; rubber compounding and mixing, lithographing, printing, dyeing.

*For the data presented under this heading, the revised and translated "List of Industrial Poisons" compiled by Sommerfeld and Fischer, has been drawn upon largely. The arrangement is similar. (See U. S. Bureau of Labor, Bulletin No. 100, May, 1911.)

Health Hazards	Symptom, Condition or Disease to Look For	Industries, Processes and Occupations Which Cause Such Exposure
D. POISONS—Cont'd		
4. Aniline Dyestuffs.	Dermatitis, itching, eruptions and discoloration of the skin; inflammation of the conjunctiva or cornea.	Dyestuffs, explosives.
5. Arsenic Compounds.	Melanosis; stomatitis; catarrh of the mucous membranes indicated by coryza, pharyngitis and bronchitis, hoarseness; perforation of the nasal septum; skin diseases; falling out of hair and nails; brownish pigmentation.	Arsenic mining, smelting and refining of lead, tin, gold, silver, copper, zinc, mixed sulphides, etc. (practically all ores in the United States carry some arsenic); copper and brass foundries, manufacturing of arsenic compounds, color making, dye works, glass manufacturing, rubber works, wall paper, Paris green, oilcloth, artificial flowers; preserving of hides, skins and furs, tanning and handling of hides, refining and dissolving fats and skin grease, galvanizing.
6. Benzol.	Numerous spots of extravasated blood; anemia, fatty degeneration of the internal organs; tremors of the hands and arms; inflammation and ulceration of the gums and lips as in scurvy; dryness of the skin.	Picric acid manufacture, coke oven by-product works, paint, varnish, dyestuffs, pharmaceutical preparations, rubber tire and specialty works, fertilizer works; as a solvent and cleansing substance in dry cleaning works, etc., carburetting, illuminating gas; painters, lacquerers, bronzers, gilders, photo-engravers, papetiers.
7. Brass (Zinc Poisoning).	The illness is primarily an acute one; definite chronic poisonings do not occur. Look for signs of respiratory and degenerative diseases.	Brass casting, brazing, junk metal refining.
8. Carbon Disulphide.	Muscular weakness with trembling, spasms or twitching, paralysis with atrophy of the muscles; deafness, acceleration of the heart's action, emaciation, disturbance of the central nervous system, excitement, depression, temper, etc.	Manufacture of carbon disulphide, carbon tetrachlorids and other chlorinated; disinfectants, rubber solvents, metal polish, artificial silk; vulcanizing rubber, extraction of oil, grease, sulphur.
9. Carbon Monoxide.	Weakness of memory, anemia, hot flushes, palpitation of the heart, irregular, slow or fast pulse.	In plants where firing and heating arrangements are defective; industrial gas producing, acetylene, calcium carbide, phosphorous oxychloride, etc., making; mining, tunnel work; blast furnaces, gas washers,

Health Hazards	Symptom, Condition or Disease to Look For	Industries, Processes and Occupations Which Offer Such Exposure
D. POISONS—Cont'd		
9. Carbon Monoxide—*Continued.*		scrubbers, gas engines, gas boilers, cupolas, dolomite furnaces and other places in the steel industry; coke ovens and coal-tar distillation plants, smelting furnaces, gas machines, kilns, foundries, charcoal burning, fermentation processes, machine soldering; motor garages or testing rooms.
10. Chlorine Derivatives: Tetrachlorethane.	Pale face; ashen blue color of lips and gums; in the early stages, faint trace of yellow in white of the eyes and drowsiness, later, jaundice; thick, very dark urine. Look especially for liver destruction.	As "dope" in varnishing aeroplane wings, and as a solvent for acetate of cellulose.
11. Chlorine Gas.	Pallid countenance, disease of the respiratory tract, lobular pneumonia, emaciation, chlorine acne, decayed teeth.	Manufacture of chlorine, chloride of lime, disinfecting agents, and other chlorine products; bleacheries; as a bleaching agent in textile mills, broom factories, paper mills, laundries, etc.; on charging floor of nitric acid building.
12. Hydrochloric Acid.	Irritation of the respiratory organs, chronic irritation of the mucous membranes, catarrh of the conjunctiva, coryza, pharyngeal, laryngeal and bronchial catarrh; erosion of the teeth, ulcers.	Acid, synthetic soda and glucose manufacturing; dye works, explosive works, dry and storage batteries, bleaching, wire drawing, soldering, tinning, metal pickling, petroleum deodorizing, fertilizer treating, galvanizing, shoddy carbonizing, glass finishing; pipefitters, steamfitters, plumbers.
13. Lead.	Pallor, pale, yellowish hue of the skin; fetid breath, blue-gray discoloration of the gums, plumbic arthralgia, fibrillar trembling of the fingers, lead paralysis, especially the extensor muscles of the arm and hand, progressive atrophy of the optic nerve.	Mining and smelting of lead ores, manufacturing of metallic lead articles, lead alloys, foundry shops, tin shops, bottle cap factories, sanitary ware factories, compound rooms, file cutting works, lead colors and other lead compounds, storage batteries; babbitting, soldering, lead burning, tempering, painting and varnishing, putty polishing; in the mixing of materials in the pottery, rubber and textile industries; linoleum manufacturing; some mirror backing.

Health Hazards	Symptom, Condition or Disease to Look For	Industries, Processes and Occupations Which Offer Such Exposure
D. POISONS—Cont'd		
14. Mercury Fulminate, Nitrate, Oxides and other Compounds.	Ptyalism; swelling and inflammation of the gums and of the buccal mucous membrane; localized white spots in the mucous surrounded by pale blue or reddened area; bleeding of and a blue line on the gums; loose teeth; rodent ulcers; dermatitis of hands, forearms and face may occur; pallor and mercurial tremor, generally weakness of the hand and digital extensors; foul breath.	Mining and smelting of quicksilver, amalgam gilding and silvering, manufacture of thermometers, barometers, etc., incandescent electric lamps, electrical apparatus; compounding of salts of mercury, colors, ships' bottoms paint, pharmaceutic products, dyes, explosives; felt hat manufacture, bilious iron-nickle alkaline storage battery, zinc electrodes, photography, steel engraving, priming in fuse and cartridge works.
15. Methyl (Wood) Alcohol.	Inflammation of throat, mucous membranes and of the air passages, conjunctivitis; affections of the retina and optic nerve, photophobia; dermatitis; epiphora; hyperesthesia and motor weakness of the arms.	Dry distillation of wood; as a solvent in the preparation of varnish, lacquer, polish and perfumes; denaturing of alcohol, pharmaceutical preparations, coal tar colors, in cotton print manufacturing; beer vat varnishing, artificial flowers stiffening, felt hat stiffening, aeroplane [illegible] ing, cellulod making, patent leather.
16. Nitrous Gases.	Pale, sallow complexion; chronic bronchial catarrh and other irritation and congestion of the air passages; inflammation of the eyes; erosions of the nasal septum; injury to the teeth.	The manufacture of nitric, sulphuric and oxalic acids, nitric salts; in the nitration processes (these include the manufacturing of explosives; nitrocellulose, or nitrocotton, picric acid, nitrotoluol, nitrobenzol, nitronaphthalene, nitroglycerine, etc.), celluloid work, aniline colors; in mines (incomplete detonation).
17. Phenol.	Digestive disturbances, emaciation, skin lesions, cough, chronic nephritis.	Picric acid, coal tar distillation, gas works, dyeing and calico printing.
18. Phosphorus	Affection of the bones of the face, swelling and ulceration of the gum and the buccal mucous membrane, loosening and falling out of teeth, suppuration, fistulous channels in the cheek and destruction of the jaw bones; ashen pallid complexion.	In the extraction of phosphorus, manufacture of phosphorous compounds, in the boneblack and bonemeal industries, tar colors, artificial manure, phosphorous bronze, some fireworks, in foundries, and in match factories, using white or yellow phosphorous.

Health Hazards	Symptom, Condition or Disease to Look For	Industries, Processes and Occupations Which Offer Such Exposure
D. POISONS—Cont'd		
19. Picric Acid.	Itching, inflammation of the skin, vesicular eruption, sometimes a rash like that of measles or scarlet fever, yellow pigmentation of the epidermis and conjunctiva, jaundice, inflammation of the mucous membrane, nasal catarrh; darkening of the urine; look for indication of inflammation of the kidneys in the urinalysis.	In the manufacture of explosives and dyestuffs; shell filling, photography, and chemical processes.
20. Sulphur Dioxide.	Irritation of the mucous membranes of the respiratory organs and of the eyes; bloody expectoration.	Roasting sulphur or pyrites, H_2SO_4 manufacturing, glue, bone and gelatine industries; disinfectants; petroleum refining, bleaching, preserving, fumigating, galvanizing; rubber works, storage batteries; furnace tending.
21. Sulphuretted Hydrogen.	Fetid eructations; irritation and inflammation of the conjunctiva, rarely erosion of the cornea; vesicles on the lips; in severer cases, contraction of the pupils, slowing of the pulse, nystagmus, and Cheyne-Stokes respiration; tendency to the formation of boils, sallow complexion and emaciation.	Pyrites and other mines; blast and other furnaces; in illuminating gas, tar distillation or coke oven plants; in putrefactive processes (glue making, bone storage, green hide storage, sewers); as a reagent in laboratories; Leblanc soda process, manufacture of compounds of sulphur and other chemical works.
22. Sulphuric Acid.	Inflammatory diseases of the respiratory organs and injury to the teeth.	Fertilizer works; petroleum, linseed oil, sugar, tallow refining; iron and steel pickling, steel wire drawing, acid dipping and other cleaning of metals, glass, brewery vats, etc.; explosives, alum, mixed materials and nitric acids, phenol, artificial organic dyestuffs, zinc sulphate, ammonia and other chemicals manufacturing; textile industry, tanneries, storage battery works, salt factories; pipe fitters, steamfitters and plumbers.

Health Hazards	Symptom, Condition or Disease to Look For	Industries, Processes and Occupations Which Offer Such Exposure
D. POISONS—Cont'd		
23. Trinitrotoluol.	Symptoms come on gradually: nose and throat irritation, obstinate coughing, expectoration of yellow mucous; discoloration—a mixture of lividity and jaundice, yellow in the eyes, livid lips, dirty grayish-yellow skin. Cyanosis, jaundice, rash on skin, shortness of breath, anemia, palpitation, bile-stained urine, rapid weak pulse. To detect early stages, look for a bluish color on the lips and lobes of the ears, yellowing of the whites of the eyes and persistent cough.	Explosives.
24. Turpentine.	Irritation of the mucous membranes of the eyes, nose and of the air passages, frequent cough, indigestion of bronchitis, bloody urine with odor of violets, inflammation of the skin, bladder and kidneys.	Manufacture and application of paint and varnish, cement, lacquer colors, etc.; tapestry printing, pottery decorating, art glass works, linoleum, cleansing, and as a rubber solvent.

ALPHABETICAL LIST OF HAZARDOUS OCCUPATIONS

(Use This List to find Diagnostic Signs in Occupations)

The capital letters after each occupation, A, B, C or D, refer to the particular hazard, whether Dust, Heat, Humidity or Poisons. The *Arabic numerals following* the capital D signify the particular poisons to which the workers in the occupation are exposed.

EXAMPLE:—Stiffeners (felt hatting), D 15.

Such workers are exposed to the fumes of wood alcohol which cause, among other symptoms, the following, which can be observed by you: Inflammation of the throat, mucous membranes and of the air passages, conjunctivitis, affection of the retina and optic nerve, dermatitis.

EXAMPLE:—Patent leather workers, B, D 13, 24, 9, 2, 15.

Such workers are exposed to heat as well as to such poisons as lead, turpentine, carbon monoxide, amyl acetate and wood alcohol.

Acetylene gas makers, D 1, 21, 18.
Acid dippers, D 18, 22, 12.
Acid dippers (electroplating), C, D 12, 18, 22.
Acid finishers (glass), D 12, 22.
Acid makers (chemicals), D 12, 18, 20, 22.
Acid miners, D 18, 22.
Acid recoverers (chemicals), D 18, 22.
Acid weighers (chemicals), D 12 or 18 or 22.
Aeroplane factory workers, D 18.
Aeroplane-wing varnishers, D 18.
Ammonia cake makers, B, D 1, 21, 20.
Alcohol stiffeners (felt hatting), D 15.
Aldehyde pumpmen (chemicals), D 15.
Alkali workers, D 11, 12, B.
Annealers, B.
Art glass workers, D 12, 24, 2, 18.
Artificial flower dyers and finishers, D 18.
Artificial manure makers, A, D 18, 22, 12, 20, 21, 18.
Asbestos workers, A.

Babbit makers, D 12.
Bakers, B.
Bar mill workers (iron and steel), B.
Base slag (artificial manure) workers, A.
Batch makers (glassworks), A, D 12, 8.
Batch makers (rubber works), A, D 18, 4.
Bates (tannery), C.
Beamers (textile), A.
Beam men (tannery), C.
Beamsters (tannery), C.
Beatermen (paper and pulp), C.
Beater tenders (paper and pulp), C.
Bed rubbers (marble and stone), A.
Beer vat varnishers, D 18, 12, 6, 24.
Bench molders (foundry), A.
Bessel still workers, D 6.
Bessemer converter workers (iron and steel), B.
Beta still operators (paint), B, D 22.
Bevellers, A.
Billet mill workers (iron and steel), B
Blacksmiths, B.
Blast furnace workers, B, D 20.
Bleachery workers, D 11, 20.
Bleachery dryers, B, C.
Blockers (felt hatting), C, D 9.
Bleeders (glove leather tanning), D 4 12.
Blooming mill workers (iron and steel), B.
Blowers (felt hatting), A.

Blowers (glass manufacturing), B.
Blowers-out (zinc smelting), B, D 7.
Blowers (revolvers), B.
Boiler workers, C.
Bolt makers, B.
Bradley hammer operators (forge shop), B.
Brass casters, D 7, B, D 13, 20, 9, 18.
Brassers, B, D 7.
Brickmakers, A, B, C, D 18.
Bronzers, D 12, 5, 6, 18, 1, 21.
Bronze and brush blenchers, D 11, 20.
Browners of gun barrels and steel, D 14.
Brushers (felt hatting), A, D 14.
Brush makers, A.
Buffers, A.
Burners (annealing), B, D 12.
Burrers (needles), A.
Burr fibers, A.
Button cutters, A.

Cable splicers (telephone), C, D 13, 24, 9, 21.
Calenders (rubber), B.
Calico printers, B, C, D 5, 12, 11, 4, 12, 22, 9, A.
Candy makers, A, B.
Canners, B, C, D 12.
Cappers (window glass), B.
Carbide workers, A, B.
Carbolic acid workers, D 6, 22, 17.
Carbon brush makers, A.
Carbonizers (shoddy), D 12, 5.
Carborundum workers, A, B.
Carbay handlers (chemicals), D 16, 22, 12.
Carders (textile, batting), A.
Card grinders (textiles), A.
Carpet weavers, A.
Carriers (felt batting), D 14.
Cartridge bullet casters, D 12.
Cartridge cap workers, C.
Cartridge felt and wad makers, C.
Cartridge fulminate miners, D 14.
Cartridge primer workers, D 14.
Cartridge shot shell paraffin dippers, B, C.
Case hardeners, B.
Casters (brass foundry), D 7, B.
Casting cleaners (foundry), A.
Casting dippers (foundry), D 12.
Catchers (iron and steel), B.
Celluloid dippers, D 2.
Celluloid dyers, D 2, 12.
Celluloid makers, D 15, 18, 22, 21.
Celluloid polishers, A.
Cement workers, A.
Chambermen (sulphuric acid), D 20, 22.
Chargers (iron and steel), B.
Chargers (zinc smelters), A, B, D 5, 9, 12, 20.
Chasers (steel), A.
*Chemical plant workers (see particular chemical).
Chilled shot makers, D 12, 5.

Chillroom workers (packing house), B.
Chippers, A.
Cigar makers, A.
Cinnabar smelters, B, D 14, 20.
Clay pipe makers (pottery), A, C.
Clay products workers, A, B, C, D 18.
Coal miners, A, C, D 9, 18, 21.
Coke oven by-product workers, D 1, 6, 9 B.
Colorers (jewelry), D 2, 12, 14, 16, 22.
Color makers, A, D 12, 5.
Color workers (print), D 16.
Comb makers (bone; celluloid; steel; textile), A.
Compositors, D 12.
Compounders (rubber), A, D 13, 4.
Concentrating mill workers (lead and zinc), A, C, D 12.
Concentrating mill workers (not cyanide), A, C.
Condenser cleaners (zinc smelting), B, D 7.
Cones (felt hatting), A, D 14.
Copper miners, A.
Copper smelters, B, D 5, 9, 20.
Core makers, A, B, D 8.
Cotton cloth bleachers, C, B, D 22, 12, 11.
Cotton mill workers, A, C.
Creosotes (chemical industry), A, B, D.
Crossmen (glass industry), B.
Crossmen (iron and steel), B.
Cresoting plant workers, C.
Crucible mixers, A.
Crucible steel department employees, B.
Crushermen (clay and stone), A.
Cupola men (foundries), B.
Curers, cold (rubber), D 4, 6, 18.
Curers, vapor (rubber), B, C, D 4, 6.
Cut glass workers, A, D 12.
Cutlers, A.
Cyanamid workers, A.

Detonator workers, packers, D 14.
Devil operators (felt batting), A.
Diamond cutters, A, D 12.
Digester house workers (paper and pulp), C, B.
Dippers, acid (electroplating), C, D 12 16, 22.
Dippers (gunsetton), D 16.
Dippers (vulcanizing), D 8.
Doffers (textile), A, C.
"Dippers" (acrophanes), D 16.
Dressers (glass), B.
Dresser tenders (textile), B C.
Drivers (motor vehicles), B, D 9.
Drop forgers, B.
Dry battery workers, A, D 6, 12, 13, 14.
Dry cleaners, B, D 6, 18, 24, 8.
Dryers (felt batting), B, D 18.
Dryers (rubber), D 6, 8.
Drying room tenders (miscellaneous), B.

*Vat, tank and still cleaners, steamfitters, pipefitters and plumbers, in chemical plants or in plants where the poisons listed are handled, are considerably more exposed than are other workers in the same plants.

Dye mixers, A, D 4, 13.
Dyers, B, C, D 4, 4, 6, 17, 19, 21, 1, 13, 15.
Dyers of hats, D 15.

Electrotypers, A, D 13.
Emery workers, A.
Enamelers, B, C, D 13.
Engine testers (automobiles), D 9.
Enricher pressers, A.
Extractor operators (soap), B, C.

Feather workers, A, D 6, 4.
Felt carbonizers, C.
Felt hatters, A, B, C, D 14, 15, 16, 22, 5, 9, 4.
Fertilizer works operatives, A, C, D 20, 12, 21, 16, 22, 6.
Fiberloid workers, D 15.
Fibre workers, A.
Filament makers and mounters (incandescent lamps), D 15, 9, B.
File makers, A, D 13.
Fillers, A.
Filler press workers, C.
Finishers (boots and shoes), B, D 15, 9, 1.
Fitters (boots and shoes), D 15.
Flangers (felt hatting), B, D 9.
Flattaners (glass), B.
Flint makers, A.
Floor molders (foundry), A.
Flue cleaners, D 9, 20, A.
Flush tenders (aluminum), C.
Forgemen, B.
Formers (felt hatting), A, D 14.
Foundryman, A, B, D, 9, 20.
Fur carders, clippers, cutters, pullers, A.
Furnace men, B, D 9.
Fur preparers (other than felt hatting), A, D 5, 14.

Galvanizers, D 1, 7, 12, 22, C.
Gardeners, D 6.
Gas brasers, B, D 9.
Gas producers, B, D 9.
Gathorers (glass), B.
Gilders, D 6 or 15 or 9.
Glass finishers, A, C, D 13, 15, 22.
Glass makers, B.
Glazers (sanitary ware), C, D 13.
Glove makers (leather preparers), D 13, 4, A, C.
Glue workers, A, C.
Grain elevator workers, A.
Graniers, A, D 13, 4.
Granite workers, A.
Graphite workers, A, B.
Grid casters and trimmers (storage batteries), D 13.
Grinders, A.
Gunnetton dippers, D 16.
Gunnetton pickers, A.
Gunnetton washers, C.
Gunnetton wringers, D 16.
Gypsum workers, A.
Hair factory workers, A, C, D 4.
Hardeners (metals), B or D 13.
Hard rubber workers, A, B, C.
Heaters (iron and steel; tin plate), B.
Hide preservers, unhairers, D 5.
Hop sulphurers, D 20.
Hot rod rollers (iron and steel), B.

Ice (artificial) makers, B, C, D 1.
Ice-cream makers, B, C.
Ice machine operators, D 1.
Illuminating gas makers, A, C, D 22, 9.
Imitation pearl workers, D 16.
Incandescent lamp makers, D 15, 9, B.
Insecticide makers, D 5, 13.
Iron and steel workers, B.
Ironers, D 9, B.
Iron workers, B.

Japanners, B.
Jewelry colorers, D 2, 12, 14, 16, 22.
Jewelry makers, D 13, A, D 12, 16, 22.
Jolly men (potteries), A.
Junk refiners, D 13, 7, A, B.

Kiln packers, tenders, B.

Lacquerers, D 24, 2, 16, 6.
Lapidaries, A, D 13.
Lasters (boot and shoe), D 15, B, C.
Laundry workers, B, C, D 9.
Layer pullers (glass), B.
Lead burners, D 13.
Leaded art glass workers, D 13, 24, 2, 16.
Lead foil makers, D 13, B.
Lead miners, A, D 13
Lead smelters, D 13, A, B.
Lead workers, D 13.
Leer tenders (glass), B.
Levermen (iron and steel), B.
Lifters-over (glass), B.
Lime pullers (tannery), C.
Lime workers, A.
Linoleum workers, D 22, A, D 13.
Linotypers, D 13.
Linseed oil makers, D 13, B, C.
Lithograph artists, D 13.
Lasters (zinc smelting), B, D 7.

Machinists (glass), B.
Marble cutters, A.
Marblers (glass), B.
Masons, A, B, C.
Match makers, C, A, D 4, 21.
Match (white phosphorus) makers, D 18.
Mattress makers, A.
Molters (foundry; glass), B.
Mercury smelters, D 14, 20.
Metal blackeners or colorers, D 16.
Metal pinkers, D 16, 12, 22.
Metal turners, A.
Mica strippers or splitters, A.
Mica workers, A.
Mirror makers, B, C.
Miners (acid), D 16, 22.
Miners (paint), D 13, 6, 24.
Mixing room workers (miscellaneous), A.
Mold breakers (foundry), A.
Molders, A.
Monotypists, D 13.

Motor car testers, D 6, 9.
Mottlers (leather dyeing), D 15.
Muffle tenders, B.
Muriatic acid mixers, A, B, D 12.

Nickel platers, C, D 22, 13, 16.
Nitrators, D 16.

Oilcloth makers, A, B, D 13, 22.
Oil refiners, B, D 13, 21, 20, 22.
Open hearth department employees (iron and steel), B.

Packing house employees, B, C.
Painters, D 13, 24, 6, 15.
Paint makers, D 2, 4, A, 6, 8, 13, 14, 16, 24.
Paint removers, A, D 12.
Pair hangers (tinplate), B.
Pammen (muriatic acid), D 12.
Paper cutters, C.
Paper hangers, A.
Paper makers, C.
Paper makers (rag department), A.
Paste mixers (storage batteries), D 13.
Patent leather workers, B, D 15, 24, 9, 2, 15.
Pattern (wooden), varnishers, D 15.
Paving stone cutters, A.
Pearl (imitation) workers, D 16.
Pencil varnishers, D 15.
Petroleum refiners, B, D 13, 21, 20, 22, 12, C, A.
Phosphate mill employees, A, B, C, D 11, 12, 18, 20, 21, 22.
Phosphor bronze makers, D 18.
Phosphorous evaporating machine operators, B, D 22.
Phosphorous sulphide compounders, D 21.
Piano varnishers, D 15.
Pickers (iron and steel), D 12, 22.
Pickers (metal products), D 16, 12, 22.
Pickers (raw gunnetton), D 6, 11, 16, 22.
Picric acid makers, D 16, 17, 20, 22.
Picric acid strikers, D 16, 18.
Pipefitters (chemical plants), D 6, 12, 16, 22.
Pit molders (foundry), A, B.
Planer men (stone; metal), A.
Plasterers, A, B, C.
Plaster of Paris workers, A.
Plate pasters (storage battery), D 13.
Platers, C, D 12, 16, 22.
Plate, spray cutters (lithographing), D 16.
Plumbers, D 13, 9.
Plumbers (explosives) D 6, 12, 16, 22, 13.
Polishers, A.
Porcelain enamelers, D 13.
Pot fillers (glass), B.
Pot lifters (iron and steel), B.
Pot makers (pottery), A, C, D 13.
Pot nitrators, D 16.
Pot pullers (foundry), B.
Pot room workers (aluminum foundry; carbide plant), B, D 9.
Pot setters, B.
Pottery workers, A, B, C, D 13.
Cobalt sprayers, D 6.

Decorators, D 13, 24.
Finishers, D 12.
Glazers, D 13.
Tinters, D 13, 5.
Pounsers (felt batting), A.
Pourers (brass foundry), D 7, B.
Preparers (tannery), C.
Pressmen (oil refining), C.
Pressmen (fire works), B.
Primer workers (explosives), D 14.
Printers, D 13, 3, 9, A.
Artists, D 13, 5.
Etchers, D 13.
Photo-engravers, D 6, 16.
Vignetters, L 13.
Print works operatives, D 16.
Puddlers (iron and steel), B.
Pullers-out (felt batting), C.
Pulp mill employees, C.
Purification process workers (gunnetton), D 6 or 5 or 11.
Putty polishers (glass), A, D 13.
Putty powder makers, A, D 13.
Pyrites burners, A, B, D 20, 21, 5.
Pyrometer operators, B.
Pyroxylin workers, D 15, 16.

Quarrymen A.

Reclaimers (rubber), A, D 13, 3, 6, 5, 12.
Acid process workers, D 22.
Grinders, A.
Recovery workers (acid), D 16, 22.
Refinery employees (sugar), B, C, D 1, 20, 21, A.
Reheaters, metals B, D 9.
Copper, D 5, 9, 20.
Lead, D 13, 5.
Mercury, D 14.
Zinc, D 5, 9, 13, 20.
Rentrevers, B, D 13, 16.
Retanners (tannery), C.
Retinners, B, C, D 22, 13.
Riveters and helpers, D 13.
Roller coverers (cotton mills), A, C.
Rollers (metals), B.
Roll setters (iron and steel), B.
Roll wrenchers (iron and steel), B.
Roofers, D 13, B.
Ropemakers, A.
Roughers (iron and steel), B.
Rubber workers, A, B, D 13, 3, 6, 5, 14, 15, 17.
Cold curing, D 3.
Mixers, A, B, D 13.
Molded goods, D 13.
Tires, D 13, 4, 3, 6.

Salt extractors (coke oven by-products), D 22.
Salt preparers, C, B, A.
Sand blasters, A.
Sand cutters, A.
Sanders, A.
Sanding machine operators, A.
Sandpaperers (enameling and painting automobiles, etc.), A, D 13.

Saw filers, A.
Saw mill workers, A.
Scourers, wood lasts (shoe), A.
Scrapers (foundry), A.
Screen tenders (pulp mill), C.
Scrubmen (bennet plant), D 6.
Sewer cleaners, D 21, 1.
Shavers (felt hatting; tannery), A.
Shavers (fur preparing), C.
Sheep-dip makers, D 5.
Shellac workers, D 13, 24, 2, 15, 6.
Shoddy carbonizers, D 12, 5.
Shoe factory operatives, A.
  Cement workers, D 15.
  Finishing, B, D 15, 2, 1, A.
  Heel makers, A, D 15.
  Lasting department workers, B, D 15, A, C.
  Sole leather machine operatives, D 14.
Shot makers, D 13, 5.
Shove-in boys (glass), B.
Sign painters, D 13.
Silk makers, D 13, 4.
Silverers (mirrors), B, C.
Silver melters, D 9, B.
Sintering plant workers, A.
Sizers (felt hat), C, D 14.
Skimmers (glass), B.
Slag machine tenders (iron and steel), B, D 21.
Slate workers, A.
Slushers (porcelain enameling), D 13.
Smoothers (glass), A, C, D 13.
Soap makers, A, C, B.
Sodium carbonate workers, A, B, C, D 1, 21.
Sodium hydroxide workers, C, B, A.
Softeners (tannery), A.
Solder casters, D 13, 5.
Solderers, D 13, 5.
Spinners (asbestos), A.
Spongers, C.
Sprayers (painting), D 13.
Spreaders (rubber works), B.
Stamp mill workers, A, C.
Starters (felt hatting), C.
Stationary workers, A.
Steamfitters (chemical works), D 6, 12, 16, 22.
Stereotype plate makers, D 13.
Stereotypers, D 13, 6.
Stiffeners (felt hatting), D 15.
Still (coal-tar) cleaners, B, D 9, 6, 21.
Stillmen (carbolic acid), B, D 17.
Stillmen operating, B.
Stone cutters, A.
Storage battery workers, D 13, 22, 14.
Straw hat bleachers, D 22, 20.
Straw hat dyers, D 13, 4.
Straw hat makers, A, D 20 or 12, 16, 4, B.
Sugar refiners.
  Charcoal department workers, A, B.
  Filtering, C.
Sulphite cooks (pulp mill), B, C.
Sulphur burners, A, B, D 20, 5.
Sulphurers of hops and malt, D 20.
Sulphuric acid workers, D 20, 22, 16, 13, 5.
  Pyrites roasters, A, B, D 20, 21, 5.
  Tower tenders, glover, D 20, 16, 22.
Sulphur monochloride workers, D 11, 12, 20.
Sumacers (tannery), C.
Superphosphate workers, A, D 22, 12, 20, 21.
Surgical dressings makers, D 17.

Table hands (tannery), C.
Table operators (iron and steel), B.
Table turners (enameling), A, B, D 13.
Takers-down (glass), B.
Tank men (vitrolite), A, B.
Tank waste workers (hydrochloric acid), D 21.
Tanners, C.
  Beamhouse, C.
  Finishing, A.
Tanners (dyers and colorers), D 5, 13, 24, 15, B, C, A.
Tanners (green hide storers), D 21.
Tanyard workers (tannery), C.
Tapers (aeroplanes), D 10.
Tappers (smelting), B.
Taxidermists, A, D 5.
Teasers (glass), B, D 9.
Telephone linemen (trench work), C, D 9, 21.
Temperers, B or D 13.
Textile comb makers, A.
Textile weighters, D 13.
Textile workers, B, C, A.
Thread glazers, B, C.
Tile makers, A, B, C, D 13.
Tin foil makers, D 13, B.
Tinners (sheets, etc.), B, C, D 13, 13, 22.
Tinners (table ware), B, C, D 12, 22.
Tinsmiths, D 13, B.
Tire builders, A, D 6, 13.
Tobacco workers, A.
Toggmen (iron and steel), B.
Topfillers (foundry), B, A.
Towermen (sulphuric acid), D 20, 16, 22, 5.
Toy varnishers, D 15.
Treaders (rubber), D 8.
Tubemakers (glass), B.
Tumbling barrel workers, A.
Turners-out (glass), B.
Turpentine extractors, C, D 24.
Type founders, D 13.

Vapor curers, D 8, 6.
Varnishers, D 13, 24, 6, 15.
Varnish makers, B, D 13, 24, 15, 2.
Vat varnishers, D 15, 13, 6, 24.
Vitrolite makers, B.
Vitrolite mixers, A.
Vitrolite polishers or rounders, A.
Vulcanizers (cold), D 8, 6, 15.
Vulcanizers (steam), B, C.

Wallpaper color workers, D 5, 13, 4, A, B.
Wallpaper printers, B, C.
Warming house employees (guncotton), B, D 16.

Washing powder workers, A, B.
Weighers, A.
Welders, B.
White lead makers, D 13.
Wire drawers, D 22.
Woodlust scourers (shoe), A.
Wool scourers, B, C.
Wool sorters, A.
Wringers (guncotton), D 16.

Zinc miners, A, D 13, 5.
Zinc smelters, B, D 8, 9, 13, 20.

