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INDUSTRIAL HEALTH HAZARDS

In designing ventilating systems for various types of industrial plants the problem sometimes arises in an engineer's office of determining, frequently at a distance, just what types of dust, fumes or odors might be encountered in a specific industry. It is to assist in this problem that this data sheet has been designed. The information covers a somewhat wider scope than ventilation alone in that it deals with all industrial health hazards, including infections, pressure abnormalities, high light intensities, radioactive compounds, and a few other hazards not directly associated with ventilation. On the whole, though, most of the hazards are those which are concerned, at least to some extent, with industrial ventilation.

Due to space limitations the information has been presented in the form of two tables. To use the table refer to Table 2 and opposite

the type of industry find the number or numbers of hazards involved in that particular industry. The numbers are keyed to the hazard in Table 1.

Example: What type of hazard would be encountered in an electrotyping plant?

Solution: Referring to Table 2, opposite Electrotyping will be found the numbers 6-49-64. In Table 1 opposite 6 is found acids; opposite 49, lead and compounds; and opposite 64, plating solutions. All of these hazards are liable to be found in an electrotyping plant and the engineer can determine in advance or at a distance the probable need for ventilation.

This data sheet is a rearrangement of data presented through the courtesy of the Connecticut State Department of Health which issued this information in a large check list entitled "Potential Industrial Health Hazards."

Table 1—Potential Industrial Health Hazards

(Numbers are keyed to Table 2.)

(IN THE LISTINGS BELOW, NOC INDICATES NOT OTHERWISE CLASSIFIED)

1 Abnormalities of Pressure	27 Dust (Asbestos)	54 Methanol
2 Abnormal Temperatures and Humidities	28 Dust (Free Silica)	55 Methyl Chloride
3 Acetaldehyde	29 Dust (Inorganic)	56 Noise
4 Acetone	30 Dust (Metals, Metalloids, etc.)	57 Nitrobenzene
5 Acetylene	31 Dust (Organic)	58 Nitrogen Oxides
6 Acids	32 Dyes and Inks	59 Nitro and Amino Compounds
7 Acrolein	33 Ethyl Ether	60 Oils (Mineral, Paraffin, Cutting, etc.)
8 Alcohols (NOC)	34 Ethylene Dichloride	61 Paints and Lacquers
9 Alkalies	35 Ethylene Trichloride	62 Phenol
10 Ammonia	36 Excessive Dampness	63 Phosphorus and Compounds
11 Aniline	37 Fatigue	64 Plating Solutions (NOC)
12 Anthrax	38 Fluorine and Compounds	65 Poisonous Plants
13 Antimony and Compounds	39 Foodstuffs	66 Radioactive Compounds
14 Arsenic and Compounds	40 Formaldehyde	67 Rubber Accelerators
15 Benzol	41 Friction and Tension	68 Silver and Compounds
16 Bromine and Compounds	42 Fumigants and Insecticides	69 Soap Solutions, Glue, etc.
17 Cadmium and Compounds	43 Hairdressing Preparations	70 Solvents (NOC)
18 Carbon Dioxide	44 Halides	71 Sulfur Chloride
19 Carbon Disulfide	45 Hydrogen Sulfide	72 Sulfur Dioxide
20 Carbon Monoxide	46 Illuminating Defects	73 Synthetic Resins
21 Carbon Tetrachloride	47 Illuminating Gas	74 Tar and Allied Substances
22 Chlorine	48 Infections	75 Tetrachloroethane
23 Chloroform	49 Lead and Compounds	76 Toluol
24 Chloronaphthalene	50 Light Intensities	77 Turpentine
25 Chromium and Compounds	51 Manganese and Compounds	78 Xylol
26 Cyanides	52 Mechanical Irritations	79 Zinc and Compounds
	53 Mercury and Compounds	

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TABLE 2 - Hazards Likely to be Found in Various Industries

PRODUCT OR TYPE OF BUSINESS	PROBABLE HAZARD (FIGURES REFER TO TABLE 1)	PRODUCT OR TYPE OF BUSINESS	PROBABLE HAZARD (FIGURES REFER TO TABLE 1)
Abrasive Products Mfg.—28-29-49-69		Gold Leaf Mfg.—30-41	
Advertising Signs and Novelties Mfg.—4-6-9-14-15-21-25-26-28-29-31-32-35-40-49-53-54-60-61-62-64-66-69-70-73-76		Hairdressing and Barbering—41-43-69-70	
Airplane and Airplane Parts Mfg.—1-4-5-6-9-15-17-20-25-26-28-29-30-35-49-50-54-56-58-60-61-64-69-70-75		Hardware Mfg. (NOC)—2-6-9-14-17-20-21-25-26-28-29-30-35-38-44-46-49-53-60-61-64-69-70-73-79	
Aluminum Ware Mfg.—6-28-29-30-56-60		Hat Mfg. ¹⁴ —2-6-15-20-31-32-36-48-53-69-70	
Analytical Chemists—6-9-10-15-21-22-33-40-45-53-58-70		Hat Mfg., Straw—22-31-32-40-61-69-70	
Arms Mfg. (Small Arms)—6-9-20-25-26-28-29-31-40-44-49-53-56-60-61-62-64-73		Hatters Fur Mfg.—6-9-12-14-21-31-48	
Artificial Silk Mfg.—2-6-9-19-32-36-45-49-72		Ice Mfg. and Harvesting—2-10-18-36-37-72	
Asbestos Goods Mfg.—15-27-40-62-70-74-76		Instrument Mfg. ¹⁵ —6-9-25-26-28-29-30-35-53-60-61-64-70-73	
Automobile Dismantling—49-60		Jewelry Mfg.—6-9-25-26-28-29-30-31-41-46-53-58-61-64-70-73	
Automobile Accessories and Service Stations—6-20-49-54-60		Junk ¹⁶ —31-49-60	
Automobile Body Mfg.—15-25-49-61-70		Laundries—2-9-10-20-22-36-48-69	
Automobile Garages or Repair Shops—6-9-20-41-49-54-60-61-70		Lead Works ¹⁷ —20-30-49-60	
Automobile Radiator Mfg.—6-20-49-60		Leather Goods Mfg.—4-15-31-32-61-69-70	
Battery Mfg.—6-49-74		Leather Mfg.—6-9-10-11-12-14-15-25-26-31-32-36-40-45-48-49-62-69-70-72-76	
Beverages Mfg.—9-36-69		Leather, Imitation, Mfg.—4-11-14-15-25-31-32-49-70-73-76	
Bootblacking or Hat Cleaning Estabs.—11-15-20-21-32-57-70		Machine Shops ¹⁸ —2-6-20-26-29-49-56-60-70-79	
Brass or Copper Goods Mfg.—2-6-9-15-17-20-25-26-28-30-35-41-46-49-60-61-64-70-79		Machinery Mfg. (NOC)—6-9-10-17-20-21-25-26-28-29-30-44-49-57-60-61-64	
Breweries—2-18-31-36-62		Mattresses and Bedsprings Mfg.—9-29-31-60-61	
Brush or Broom Mfg.—9-12-22-31-32-40-61-69-72-73-74		Metal Goods Mfg.—6-9-15-20-25-26-28-29-30-35-49-60-61-64-70-79	
Button Mfg.—6-9-26-31-40-49-53-61-62-64-70-73		Musical Instruments Mfg.—6-9-26-31-35-49-60-61-64-69-70-73	
Cable and Wire Insulating—15-21-24-27-29-31-49-67-74		Office Machinery Mfg.—6-9-17-20-25-26-28-29-30-31-49-60-61-64-69-70-73	
Cable and Wire Mfg.—20-49-60		Paint, Varnish and Lacquer Mfg.—2-4-6-8-9-14-15-17-21-25-29-30-31-34-49-54-61-70-75-76-77-78	
Caisson Work—1-28-29-36-46		Painting—4-11-14-15-21-25-41-49-54-61-70-74-75-76-77-78	
Candy Mfg.—39		Paper and Pulp Mfg.—2-6-9-14-22-31-32-36-40-45-48-72-73	
Carbon Paper or Typewriter Ribbon Mfg.—15-32		Paper Goods Mfg.—6-9-40-60-61-62-69-74	
Carpet or Rug Mfg.—12-14-31-32-48-69-70		Photo-Engraving—6-9-14-15-32-44-46-49-64-70	
Ceramics Mfg.—2-20-28-29-36-37-47-49-50		Photography—6-9-25-46-66-77	
Chemical Mfg. ¹ —6-9-10-29-31-40-58-62-67-69-70-74		Printing ¹⁹ —6-9-11-14-15-20-25-30-41-44-46-49-53-54-58-64-70-75	
Chemical Mfg. ² —6-9-14-19-26-28-32-40-44-49-58-63-67-72-76		Quarrying and Mining—2-20-28-29-36-41-46-48-59	
Chemical Mfg. ³ —3-6-8-9-10-11-15-16-19-20-21-22-23-26-31-32-33-34-35-40-44-45-49-51-53-54-55-57-58-62-67-70-71-72-74-75-76		Rolling Mills, Non-Ferrous—2-6-20-30-41-56-60	
Cigar and Cigarette Mfg.—31-41		Rolling Mills, Ferrous—2-6-20-30-41-56-60	
Cleaning and Dyeing Estabs.—9-10-15-19-21-32-34-35-54-69-70		Rubber Goods Mfg.—2-4-6-9-11-13-14-15-19-21-25-29-31-32-35-37-41-49-54-67-70-71-72-75-79	
Clock and Watch Mfg.—6-9-25-26-28-29-30-35-49-60-61-64-66-73		Sewage Disposal Plants—10-18-22-36-45-48	
Coke Mfg.—2-10-15-20-31-45-62-72-74-76-78		Ship Building—2-6-9-20-22-31-49-56-60-61-70	
Contractors ⁴ (NOC)—20-28-29-36-41-49-55-60-61-65-69-72-74		Shoe and Shoe Sundries Mfg.—4-8-10-15-19-21-29-31-32-33-44-53-54-69-70-76	
Cosmetics and Dentifrices Mfg.—4-8-29-60		Silverware Mfg.—6-25-26-29-30-35-53-58-60-61-64-68-70	
Dairy Products Mfg.—2-18-36-41		Smelting and Refining of Metal—2-6-9-14-17-20-26-29-30-38-45-49-51-53-58-63-72-79	
Distillery—2-8-18-54		Soap or Soap Powder Mfg.—6-7-9-10-15-28-29-31-36-40-45-48-54-62-69	
Drug Preparation Mfg. ⁵ —6-9-14-15-19-29-31-49-53-54-60-62-70-71-79		Sporting Goods Mfg.—4-6-9-10-15-20-25-26-28-29-30-31-32-35-49-60-61-69-70	
Electric Apparatus and Fixtures Mfg.—6-9-15-21-25-26-28-29-40-41-49-53-60-61-62-64-70-73		Steel and Iron Fabrication—20-49-50-56-58-61	
Electric Light and Power Plants ⁶ —20-36-49-53-65		Stone and Mineral Products Mfg.—28-29-56	
Electroplating—2-6-9-10-14-15-17-19-21-25-26-35-44-49-53-58-64-70		Stores—10-39-41-48-69	
Electrotyping—6-49-64		Synthetic Resins and Products Mfg.—4-8-31-32-40-54-58-62-70-73-76	
Explosives Mfg. ⁷ —3-4-6-8-9-10-22-25-31-40-49-53-54-58-59-62-63-70-76		Textile Mfg.—2-6-9-19-20-31-32-41-45-46-48-49-69-70	
Exterminating and Fumigating—26-40-42-72		Textile Finishing ⁸ —6-9-10-11-14-17-20-21-22-25-31-32-36-40-62-69-70-71-72	
Farming or Gardening ⁹ —12-14-15-26-29-31-48-49-62-65		Textile Goods Mfg.—4-20-31-32-46-52-54-69-70	
Fertilizer Mfg.—6-7-9-10-15-26-29-31-38-48-63-72		Tobacco Handling—2-14-15-20-26-31-36-42-49-65	
Food Preparation and Handling—2-7-10-12-31-40-48-69-72		Tool Mfg.—6-9-20-25-26-28-30-35-49-60-61-64-70-73	
Foundries, Non-Ferrous—2-6-7-14-17-20-28-29-30-49-50-72-79		Toys—4-6-9-15-25-26-28-30-31-40-49-60-61-62-69-70	
Foundries, Ferrous—2-6-7-20-28-29-30-50-72		Transportation and Equipment Repairing—10-29-50-56-60-61-70	
Fur Handling ¹⁰ —12-14-31-32-48		Welding—6-20-29-30-38-49-50-58	
Furniture Mfg.—6-9-15-25-26-28-31-49-54-61-69-70		Wood Products Mfg.—4-8-28-29-31-41-49-54-61-70-74	
Garbage Works ¹¹ —6-7-9-10-22-31-48-69			
Gas Works—6-9-10-15-20-26-41-45-62-72-74-76-78			
Gasoline and Oil Bulk Stations—15-41-49-60			
Glass Products Mfg.—2-3-6-9-10-14-26-28-29-40-49-50			

¹Plants making product not composed exclusively of wood, metal, or celluloid.
²Where product is made from sheet aluminum excluding rolling or smelting operations.
³Including the salvage or junking of parts.
⁴Where the materials are of slight toxicity.
⁵Where the toxic materials spread into the room air.
⁶Where the toxic materials are within completely enclosed spaces.
⁷All kinds of contracting.
⁸Including medicine and pharmaceutical preparations but not including the manufacturing of the ingredients.

⁹All operations.
¹⁰Including manufacturing involving explosives in any way.
¹¹Including spraying.
¹²Excluding hatters' fur.
¹³Including rendering and incineration.
¹⁴Excepting straw or cloth hats.
¹⁵Professional or scientific instruments.
¹⁶Including old metal and rag sorting.
¹⁷Sheet, pipe, and shot, excluding smelting.
¹⁸Including forging but excluding foundry operations.
¹⁹Including publishing, lithographing and allied industry.
²⁰Including bleaching and dyeing but not cleaning and dyeing.

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