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WHAT'S NEW IN INDUSTRIAL HYGIENE

State of Illinois
Department of Public Health
DIVISION OF INDUSTRIAL HYGIENE
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FOREWORD

Probably no other source of energy which has been harnessed and brought within the range of control by man portends so much good or harm as does atomic energy. To industry it appears to offer potentialities for research and practical application on a scale never before available, while to medicine it holds out opportunities for both research and therapeutic application which may have far reaching benefits on individual and public health.

No other material or process has such inherent dangers in its use. That these health hazards can be controlled, has been clearly indicated by the Manhattan District Project. It has been shown that control, however, is costly. In competitive industry, the ever-present importance of reducing costs cannot be considered in the control of this process. It remains for the industrial physician and hygiene engineer to make this clear to their managements.

The use of atomic energy in medicine likewise poses a most serious problem. One has only to consider the very high incidence of leukemia among radiologists to realize that even more training and control procedures are vitally necessary to prevent radioactive isotopes from being an instrument of destruction among the profession.

The Illinois State Department of Public Health is ready to assist industry, the medical profession and others in the vitally necessary monitoring procedure which must be of signal importance if radioactive materials and atomic energy are to be safely utilized.

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ANNOUNCEMENTS

SAFE USE OF RADIOACTIVE ISOTOPES

One of the most insidious types of poisoning may develop from daily exposure to the radiations emanating from radioactive materials. The fact that these very hazardous materials can be safely utilized has been well demonstrated by the various Atomic Energy Commission laboratories, such as the Argonne Laboratory in Chicago. However, their safe use demands the constant monitoring procedures utilized on these projects.

Radioactive isotopes are being contemplated or are being used in industrial and medical research and control. Advice and counsel on the necessary precautions to protect personnel is one of the services available from this Division. The Division is equipped with various radiation meters and other equipment to perform the necessary tests. As in the case of our other services, this service is rendered at no cost. INQUIRE ABOUT HEALTH PRECAUTIONS BEFORE UTILIZING RADIOACTIVE ISOTOPES.

1947 TOXIC LIMITS

The following maximum allowable concentration values for continuous 8 hr. exposure were a part of the preliminary report submitted by the Committee on Threshold Limits of the American Conference of Governmental Industrial Hygienists at the 1947 meeting. THESE VALUES ARE TO BE REVISED ANNUALLY IN LIGHT OF NEW INFORMATION.

GASES AND VAPORS

Substance	M.A.C. (ppm*)
Acetaldehyde	200
Acetic acids	10
Acetic anhydride	5
Acetone	500
Acrolein	0.5
Acrylonitrile	20
Ammonia	100
Amyl acetate	200
iso-Amyl alcohol	100
Aniline	5
Arsine	0.05
Benzene (benzol)	50
Bromine	1
1,3-Butadiene	1,000
n-Butanol	50
2-Butanone	200
n-Butyl acetate	200
Butyl "cellosolve"	200
Carbon dioxide	5,000
Carbon disulfide	20
Carbon monoxide	100
Carbon tetrachloride	50
"Cellosolve"	200
"Cellosolve" acetate	100
Chlorine	2
2-Chlorobutadiene	25
Chloroform	100
1-Chloro-1-nitropropane	20
Cyclohexane	400
Cyclohexanol	100
Cyclohexene	400
Cyclohexanone	100
Cyclopropane (propene)	400
o-Dichlorobenzene	50
Dichlorodifluoromethane	1,000
1,1-Dichloroethane	100
1,2-Dichloroethane (ethylene dichloride)	75
1,2-Dichloroethylene	200
Dichloroethyl ether	15
Dichloromethane	500
Dichloromonofluoromethane	1,000
1,1-Dichloro-1-nitroethane	10
Dichlorotetrafluoroethane	1,000
Dimethylaniline	5
Dimethylsulfate	1
Dioxane	100
Ethyl acetate	400
Ethyl alcohol	1,000
Ethyl benzene	200
Ethyl bromide	200
Ethyl chloride	1,000
Ethylene chlorhydrin	5
Ethylene oxide	100
Ethyl ether	400
Ethyl formate	100
Ethyl silicate	100
Formaldehyde	10
Gasolene	500
Heptane	500
Hexane	500
Hydrogen chloride	10
Hydrogen cyanide	20
Hydrogen fluoride	3
Hydrogen selenide	0.1
Hydrogen sulfide	20
Isophorone	25
Mesityl oxide	50
Methanol	200
Methyl acetate	200
Methyl bromide	20
Methyl butanone	100
Methyl "cellosolve"	25
Methyl "cellosolve" acetate	25
Methyl chloride	100
Methylcyclohexane	500
Methyl cyclohexanol	100
Methyl cyclohexanone	100
Methyl formate	100
Methyl iso-butyl ketone	100
Monochlorobenzene	75
Monofluorotrichloromethane	1,000
Mononitrotoluene	5
Naphtha (coal tar)	200
Naphtha (petroleum)	500
Nickel carbonyl	1
Nitrobenzene	1
Nitroethane	100
Nitrogen oxides (other than nitrous oxide)	25
Nitroglycerine	0.5
Nitromethane	100
2-Nitropropane	50
Octane	500
Ozone	1
Pentane	1,000
Pentanone (methyl propanone)	200
Phosgene	1
Phosphine	0.05
Phosphorus trichloride	0.5
iso-Propanol	400
Propyl acetate	200
iso-Propyl ether	400
Stibine	0.1
Stoddard solvent	500
Styrene monomer	200
Sulfur chloride	1
Sulfur dioxide	10
1,1,2,2-Tetrachloroethane	5
Tetrachloroethylene	100
Toluene	200
Toluidine	5
Trichloroethylene	150
Turpentine	100
Vinyl chloride (chloroethane)	500
Xylene	200

TOXIC DUSTS, FUMES, AND MISTS

Substance	Mg/M³*
Antimony	0.1
Arsenic	0.1
Barium	0.5
Cadmium	0.1
Chlorodiphenyl	1
Chromic acid and chromates (as CrO_3)	0.1
Cyanide as CN	5
1, 2-Dichloropropane (propylene dichloride) (ppm)	75
Dinitrotoluene	1.5
Fluorides	2.5
Iodine	0.1
Iron oxide fume	15
Lead	0.15
Magnesium oxide fume	15
Manganese	6
Mercury	0.1
Pentachloronaphthalene	0.5
Pentachlorophenol	0.5
Phosphorus (yellow)	0.1
Phosphorus pentachloride	1
Phosphorus pentasulfide	1
Selenium, compounds as selenium	0.1
Sulfuric acid	0.5
Tellurium	0.1
Tetryl	1.5
Trichloronaphthalene	5
Trinitrotoluene	1.5
Zinc oxide fumes	15

MINERAL DUSTS

Substance	M.P.P.C.F.*
Alundum	50
Asbestos	5

M. A. C. VALUES—

Carborundum	50
Dust (nuisance, no free silica)	50
Mica (below 5 percent free silica)	50
Portland cement	50
Silica—high (above 50 percent free SiO_2)	5
Silica—medium (5 to 50 percent free SiO_2)	20
Silica—low (below 5 percent free SiO_2)	50
Slate (below 5 percent free SiO_2)	50
Soapstone (below 5 percent free SiO_2)	50
Talc	20
Total dust (below 5 percent free SiO_2)	50

RADIATIONS

Material or Radiation	Radiant Energy
Gamma radiation	0.1 roentgen per day
Radon	10^{-8} curies per cubic meter
Thoron	10^{-9} curies per cubic meter
X-ray	0.1 roentgen per day

*ppm = parts per million.
*Mg/M³ = milligrams per cubic meter.
*M.P.P.C.F. = million particles per cubic foot of air, standard light field count.