XXI

OCCUPATIONAL HEALTH REGULATIONS

NO. 3

MAXIMUM PERMISSIBLE CONCENTRATIONS OF ATMOSPHERIC CONTAMINANTS IN PLACES OF EMPLOYMENT

Effective December 1, 1957

(Supersedes American Conference of Governmental Industrial Hygienists Threshold Limit Values for 1956–April 1957)

CONSULT LOCAL HEALTH DEPARTMENTS AND PHYSICIANS

FOR

INFORMATION AND ADVICE

ON METHODS OF CONTROL OVER

HEALTH HAZARDS TO ALL WORKERS

AND

INDUSTRIAL DISEASES AND INJURIES

MEDICAL & HEALTH UNIT
Recd. NOV 12 1957
Refer to_____
ABC____Trav____ODA____
GH_____DD_____RW_____
Nurse Staff____RLS____
Medical Staff____F_____
Handle____Discuss_____
Info_____File_____
Return____Note, Return

TEXAS STATE DEPARTMENT OF HEALTH
DIVISION OF OCCUPATIONAL HEALTH
Austin, Texas

OH–13–1
September 1957

PLAINTIFF'S EXHIBIT
tabbies
SOTA-84

THESE STANDARDS WERE ADOPTED BY THE TEXAS STATE BOARD OF HEALTH ON SEPTEMBER 9, 1957 IN ACCORDANCE WITH THE AUTHORITY GRANTED IN ARTICLE 4418D OF THE REVISED CIVIL STATUTES, STATE OF TEXAS, AND ARE PROMULGATED ALSO IN ACCORDANCE WITH ARTICLE 4477, SECTION 19

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CONTENTS

I. Scope; Purpose; Availability of Pertinent References 1

II. Applicability of Figures Listed Herein 1

III. Revision 1

IV. Definitions 1

V. Maximum Permissible Concentrations During One Working Day 2

A. Gases and Vapors 2
B. Toxic Dusts, Fumes and Mists 6
C. Mineral Dusts 8

Occupational Health Regulations No. 3: Maximum Permissible Concentrations of Atmospheric Contaminants in Plac… Published by AsbestosClaims.Law
ACL Doc 21621 · Page 3 of 11 asbestosclaims.law/library/21621/3

MAXIMUM PERMISSIBLE CONCENTRATIONS OF ATMOSPHERIC CONTAMINANTS IN PLACES OF EMPLOYMENT

I. Scope; Purpose; Availability of Pertinent References

Scope: This regulation applies to all places of employment in Texas. It does not cover maximum permissible dose of radiation or the minimum environmental sanitation requirements, nor include measures required for control of community external air pollution or air pollution nuisances.

Purpose: The purpose of this regulation is to prescribe to employers the maximum average atmospheric concentration of contaminants to which they are permitted to expose employees during an eight-hour working day in their places of employment, including industrial establishments.

Pertinent References: Copies of related laws, regulations, opinions of the Attorney General of Texas, and Advisory Standards currently applicable will be provided to any citizen of Texas upon request.

II. Applicability of Figures Listed Herein

Individual people react differently after excessive exposures to atmospheric concentrations of contaminants in places of employment. Listed herein are weighted average concentrations generally safe in places of employment during an eight-hour working exposure. These are not maximum values which cannot be exceeded momentarily depending upon, but not limited to, such factors as nature of contaminant; frequency of occurrence of high concentration; variable durations of exposure; probability of acute poisoning from high concentration for even short periods; cumulative effects. Employers shall consider these factors prior to exceeding values listed herein.

III. Revision

Values listed herein are based upon information obtained from recent experience, experimental study reports, or a combination of the two. Regular review will result in revision as justified. The State Board of Health solicits and will consider pertinent data based upon facts and experiences received from individuals, industries, governmental agencies, or others.

IV. Definitions

1. Industrial Establishment is defined to mean an institution, a place, building or location related to manufactures or to the product of industry or labor.

2. Places of Employment is defined to mean any place where two or more persons are directly or indirectly employed by another for direct or indirect gain or profit.

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ACL Doc 21621 · Page 4 of 11 asbestosclaims.law/library/21621/4

V. MAXIMUM PERMISSIBLE CONCENTRATIONS DURING ONE WORKING DAY

A. Gases and Vapors	P.P.M.*	Approx. Mg. per Cu. M.+
Acetaldehyde	200	360
Acetic acid	10	25
Acetic anhydride	5	20
Acetone	1,000	2,400
(t) Acetylene tetrabromide	1	14
Acrolein	0.5	1.2
Acrylonitrile	20	45
Allyl alcohol	5	12
Allyl chloride	5	15
(t) Allyl glycidyl ether (AGE)	10	45
Allyl propyl disulfide	2	12
Ammonia	100	70
Amyl acetate	200	1,050
Amyl alcohol (isoamyl alcohol)	100	360
Aniline	5	19
Arsine	0.05	0.2
Benzene (benzol)	25	80
Benzyl chloride	1	5
(t) Boron trifluoride	1	3
Bromine	1	7
Butadiene (1,3-butadiene)	1,000	2,200
Butanone (methyl ethyl ketone)	250	740
Butyl acetate (n-butyl acetate)	200	950
Butyl alcohol (n-butanol)	100	300
(t) Butyl glycidyl ether (BGE) (n-butyl glycidyl ether)	50	270
Butylamine	5	15
Butyl cellosolve (2-butoxyethanol)	50	240
(t) Butyl mercaptan	10	35
Carbon dioxide	5,000	9,000
Carbon disulfide	20	60
Carbon monoxide	100	110
Carbon tetrachloride	25	160
Cellosolve (2-ethoxyethanol)	200	740
Cellosolve acetate (2-ethoxyethyl acetate)	100	540
Chlorine	1	3
Chlorine trifluoride	0.1	0.4
(t) Chloroacetaldehyde	1	3
Chlorobenzene (monochlorobenzene)	75	350
(t) Chlorobromomethane ($ClBrCH_2$)	400	2,100
Chloroform (trichloromethane)	100	490
1-Chloro-1-nitropropane	20	100
Chloropicrin	1	7

*Parts of vapor or gas per million parts of air by volume.

+Approximate milligrams per cubic meter of air.

(t) Toxicological information or injury reports on these items is of recent origin and most probably will require revision at an early date.

SIM0000230

A. GASES AND VAPORS (Cont.)	P.P.M.*	Approx. Mg. per Cu.M. +
Chloroprene (2-chloro-1,3-butadiene)	25	90
Cresol (all isomers)	5	22
Cyclohexane	400	1,400
Cyclohexanol	100	410
Cyclohexanone	100	400
Cyclohexene	400	1,350
Cyclopropane	400	690
Decaborane	0.05	0.3
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	50	240
Diborane	0.1	0.1
o-Dichlorobenzene	50	300
Dichlorodifluoromethane	1,000	4,950
1,1-Dichloroethane	100	400
1,2-Dichloroethane (ethylene dichloride)	100	400
1,2-Dichloroethylene	200	790
Dichloroethyl ether	15	90
Dichloromonofluoromethane	1,000	4,200
1,1-Dichloro-1-nitroethane	10	60
Dichlorotetrafluoroethane	1,000	7,000
Diethylamine	25	75
Difluorodibromomethane	100	860
(t) Diglycidyl ether (DGE)	10	55
Diisobutyl ketone	50	290
Dimethylaniline (n-dimethylaniline)	5	25
(t) Dimethyl formamide	20	60
Dimethylsulfate	1	5
Dioxane (diethylene dioxide)	100	360
(t) Dipropyleneglycolmethylether	100	600
Ethyl acetate	400	1,400
Ethyl acrylate	25	100
Ethyl alcohol (ethanol)	1,000	1,900
(t) Ethyl mercaptan	250	640
Ethlamine	25	45
Ethylbenzene	200	870
Ethyl bromide	200	890
Ethyl chloride	1,000	2,600
Ethyl ether	400	1,200
Ethyl formate	100	300
Ethyl silicate	100	850
Ethylene chlorohydrin	5	16

*Parts of vapor or gas per million parts of air by volume.

+ Approximate milligrams per cubic meter of air.

(t) Toxicological information or injury reports on these items is of recent origin and most probably will require revision at an early date.

SIM0000231

A. GASES AND VAPORS (Cont.)

	P.P.M.*	Approx. Mg. Per Cu.M. +
Ethylenediamine	10	30
Ethylene dibromide (1,2-dibromoethane)	25	190
Ethylene imine	5	9
Ethylene oxide	50	90
Fluorine	0.1	0.2
Fluorotrichloromethane	1,000	5,600
Formaldehyde	5	6
Furfural	5	20
(t) Furfuryl alcohol	50	200
Gasoline	500	2,000
(t) Glycidol	50	150
Heptane (n-heptane)	500	2,000
Hexane (n-hexane)	500	1,800
Hexanone (methyl butyl ketone)	100	410
Hexone (methyl isobutyl ketone)	100	410
Hydrazine	1	1.3
Hydrogen bromide	5	17
Hydrogen chloride	5	7
Hydrogen cyanide	10	11
Hydrogen fluoride	3	2
Hydrogen peroxide, 90%	1	1.4
Hydrogen selenide	0.05	0.2
Hydrogen sulfide	20	30
Iodine	0.1	1
Isophorone	25	140
(t) Isopropyl glycidyl ether (IGE)	50	240
Isopropylamine	5	12
Mesityl oxide	50	200
Methyl acetate	200	610
Methyl acetylene	1,000	1,650
Methyl acrylate	10	35
Methyl alcohol (methanol)	200	260
Methyl bromide	20	80
Methyl cellosolve (2-methoxyethanol)	25	80
Methyl cellosolve acetate (ethylene glycol monomethyl ether acetate)	25	120
Methyl chloride	100	210
Methylal (dimethoxymethane)	1,000	3,100
Methyl chloroform (1,1,1-trichloroethane)	500	2,700
Methylcyclohexane	500	2,000
Methylcyclohexanol	100	470
Methylcyclohexanone	100	460

*Parts of vapor or gas per million parts of air by volume.

+ Approximate milligrams per cubic meter of air.

(t) Toxicological information or injury reports on these items is of recent origin and most probably will require revision at an early date.

SIM0000232

A. GASES AND VAPORS (Cont.)	P.P.M.*	Approx. Mg. Per Cu.M. +
Methyl formate	100	250
Methyl isobutyl carbinol (methyl amyl alcohol)	25	100
(t) Methyl mercaptan	50	100
(t) Methyl styrene	100	480
Methylene chloride (dichloromethane)	500	1,750
(t) Monomethyl aniline	2	9
Naphtha (coal tar)	200	800
Naphtha (petroleum)	500	2,000
Nickel carbonyl	0.001	0.007
Nitric acid	5	25
P-Nitroaniline	1	6
Nitrobenzene	1	5
Nitroethane	100	310
Nitrogen dioxide	5	9
Nitroglycerin	0.5	5
Nitromethane	100	250
2-Nitropropane	50	180
Nitrotoluene	5	30
Octane	500	2,350
Ozone	0.1	0.2
Pentane	1,000	2,950
Pentanone (methyl propyl ketone)	200	700
Perchloroethylene (tetrachloroethylene)	200	1,350
(t) Perchloromethyl mercaptan	0.1	0.8
Phenol	5	19
(t) Phenyl glycidyl ether (PGE)	50	310
Phenylhydrazine	5	22
Phosgene (carbonyl chloride)	1	4
Phosphine	0.05	0.07
Phosphorus trichloride	0.5	3
Propyl acetate	200	840
Propyl alcohol (isopropyl alcohol)	400	980
Propyl ether (isopropyl ether)	500	2,100
Propylene dichloride (1,2-dichloropropane)	75	350
Propylene imine	25	60
(t) Propylene oxide	100	240
Pyridine	10	30
Quinone	0.1	0.4
Stibine	0.1	0.5
Stoddard solvent	500	2,900
Styrene monomer (phenylethylene)	100	420
Sulfur dioxide	5	13

*Parts of vapor or gas per million parts of air by volume.

+ Approximate milligrams per cubic meter of air.

(t) Toxicological information or injury reports on these items is of recent origin and most probably will require revision at an early date.

SIM0000233

A. GASES AND VAPORS (Cont.)	P.P.M.*	Approx. Mg. Per Cu.M. ‡
Sulfur hexafluoride	1,000	6,000
Sulfur monochloride	1	6
Sulfur pentafluoride	0.025	0.25
p-Tertiary butyl toluene	10	60
(t) Tertiary butyl alcohol	100	300
1,1,2,2-Tetrachloroethane	5	35
Tetrahydrofuran	200	590
Tetranitromethane	1	8
Toluene (toluol)	200	750
o-Toluidine	5	22
(t) Tolylene-2,4-diisocyanate	0.1	0.7
Trichloroethylene	200	1,050
(t) Triethyl amine	25	100
Trifluoromonobromomethane	1,000	6,100
Turpentine	100	560
Vinyl chloride (chloroethylene)	500	1,300
(t) Vinyl toluene	100	480
Xylene (xylol)	200	870
(t) Xylidine	5	25
(#)(t) Teflon decomposition products	0	0
(#)(t) Pentaborane (B_5H_9)	0	0

B. TOXIC DUSTS, FUMES, AND MISTS	Mg. per Cu. M. ‡
Aldrin (1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-dimethanonaphthalene)	0.25
Ammate (ammonium sulfamate)	15
Antimony	0.5
ANTU (alpha naphthyl thiourea)	0.3
Arsenic	0.5
Barium (soluble compounds)	0.5
(t) Beryllium	0.002
Cadmium oxide fume	0.1
Calcium arsenate	0.1
Chlordane (1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane)	2
Chlorinated camphene, 60%	0.5
Chlorinated diphenyl oxide	0.5

* Parts of vapor or gas per million parts of air by volume.

‡ Approximate milligrams per cubic meter of air.

(t) Toxicological information or injury reports on these items is of recent origin and most probably will require revision at an early date.

(#) Until more data are forthcoming, it is important that atmospheric concentrations of these materials to which workers are exposed must be kept as near 0 as possible.

‡ Milligrams of dust, fume, or mist per cubic meter of air.

SIM0000234

B. TOXIC DUSTS, FUMES AND MISTS (Cont.)	Mg. per Cu. M. ‡
Chlorodiphenyl (42% chlorine)	1
Chlorodiphenyl (54% chlorine)	0.5
Chromic acid and chromates (as CrO_3)	0.1
Crag herbicide (sodium 2-[2,4-dichlorophenoxy] ethanol hydrogen sulfate)	15
Cyanide (as CN)	5
2,4-D(2,4-dichlorophenoxyacetic acid)	10
DDT (2,2-bis[p-chlorophenyl] -1,1,1-trichloroethane)	1
Dieldrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethano-naphthalene	0.25
Dinitrobenzene	1
Dinitrotoluene	1.5
Dinitro-o-cresol	0.2
EPN (O-ethyl O-p-nitrophenyl thionobenzenephosphonate)	0.5
Ferbam (ferric dimethyl dithiocarbamate)	15
Ferrovanadium dust	1
Fluoride	2.5
HETP (hexaethyl tetraphosphate)	0.1
Hydroquinone	2
Iron oxide fume	15
Lead	0.2
Lead arsenate	0.15
Lindane (hexachlorocyclohexane, gamma isomer)	0.5
(t) Lithium hydride	0.025
Magnesium oxide fume	15
Malathion (O,O-dimethyl dithiophosphate of diethyl mercaptosuccinate)	15
Manganese	6
Mercury	0.1
Mercury (organic compounds)	0.01
Methoxychlor (2,2-di-p-methoxyphenyl-1,1,1-trichloroethane)	15
Molybdenum (soluble compounds)	5
(insoluble compounds)	15
Nicotine	0.5
(t) Paradichlorobenzene	450
Parathion (O,O-diethyl O-p-nitrophenylthiophosphate)	0.1
Pentachloronaphthalene	0.5
Pentachlorophenol	0.5
Phosphorus (yellow)	0.1
Phosphorus pentachloride	1
Phosphorus pentasulfide	1
Picric acid	0.1

‡ Milligrams of dust, fume, or mist per cubic meter of air.

(t) Toxicological information or injury reports on these items is of recent origin and most probably will require revision at an early date.

SIM0000235

B. TOXIC DUSTS, FUMES AND MISTS (Cont.)	Mg. per Cu. M. ‡
Pyrethrum	2
Rotenone	5
Selenium compounds (as Se)	0.1
Sodium hydroxide	2
Sodium fluoroacetate (1080)	0.1
Strychnine	0.15
Sulfuric acid	1
TEDP (Tetraethyl dithionopyrophosphate)	0.2
TEPP (Tetraethyl pyrophosphate)	0.05
Tellurium	0.1
Tetryl (2,4,6-trinitrophenylmethylnitramine)	1.5
Thiram (tetramethyl thiuram disulfide)	5
Thallium (soluble compounds)	0.1
Titanium dioxide	15
Trichloronaphthalene	5
Trinitrotoluene	1.5
Uranium (soluble compounds)	0.05
(insoluble compounds)	0.25
Vanadium	
(V_2O_5 dust)	0.5
(V_2O_5 fume)	0.1
Warfarin (3-(a-acetonylbenzyl)-4-hydroxycoumarin)	0.5
(t) Yttrium and inorganic compounds	5
Zinc oxide fumes	15
Zirconium compounds (as Zr)	5

C. MINERAL DUSTS	M.P.P.C.F.**
Aluminum oxide	50
Asbestos	5
Dust (nuisance, no free silica)	50
Mica (below 5% free silica)	20
Portland cement	50
Talc	20
Silica	
High (above 50% free SiO_2)	5
Medium (5 to 50% free SiO_2)	20
Low (below 5% free SiO_2)	50
Silicon carbide	50
Soapstone (below 5% free SiO_2)	20

‡ Milligrams of dust, fume, or mist per cubic meter of air.

(t) Toxicological information or injury reports on these items is of recent origin and most probably will require revision at an early date.

** Millions of particles per cubic foot of air.

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