



DEPARTMENT OF LABOR & ECONOMIC GROWTH
DIRECTOR'S OFFICE
OCCUPATIONAL HEALTH STANDARDS

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(By authority conferred on the director of the department of consumer and industry services by sections 14 and 24 of 1974 PA 154 and Executive Reorganization Orders Nos. 1996-1 and 1996-2, MCL 408.1014, 408.1024, 330.3101, and 445.2001)

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PART 601. AIR CONTAMINANTS FOR CONSTRUCTION

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R 325.60151 Construction air contaminants.

Rule 1. (1) An employer shall ensure that employee exposures to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, as listed in R 325.60154 to R 325.60161, are avoided.

(2) To achieve compliance with subrule (1) of this rule, an employer shall ensure that administrative or engineering controls are implemented whenever feasible. If administrative or engineering controls are not feasible to achieve full compliance, then protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this rule. Any equipment and technical measures used for this purpose shall first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Respirators shall be used in a manner that is in compliance with R 325.60051 et seq., Part 451. respiratory protection.

(3) R 325.51401 et seq., Part 302. vinyl chloride, of the MIOSHA Occupational Health Standards for General Industry applies to the exposure of every employee to vinyl chloride in every employment and place of employment covered by these rules in place of any different standard on exposure to vinyl chloride that would otherwise be applicable by virtue of subrule (1) of this rule.

(4) These rules replace O.H. rule 6201.

(5) The "Threshold Limit Values (TLV) of the American Conference of Governmental Industrial Hygienists (A.C.G.I.H.) for 1970" appear in R 325.60153 to R 325.60161. The Threshold Limit Values identified in these administrative rules

as Maximum Allowable Concentrations (MAC) are specified in the rules that follow.

R 325.60152 Definitions pertaining to contaminants.

Rule 2. As used in these rules:

(a) "Maximum allowable concentration" or "MAC" means the threshold limit value or the time-weighted average 8-hour airborne concentration of a contaminant to which a person may be safely exposed.

(b) "Mg/m³" means milligrams of particulate per cubic meter of air.

(c) "Mppcf" means millions of particulates per cubic foot of air based on impinger samples counted by light field microscopic techniques.

(d) "Non-respirable atmosphere" means an atmosphere which contains insufficient oxygen, or an elevated level of contaminants which may render a person incapable of self-rescue.

(e) "Ppm" means parts of vapor or gas per million parts of air by volume at 25 degrees Celsius and 760 millimeters of mercury pressure.

(f) "Source" means a process or equipment that releases a contaminant into the air in concentrations exceeding the MAC.

R 325.60153 Contaminants; exposures; MAC.

Rule 3. (1) An employer shall not allow an employee to be exposed to a contaminant at concentrations in excess of the MAC as listed in R 325.60154 to R 325.60161.

(2) An employer shall not allow an employee to be exposed to a contaminant or combination of contaminants in concentrations that are hazardous or injurious to the person's health.

R 325.60154 Maximum allowable concentrations.

Rule 4. (1) Maximum allowable concentrations of air contaminants based on a repeated 8-hour work day exposure are listed in tables 1 to 7 in R 325.60155 to R 325.60161.

(2) A substance in tables 1 to 6 that is preceded by the letter A, C, or S is an especially hazardous contaminant and all the following precautions shall be taken:

(a) If the substance is preceded by the letter "A", then an employer shall ensure that an employee or any part of an employee's anatomy is not exposed to, or allowed to come in

contact with, the substance by means of any respiratory, oral, or skin route.

(b) If the substance is preceded by the letter "C", then its MAC means the highest concentration at which an employer may allow a person to be exposed at any time. This concentration is commonly referred to as a "ceiling."

(c) If the substance is preceded by the letter "S", then an employer shall ensure that precautions are taken to prevent skin absorption.

R 325.60155 Maximum allowable concentrations for substances; A and B.

Rule 5. Table 1. Substances A and B

Substance	MAC	
	ppm	mg/m ³
Abate	---	15
Acetaldehyde	200	360
Acetic acid	10	25
Acetic anhydride	5	20
Acetone	1,000	2,400
Acetonitrile	40	70
Acetylene	Inert gas	
Acetylene dichloride, see 1,2-Dichloroethylene		
Acetylene tetrabromide	1	14
Acrolein	0.1	0.25
S Acrylamide	---	0.3
S Acrylonitrile (see R 325.51501 et seq.*)		
S Aldrin	---	0.25
S Allyl alcohol	2	5
Allyl chloride	1	3
C Allyl glycidyl ether (AGE)	10	45
Allyl propyl disulfide	2	12
Alundum, (Al ₂ O ₃)	Inert dust	
2-Aminoethanol, see Ethanolamine		
2-Aminopyridine	0.5	2
Ammonia	50	35
Ammonium sulfamate (amate)	---	15
n-Amyl acetate	100	525
sec-Amyl acetate	125	650
S Aniline	5	19
S Anisidine (o,p-isomers)	---	0.5
Antimony & compounds (as Sb)	---	0.5
ANTU (alpha naphthyl thiourea)	---	0.3
Argon	Inert gas	
Arsenic, inorganic compounds (see R 325.51601 et seq.*)		
Arsenic, organic compounds (as As)	---	0.5
Arsine	0.05	0.2
S Azinphos-methyl	---	0.2
Barium (soluble compounds)	---	0.5
S,C Benzene (benzol) (see R 325.77101 et seq.*)		
A,S Benzidine	---	---
p-Benzoquinone, see Quinone		
Benzoyl peroxide	---	5
Benzyl chloride	1	5
Beryllium	---	0.002
Biphenyl, see Diphenyl		
Bisphenol A, see Diglycidyl ether		
Boron oxide	---	15
Boron tribromide	1	10
C Boron trifluoride	1	3
Bromine	0.1	0.7

Substance	MAC	
	ppm	mg/m ³
Bromine pentafluoride	0.1	0.7
S Bromoform	0.5	5
Butadiene (1,3-butadiene) (see R 325.50091 et seq.*)		
Butanethiol, see Butyl mercaptan		
2-Butanone	200	590
S 2-Butoxy ethanol (butyl cellosolve)	50	240
Butyl acetate (n-butyl acetate)	150	710
sec-Butyl acetate	200	950
tert-Butyl acetate	200	950
Butyl alcohol	100	300
sec-Butyl alcohol	150	450
tert-Butyl alcohol	100	300
S,C Butylamine	5	15
S,C tert-Butyl chromate (as CrO ₃)	---	0.1
n-Butyl glycidyl ether (BGE)	50	270
Butyl mercaptan	0.5	1.5
p-tert-Butyltoluene	10	60

A See R 325.60154(2).
C See R 325.60154(2).
S See R 325.60154(2).

* Caution--these rules contain extensive requirements for exposure to these substances.

R 325.60156 Maximum allowable concentrations for substances; C and D.

Rule 6. Table 2. Substances C and D

Substance	MAC	
	ppm	mg/m ³
Cadmium (metal dust and soluble salts) (see R 325.51851 et seq.*)		
C Cadmium oxide fume (as Cd) (see R 325.51851 et seq.*)		
Calcium arsenate	---	1
Calcium carbonate	Inert dust	
Calcium oxide	---	5
Camphor (synthetic)	2	---
Carbaryl (Sevin®)	---	5
Carbon black	---	3.5
Carbon dioxide	5,000	9,000
S Carbon disulfide	20	60
Carbon monoxide	50	55
S,C Carbon tetrachloride	10	65
Cellulose (paper fiber)	Inert dust	
S Chlordane	---	0.5
S Chlorinated camphene	---	0.5
Chlorinated diphenyl oxide	---	0.5

Substance	MAC	
	ppm	mg/m ³
Chlorine	1	3
Chlorine dioxide	0.1	0.3
C Chlorine trifluoride	0.1	0.4
C Chloroacetaldehyde	1	3
alpha-Chloroacetophenone (phenacylchloride)	0.05	0.3
Chlorobenzene (monochlorobenzene)	75	350
o-Chlorobenzylidene malononitrile (OCBM)	0.05	0.4
Chlorobromomethane	200	1,050
2-Chloro-1,3-butadiene, see Chloroprene		
S Chlorodiphenyl (42% Chlorine)	---	1
S Chlorodiphenyl (54% Chlorine)	---	0.5
1-Chloro-2,3-epoxypropane, see Epichlorohydrin		
2-Chloroethanol, see Ethylene chlorohydrin		
Chloroethylene, see Vinyl chloride		
C Chloroform (trichloromethane)	50	240
1-Chloro-1-nitropropane	20	100
Chloropicrin	0.1	0.7
S Chloroprene (2-chloro-1,3-butadiene)	25	90
Chromic acid and chromates (as CrO ₃)	---	0.1
Chromium, sol. chromic & chromous salts (as Cr)	---	0.5
Metal & insol. salts	---	1
Coal tar pitch volatiles (benzene soluble fraction: anthracene, BaP, phenanthrene, acridine, chrysene, pyrene)	---	0.2
Cobalt, metal fume & dust	---	0.1
Coke oven emissions (see R 325.50101 et seq.*)		
Copper fume	---	0.1
Dusts and mists	---	1
Corundum (Al ₂ O ₃)	Inert dust	
Cotton dust (raw)	---	1
Crag® herbicide	---	15
S Cresol (all isomers)	5	22
Crotonaldehyde	2	6
S Cumene	50	245
S Cyanide (as CN)	---	5
Cyanogen	10	---
Cyclohexane	300	1,050
Cyclohexanol	50	200
Cyclohexanone	50	200
Cyclohexene	300	1,015
Cyclopentadiene	75	200
2,4-D	---	10
S DDT (Dichlorodiphenyl-trichloroethane)	---	1
DDVP, see Dichlorvos		
S Decaborane	0.05	0.3
S Demeton®	---	0.1
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	50	240
1,2-Diainoethane, see Ethylenediamine		
Diazomethane	0.2	0.4
Diborane	0.1	0.1
S,C 1,2-Dibromoethane (ethylene dibromide)	25	190
Dibutyl phosphate	1	5
Dibutyl phthalate	---	5
C Dichloroacetylene	0.1	0.4
C o-Dichlorobenzene	50	300
p-Dichlorobenzene	75	450
Dichlorodifluoromethane	1,000	4,950

Substance	MAC	
	ppm	mg/m ³
1,3-Dichloro-5,5-dimethyl hydantoin	---	0.2
1,1-Dichloroethane	100	400
1,2-Dichloroethane	50	200
1,2-Dichloroethylene	200	790
S,C Dichloroethyl ether	15	90
Dichloromethane, see Methylene chloride		
Dichloromonofluoromethane	1,000	4,200
C 1,1-Dichloro-1-nitroethane	10	60
1,2-Dichloropropane, see Propylene dichloride		
Dichlorotetrafluoroethane	1,000	7,000
S Dichlorvos (DDVP)	---	1
S Dieldrin	---	0.25
Diethylamine	25	75
S Diethylamino, ethanol	10	50
S,C Diethylene triamine	10	42
Diethyl ether, see Ethyl ether		
Difluorodibromomethane	100	860
C Diglycidyl ether (DGE)	0.5	2.8
Dihydroxybenzene, see Hydroquinone		
Diisobutyl ketone	50	290
S Diisopropylamine	5	20
Dimethoxymethane, see Methylal		
S Dimethyl acetamide	10	35
Dimethylamine	10	18
Dimethylaminobenzene, see Xylidene		
S Dimethylaniline (N-dimethylaniline)	5	25
Dimethylbenzene, see Xylene		
Dimethyl-1,2-dibromo-2,2-dichloroethyl phosphate (Dibrom®)	---	3
S Dimethylformamide	10	30
2,6-Dimethylheptanone, see Diisobutyl ketone		
S 1,1-Dimethylhydrazine	0.5	1
Dimethylphthalate	---	5
S Dimethylsulfate	1	5
S Dinitrobenzene (all isomers)	---	1
S Dinitro-o-cresol	---	0.2
S Dinitrotoluene	---	1.5
S Dioxane (diethylene dioxide)	100	360
Diphenyl	0.2	1
Diphenyl amine	---	10
Diphenylmethane diisocyanate, see Methylene bisphenyl isocyanate (MDI)		
S Dipropylene glycol methyl ether (di-sec, octyl phthalate)	100	600
(di-2-ethylhexylphthalate)	---	5
A See R 325.60154(2).		
C See R 325.60154(2).		
S See R 325.60154(2).		

* Caution--these rules contain extensive requirements for exposure to these substances.

R 325.60157 Maximum allowable concentrations for substances; E to H.

Rule 7. Table 3. Substances E to H

Substance	MAC	
	ppm	mg/m ³
Emery		Inert dust
S Endosulfan (Thiodan®)	---	0.1
S Endrin	---	0.1
S Epichlorohydrin	5	19
S EPN	---	0.5
1,2-Epoxypropane, see Propylene oxide		
2,3-Epoxy-1-propanol, see Glycidol		
Ethane		Inert gas
Ethanethiol, see Ethyl mercaptan		

Substance	MAC	
	ppm	mg/m ³
S Ethanolamine	3	6
S 2-Ethoxyethanol	200	740
S 2-Ethoxyethylacetate (cellosolve acetate)	100	540
Ethyl acetate	400	1,400
S Ethyl acrylate	25	100
Ethyl alcohol (ethanol)	1,000	1,900
Ethylamine	10	18
Ethyl sec-amyl ketone (5-methyl-3-heptanone)	25	130
Ethyl benzene	100	435
Ethyl bromide	200	890
Ethyl butyl ketone (3-heptanone)	50	230
Ethyl chloride	1,000	2,600
Ethyl ether	400	1,200
Ethyl formate	100	300
Ethyl mercaptan	0.5	1
Ethyl silicate	100	850
Ethylene	Inert gas	
S Ethylene chlorohydrin	5	16
Ethylenediamine	10	25
Ethylene dibromide, see 1,2-Dibromoethane		
Ethylene dichloride, see 1,2-Dichloroethane		
S,C Ethylene glycol dinitrate and/or Nitroglycerin	0.2	
Ethylene glycol monomethyl ether acetate, see Methyl cellosolve acetate		
S Ethyleneimine	0.5	1
Ethylene oxide (see R 325.51151 et seq.*)		
Ethylidene chloride, see 1,1-Dichloroethane		
S N-Ethylmorpholine	20	94
Ferbam	---	15
Ferrovandium dust	---	1
Fibrous glass	Inert dust	
Fluoride (as F)	---	2.5
Fluorine	0.1	0.2
Fluorotrichloromethane	1,000	5,600
C Formaldehyde (see R 325.51451 et seq.*)		
Formic acid	5	9
S Furfural	5	20
Furfuryl alcohol	50	200
Gasoline (limits will be based on aromatic hydrocarbons in mixture)		
Glycerine mist	Inert mist	
Glycidol (2,3-epoxy-1-propanol)	50	150
Glycol monoethyl ether, see 2-Ethoxyethanol		
Graphite (synthetic)	Inert dust	
Guthion®, see Azinphos-methyl		
Gypsum	Inert dust	
Hafnium	---	0.5
Helium	Inert gas	
S Heptachlor	---	0.5
Heptane (n-heptane)	500	2,000
S Hexachloroethane	1	10
S Hexachloronaphthalene	---	0.2
Hexane (n-hexane)	500	1,800
2-Hexanone	100	410
Hexone (methyl isobutyl ketone)	100	410
sec-Hexyl acetate	50	300
S Hydrazine	1	1.3
Hydrogen	Inert gas	
Hydrogen bromide	3	10
C Hydrogen chloride	5	7
S Hydrogen cyanide	10	11
Hydrogen fluoride	3	2
Hydrogen peroxide	1	1.4
Hydrogen selenide	0.05	0.2

Substance	MAC	
	ppm	mg/m ³
Hydrogen sulfide	10	15
Hydroquinone	---	2
A See R 325.60154(2).		
C See R 325.60154(2).		
S See R 325.60154(2).		

* Caution--these rules contain extensive requirements for exposure to these substances.

R 325.60158 Maximum allowable concentrations for substances; I to M.

Rule 8. Table 4. Substances I to M

Substance	MAC	
	ppm	mg/m ³
Indene	10	45
Indium and compounds (as In)	---	0.1
C Iodine	0.1	1
Iron oxide fume	---	10
Iron salts, soluble (as Fe)	---	1
Isoamyl acetate	100	525
Isoamyl alcohol	100	360
Isobutyl acetate	150	700
Isobutyl alcohol	100	300
Isophorone	25	140
Isopropyl acetate	250	950
Isopropyl alcohol	400	980
Isopropylamine	5	12
Isopropyl ether	500	2,100
Isopropyl glycidyl ether (IGE)	50	240
Kaolin	Inert dust	
Ketene	0.5	0.9
Lead and lead compounds (see R 325.51991 et seq.*)		
Limestone	Inert dust	
S Lindane	---	0.5
Lithium hydride	---	0.025
L.P.G. (liquified petroleum gas)	1,000	1,800
Magnesite	Inert dust	
Magnesium oxide fume	15	
S Malathion	---	15
Maleic anhydride	0.25	1
C Manganese and compounds (as Mn)	---	5
Marble	Inert dust	
S Mercury	---	0.1
S Mercury (organic compounds)	---	0.01
Mesityl oxide	25	100
Methane	Inert gas	
Methanethiol, see Methyl mercaptan		
Methoxychlor	---	15
2-Methoxyethanol, see Methyl cellosolve		
Methyl acetate	200	610
Methyl acetylene (propyne)	1,000	1,650
Methyl acetylene-propadiene mixture (MAPP)	1,000	1,800
S Methyl acrylate	10	35
Methylal (dimethoxymethane)	1,000	3,100
Methyl alcohol (methanol)	200	260
Methylamine	10	12
Methyl amyl alcohol, see Methyl isobutyl carbinol		
Methyl (n-amyl) ketone (2-heptanone)	100	465
S,C Methyl bromide	20	80
Methyl butyl ketone, see 2-Hexanone		
S Methyl cellosolve	25	80
S Methyl cellosolve acetate	25	120

Substance	MAC	
	ppm	mg/m ³
C Methyl chloride	100	210
Methyl chloroform	350	1,900
Methylcyclohexane	500	2,000
Methylcyclohexanol	100	470
S o-Methylcyclohexanone	100	460
Methylenedianiline (MDA) (see R 325.51651 et seq.*)		
Methyl ethyl ketone (MEK), see 2-Butanone		
Methyl formate	100	250
S Methyl iodide	5	28
Methyl isoamyl ketone	100	475
S Methyl isobutyl carbinol	25	100
Methyl isobutyl ketone, see Hexone		
S Methyl isocyanate	0.02	0.05
Methyl mercaptan	0.5	1
Methyl methacrylate	100	410
Methyl propyl ketone, see 2-Pentanone		
C Methyl silicate	5	30
C alpha-Methyl styrene	100	480
C Methylene bisphenyl isocyanate (MDI)	0.02	0.2
Methylene chloride (dichloromethane) (see R 325.51651 et seq.*)		
Molybdenum (soluble compounds)	---	5
(insoluble compounds)	---	15
S Monomethyl aniline	2	9
S,C Monomethyl hydrazine	0.2	0.35
S Morpholine	20	70
A See R 325.60154(2).		
C See R 325.60154(2).		
S See R 325.60154(2).		

* Caution--these rules contain extensive requirements for exposure to these substances.

R 325.60159 Maximum allowable concentrations for substances; N to P.

Rule 9. Table 5. Substances N to P

Substance	MAC	
	ppm	mg/m ³
Naphtha (coal tar)	100	400
Naphtha (petroleum)(MAC will be based on aromatic hydrocarbons in mixture)		
Naphthalene	10	50
A beta-Naphthylamine	---	
Neon	Inert gas	
Nickel carbonyl	0.001	0.007
Nickel, metal and soluble compounds (as Ni)	---	1
S Nicotine	---	0.5
Nitric acid	2	5
Nitric oxide	25	30
S p-Nitroaniline	1	6
S Nitrobenzene	1	5
S p-Nitrochlorobenzene	---	1
Nitroethane	100	310
Nitrogen	Inert gas	
Nitrogen dioxide	5	9
Nitrogen trifluoride	10	29
S Nitroglycerin	0.2	2
Nitromethane	100	250
1-Nitropropane	25	90
2-Nitropropane	25	90
S,A N-Nitrosodimethylamine (dimethylnitrosamine)	---	
S Nitrotoluene	5	30
Nitrotrichloromethane, see Chloropicrin		
Nitrous oxide	Inert gas	

Substance	MAC	
	ppm	mg/m ³
S Octachloronaphthalene	---	0.1
Octane	400	1,900
Oil mist, particulate	---	5
Oil mist, vapor (MAC will be based on aromatic hydrocarbons in mixture)		
Osmium tetroxide	---	0.002
Oxalic acid	---	1
Oxygen difluoride	0.05	0.1
Ozone	0.1	0.2
S Paraquat	---	0.5
S Parathion	---	0.1
Pentaborane	0.005	0.01
S Pentachloronaphthalene	---	0.5
S Pentachlorophenol	---	0.5
Pentaerythritol	Inert particulate	
Pentane	500	1,500
2-Pentanone	200	700
Perchloroethylene	100	670
Perchloromethyl mercaptan	0.1	0.8
Perchloryl fluoride	3	13.5
Petroleum distillates (naphtha)(MAC will be based on aromatic hydrocarbons in mixture)		
S Phenol	5	19
S p-Phenylene diamine	---	0.1
Phenyl ether (vapor)	1	7
Phenyl ether-biphenyl mixture (vapor)	1	7
Phenylethylene, see Styrene		
Phenyl glycidyl ether (PGE)	10	60
S Phenylhydrazine	5	22
S Phosdrin (Mevinphos®)	---	0.1
Phosgene (carbonyl chloride)	0.1	0.4
Phosphine	0.3	0.4
Phosphoric acid	---	1
Phosphorus (yellow)	---	0.1
Phosphorus pentachloride	---	1
Phosphorus pentasulfide	---	1
Phosphorus trichloride	0.5	3
Phthalic anhydride	2	12
S Picric acid	---	0.1
Pival® (2-pivalyl-1,3-indandione)	---	0.1
Plaster of Paris	Inert dust	
Platinum, soluble salts (as Pt)	---	0.002
Polytetrafluoroethylene decomposition products, see Teflon® decomposition products		
Propane	Inert gas	
S Propargyl alcohol	1	---
A beta-Propiolactone	---	
n-Propyl acetate	200	840
Propyl alcohol	200	500
n-Propyl nitrate	25	110
Propylene bichloride	75	350
S Propylene imine	2	5
Propylene oxide	100	240
Propyne, see Methyl acetylene		
Pyrethrum	---	5
Pyridine	5	15
A See R 325.60154(2).		
C See R 325.60154(2).		
S See R 325.60154(2).		

R 325.60160 Maximum allowable concentrations for substances; Q to Z.

Rule 10. Table 6. Substances Q to Z

Substance	MAC	
	ppm	mg/m ³
S Quinone	0.1	0.4
S RDX	---	1.5
Rhodium, metal fume, dusts, and insoluble compounds (as Rh)	---	0.1
Rhodium, soluble compounds (as Rh)	---	0.001
Ronnel	---	10
Rotenone (commercial)	---	5
Rouge	Inert dust	
Selenium compounds (as Se)	---	0.2
Selenium hexafluoride	0.05	0.4
Silicon carbide	Inert dust	
Silver, metal and soluble compounds	---	0.01
S Sodium fluoroacetate (1080)	---	0.05
Sodium hydroxide	---	2
Starch	Inert dust	
Stibine	0.1	0.5
Stoddard solvent	200	1,150
Strychnine	---	0.15
C Styrene monomer (phenylethylene)	100	420
Sucrose	Inert dust	
Sulfur dioxide	5	13
Sulfur hexafluoride	1,000	6,000
Sulfuric acid	---	1
Sulfur monochloride	1	6
Sulfur pentafluoride	0.025	0.25
Sulfuryl fluoride	5	20
Systox, see Demeton®		
2,4,5T	---	10
Tantalum	---	5
S TEDP	---	0.2
Teflon® decomposition products (maintain minimal air concentration)		
Tellurium	---	0.1
Tellurium hexafluoride	0.02	0.2
S TEPP	---	0.05
C Terphenyls	1	9
1,1,1,2-Tetrachloro-2,2-difluoroethane	500	4,170
1,1,2,2-Tetrachloro-1,2-difluoroethane	500	4,170
S 1,1,2,2-Tetrachloroethane	5	35
Tetrachloroethylene, see Perchloroethylene		
Tetrachloromethane, see Carbon tetrachloride		
S Tetrachloronaphthalene	---	2
S Tetraethyl lead (as Pb)	---	0.075 ^a
Tetrahydrofuran	200	590
S Tetramethyl lead (TML) (as Pb)	---	0.150
S Tetramethyl succinonitrile	0.5	3
Tetranitromethane	1	8
S Tetryl (2,4,6-trinitrophenylmethyl-nitramine)	---	1.5
S Thallium, soluble compounds (as Tl)	---	0.1

Substance	MAC	
	ppm	mg/m ³
Thiram	---	5
Tin (inorganic compounds, except SnH ₄ and SnO ₂) (organic compounds)	---	2 0.1
Tin oxide	Inert particulate	
Titanium dioxide	Inert particulate	
Toluene (toluol)	200	750
C Toluene-2,4-diisocyanate	0.02	0.14
S o-Toluidine	5	22
Toxaphene, see Chlorinated camphene		
Tributyl phosphate	---	5
1,1,1-Trichloroethane, see Methyl chloroform		
S 1,1,2-Trichloroethane	10	45
Trichloroethylene	100	535
Trichloromethane, see Chloroform		
S Trichloronaphthalene	---	5
1,2,3-Trichloropropane	50	300
1,1,2-Trichloro-1,2,2-trifluoroethane	1,000	7,600
Triethylamine	25	100
Trifluoromonobromomethane	1,000	6,100
Trimethyl benzene	25	120
2,4,6-Trinitrophenol, see Picric acid		
2,4,6-Trinitrophenylmethyl-nitramine, see Tetryl		
S Trinitrotoluene	---	1.5
Triorthocresyl phosphate	---	0.1
Triphenyl phosphate	---	3
Tungsten and compounds (as W)		
Insoluble	---	5
Soluble	---	1
Turpentine	100	560
Uranium (natural) soluble & insoluble compounds (as U)	---	0.2
C Vanadium (V ₂ O ₅ dust)	---	0.5
(V ₂ O ₅ fume)	---	0.1
Vinyl benzene, see Styrene		
C Vinyl chloride (see R 325.51401 et seq.*)		
Vinyl cyanide, see Acrylonitrile		
Vinyl toluene	100	480
Warfarin	---	0.1
Xylene (xylol)	100	435
S Xylidine	5	25
Yttrium	---	1
Zinc chloride fume	---	1
Zinc oxide fume	---	5
Zirconium compounds (as Zr)	---	5

A	See R 325.60154(2).
C	See R 325.60154(2).
S	See R 325.60154(2).

^a The 1970 ACGIH standard for Tetraethyl lead is 0.100 mg/m³.

* Caution--these rules contain extensive requirements for exposure to these substances.

R 325.60161 Maximum allowable concentrations for mineral dusts.**Rule 11. Table 7. Mineral dusts**

Substance	MAC (mppcf)
Silica Crystalline * Quartz	MAC = $\frac{250}{\% \text{ SiO}_2+5}$
Cristobalite	MAC same as quartz
Amorphous, including natural diatomaceous earth	20
Silicates (less than 1% crystalline silica) Asbestos, all types (see asbestos in construction R 325.51301 et seq.)	
Mica	20
Portland cement	50
Soapstone	20
Talc (non-asbestiform)	20
Talc (fibrous) (see asbestos in construction R 325.51301 et seq.)	
Tremolite (see asbestos in construction R 325.51301 et seq.)	
Graphite (natural)	15
Inert or nuisance particles **	50 of total dust less than 1% SiO ₂ (or 15 mg/m ³ , whichever is the smaller)

* The percentage of crystalline silica, SiO₂, in the formula is the amount determined from airborne samples.

** The following are some examples of inert or nuisance particulates when toxic impurities are not present;
e.g. quartz less than 1%.

Alundum (Al ₂ O ₃)	Gypsum	Rouge
Calcium carbonate	Limestone	Silicon carbide
Cellulose	Magnesite	Starch
Corundum (Al ₂ O ₃)	Marble	Sucrose
Emery	Pentaerythritol	Tin oxide
Glycerine mist	Plaster of Paris	Titanium dioxide
Graphite (synthetic)	Portland cement	Vegetable oil mists (except castor, cashew nut, or similar irritant oils)



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