



Regulations (Standards - 29 CFR) - Table of Contents

- **Part Number:** 1910
- **Part Title:** Occupational Safety and Health Standards
- **Subpart:** Z
- **Subpart Title:** Toxic and Hazardous Substances
- **Standard Number:** 1910.1000 TABLE Z-1
- **Title:** TABLE Z-1 Limits for Air Contaminants.

TABLE Z-1 LIMITS FOR AIR CONTAMINANTS

NOTE: Because of the length of the table, explanatory Footnotes applicable to all substances are given below as well as at the end of the table. Footnotes specific only to a limited number of substances are also shown within the table.

Footnote(1) The PELs are 8-hour TWAs unless otherwise noted; a (C) designation denotes a ceiling limit. They are to be determined from breathing-zone air samples.

Footnote(a) Parts of vapor or gas per million parts of contaminated air by volume at 25 degrees C and 760 torr.

Footnote(b) Milligrams of substance per cubic meter of air. When entry is in this column only, the value is exact; when listed with a ppm entry, it is approximate.

Footnote(c) The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than one metal compound measured as the metal, the CAS number for the metal is given - not CAS numbers for the individual compounds.

Footnote(d) The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except in some circumstances the distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures; for the excepted subsegments, the benzene limits in Table Z-2 apply. See 1910.1028 for specific circumstances.

Footnote(e) This 8-hour TWA applies to respirable dust as measured by a vertical elutriator cotton dust sampler or equivalent instrument. The time-weighted average applies to the cotton waste processing operations of waste recycling (sorting, blending, cleaning and willowing) and garnetting. See also 1910.1043 for cotton dust limits applicable to other sectors.

Footnote(f) All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.

Footnote(2) See Table Z-2.

Footnote(3) See Table Z-3

Footnote(4) Varies with compound.

Footnote(5) See Table Z-2 for the exposure limits for any operations or sectors where the exposure limits in 1910.1026 are stayed or are otherwise not in effect.

TABLE Z-1. - LIMITS FOR AIR CONTAMINANTS

Substance	CAS No. (c)	ppm (a) (1)	mg/m (3) (b) (1)	Skin designation

Acetaldehyde.....	75-07-0	200	360	
Acetic acid.....	64-19-7	10	25	
Acetic anhydride.....	108-24-7	5	20	
Acetone.....	67-64-1	1000	2400	
Acetonitrile.....	75-05-8	40	70	
2-Acetylaminofluorene; see 1910.1014.....	53-96-3			
Acetylene dichloride; see 1,2-Dichloroethylene.				
Acetylene tetrabromide.	79-27-6	1	14	
Acrolein.....	107-02-8	0.1	0.25	
Acrylamide.....	79-06-1	.....	0.3	X
Acrylonitrile; see 1910.1045.....	107-13-1			
Aldrin.....	309-00-2	.....	0.25	X
Allyl alcohol.....	107-18-6	2	5	X
Allyl chloride.....	107-05-1	1	3	
Allyl glycidyl ether... (AGE).....	106-92-3	(C)10	(C)45	
Allyl propyl disulfide.	2179-59-1	2	12	
alpha-Alumina..... Total dust..... Respirable fraction..	1344-28-1	.....	15 5	
Aluminum Metal (as Al). Total dust..... Respirable fraction..	7429-90-5	.....	15 5	
4-Aminodiphenyl; see 1910.1011.....	92-67-1			
2-Aminoethanol; see Ethanolamine.....				
2-Aminopyridine.....	504-29-0	0.5	2	
Ammonia.....	7664-41-7	50	35	
Ammonium sulfamate..... Total dust..... Respirable fraction..	7773-06-0	.....	15 5	
n-Amyl acetate.....	628-63-7	100	525	
sec-Amyl acetate.....	626-38-0	125	650	
Aniline and homologs... Anisidine (o-,p-isomers).....	62-53-3 29191-52-4	5	19 0.5	X X
Antimony and compounds (as Sb).....	7440-36-0	.....	0.5	
ANTU (alpha Naphthylthiourea)....	86-88-4	.....	0.3	
Arsenic, inorganic compounds (as As); see 1910.1018.....	7440-38-2			
Arsenic, organic compounds (as As)....	7440-38-2	.....	0.5	
Arsine.....	7784-42-1	0.05	0.2	
Asbestos; see 1910.1001.....	(4)			
Azinphos-methyl.....	86-50-0	.....	0.2	X
Barium, soluble compounds (as Ba)....	7440-39-3	.....	0.5	
Barium sulfate..... Total dust..... Respirable fraction..	7727-43-7	.....	15 5	
Benomyl..... Total dust.....	17804-35-2	.....	15	

Respirable fraction..		.....	5	
Benzene; See 1910.1028.	71-43-2			
See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028(d)				
Benzidine;				
See 1910.1010.....	92-87-5			
p-Benzoquinone; see Quinone.				
Benzo(a)pyrene; see Coal tar pitch volatiles.....				
Benzoyl peroxide.....	94-36-0	.....	5	
Benzyl chloride.....	100-44-7	1	5	
Beryllium and beryllium compounds (as Be).....	7440-41-7		(2)	
Biphenyl; see Diphenyl.				
Bismuth telluride, Undoped.....	1304-82-1			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Boron oxide.....	1303-86-2			
Total dust.....		.....	15	
Boron trifluoride.....	7637-07-2	(C)1	(C)3	
Bromine.....	7726-95-6	0.1	0.7	
Bromoform.....	75-25-2	0.5	5	X
Butadiene (1,3-Butadiene); See 29 CFR 1910.1051; 29 CFR 1910.19(1)....	106-99-0	1 ppm/5 ppm STEL		
Butanethiol; see Butyl mercaptan.				
2-Butanone (Methyl ethyl ketone)	78-93-3	200	590	
2-Butoxyethanol.....	111-76-2	50	240	X
n-Butyl-acetate.....	123-86-4	150	710	
sec-Butyl acetate.....	105-46-4	200	950	
tert-Butyl-acetate.....	540-88-5	200	950	
n-Butyl alcohol.....	71-36-3	100	300	
sec-Butyl alcohol.....	78-92-2	150	450	
tert-Butyl alcohol.....	75-65-0	100	300	
Butylamine.....	109-73-9	(C)5	(C)15	X
tert-Butyl chromate (as CrO(3))..... see 1910.1026	1189-85-1			
n-Butyl glycidyl ether (BGE).....	2426-08-6	50	270	
Butyl mercaptan.....	109-79-5	10	35	
p-tert-Butyltoluene....	98-51-1	10	60	
Cadmium (as Cd); see 1910.1027.....	7440-43-9			
Calcium Carbonate.....	1317-65-3			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Calcium hydroxide.....	1305-62-0			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Calcium oxide.....	1305-78-8	.....	5	

Calcium silicate.....	1344-95-2				
Total dust.....				15	
Respirable fraction..				5	
Calcium sulfate.....	7778-18-9				
Total dust.....				15	
Respirable fraction..				5	
Camphor, synthetic.....	76-22-2			2	
Carbaryl (Sevin).....	63-25-2			5	
Carbon black.....	1333-86-4			3.5	
Carbon dioxide.....	124-38-9	5000		9000	
Carbon disulfide.....	75-15-0			(2)	
Carbon monoxide.....	630-08-0	50		55	
Carbon tetrachloride...	56-23-5			(2)	
Cellulose.....	9004-34-6				
Total dust.....				15	
Respirable fraction..				5	
Chlordane.....	57-74-9			0.5	X
Chlorinated camphene...	8001-35-2			0.5	X
Chlorinated diphenyl oxide.....	55720-99-5			0.5	
Chlorine.....	7782-50-5	(C)1		(C)3	
Chlorine dioxide.....	10049-04-4	0.1		0.3	
Chlorine trifluoride...	7790-91-2	(C)0.1		(C)0.4	
Chloroacetaldehyde.....	107-20-0	(C)1		(C)3	
a-Chloroacetophenone (Phenacyl chloride)...	532-27-4		0.05	0.3	
Chlorobenzene.....	108-90-7	75		350	
o-Chlorobenzylidene malononitrile.....	2698-41-1		0.05	0.4	
Chlorobromomethane.....	74-97-5	200		1050	
2-Chloro-1,3-butadiene; See beta-Chloroprene.					
Chlorodiphenyl (42% Chlorine) (PCB)...	53469-21-9			1	X
Chlorodiphenyl (54% Chlorine) (PCB)...	11097-69-1			0.5	X
1-Chloro-2, 3-epoxypropane; See Epichlorohydrin.					
2-Chloroethanol; See Ethylene chlorohydrin					
Chloroethylene; See Vinyl chloride.					
Chloroform (Trichloromethane)...	67-66-3	(C)50		(C)240	
bis(Chloromethyl) ether; see 1910.1008.	542-88-1				
Chloromethyl methyl ether; see 1910.1006.	107-30-2				
1-Chloro-1-nitropropane	600-25-9	20		100	
Chloropicrin.....	76-06-2	0.1		0.7	
beta-Chloroprene.....	126-99-8	25		90	X
2-Chloro-6 (trichloromethyl) pyridine.....	1929-82-4				
Total dust.....				15	
Respirable fraction..				5	
Chromic acid and chromates (as CrO(3))	(4)			(2)	
Chromium (II) compounds (as Cr).....	7440-47-3			0.5	
Chromium (III)					

compounds (as Cr)....	7440-47-3	.....	0.5	
Chromium (VI) compounds				
See 1910.1026(5)				
Chromium metal and				
insol. salts (as Cr)..	7440-47-3	.....	1	
Chrysene; see Coal tar				
pitch volatiles.....				
Clopidol.....	2971-90-6			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Coal dust (less than				
5% SiO(2)),				
respirable fraction..			(3)	
Coal dust (greater than				
or equal to 5%				
SiO(2)), respirable				
fraction.....			(3)	
Coal tar pitch				
volatiles (benzene				
soluble fraction),				
anthracene, BaP,				
phenanthrene,				
acridine, chrysene,				
pyrene.....	65966-93-2	.....	0.2	
Cobalt metal, dust,				
and fume (as Co)....	7440-48-4	.....	0.1	
Coke oven emissions;				
see 1910.1029.....				
Copper.....	7440-50-8			
Fume (as Cu).....		.....	0.1	
Dusts and mists				
(as Cu).....		.....	1	
Cotton dust (e),				
see 1910.1043.....		.....	1	
Crag herbicide (Sesone)	136-78-7			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Cresol, all isomers....	1319-77-3	5	22	X
Crotonaldehyde.....	123-73-9	2	6	
	4170-30-3			
Cumene.....	98-82-8	50	245	X
Cyanides (as CN)....	(4)	.....	5	X
Cyclohexane.....	110-82-7	300	1050	
Cyclohexanol.....	108-93-0	50	200	
Cyclohexanone.....	108-94-1	50	200	
Cyclohexene.....	110-83-8	300	1015	
Cyclopentadiene.....	542-92-7	75	200	
2,4-D (Dichlorophen-				
oxyacetic acid)....	94-75-7	.....	10	
Decaborane.....	17702-41-9	0.05	0.3	X
Demeton (Systox).....	8065-48-3	.....	0.1	X
Diacetone alcohol				
(4-Hydroxy-4-methyl-				
2-pentanone).....	123-42-2	50	240	
1,2-Diaminoethane;				
see Ethylenediamine..				
Diazomethane.....	334-88-3	0.2	0.4	
Diborane.....	19287-45-7	0.1	0.1	
1,2-Dibromo-3-				
chloropropane (DBCP);				
see 1910.1044.....	96-12-8			
1,2-Dibromoethane; see				

Ethylene dibromide...				
Dibutyl phosphate.....	107-66-4	1	5	
Dibutyl phthalate.....	84-74-2	.....	5	
o-Dichlorobenzene.....	95-50-1	(C) 50	(C) 300	
p-Dichlorobenzene.....	106-46-7	75	450	
3,3'-Dichlorobenzidine; see 1910.1007.....	91-94-1			
Dichlorodifluoromethane	75-71-8	1000	4950	
1,3-Dichloro-5, 5-dimethyl hydantoin.	118-52-5	.....	0.2	
Dichlorodiphenyltri- chloroethane (DDT)...	50-29-3	.....	1	X
1,1-Dichloroethane.....	75-34-3	100	400	
1,2-Dichloroethane; see Ethylene dichloride..				
1,2-Dichloroethylene...	540-59-0	200	790	
Dichloroethyl ether....	111-44-4	(C) 15	(C) 90	X
Dichloromethane; see Methylene chloride...				
Dichloromonofluoro- methane.....	75-43-4	1000	4200	
1,1-Dichloro-1- nitroethane.....	594-72-9	(C) 10	(C) 60	
1,2-Dichloropropane; see Propylene dichloride.				
Dichlorotetrafluoro- ethane.....	76-14-2	1000	7000	
Dichlorvos (DDVP).....	62-73-7	.....	1	X
Dicyclopentadienyl iron	102-54-5			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Dieldrin.....	60-57-1	.....	0.25	X
Diethylamine.....	109-89-7	25	75	
2-Diethylaminoethanol..	100-37-8	10	50	X
Diethyl ether; see Ethyl ether.....				
Difluorodibromomethane.	75-61-6	100	860	
Diglycidyl ether (DGE)..	2238-07-5	(C) 0.5	(C) 2.8	
Dihydroxybenzene; see Hydroquinone.....				
Diisobutyl ketone.....	108-83-8	50	290	
Diisopropylamine.....	108-18-9	5	20	X
4-Dimethylaminoazo- benzene; see 1910.1015.....	60-11-7			
Dimethoxymethane; see Methylal.....				
Dimethyl acetamide.....	127-19-5	10	35	X
Dimethylamine.....	124-40-3	10	18	
Dimethylaminobenzene; see Xylidine.....				
Dimethylaniline (N,N-Dimethylaniline)	121-69-7	5	25	X
Dimethylbenzene; see Xylene.....				
Dimethyl-1,2-dibromo-2, 2-dichloroethyl phosphate.....	300-76-5	.....	3	
Dimethylformamide.....	68-12-2	10	30	X
2,6-Dimethyl-4- heptanone; see				

Diisobutyl ketone.....|					
1,1-Dimethylhydrazine..|	57-14-7	0.5	1		X
Dimethylphthalate.....|	131-11-3	.....	5		
Dimethyl sulfate.....|	77-78-1	1	5		X
Dinitrobenzene					
(all isomers).....|			1		X
(ortho).....|	528-29-0				
(meta).....|	99-65-0				
(para).....|	100-25-4				
Dinitro-o-cresol.....|	534-52-1	.....	0.2		X
Dinitrotoluene.....|	25321-14-6	.....	1.5		X
Dioxane					
(Diethylene dioxide)..|	123-91-1	100	360		X
Diphenyl (Biphenyl)....|	92-52-4	0.2	1		
Diphenylmethane					
diisocyanate; see					
Methylene bisphenyl					
isocyanate.....|					
Dipropylene glycol					
methyl ether.....|	34590-94-8	100	600		X
Di-sec octyl phthalate					
(Di-(2-ethylhexyl)					
phthalate).....|	117-81-7	.....	5		
Emery.....|	12415-34-8				
Total dust.....|		.....	15		
Respirable fraction..|		.....	5		
Endrin.....|	72-20-8	.....	0.1		X
Epichlorohydrin.....|	106-89-8	5	19		X
EPN.....|	2104-64-5	.....	0.5		X
1,2-Epoxypropane; see					
Propylene oxide.....|					
2,3-Epoxy-1-propanol;					
see Glycidol.....|					
Ethanethiol; see					
Ethyl mercaptan.....|					
Ethanolamine.....|	141-43-5	3	6		
2-Ethoxyethanol					
(Cellosolve).....|	110-80-5	200	740		X
2-Ethoxyethyl acetate					
(Cellosolve acetate)..|	111-15-9	100	540		X
Ethyl acetate.....|	141-78-6	400	1400		
Ethyl acrylate.....|	140-88-5	25	100		X
Ethyl alcohol (Ethanol)|	64-17-5	1000	1900		
Ethylamine.....|	75-04-7	10	18		
Ethyl amyl ketone					
(5-Methyl-3-					
heptanone).....|	541-85-5	25	130		
Ethyl benzene.....|	100-41-4	100	435		
Ethyl bromide.....|	74-96-4	200	890		
Ethyl butyl ketone					
(3-Heptanone).....|	106-35-4	50	230		
Ethyl chloride.....|	75-00-3	1000	2600		
Ethyl ether.....|	60-29-7	400	1200		
Ethyl formate.....|	109-94-4	100	300		
Ethyl mercaptan.....|	75-08-1	(C)10	(C)25		
Ethyl silicate.....|	78-10-4	100	850		
Ethylene chlorohydrin..|	107-07-3	5	16		X
Ethylenediamine.....|	107-15-3	10	25		
Ethylene dibromide.....|	106-93-4		(2)		
Ethylene dichloride					
(1,2-Dichloroethane)..|	107-06-2		(2)		
Ethylene glycol					

dinitrate.....	628-96-6	(C) 0.2	(C) 1	X
Ethylene glycol methyl acetate; see Methyl cellosolve acetate...				
Ethyleneimine; see 1910.1012.....	151-56-4			
Ethylene oxide; see 1910.1047.....	75-21-8			
Ethylidene chloride; see 1,1-Dichlorethane				
N-Ethylmorpholine.....	100-74-3	20	94	X
Ferbam.....	14484-64-1			
Total dust.....			15	
Ferrovandium dust.....	12604-58-9		1	
Fluorides (as F).....	(4)		2.5	
Fluorine.....	7782-41-4	0.1	0.2	
Fluorotrichloromethane (Trichloro-fluoromethane).....	75-69-4	1000	5600	
Formaldehyde; see 1910.1048.....	50-00-0			
Formic acid.....	64-18-6	5	9	
Furfural.....	98-01-1	5	20	X
Furfuryl alcohol.....	98-00-0	50	200	
Grain dust (oat, wheat barley).....			10	
Glycerin (mist).....	56-81-5			
Total dust.....			15	
Respirable fraction..			5	
Glycidol.....	556-52-5	50	150	
Glycol monoethyl ether; see 2-Ethoxyethanol..				
Graphite, natural respirable dust.....	7782-42-5		(3)	
Graphite, synthetic....				
Total dust.....			15	
Respirable Fraction..			5	
Guthion; see Azinphos methyl..				
Gypsum.....	13397-24-5			
Total dust.....			15	
Respirable fraction..			5	
Hafnium.....	7440-58-6		0.5	
Heptachlor.....	76-44-8		0.5	X
Heptane (n-Heptane)....	142-82-5	500	2000	
Hexachloroethane.....	67-72-1	1	10	X
Hexachloronaphthalene..	1335-87-1		0.2	X
n-Hexane.....	110-54-3	500	1800	
2-Hexanone (Methyl n-butyl ketone).....	591-78-6	100	410	
Hexone (Methyl isobutyl ketone).....	108-10-1	100	410	
sec-Hexyl acetate.....	108-84-9	50	300	
Hydrazine.....	302-01-2	1	1.3	X
Hydrogen bromide.....	10035-10-6	3	10	
Hydrogen chloride.....	7647-01-0	(C) 5	(C) 7	
Hydrogen cyanide.....	74-90-8	10	11	X
Hydrogen fluoride (as F).....	7664-39-3		(2)	
Hydrogen peroxide.....	7722-84-1	1	1.4	
Hydrogen selenide (as Se).....	7783-07-5	0.05	0.2	

Hydrogen sulfide.....	7783-06-4		(2)	
Hydroquinone.....	123-31-9	.....	2	
Iodine.....	7553-56-2	(C) 0.1	(C) 1	
Iron oxide fume.....	1309-37-1	.....	10	
Isomyl acetate.....	123-92-2	100	525	
Isomyl alcohol				
(primary and				
secondary).....	123-51-3	100	360	
Isobutyl acetate.....	110-19-0	150	700	
Isobutyl alcohol.....	78-83-1	100	300	
Isophorone.....	78-59-1	25	140	
Isopropyl acetate.....	108-21-4	250	950	
Isopropyl alcohol.....	67-63-0	400	980	
Isopropylamine.....	75-31-0	5	12	
Isopropyl ether.....	108-20-3	500	2100	
Isopropyl glycidyl				
ether (IGE).....	4016-14-2	50	240	
Kaolin.....	1332-58-7			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Ketene.....	463-51-4	0.5	0.9	
Lead inorganic (as Pb);				
see 1910.1025.....	7439-92-1			
Limestone.....	1317-65-3			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Lindane.....	58-89-9	.....	0.5	X
Lithium hydride.....	7580-67-8	.....	0.025	
L.P.G. (Liquified				
petroleum gas).....	68476-85-7	1000	1800	
Magnesite.....	546-93-0			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Magnesium oxide fume...	1309-48-4			
Total Particulate....		.....	15	
Malathion.....	121-75-5			
Total dust.....		.....	15	X
Maleic anhydride.....	108-31-6	0.25	1	
Manganese compounds				
(as Mn).....	7439-96-5	.....	(C) 5	
Manganese fume (as Mn)..	7439-96-5	.....	(C) 5	
Marble.....	1317-65-3			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Mercury (aryl and				
inorganic) (as Hg)....	7439-97-6		(2)	
Mercury (organo) alkyl				
compounds (as Hg)....	7439-97-6		(2)	
Mercury (vapor) (as Hg)|	7439-97-6		(2)	
Mesityl oxide.....	141-79-7	25	100	
Methanethiol;				
see Methyl mercaptan..				
Methoxychlor.....	72-43-5			
Total dust.....		.....	15	
2-Methoxyethanol;				
(Methyl cellosolve)..	109-86-4	25	80	X
2-Methoxyethyl acetate				
(Methyl cellosolve				
acetate).....	110-49-6	25	120	X
Methyl acetate.....	79-20-9	200	610	
Methyl acetylene				
(Propyne).....	74-99-7	1000	1650	

Methyl acetylene					
propadiene mixture					
(MAPP).....		1000	1800		
Methyl acrylate.....	96-33-3	10	35		X
Methylal					
(Dimethoxy-methane)...	109-87-5	1000	3100		
Methyl alcohol.....	67-56-1	200	260		
Methylamine.....	74-89-5	10	12		
Methyl amyl alcohol;					
see Methyl Isobutyl					
carbinol.....					
Methyl n-amyl ketone...	110-43-0	100	465		
Methyl bromide.....	74-83-9	(C) 20	(C) 80		X
Methyl butyl ketone;					
see 2-Hexanone.....					
Methyl cellosolve;					
see 2-Methoxyethanol.					
Methyl cellosolve					
acetate;					
see 2-Methoxyethyl					
acetate.....					
Methyl chloride.....	74-87-3		(2)		
Methyl chloroform					
(1,1,1-Trichloro-					
ethane).....	71-55-6	350	1900		
Methylcyclohexane.....	108-87-2	500	2000		
Methylcyclohexanol.....	25639-42-3	100	470		
o-Methylcyclohexanone..	583-60-8	100	460		X
Methylene chloride.....	75-09-2		(2)		
Methyl ethyl ketone					
(MEK); see 2-Butanone					
Methyl formate.....	107-31-3	100	250		
Methyl hydrazine					
(Monomethyl					
hydrazine).....	60-34-4	(C) 0.2	(C) 0.35		X
Methyl iodide.....	74-88-4	5	28		X
Methyl isoamyl ketone..	110-12-3	100	475		
Methyl isobutyl					
carbinol.....	108-11-2	25	100		X
Methyl isobutyl ketone;					
see Hexone.....					
Methyl isocyanate.....	624-83-9	0.02	0.05		X
Methyl mercaptan.....	74-93-1	(C) 10	(C) 20		
Methyl methacrylate....	80-62-6	100	410		
Methyl propyl ketone;					
see 2-Pentanone.....					
alpha-Methyl styrene...	98-83-9	(C) 100	(C) 480		
Methylene bisphenyl					
isocyanate (MDI).....	101-68-8	(C) 0.02	(C) 0.2		
Mica; see Silicates....					
Molybdenum (as Mo).....	7439-98-7				
Soluble compounds....		.....	5		
Insoluble Compounds					
Total dust.....		.....	15		
Monomethyl aniline.....	100-61-8	2	9		X
Monomethyl hydrazine;					
see Methyl hydrazine.					
Morpholine.....	110-91-8	20	70		X
Naphtha (Coal tar).....	8030-30-6	100	400		
Naphthalene.....	91-20-3	10	50		
alpha-Naphthylamine;					
see 1910.1004.....	134-32-7				

beta-Naphthylamine;					
see 1910.1009.....	91-59-8				
Nickel carbonyl (as Ni)	13463-39-3	0.001	0.007		
Nickel, metal and insoluble compounds					
(as Ni).....	7440-02-0	.....	1		
Nickel, soluble compounds (as Ni)....	7440-02-0	.....	1		
Nicotine.....	54-11-5	.....	0.5	X	
Nitric acid.....	7697-37-2	2	5		
Nitric oxide.....	10102-43-9	25	30		
p-Nitroaniline.....	100-01-6	1	6	X	
Nitrobenzene.....	98-95-3	1	5	X	
p-Nitrochlorobenzene...	100-00-5	.....	1	X	
4-Nitrodiphenyl;					
see 1910.1003.....	92-93-3				
Nitroethane.....	79-24-3	100	310		
Nitrogen dioxide.....	10102-44-0	(C) 5	(C) 9		
Nitrogen trifluoride...	7783-54-2	10	29		
Nitroglycerin.....	55-63-0	(C) 0.2	(C) 2	X	
Nitromethane.....	75-52-5	100	250		
1-Nitropropane.....	108-03-2	25	90		
2-Nitropropane.....	79-46-9	25	90		
N-Nitrosodimethylamine;					
see 1910.1016					
Nitrotoluene					
(all isomers).....		5	30	X	
o-isomer.....	88-72-2				
m-isomer.....	99-08-1				
p-isomer.....	99-99-0				
Nitrotrichloromethane;					
see Chloropicrin.....					
Octachloronaphthalene..	2234-13-1	.....	0.1	X	
Octane.....	111-65-9	500	2350		
Oil mist, mineral.....	8012-95-1	.....	5		
Osmium tetroxide					
(as Os).....	20816-12-0	.....	0.002		
Oxalic acid.....	144-62-7	.....	1		
Oxygen difluoride.....	7783-41-7	0.05	0.1		
Ozone.....	10028-15-6	0.1	0.2		
Paraquat, respirable					
dust.....	4685-14-7	.....	0.5	X	
	1910-42-5				
	2074-50-2				
Parathion.....	56-38-2	.....	0.1	X	
Particulates not otherwise regulated					
(PNOR) (f).....					
Total dust.....		.....	15		
Respirable fraction..		.....	5		
PCB; see Chlorodiphenyl					
(42% and 54% chlorine).....					
Pentaborane.....	19624-22-7	0.005	0.01		
Pentachloronaphthalene.	1321-64-8	.....	0.5	X	
Pentachlorophenol.....	87-86-5	.....	0.5	X	
Pentaerythritol.....	115-77-5				
Total dust.....		.....	15		
Respirable fraction..		.....	5		
Pentane.....	109-66-0	1000	2950		
2-Pentanone (Methyl propyl ketone).....	107-87-9	200	700		

Perchloroethylene				
(Tetrachloroethylene)	127-18-4		(2)	
Perchloromethyl mercaptan.....	594-42-3	0.1	0.8	
Perchloryl fluoride....	7616-94-6	3	13.5	
Petroleum distillates				
(Naphtha) (Rubber Solvent).....		500	2000	
Phenol.....	108-95-2	5	19	X
p-Phenylene diamine....	106-50-3	.....	0.1	X
Phenyl ether, vapor....	101-84-8	1	7	
Phenyl ether-biphenyl mixture, vapor.....		1	7	
Phenylethylene; see Styrene.....				
Phenyl glycidyl ether (PGE).....	122-60-1	10	60	
Phenylhydrazine.....	100-63-0	5	22	X
Phosdrin (Mevinphos)....	7786-34-7	.....	0.1	X
Phosgene (Carbonyl chloride).....	75-44-5	0.1	0.4	
Phosphine.....	7803-51-2	0.3	0.4	
Phosphoric acid.....	7664-38-2	.....	1	
Phosphorus (yellow)....	7723-14-0	.....	0.1	
Phosphorus pentachloride.....	10026-13-8	.....	1	
Phosphorus pentasulfide	1314-80-3	.....	1	
Phosphorus trichloride.	7719-12-2	0.5	3	
Phthalic anhydride.....	85-44-9	2	12	
Picloram.....	1918-02-1			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Picric acid.....	88-89-1	.....	0.1	X
Pindone (2-Pivalyl-1, 3-indandione).....	83-26-1	.....	0.1	
Plaster of paris.....	26499-65-0			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Platinum (as Pt).....	7440-06-4			
Metal.....		.....	.....
Soluble Salts.....		.....	0.002	
Portland cement.....	65997-15-1			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Propane.....	74-98-6	1000	1800	
beta-Propriolactone; see 1910.1013.....	57-57-8			
n-Propyl acetate.....	109-60-4	200	840	
n-Propyl alcohol.....	71-23-8	200	500	
n-Propyl nitrate.....	627-13-4	25	110	
Propylene dichloride....	78-87-5	75	350	
Propylene imine.....	75-55-8	2	5	X
Propylene oxide.....	75-56-9	100	240	
Propyne; see Methyl acetylene.....				
Pyrethrum.....	8003-34-7	.....	5	
Pyridine.....	110-86-1	5	15	
Quinone.....	106-51-4	0.1	0.4	
RDX: see Cyclonite.....				
Rhodium (as Rh), metal fume and insoluble compounds.....	7440-16-6	.....	0.1	

Rhodium (as Rh),				
soluble compounds....	7440-16-6	.....	0.001	
Ronnel.....	299-84-3	.....	15	
Rotenone.....	83-79-4	.....	5	
Rouge.....				
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Selenium compounds				
(as Se).....	7782-49-2	.....	0.2	
Selenium hexafluoride				
(as Se).....	7783-79-1	0.05	0.4	
Silica, amorphous,				
precipitated and gel.	112926-00-8		(3)	
Silica, amorphous,				
diatomaceous earth,				
containing less than				
1% crystalline silica	61790-53-2		(3)	
Silica, crystalline				
cristobalite,				
respirable dust.....	14464-46-1		(3)	
Silica, crystalline				
quartz, respirable				
dust.....	14808-60-7		(3)	
Silica, crystalline				
tripoli (as quartz),				
respirable dust.....	1317-95-9		(3)	
Silica, crystalline				
tridymite,				
respirable dust.....	15468-32-3		(3)	
Silica, fused,				
respirable dust.....	60676-86-0		(3)	
Silicates (less than 1%				
crystalline silica)				
Mica (respirable				
dust).....	12001-26-2		(3)	
Soapstone, total dust	.....		(3)	
Soapstone, respirable				
dust.....	.....		(3)	
Talc (containing				
asbestos): use				
asbestos limit: see				
29 CFR 1910.1001.....			(3)	
Talc (containing no				
asbestos),				
respirable dust.....	14807-96-6		(3)	
Tremolite,				
asbestiform; see				
1910.1001.....				
Silicon.....	7440-21-3			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Silicon carbide.....	409-21-2			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Silver, metal and				
soluble compounds				
(as Ag).....	7440-22-4	.....	0.01	
Soapstone;				
see Silicates.....				
Sodium fluoroacetate...	62-74-8	.....	0.05	X
Sodium hydroxide.....	1310-73-2	.....	2	
Starch.....	9005-25-8			

Total dust.....			15	
Respirable fraction..			5	
Stibine.....	7803-52-3	0.1	0.5	
Stoddard solvent.....	8052-41-3	500	2900	
Strychnine.....	57-24-9		0.15	
Styrene.....	100-42-5		(2)	
Sucrose.....	57-50-1			
Total dust.....			15	
Respirable fraction..			5	
Sulfur dioxide.....	7446-09-5	5	13	
Sulfur hexafluoride....	2551-62-4	1000	6000	
Sulfuric acid.....	7664-93-9		1	
Sulfur monochloride....	10025-67-9	1	6	
Sulfur pentafluoride...	5714-22-7	0.025	0.25	
Sulfuryl fluoride.....	2699-79-8	5	20	
Systox; see Demeton...				
2,4,5-T (2,4,5-tri- chlorophenoxyacetic acid).....	93-76-5		10	
Talc; see Silicates...				
Tantalum, metal and oxide dust.....	7440-25-7		5	
TEDP (Sulfotep).....	3689-24-5		0.2	X
Tellurium and compounds (as Te)....	13494-80-9		0.1	
Tellurium hexafluoride (as Te).....	7783-80-4	0.02	0.2	
Temephos.....	3383-96-8			
Total dust.....			15	
Respirable fraction..			5	
TEPP (Tetraethyl pyrophosphaate).....	107-49-3		0.05	X
Terphenylis.....	26140-60-3	(C)1	(C)9	
1,1,1,2-Tetrachloro-2, 2-difluoroethane....	76-11-9	500	4170	
1,1,2,2-Tetrachloro-1, 2-difluoroethane....	76-12-0	500	4170	
1,1,2,2-Tetrachloro- ethane.....	79-34-5	5	35	X
Tetrachoroethylene; see Perchloroethylene				
Tetrachloromethane; see Carbon tetrachloride.				
Tetrachloronaphthalene.	1335-88-2		2	X
Tetraethyl lead (as Pb)	78-00-2		0.075	X
Tetrahydrofuran.....	109-99-9	200	590	
Tetramethyl lead, (as Pb).....	75-74-1		0.075	X
Tetramethyl succinonitrile.....	3333-52-6	0.5	3	X
Tetranitromethane.....	509-14-8	1	8	
Tetryl (2,4,6-Trinitro- phenylmethyl- nitramine).....	479-45-8		1.5	X
Thallium, soluble compounds (as Tl)....	7440-28-0		0.1	X
4,4'-Thiobis(6-tert, Butyl-m-cresol).....	96-69-5			
Total dust.....			15	
Respirable fraction..			5	
Thiram.....	137-26-8		5	
Tin, inorganic				

compounds (except oxides) (as Sn).....	7440-31-5	.....	2	
Tin, organic compounds (as Sn).....	7440-31-5	.....	0.1	
Titanium dioxide.....	13463-67-7			
Total dust.....		.....	15	
Toluene.....	108-88-3		(2)	
Toluene-2, 4-diisocyanate (TDI)..	584-84-9	(C) 0.02	(C) 0.14	
o-Toluidine.....	95-53-4	5	22	X
Toxaphene; see Chlorinated camphene.				
Tremolite; see Silicates.....				
Tributyl phosphate.....	126-73-8	.....	5	
1,1,1-Trichloroethane; see Methyl chloroform				
1,1,2-Trichloroethane..	79-00-5	10	45	X
Trichloroethylene.....	79-01-6		(2)	
Trichloromethane; see Chloroform				
Trichloronaphthalene...	1321-65-9	.....	5	X
1,2,3-Trichloropropane.	96-18-4	50	300	
1,1,2-Trichloro-1,2, 2-trifluoroethane....	76-13-1	1000	7600	
Triethylamine.....	121-44-8	25	100	
Trifluorobromomethane..	75-63-8	1000	6100	
2,4,6-Trinitrophenol; see Picric acid.....				
2,4,6-Trinitrophenyl- methyl nitramine; see Tetryl.....				
2,4,6-Trinitrotoluene (TNT).....	118-96-7	.....	1.5	X
Triorthocresyl phosphate.....	78-30-8	.....	0.1	
Triphenyl phosphate....	115-86-6	.....	3	
Turpentine.....	8006-64-2	100	560	
Uranium (as U).....	7440-61-1			
Soluble compounds....		.....	0.05	
Insoluble compounds..		.....	0.25	
Vanadium.....	1314-62-1			
Respirable dust (as V ₂ O ₅).....		.....	(C) 0.5	
Fume (as V ₂ O ₅).....		.....	(C) 0.1	
Vegetable oil mist.....				
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Vinyl benzene; see Styrene.....				
Vinyl chloride; see 1910.1017.....	75-01-4			
Vinyl cyanide; see Acrylonitrile				
Vinyl toluene.....	25013-15-4	100	480	
Warfarin.....	81-81-2	.....	0.1	
Xylenes (o-, m-, p-isomers)..	1330-20-7	100	435	
Xylidine.....	1300-73-8	5	25	X
Yttrium.....	7440-65-5	.....	1	
Zinc chloride fume.....	7646-85-7	.....	1	
Zinc oxide fume.....	1314-13-2	.....	5	

Zinc oxide.....	1314-13-2			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Zinc stearate.....	557-05-1			
Total dust.....		.....	15	
Respirable fraction..		.....	5	
Zirconium compounds				
(as Zr).....	7440-67-7	.....	5	

Footnote(1) The PELs are 8-hour TWAs unless otherwise noted; a (C) designation denotes a ceiling limit. They are to be determined from breathing-zone air samples.

Footnote(a) Parts of vapor or gas per million parts of contaminated air by volume at 25 degrees C and 760 torr.

Footnote(b) Milligrams of substance per cubic meter of air. When entry is in this column only, the value is exact; when listed with a ppm entry, it is approximate.

Footnote(c) The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than one metal compound measured as the metal, the CAS number for the metal is given - not CAS numbers for the individual compounds.

Footnote(d) The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except in some circumstances the distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures; for the excepted subsegments, the benzene limits in Table Z-2 apply. See 1910.1028 for specific circumstances.

Footnote(e) This 8-hour TWA applies to respirable dust as measured by a vertical elutriator cotton dust sampler or equivalent instrument. The time-weighted average applies to the cotton waste processing operations of waste recycling (sorting, blending, cleaning and willowing) and garnetting. See also 1910.1043 for cotton dust limits applicable to other sectors.

Footnote(f) All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.

Footnote(2) See Table Z-2.

Footnote(3) See Table Z-3

Footnote(4) Varies with compound.

Footnote(5) See Table Z-2 for the exposure limits for any operations or sectors where the exposure limits in 1910.1026 are stayed or are otherwise not in effect.

[54 FR 36767, Sept. 5, 1989; 54 FR 41244, Oct. 6, 1989; 55 FR 3724, Feb. 5, 1990; 55 FR 12819, Apr 6, 1990; 55 FR 19259, May 9, 1990; 55 FR 46950, Nov. 8, 1990; 57 FR 29204, July 1, 1992; 57 FR 42388, Sept. 14, 1992; 58 FR 35340, June 30, 1993; 61 FR 56746, Nov. 4, 1996; 62 FR 42018, August 4, 1997; 71 FR 10373, Feb. 28, 2006]

➤ [Next Standard \(1910.1000 TABLE Z-2\)](#)

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