

**TABLE Z-1 LIMITS FOR AIR CONTAMINANTS**

Substance	CAS No. (d)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Acetaldehyde	75-07-0	100	180	150	270			
Acetic acid	64-19-7	10	25					
Acetic anhydride	108-24-7					5	20	
Acetone	67-64-1	750	1800	1000	2400			
Acetonitrile	75-05-8	40	70	60	105			
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	0.3	0.8			
Acrylamide	79-06-1		0.03					X
Acrylonitrile; see 1910.1045	107-13-1							
Aldrin	309-00-2		0.25					X
Allyl alcohol	107-18-6	2	5	4	10			X
Allyl chloride	107-05-1	1	3	2	6			
Allyl glycidyl ether (AGE)	106-92-3	5	22	10	44			
Allyl propyl disulfide	2179-59-1	2	12	3	18			
alpha-Alumina Total dust Respirable fraction	1344-28-1		10 5					
Aluminum (as Al) Metal Total dust Respirable fraction Pyro powders Welding fumes* Soluble salts Alkyls	7429-90-5		15 5 5 5 2 2					
4-Aminodiphenyl; see 1910.1011	92-67-1							
2-Aminoethanol; see Ethanolamine								
2-Aminopyridine	504-29-0	0.5	2					
Amitrole	61-82-5		0.2					
Ammonia	7664-41-7			35	27			
Ammonium sulfamate Total dust Respirable fraction	7773-06-0		10 5					
n-Amyl acetate	628-63-7	100	525					
sec-Amyl acetate	626-38-0	125	650					
Aniline and homologs	62-53-3	2	8					X
Anisidine (o-,p-isomers)	29191-52-4		0.5					X
Antimony and compounds (as Sb)	7440-36-0		0.5					
ANTU (alpha Naphthyl-thiourea)	86-88-4		0.3					

Substance	CAS No. (f)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
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 and 1926.1101	Varies							
Atrazine	1912-24-9		5					
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		10 5					
Benomyl Total dust Respirable fraction	17804-35-2		10 5					
Benzene; See 1910.1028 See Table Z-2 for the limits applicable in the Operations or sectors excluded in 1910.1028 <sup>e</sup>	71-43-2							
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		Table Z-2		Table Z-2		Table Z-2	
Biphenyl; see Diphenyl								
Bismuth telluride, Undoped Total dust Respirable fraction	1304-82-1		15 5					
Bismuth telluride, Se-doped			5					
Borates, tetra, sodium salts Anhydrous Decahydrate Pentahydrate	1330-43-4 1303-96-4 12179-04-3		10 10 10					
Boron oxide Total dust	1303-86-2		10					
Boron tribromide	10294-33-4					1	10	
Boron trifluoride	7637-07-2					1	3	
Bromacil	314-40-9	1	10					
Bromine	7726-95-6	0.1	0.7	0.3	2			
Bromine pentafluoride	7789-30-2	0.1	0.7					
Bromoform	75-25-2	0.5	5					X
Butadiene (1,3-Butadiene)	106-99-0	1000	2200					
Butane	106-97-8	800	1900					

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		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Butanethiol; see Butyl mercaptan								
2-Butanone (Methyl ethyl ketone)	78-93-3	200	590	300	885			
2-Butoxyethanol	111-76-2	25	120					X
n-Butyl-acetate	123-86-4	150	710	200	950			
sec-Butyl acetate	105-46-4	200	950					
tert-Butyl-acetate	540-88-5	200	950					
Butyl acrylate	141-32-2	10	55					
n-Butyl alcohol	71-36-3					50	150	X
sec-Butyl alcohol	78-92-2	100	305					
tert-Butyl alcohol	75-65-0	100	300	150	450			
Butylamine	109-73-9					5	15	X
tert-Butyl chromate (as CrO <sub>3</sub> )	1189-85-1						0.1	X
n-Butyl glycidyl ether (BGE)	2426-08-6	25	135					
n-Butyl lactate	138-22-7	5	25					
Butyl mercaptan	109-79-5	0.5	1.5					
o-sec-Butylphenol	89-72-5	5	30					X
p-tert-Butyltoluene	98-51-1	10	60	20	120			
Cadmium fume(as Cd)	7440-43-9		0.1				0.3	
Cadmium dust (as Cd)	7440-43-9		0.2				0.6	
Calcium Carbonate Total dust Respirable fraction	1317-65-3		15 5					
Calcium cyanamide	156-62-7		0.5					
Calcium hydroxide	1305-62-0		5					
Calcium oxide	1305-78-8		5					
Calcium silicate Total dust Respirable fraction	1344-95-2		15 5					
Calcium sulfate Total dust Respirable fraction	7778-18-9		15 5					
Camphor, synthetic	76-22-2		2					
Caprolactam Dust Vapor	105-60-2	5	1 20	10	3 40			
Captafol (Difolatan <sup>R</sup> )	2425-06-1		0.1					
Captan	133-06-2		5					
Carbaryl (Sevin <sup>R</sup> )	63-25-2		5					
Carbofuran (Furadan <sup>R</sup> )	1563-66-2		0.1					
Carbon black	1333-86-4		3.5					
Carbon dioxide	124-38-9	10000 <sup>f</sup>	18000	30000	54000			
Carbon disulfide	75-15-0	4	12	12	36			X

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Carbon monoxide	630-08-0	35	40			200	229	
Carbon tetrabromide	558-13-4	0.1	1.4	0.3	4			
Carbon tetrachloride	56-23-5	2	12.6					
Carbonyl fluoride	353-50-4	2	5	5	15			
Catechol (Pyrocatechol)	120-80-9	5	20					
Cellulose Total dust Respirable fraction	9004-34-6		15 5					
Cesium hydroxide	21351-79-1		2					
Chlordane	57-74-9		0.5					X
Chlorinated camphene	8001-35-2		0.5		1			X
Chlorinated diphenyl oxide	55720-99-5		0.5					
Chlorine	7782-50-5	0.5	1.5	1	3			
Chlorine dioxide	10049-04-4	0.1	0.3	0.3	0.9			
Chlorine trifluoride	7790-91-2					0.1	0.4	
Chloroacetaldehyde	107-20-0					1	3	
a-Chloroacetophenone (Phenacyl chloride)	532-27-4	0.05	0.3					
Chloroacetyl chloride	79-04-9	0.05	0.2					
Chlorobenzene	108-90-7	75	350					
o-Chlorobenzylidene malononitrile	2698-41-1					0.05	0.4	X
Chlorobromomethane	74-97-5	200	1050					
2-Chloro-1,3-butadiene; see b-Chloroprene								
Chlorodifluoromethane	75-45-6	1000	3500					
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	2	9.78					
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	2	10					
Chloropentafluoroethane	76-15-3	1000	6320					
Chloropicrin	76-06-2	0.1	0.7					
beta-Chloroprene	126-99-8	10	35					X
o-Chlorostyrene	2039-87-4	50	285	75	428			
0-Chlorotoluene	95-49-8	50	250					
2-Chloro-6-trichloro-methyl) pyridine Total dust Respirable fraction	1929-82-4		15 5					
Chlorpyrifos	2921-88-2		0.2					X
Chromic acid and chromates (as CrO <sub>3</sub> )	7440-47-3					0.1		

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Chromium (II) compounds (as Cr)	7440-47-3		0.5					
Chromium (III) compounds (as Cr)	7440-47-3		0.5					
Chromium metal (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 <sub>2</sub> ), Respirable fraction			2					
Coal dust (greater than or equal to 5% SiO <sub>2</sub> ), Respirable quartz fraction			0.1					
Coal tar pitch volatiles (benzene fraction), anthracene, BaP, phenanthrene, acridine, chrysene, pyrene.	65996-93-2		0.2					
Cobalt metal, dust, and fume (as Co)	7440-48-4		0.05					
Cobalt carbonyl (as Co)	10210-68-1		0.1					
Cobalt hydrocarbonyl (as Co)	16842-03-8		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 (raw)			1					
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 garneting. See also 1910.1043 for cotton dust limits applicable to other sectors.								
Crag herbicide (Sesone)	136-78-7							
Total dust			10					
Respirable fraction			5					
Cresol, all isomers	1319-77-3	5	22					X
Crotonaldehyde	123-73-9; 4170-30-3	2	6					
Crufomate	299-86-5		5					
Cumene	98-82-8	50	245					X
Cyanamide	420-04-2		2					
Cyanides (as CN)	Varies with compound		5					
Cyanogen	460-19-5	10	20					
Cyanogen chloride	506-77-4					0.3	0.6	
Cyclohexane	110-82-7	300	1050					
Cyclohexanol	108-93-0	50	200					X
Cyclohexanone	108-94-1	25	100					X
Cyclohexene	110-83-8	300	1015					

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Cyclohexylamine	108-91-8	10	40					
Cyclonite	121-82-4		1.5					X
Cyclopentadiene	542-92-7	75	200					
Cyclopentane	287-92-3	600	1720					
Cyhexatin	13121-70-5		5					
2,4-D (Dichlorophenoxyacetic acid)	94-75-7		10					
Decaborane	17702-41-9	0.05	0.3	0.15	0.9			X
Demeton (Systox <sup>R</sup> )	8065-48-3		0.1					X
Dichlorodiphenyltrichloroethane (DDT)	50-29-3		1					X
Dichlorvos (DDVP)	62-73-7		1					X
Diacetone alcohol (4-Hydroxy-4-methyl-2-pentanone)	123-42-2	50	240					
1,2-Diaminoethane; see Ethylenediamine								
Diazinon	333-41-5		0.1					X
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							
2-N-Dibutyleaminoethanol	102-81-8	2	14					
Dibutyl phosphate	107-66-4	1	5	2	10			
Dibutyl phthalate	84-74-2		5					
Dichloroacetylene	7572-29-4					0.1	0.4	
o-Dichlorobenzene	95-50-1					50	300	
p-Dichlorobenzene	106-46-7	75	450	110	675			
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		0.4			
1,1-Dichloroethane	75-34-3	100	400					
1,2-Dichloroethylene	540-59-0	200	790					
Dichloroethyl ether	111-44-4	5	30	10	60			X
Dichloromethane; see Methylene chloride								
Dichloromonofluoromethane	75-43-4	10	40					
1,1-Dichloro-1-nitroethane	594-72-9	2	10					
1,2-Dichloropropane; see Propylene dichloride								
1,3-Dichloropropane	542-75-6	1	5					
2,2-Dichloropropionic acid	75-99-0	1	6					
Dichlorotetrafluoroethane	76-14-2	1000	7000					
Dicrotophos	141-66-2		0.25					X
Dicyclopentadiene	77-73-6	5	30					
Dicyclopentadienyl iron Total dust Respirable fraction	102-54-5		10 5					
Dieldrin	60-57-1		.025					X
Diethanolamine	111-42-2	3	15					

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Diethylamine	109-89-7	10	30	25	75			
2-Diethylaminoethanol	100-37-8	10	50					X
Diethylene triamine	111-40-0	1	4					
Diethyl ether; see Ethyl ether								
Diethyl ketone	96-22-0	200	705					
Diethyl phthalate	84-66-2		5					
Difluorodibromomethane	75-61-6	100	860					
Diglycidyl ether (DGE)	2238-07-5	0.1	0.5					
Dihydroxybenzene; see Hydroquinone								
Diisobutyl ketone	108-83-8	25	150					
Diisopropylamine	108-18-9	5	20					X
4-Dimethylaminoazobenzene; 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-Dimethylaniline)	121-69-7	5	25	10	50			X
Dimethylbenzene; see Xylene								
Dimethyl-1,2-dibromo-2,2-dichloroethyl phosphate	300-76-5		3					X
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	0.1	0.5					X
Dinitolmide (3,5-Dinitro-o-toluamide)	148-01-6		5					
Dinitrobenzene (all isomers)								
alpha	528-29-0		1					X
meta	99-65-0		1					X
para	100-25-4		1					X
Dinitro-o-cresol	534-52-1		0.2					X
Dinitrotoluene	25321-14-6		1.5					X
Dioxane (Diethylene dioxide)	123-91-1	25	90					X
Dioxathion (Delnav)	78-34-2		0.2					X
Diphenyl (Biphenyl)	92-52-4	0.2	1					
Diphenylamine	122-39-4		10					
Diphenylmethane diisocyanate; see Methylene bisphenyl isocyanate								
Dipropylene glycol methyl ether	34590-94-8	100	600	150	900			X
Dipropyl ketone	123-19-3	50	235					
Diquat	85-00-7		0.5					
Di-sec octyl phthalate (Di-2-ethylhexyl-phthalate)	117-81-7		5		10			
Disulfram	97-77-8		2					





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Ethylidene norbornene	16219-75-3					5	25	
N-Ethylmorpholine	100-74-3	5	23					X
Fenamiphos	22224-92-6		0.1					X
Fensulfothion (Dasanit)	115-90-2		0.1					
Fenthion	55-38-9		0.2					X
Ferbam	14484-64-1							
Total dust			10					
Ferrovanadium dust	12604-58-9		1		3			
Fluorides (as F)	Varies with compound		2.5					
Fluorine	7782-41-4	0.1	0.2					
Fluorotrchloromethane (Trichlorofluoromethane)	75-69-4					1000	5600	
Fonofos	944-22-9		0.1					X
Formaldehyde; see 1910.1048; see Table Z-2 for operations or sectors excluded from 1910.1048 or for which limit(s) is(are) stayed.	50-00-0							
Formamide	75-12-7	20	30	30	45			
Formic acid	64-18-6	5	9					
Furfural	98-01-1	2	8					X
Furfuryl alcohol	98-00-0	10	40	15	60			X
Gasoline	8006-61-9	300	900	500	1500			
Germanium tetrahydride	7782-65-2	0.2	0.6					
Glutaraldehyde	111-30-8					0.2	0.8	
Glycerin (mist)	56-81-5							
Total dust			10					
Respirable fraction			5					
Glycidol	556-52-5	25	75					
Glycol monoethyl ether; see 2-Ethoxyethanol								
Grain dust (oat, wheat, barley)			10					
Graphite, natural respirable dust	7782-42-5		2.5					
Graphite, synthetic								
Total dust			10					
Respirable fraction			5					
Guthion <sup>R</sup> ; 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	400	1600	500	2000			
Hexachlorobutadiene	87-68-3	0.02	0.24					
Hexachlorocyclo-pentadiene	77-47-4	0.01	0.1					

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Hexachloroethane	67-72-1	1	10					X
Hexachloronaphthalene	1335-87-1		0.2					X
Hexafluoroacetone	684-16-2	0.1	0.7					X
n-Hexane	110-54-3	50	180					
Hexane isomers	Varies with compound	500	1800	1000	3600			
2-Hexanone (Methyl n-butyl ketone)	591-78-6	5	20					
Hexone (Methyl isobutyl ketone)	108-10-1	50	205	75	300			
sec-Hexyl acetate	108-84-9	50	300					
Hexylene glycol	107-41-5					25	125	
Hydrazine	302-01-2	0.1	0.1					X
Hydrogenated terphenyls	61788-32-7	0.5	5					
Hydrogen bromide	10035-10-6					3	10	
Hydrogen chloride	7647-01-0					5	7	
Hydrogen cyanide	74-90-8			4.7	5			X
Hydrogen fluoride (as F)	7664-39-3	3		6				
Hydrogen peroxide	7722-84-1	1	1.4					
Hydrogen selenide (as Se)	7783-07-5	0.05	0.2					
Hydrogen sulfide	7783-06-4	10	14	15	21			
Hydroquinone	123-31-9		2					
2-Hydroxypropyl acrylate	999-61-1	0.5	3					X
Indene	95-13-6	10	45					
Indium and compounds (as In)	7440-74-6		0.1					
Iodine	7553-56-2					0.1	1	
Iodoform	75-47-8	0.6	10					
Iron oxide dust and fume (as Fe) Total particulate	1309-37-1		10					
Iron pentacarbonyl (as Fe)	13463-40-6	0.1	0.8	0.2	1.6			
Iron salts (soluble) (as Fe)	Varies with compound		1					
Isomyl acetate	123-92-2	100	525					
Isomyl alcohol (primary and secondary)	123-51-3	100	360	125	450			
Isobutyl acetate	110-19-0	150	700					
Isobutyl alcohol	78-83-1	50	150					
Isooctyl alcohol	26952-21-6	50	270					X
Isophorone	78-59-1	4	23					
Isophorone diisocyanate	4098-71-6	0.005		0.02				X
2-isopropoxyethanol	109-59-1	25	105					
Isopropyl acetate	108-21-4	250	950	310	1185			
Isopropyl alcohol	67-63-0	400	980	500	1225			
Isopropylamine	75-31-0	5	12	10	24			
N-isopropylaniline	768-52-5	2	10					X

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Isopropyl ether	108-20-3	500	2100					
Isopropyl glycidyl ether (IGE)	4016-14-2	50	240	75	360			
Kaolin								
Total dust			10					
Respirable fraction			5					
Ketene	463-51-4	0.5	0.9	1.5	3			
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			10					
Malathion	121-75-5							
Total dust			10					X
Maleic anhydride	108-31-6	0.25	1					
Manganese compounds (as Mn)	7439-96-5						5	
Manganese fume (as Mn)	7439-96-5		1		3			
Manganese cyclopenta-dienyl tricarbonyl (as Mn)	12079-65-1		0.1					X
Manganese tetroxide (as Mn)	1317-35-7		1					
Marble	1317-65-3							
Total dust			15					
Respirable fraction			5					
Mercury (aryl and inorganic)(as Hg)	7439-97-6						0.1	X
Mercury (organo) alkyl compounds (as Hg)	7439-97-6		0.01		0.03			X
Mercury (vapor) (as Hg)	7439-97-6		0.05					X
Mesityl oxide	141-79-7	15	60	25	100			
Methacrylic acid	79-41-4	20	70					X
Methanethiol; see Methyl mercaptan								
Methomyl (Lannate)	16752-77-5		2.5					
Methoxychlor	72-43-5							
Total dust			10					
2-Methoxyethanol; see Methyl cellosolve								
4-Methoxyphenol	150-76-5		5					
Methyl acetate	79-20-9	200	610	250	760			
Methyl acetylene (Propyne)	74-99-7	1000	1650					
Methyl acetylene propadiene mixture (MAPP)		1000	1800	1250	2250			



Substance	CAS No. (f)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Molybdenum (as Mo) Soluble compounds Insoluble Compounds Total dust	7439-98-7		5 10					
Monocrotophos (Azodrin <sup>R</sup> )	6923-22-4		0.25					
Monomethyl aniline	100-61-8	0.5	2					X
Morpholine	110-91-8	20	70	30	105			X
Naphtha (Coal tar)	8030-30-6	100	400					
Naphthalene	91-20-3	10	50	15	75			
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		0.1					
Nicotine	54-11-5		0.5					X
Nitric acid	7697-37-2	2	5	4	10			
Nitric oxide	10102-43-9	25	30					
p-Nitroaniline	100-01-6		3					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			1	1.8			
Nitrogen trifluoride	7783-54-2	10	29					
Nitroglycerin	55-63-0				0.1			X
Nitromethane	75-52-5	100	250					
1-Nitropropane	108-03-2	25	90					
2-Nitropropane	79-46-9	10	35					
N-Nitrosodimethylamine; see 1910.1016	62-75-9							
Nitrotoluene o-isomer m-isomer p-isomer	88-72-2 99-08-1 99-99-0	2	11					X
Nitrotrichloromethane; see Chloropicrin								
Nonane	111-84-2	200	1050					
Octachloronaphthalene	2234-13-1		0.1		0.3			X
Octane	111-65-9	300	1450	375	1800			
Oil mist, mineral	8012-95-1		5					
Osmium tetroxide (as Os)	20816-12-0	0.0002	0.002	0.0006	0.006			
Oxalic acid	144-62-7		1		2			
Oxygen difluoride	7783-41-7					0.05	0.1	
Ozone	10028-15-6	0.1	0.2	0.3	0.6			

Substance	CAS No. (f)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Paraffin wax fume	8002-74-2		2					
Paraquat, respirable dust	1910-42-5 4685-14-7 2074-50-2		0.1					X
Parathion	56-38-2		0.1					X
Particulates not otherwise regulated Total dust Respirable fraction			15 5					
Pentaborane	19624-22-7	0.005	0.01	0.015	0.03			
Pentachloronaphthalene	1321-64-8		0.5					X
Pentachlorophenol	87-86-5		0.5					X
Pentaerythritol Total dust Respirable fraction	115-77-5		10 5					
Pentane	109-66-0	600	1800	750	2250			
2-Pentanone (Methyl propyl ketone)	107-87-9	200	700	250	875			
Perchloroethylene (Tetrachloroethylene)	127-18-4	25	170					
Perchloromethyl mercaptan	594-42-3	0.1	0.8					
Perchloryl fluoride	7616-94-6	3	14	6	28			
Perlite Total dust Respirable fraction			15 5					
Petroleum distillates (Naphtha)	8002-05-9	400	1600					
Phenol	108-95-2	5	19					X
Phenothiazine	92-84-2		5					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	1	6					
Phenylhydrazine	100-63-0	5	20	10	45			X
Phenyl mercaptan	108-98-5	0.5	2					
Phenylphosphine	638-21-1					0.05	0.25	
Phorate	298-02-2		0.05		0.2			X
Phosdrin (Mevinphos <sup>R</sup> )	7786-34-7	0.01	0.1	0.03	0.3			X
Phosgene (Carbonyl chloride)	75-44-5	0.1	0.4					
Phosphine	7803-51-2	0.3	0.4	1	1			
Phosphoric acid	7664-38-2		1		3			
Phosphorus (yellow)	7723-14-0		0.1					
Phosphorus oxychloride	10025-87-3	0.1	0.6					
Phosphorus pentachloride	10026-13-8		1					
Phosphorus pentasulfide	1314-80-3		1		3			

Substance	CAS No. (f)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Phosphorus trichloride	7719-12-2	0.2	1.5	0.5	3			
Phthalic anhydride	85-44-9	1	6					
m-Phthalodinitrile	626-17-5		5					
Picloram Total dust Respirable fraction			10 5					
Picric acid	88-89-1		0.1					X
Poperazine dihydro-chloride	142-64-3		5					
Pindone (2-Pivalyl-1,3-indandione)	83-26-1		0.1					
Plaster of paris Total dust Respirable fraction	24699-65-0		15 5					
Platinum (as Pt) Metal Soluble salts	7440-06-4		1 0.002					
Portland cement Total dust Respirable fraction	65997-15-1		10 5					
Potassium hydroxide	1310-58-3						2	
Propane	74-98-6	1000	1800					
Propargyl alcohol	107-19-7	1	2					X
beta-Propriolactone; see 1910.1013	57-57-8							
Propionic acid	79-09-4	10	30					
Propoxur (Baygon)	114-26-1		0.5					
n-Propyl acetate	109-60-4	200	840	250	1050			
n-Propyl alcohol	71-23-8	200	500	250	625			
n-Propyl nitrate	627-13-4	25	105	40	170			
Propylene dichloride	78-87-5	75	350	110	510			
Propylene glycol dinitrate	6423-43-4	0.05	0.36					
Propylene glycol monomethyl ether	107-98-2	100	360	150	540			
Propylene imine	75-55-8	2	5					X
Propylene oxide	75-56-9	20	50					
Propyne; see Methyl acetylene								
Pyrethrum	8003-34-7		5					
Pyridine	110-86-1	5	15					
Quinone	106-51-4	0.1	0.4					
Resorcinol	108-46-3	10	45	20	90			
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		10					
Rosin core solder pyrolysis products, as formaldehyde			0.1					
Rotenone	83-79-4		5					

Substance	CAS No. (f)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Rouge Total dust Respirable fraction			10 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			6					
Silica, amorphous, diatomaceous earth, containing less than 1% crystalline silica	61790-53-2		6					
Silica, crystalline cristobalite, (as quartz), respirable dust	14464-46-1		0.05					
Silica, crystalline quartz, (as quartz) respirable dust	14808-60-7		0.1					
Silica, crystalline tripoli (as quartz), respirable dust	1317-95-9		0.1					
Silica, crystalline tridymite, (as quartz) respirable dust	15468-32-3		0.05					
Silica, fused, respirable dust	60676-86-0		0.1					
Silicates (less than 1% crystalline silica) Mica (respirable dust) Soapstone, total dust Soapstone, respirable dust Talc (containing asbestos); see 1910.1001 Talc (containing no asbestos), respirable dust Tremolite; see 1910.1101	12001-26-2		3 6 3 2					
Silicon Total dust Respirable fraction	7440-21-3		10 5					
Silicon carbide Total dust Respirable fraction	409-21-2		10 5					
Silicon tetrahydride Respirable fraction	7803-62-5	5	7					
Silver, metal and soluble compounds (as Ag)	7440-22-4		0.01					
Soapstone; see Silicates								
Sodium azide (as HN <sub>3</sub> ) (as NaN <sub>3</sub> )	26628-22-8					0.1	0.3	X X
Sodium bisulfite	7631-90-5		5					
Sodium fluoroacetate	62-74-8		0.05		0.15			X
Sodium hydroxide	1310-73-2						2	
Sodium metabisulfite	7681-57-4		5					



Substance	CAS No. (f)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Starch Total dust Respirable fraction	9005-25-8		15 5					
Stibine	7803-52-3	0.1	0.5					
Stoddard solvent	8052-41-3	100	525					
Strychnine	57-24-9		0.15					
Styrene	100-42-5	50	215	100	425			
Subtilisins (Proteolytic enzymes)	9014-01-1				0.00006 (60 min.) <sup>g</sup>			
Sucrose Total dust Respirable fraction	57-50-1		15 5					
Sulfur dioxide	7446-09-5	2	5	5	10			
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					0.01	0.1	
Sulfur tetrafluoride	7783-60-0					0.1	0.4	
Sulfuryl fluoride	2699-79-8	5	20	10	40			
Sulprofos	35400-43-2		1					
Systox <sup>R</sup> ; see Demeton								
2,4,5-T (2,4,5-trichlorophenoxyacetic acid)	93-76-5		10					
Talc; see Silicates								
Tantalum, metal and oxide dust	7440-25-7		5					
TEDP (Sulfotep)	3669-24-5		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 Total dust Respirable fraction	3383-96-8		10 5					
TEPP (Tetraethyl Pyrophosphate)	107-49-3		0.05					X
Terphenylis	26140-60-3					0.5	5	
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-Tetrachloroethane	79-34-5	1	7					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	250	735			



Substance	CAS No. (f)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
2,4,6-Trinitrophenylmethyl nitramine; see Tetryl								
2,4,6-Trinitrotoluene (TNT)	118-96-7		0.5					X
Triorthocresyl phosphate	78-30-8		0.1					X
Triphenyl amine	603-34-9		5					
Triphenyl phosphate	115-86-6		3					
Tungsten (as W)	7440-33-7							
Soluble compounds			5		10			
Insoluble compounds			1		3			
Turpentine	8006-64-2	100	560					
Uranium (as U)	7440-61-1							
Soluble compounds			0.05					
Insoluble compounds			0.2		0.6			
n-Valeraldehyde	110-62-3	50	175					
Vanadium	1314-62-1							
Respirable dust			0.05					
Fume (as V <sub>2</sub> O <sub>3</sub> )			0.05					
Vegetable oil mist								
Total dust			15					
Respirable fraction			5					
Vinyl acetate	108-05-4	10	30	20	60			
Vinyl benzene; see Styrene								
Vinyl bromide	593-60-2	5	20					
Vinyl chloride; see 1910.1017	75-01-4							
Vinyl cyanide; see Acrylonitrile								
Vinyl cyclohexene dioxide	106-87-6	10	60					X
Vinylidene chloride (1,1-Dichloroethylene)	75-34-4	1	4					
Vinyl toluene	25013-15-4	100	480					
VM & P Naphtha	8032-32-4	300	1350	400	1800			
Warfarin	81-81-2		0.1					
Welding fumes (total particulate)*			5					
Wood dust, all soft and hard woods, except Western red cedar			5		10			
Wood dust, Western red cedar			2.5					
Xylenes (o-, m-, p-isomers)	1330-20-7	100	435	150	655			
m-Xylene alpha, alpha'-diamine	1477-55-0						0.1	X
Xylidine	1300-73-8	2	10					X
Yttrium	7440-65-5		1					
Zinc chloride fume	7646-85-7		1		2			
Zinc chromate (as CrO <sub>3</sub> )	Varies with compound						0.1	
Zinc oxide fume	1314-13-2		5		10			

Substance	CAS No. (d)	TWA		STEL (c)		Ceiling		Skin desig- nation
		ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	ppm (a)	mg/m <sup>3</sup> (b)	
Zinc oxide Total dust Respirable fraction	1314-13-2		10 5					
Zinc stearate Total dust Respirable fraction	557-05-1		10 5					
Zirconium compounds (as Zr)	7440-67-7		5		10			

\* As 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) Duration is for 15 minutes, unless otherwise noted.

Footnote(d) 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(e) 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(f) Exposures to carbon dioxide under 10,000 ppm to be cited de minimus.

Footnote(g) Compliance with the subtilisins PEL is assessed by sampling with a high volume sampler (600-800 liters per minute) for at least 60 minutes.