

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		Ceiling <sup>(g)</sup>	STEL <sup>(o)</sup>		
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>	
75070		Acetaldehyde	25	45	C			
64197		Acetic acid	10	25	40 ppm	15	37	
108247		Acetic Anhydride	5	20	C			
67641		Acetone	500	1200	3000 ppm	750	1780	
75868		Acetone cyanohydrin as CN	4.7	5	C			
75058	S	Acetonitrile	40	70		60	105	
98862		Acetophenone	10	49				
53963	S	2-Acetylaminofluorene; N-fluoren-2-yl acetamide; see Section 5209						
74862		Acetylene	(h)					
540590		Acetylene dichloride; see 1,2-Dichloroethylene						
79276		Acetylene tetrabromide:1,1,2,2-tetrabromoethane	1	14				
79345		Acetylene tetrachloride; see 1,1,2,2-Tetrachloroethane						
50782		Acetylsalicylic acid (Aspirin)		5				
107028	S	Acrolein	0.1	0.25	C			
79061	S	Acrylamide	--	0.03				
79107	S	Acrylic acid	2	5.9				
107131	S	Acrylonitrile; see Section 5213	2	4.5				
124049		Adipic acid	--	5				
111693	S	Adiponitrile	2	8.8				
309002	S	Aldrin; 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-endo-1,2-exo-5,8-dimethanonaphthalene	--	0.25				
107186	S	Allyl alcohol	0.5	1.25		4	10	
107051		Allyl chloride	1	3		2	6	
106923	S	Allyl glycidyl ether; AGE	5	22		10	44	
2179591		Allyl propyl disulfide	2	12		3	18	
1344281		Alumina; see Particulates not otherwise regulated						
		Aluminum, alkyls (not otherwise classified)	--	2				
		Aluminum soluble salts	--	2				
		Aluminum metal and oxide	--					
		Total dust	--	10				
		Respirable fraction <sup>(n)</sup>	--	5 <sup>(n)</sup>				
		Aluminum pyro powders	--	5				
		Aluminum welding fumes	--	5				
300925		Aluminum distearate	--	10				
7047849		Aluminum stearate	--	10				
637127		Aluminum tristearate	--	10				
1300738		Aminodimethylbenzene; see Xylidene						
92671	S	4-Aminodiphenyl; see Section 5209						
141435		2-Aminoethanol; see Ethanolamine						
91598		2-Aminonaphthalene; see beta-Naphthylamine, Section 5209						
504290		2-Aminopyridine	0.5	2				
61825		Amitrole	--	0.2				
7664417		Ammonia	25	18		35	27	
3825261	S	Ammonium perfluorooctanoate	--	00.1				
12125029		Ammonium chloride fume	--	10		--	20	
1002897		Ammonium stearate	--	10				
7773060		Ammonium sulfamate	--					

Footnotes (a) through (t) at end of Table AC-1

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			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
620111		3-Amyl acetate; See Pentyl acetate					
628637		n-Amyl acetate; See Pentyl acetate					
626380		sec-Amyl acetate (all isomers and mixtures); See Pentyl acetate					
625161		tert-Amyl acetate; See Pentyl acetate					
62533	S	Aniline	2	7.6			
29191524	S	Anisidine (ortho and para isomers)	0.1	0.5			
		Antimony and compounds, as Sb	--	0.5			
86884		ANTU; 1-(1-naphthyl)-2-thiourea; Bantu; Rattract	--	0.3			
7440371		Argon	(h)				
7440382		Arsenic and inorganic arsenic compounds; see also Section 5214		0.01			
		Arsenic, organic compounds, as As	--	0.2			
7784421		Arsine; AsH <sub>3</sub>	0.05	0.2			
1332-21-4		Asbestos (including actinolite, amosite anthophyllite, chrysotile, crocidolite, and tremolite); see Section 5208					
8052424		Asphalt (petroleum) fumes	--	5			
1912249		Atrazine	--	5			
86500	S	Azinphos methyl; o,o-dimethyl S-(4-oxo-1,2,3- benzotriazin-3(4H)-ylmethyl) phosphorodithioate	--	0.2			
3333526	S	2,2'-Azobisisobutyronitrile decomposition product, see Tetramethyl succinonitrile					
7440393		Barium, soluble compounds, as Ba	--	0.5			
7727437		Barium sulfate; see Particulates not otherwise regulated					
17804352		Benomyl					
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
71432	S	Benzene; see also Section 5218	1			5	--
92875	S	Benzidine; 4,4'-diaminobiphenyl, see Section 5209					
71432		Benzol; see Benzene					
106514		D-Benzoquinone; see Quinone					
98884		Benzoyl chloride	0.2	1.1	C		
94360		Benzoyl peroxide; dibenzoyl peroxide	--	5			
140114		Benzyl acetate	10	61			
100447		benzyl chloride; alpha-chlorotoluene	1	5			
7440417		Beryllium, and beryllium compounds as Be	--	0.0002	0.025mg/M <sup>3</sup>	--	
92524		Biphenyl; diphenyl; phenylbenzene	0.2	1.5			
542881		Bis(chloromethyl) ether, see bis-Chloromethyl ether, Section 5209					
3033623	S	Bis (Dimethylaminoethyl) ether (DMAEE)	0.05	0.328		0.15	0.983
1304821		Bismuth telluride					
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
		Bismuth telluride (selenium-doped)	--	5			
		Borates, tetra, sodium salts					
		Anhydrous	--	5			
		Decahydrate	--	5			
		Pentahydrate	--	5			
1303862		Boron oxide	--	10			

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			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
10294334		Boron tribromide	1	10	C		
7637072		Boron trifluoride	1	3	C		
314409		Bromacil	1	10			
7726956		Bromine	0.1	0.7	C		
7789302		Bromine pentafluoride	0.1	0.7			
74975		Bromochloromethane; see Chlorobromomethane					
74964		Bromoethane; see Ethyl bromide					
75252	S	Bromoform; tribromomethane	0.5	5			
74839		Bromomethane, see Methyl bromide					
75638		Bromotrifluoromethane; see Trifluorobromomethane					
106990		1,3-Butadiene (see also section 5201)	1	2.2		5	11
106978		Butane	800	1,900			
109795		1-Butanethiol; see Butyl mercaptan					
71363		1-Butanol; see n-Butyl alcohol					
78933		2-Butanone; see Methyl ethyl ketone					
111762	S	2-Butoxyethanol (EGBE)	20	97			
123864		n-Butyl acetate	150	710		200	950
105464		sec-Butyl acetate	200	950			
540885		tert-Butyl acetate	200	950			
141322		Butyl acrylate	2	11			
71363	S	n-Butyl alcohol; 1-butanol	50	150	C		
78922		sec-Butyl alcohol	100	305			
75650		tert-Butyl alcohol	100	300		150	450
109739	S	Butylamine	5	15	C		
1189851	S	tert-Butyl chromate; di-tert-butyl chromate, as CrO <sub>3</sub> As Cr (see also Sections 1532.2, 5206 & 8359)	--	0.1 0.005	C		
2426086		n-Butyl glycidyl ether; BGE; 1-butoxy-2,3-epoxypropane	25	135			
138227		n-Butyl lactate	5	25			
109795		n-Butyl mercaptan	0.5	1.5			
89725	S	o-sec-Butylphenol	5	30			
98511		p-tert-Butyltoluene	1	6.1		20	120
7440439		Cadmium metal dust, as Cd (see also Sections 1532 & 5207)	--	0.005			
		Cadmium, soluble salts, as Cd (see also Sections 1532 & 5207)	--	0.005			
1306190		Cadmium oxide fume, as Cd (see also Sections 1532 & 5207)	--	0.005			
7778441		Calcium arsenate; see Arsenic, inorganic (see also Section 5214)					
471341		Calcium carbonate; see Particulates not otherwise regulated		--			
156627		Calcium cyanamide	--	0.5			
1305620		Calcium hydroxide	--	5			
1305788		Calcium oxide	--	2			
		Calcium silicate; see Particulates not otherwise regulated					
1344952		Calcium silicate (synthetic); see Particulates not otherwise regulated					
1592230		Calcium stearate	--	10			
7778189		Calcium sulfate; see Particulates not otherwise regulated					
76222		Camphor (synthetic)	--	2			

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105602		Caprolactam dust	--	1		--	3
105602		Caprolactam vapor	5	20		10	40
2425061	S	Captafol	--	0.1			
133062		Captan	--	5			
63252		Carbaryl; 1-naphthyl N-methylcarbamate	--	5			
1563662		Carbofuran	--	0.1			
1333864		Carbon black	--	3.5			
124389		Carbon dioxide	5,000	9,000		30,000	54,000
75150	S	Carbon disulfide	4	12	30 ppm	12	36
630080		Carbon monoxide	25	29	200 ppm		
558134		Carbon tetrabromide	0.1	1.4		0.3	4
56235	S	Carbon tetrachloride	2	12.6	200 ppm	10	63
75445		Carbonyl chloride; see Phosgene					
353504		Carbonyl fluoride	2	5		5	15
120809	S	Catechol; pyrocatechol	5	20			
9004346		Cellulose (paper fiber); see Particulates not otherwise regulated					
21351791		Cesium hydroxide		2			
57749	S	Chlordane; 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane	--	0.5			
8001352	S	Chlorinated camphene; toxaphene	--	0.5		--	1
		Chlorinated diphenyl oxide	--	0.5			
7782505		Chlorine	0.5	1.5		1	3
10049044		Chlorine dioxide	0.1	0.3		0.3	0.9
7790912		Chlorine trifluoride	0.1	0.4	C		
107200		Chloroacetaldehyde	1	3	C		
78955	S	Chloroacetone	1	3.8	C		
532274		alpha-Chloroacetophenone;phenacyl chloride	0.05	0.3			
79049	S	Chloroacetyl chloride	0.05	0.2		0.15	0.69
108907		Chlorobenzene; monochlorobenzene	10	46			
2698411	S	o-Chlorobenzylidene malononitrile; OCBM	0.05	0.4	C		
74975		Chlorobromomethane; bromochloromethane	200	1,050			
126998	S	2-Chloro-1,3-butadiene; see Chloroprene					
75456		Chlorodifluoromethane; Fluorocarbon 22	1,000	3,500			
53469219	S	Chlorodiphenyl (42% chlorine)	--	1			
11097691	S	Chlorodiphenyl (54% chlorine)	--	0.5			
106898		1-Chloro-2,3-epoxypropane; see Epichlorohydrin					
75003		Chloroethane; see Ethyl chloride					
107073		2-Chloroethanol; see Ethylene chlorohydrin					
75014		Chloroethylene, see Vinyl chloride, Section 5210					
67663		Chloroform; trichloromethane	2	9.78			
74873		Chloromethane, see Methyl chloride					
107302		Chloromethyl methyl ether; see Methyl chloromethyl ether, Section 5209					
542881		bis-Chloromethyl ether, see also Section 5209	0.001	0.005			
100005		1-Chloro-4-nitrobenzene; see p-Nitrochlorobenzene					
600259		1-Chloro-1-nitropropane	2	10			
76153		Chloropentafluoroethane	1,000	6,320			
76062		Chloropicrin; trichloronitromethane	0.1	0.7			
126998	S	Chloroprene; 2-chloro-1,3-butadiene	10	36			
598787	S	2-Chloropropionic acid	0.1	0.44			

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2039874		o-Chlorostyrene	50	285		75	428
95498	S	o-Chlorotoluene	50	250			
1929824		2-Chloro-6-(trichloromethyl)pyridine; see Nitrapyrin					
2921882	S	Chlorpyrifos	--	0.2			
		Chromite ore processing (chromate), as Cr (see also Sections 1532.2, 5206 & 8359)	--	0.005			
7440473		Chromium metal	--	0.5			
		Chromium (II) compounds, as Cr	--	0.5			
		Chromium (III) compounds, as Cr	--	0.5			
		Chromium (VI) compounds, as Cr (see also Sections 1532.2, 5206 & 8359)	--	0.005	0.1mg/M <sup>3</sup>		
14977618		Chromyl chloride	0.025	0.15			
2971906		Clopidol	--				
		Total dust	--	10			
		Respirable fraction	--	5			
		Coal (Bituminous) dust					
		<5% quartz, respirable fraction <sup>(n)</sup>	--	2			
		>5% quartz, respirable fraction <sup>(n)</sup>	--	0.1			
		Coal tar pitch volatiles <sup>(i)</sup>	--	0.2			
7440484		Cobalt, metal fume and dust, as Co	--	0.020			
		Cobalt carbonyl, as Co	--	0.1			
16842038		Cobalt hydrocarbonyl, as Co	--	0.1			
		Coke oven emissions, see Section 5211		0.15			
7440508		Copper metal fume, as Cu	--	0.1			
		Copper salts, dusts and mists, as Cu	--	1			
		Corundum, see Particulates not otherwise regulated					
		Cotton dust, see also Section 5190	--	1 <sup>(j)</sup>			
1319773	S	Cresol (all isomers)	5	22			
123739	S	Crotonaldehyde; beta-methylacrolein			0.3		
4170303							
299865		Crufomate	--	5			
98828	S	Cumene; isopropylbenzene	50	245			
420042		Cyanamide	--	2			
	S	Cyanide, as CN	--	5			
460195		Cyanogen	10	20			
506774		Cyanogen chloride	0.3	0.6	C		
110827		Cyclohexane	300	1,050			
108930	S	Cyclohexanol	50	200			
108941	S	Cyclohexanone	25	100			
110838		Cyclohexene	300	1,015			
108918	S	Cyclohexylamine	10	40			
121824	S	Cyclonite; RDX; cyclotrimethylenetrinitramine	--	1.5			
542927		Cyclopentadiene	75	200			
287923		Cyclopentane	600	1,720			
13121705		Cyhexatin; tricyclohexyltin hydroxide		5			
94757		2,4-D;2,4-dichlorophenoxyacetic acid	--	10			
50293	S	DDT; 1,1,1-trichloro-2,2-bis- (p-chlorophenyl)ethane	--	1			
62737		DDVP, see Dichlorvos					
17702419	S	Decaborane	0.05	0.3		0.15	0.9
8065483	S	Demeton; a mixture of o,o-diethyl					

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		o-2(ethylthio)ethyl phosphorothioate and o,o'-diethyl S-2(ethylthio)ethyl phosphorothioate	0.01	0.1			
123422		Diacetone alcohol; 4-hydroxy-4-methyl- 2-pentanone	50	240			
107153		1,2-Diaminoethane; see Ethylenediamine					
		Diatomaceous earth; see Silica-amorphous					
333415	S	Diazinon; o,o-diethyl o-(2-isopropyl-6- methyl-4-pyrimidinyl) phosphorothioate	--	0.1			
334883		Diazomethane	0.2	0.4			
94360		Dibenzoyl peroxide; see Benzoyl peroxide					
19287457		Diborane	0.1	0.1			
2528361	S	Dibutyl phenyl phosphate	0.3	3.5			
96128		1,2-Dibromo-3-chloropropane; DBCP; see Section 5212	.001	.01			
75616		Dibromodifluoromethane; see Difluorodibromomethane					
106934	S	1,2-Dibromomethane; see Ethylene dibromide, Section 5219					
102818	S	2-N-Dibutylaminoethanol	2	14			
107664		Dibutyl phosphate	1	5		2	10
84742		Dibutyl phthalate	--	5			
7572294		Dichloroacetylene	0.1	0.4	C		
95501	S	o-Dichlorobenzene	25	150	50 ppm		
106467		p-Dichlorobenzene; 1,4-dichlorobenzene	10	60	200 ppm	110	675
91941	S	3,3'-Dichlorobenzidine; 4,4'-diamino-3,3'- dichlorobiphenyl; see Section 5209					
764410	S	1,4 -Dichloro-2-butene	0.005	0.025			
75718		Dichlorodifluoromethane	1000	4950	6200 ppm		
118525		1,3-Dichloro-5,5-dimethyl hydantoin	--	0.2		--	0.4
75343		1,1-Dichloroethane	100	400			
107062		1,2-Dichloroethane, see Ethylene dichloride					
75354		1,1-Dichloroethylene; see Vinylidene chloride					
540590		1,2-Dichloroethylene; acetylene dichloride	200	790			
111444	S	Dichloroethyl ether; bis(2-chloroethyl) ether	5	30		10	60
75434		Dichlorofluoromethane; Fluorocarbon 21	10	42			
75092		Dichloromethane; see Methylene chloride					
594729		1,1-Dichloro-1-nitroethane	2	10			
78875		1,2-Dichloropropane; see Propylene dichloride					
542756	S	Dichloropropene	1	5			
75990		2,2-Dichloropropionic acid	1	6			
76142		1,2-Dichlorotetrafluoroethane; Fluorocarbon 114	1,000	7,000			
62737	S	Dichlorvos (DDVP); 2,2-dichlorovinyl dimethyl phosphate	0.1	1			
141662	S	Dicrotophos	--	0.25			
5124301		Dicyclohexylmethane-4,4'-diisocyanate; see Methylene bis-(4-cyclohexylisocyanate)					
77736		Dicyclopentadiene	5	30			
102545		Dicyclopentadienyl iron	--				
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
60571	S	Dieldrin; 1,2,3,4,10,10-hexachloro-6,7-epoxy-					

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		1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-exo-5,8-dimethanonaphthalene	--	0.25			
111422	S	Diethanolamine	0.46	2			
109897	S	Diethylamine	5	15	C		
112367	S	Diethylene glycol diethyl ether, Ethyl diglyme	5	33			
111966	S	Diethylene glycol dimethyl ether, Diglyme	1	5.5		5	27
100378	S	2-(Diethylamino) ethanol	2	9.6			
123911		1,4-Diethylene dioxide; see p-Dioxane					
111400	S	Diethylenetriamine	1	4			
60297		Diethyl ether; see Ethyl ether					
298044		Di-(2-ethylhexyl) phthalate; see Di-sec-octyl phthalate					
96220		Diethyl ketone	200	705		300	1057
84662		Diethyl phthalate	--	5			
75616		Difluorodibromomethane; dibromodifluoromethane	100	860			
2238075		Diglycidyl ether; DGE; bis(2,3-epoxypropyl) ether	0.1	0.5			
123319		p-Dihydroxybenzene; see Hydroquinone					
108838		Diisobutyl ketone; 2,6-dimethyl-4-heptanone	25	150			
108189	S	Diisopropylamine	5	20			
108203		Diisopropyl ether; see Isopryl ether					
109875		Dimethoxymethane; see Methylal					
127195	S	Dimethylacetamide	10	35			
124403		Dimethylamine	5	9.2		15	27.6
60117		4-Dimethylaminoazobenzene, see Section 5209					
1300738		Dimethylaminobenzene; see Xylidene					
121697	S	N,N-Dimethylaniline; dimethylphenylamine	5	25		10	50
1330207		Dimethylbenzene; see Xylene					
108849		1,3-Dimethylbutyl acetate; see sec- Hexyl acetate					
300765		o,o-Dimethyl o-(1,2-dibromo-2,2-dichloroethyl) phosphate; see Naled					
14857342		Dimethylethoxysilane	0.5	2.1		1.5	6.4
68122	S	Dimethylformamide; DMF	10	30			
108838		2,6-Dimethyl-4-heptanone; see Diisobutyl ketone					
57147	S	1,1-Dimethylhydrazine	0.01	0.025			
67641		Dimethyl ketone; see Acetone					
62759		N,N-Dimethylnitrosamine; see N-Nitrosodimethylamine, Section 5209					
131113		Dimethyl phthalate	--	5			
77781	S	Dimethyl sulfate; methyl sulfate	0.1	0.5			
148016		Dinitolmide; 3,5-Dinitro-o-toluamide	--	5			
528290,	S	Dinitrobenzene (all (isomers) ortho, meta and para isomers	0.15	1			
99650, 100254							
534521	S	4,6-Dinitro-o-cresol; 2-methyl- 4,6-dinitrophenol	--	0.2			
25321146	S	2,4-Dinitrotoluene	--	0.15			
123911	S	p-Dioxane, tech. grade;					

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Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		Ceiling <sup>(g)</sup>	STEL <sup>(o)</sup>	
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
		1,4-dioxacyclohexane; 1,4-diethylene dioxide	25	90			
78342	S	Dioxathion	--	0.2			
92524		Diphenyl; see Biphenyl					
122394		Diphenylamine; N-phenylaniline	--	10			
101688		Diphenylmethane diisocyanate; see Methylene bis(phenylisocyanate)					
123193		Dipropyl ketone	50	235			
34590948	S	Dipropylene glycol methyl ether	100	600		150	900
85007		Diquat; 1,1'-ethylene-2,2'- dipyridinium dibromide	--				
		Total dust	--	0.5			
		Respirable fraction <sup>(n)</sup>					
117817		Di-sec-octyl phthalate; bis(2 ethylhexyl) phthalate	--	5		--	
97778		Disulfiram	--	2			
298044	S	Disulfoton; o,o-diethyl S-2-(ethylthio)ethyl phosphorodithioate	--	0.1			
128370		2,6-Di-tert-butyl-p-cresol	--	10			
330541		Diuron	--	10			
68122		DMF; see Dimethylformamide					
57147		DMH; see 1,1-Dimethylhydrazine					
1321740		Divinyl benzene	10	50			
		Dust, nuisance dust and particulates, see Particulates not otherwise regulated					
12415348		Emery; see Particulates not otherwise regulated					
115297	S	Endosulfan; 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4, 3-benzodioxathiepin-3-oxide	--	0.1			
72208	S	Endrin; 1,2,3,4,10,10-hexachloro-6,7-epoxy- 1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-endo-5, 8-dimethanonaphthalene	--	0.1			
13838169		Enflurane	2	15			
106898	S	Epichlorohydrin; 1-chloro-2, 3-epoxypropane	0.05	0.19			
2104645	S	EPN; o-ethyl o-(p-nitrophenyl) phenylphosphonothioate	--	0.1			
75569		1,2-Epoxypropane; see Propylene oxide					
556525		2,3-Epoxypropanol; see Glycidol					
74840		Ethane	(h)	--			
75081		Ethanethiol; see Ethyl mercaptan					
64175		Ethanol; see Ethyl alcohol					
141435		Ethanolamine; 2-aminoethanol	3	8		6	15
563122	S	Ethion	--	0.4			
110805	S	2-Ethoxyethanol	5	18			
111159	S	2-Ethoxyethyl acetate	5	27			
141786		Ethyl acetate	400	1,400			
140885	S	Ethyl acrylate	5	20		25	100
64175		Ethyl alcohol; ethanol	1,000	1,900			
75047	S	Ethylamine	5	9.2	C		
541855		Ethyl sec-amyl ketone; 5-methyl-3-heptanone	25	130			
100414		Ethylbenzene	100	435		125	545

Footnotes (a) through (t) at end of Table AC-1

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			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
74964	S	Ethyl bromide	5	22			
106354		Ethyl butyl ketone; 3-heptanone	50	230		75	345
75003	S	Ethyl chloride; chloroethane	100	264			
7085850		Ethyl cyanoacrylate	0.2	1.02			
673923		Ethyl tert-butyl ether	5	21			
74851		Ethylene	(h)	--			
107073	S	Ethylene chlorohydrin; 2-chloroethanol	1	3	C		
107153		Ethylenediamine; 1,2-diaminoethane	10	25			
106934	S	Ethylene dibromide; 1,2-dibromoethane, see Section 5219	0.13	1	C		
107062		Ethylene dichloride; 1,2-dichloroethane	1	4	200 ppm	2	8
107211		Ethylene glycol (vapor)	40	100	C		
629141	S	Ethylene glycol diethyl ether, 1,2-diethoxyethane	5	24			
110714	S	Ethylene glycol dimethyl ether, 1,2-dimethoxyethane, Glyme	1	3.7		5	18
628966	S	Ethylene glycol dinitrate		(k)		--	0.1
110805	S	Ethylene glycol monoethyl ether, see 2-Ethoxyethanol					
109864	S	Ethylene glycol monomethyl ether, see 2-Methoxyethanol					
110496	S	Ethylene glycol monomethyl ether acetate; see 2-Methoxyethyl acetate					
151564	S	Ethyleneimine; see also Section 5209	0.5	1			
75218		Ethylene oxide; see Section 5220	1	2		5	
60297		Ethyl ether	400	1,200		500	1500
109944		Ethyl formate	100	300			
75343		Ethylidene chloride; see 1,1-Dichloroethane					
16219753		Ethylidene norbornene	5	25	C		
75081		Ethyl mercaptan; ethanethiol	0.5	1			
78933		Ethyl methyl ketone; see Methyl ethyl ketone					
100743	S	N-Ethylmorpholine; 4-ethyl-1, 4-tetrahydrooxazine	5	23			
78104		Ethyl silicate; tetraethyl silicate	10	85			
22224926	S	Fenamiphos		0.1			
115902		Fensulfothion	--	0.1			
55389	S	Fenthion	--	0.2			
14484641		Ferbam; ferric N,N-dimethylthiocarbamate	--	10			
12604589		Ferrovandium dust	--	1		--	3
14808607		Fibrous glass, see Glass					
		Flour dust		0.5 <sup>(s)</sup>			
		Fluorides, as F	--	2.5			
7782414		Fluorine	0.1	0.2			
75694		Fluorocarbon 11; see Trichlorofluoromethane					
75718		Fluorocarbon 12; see Dichlorodifluoromethane					
75434		Fluorocarbon 21; see Dichlorofluoromethane					
75456		Fluorocarbon 22; see Chlorodifluoromethane					
76120		Fluorocarbon 112; see 1,1,2,2-Tetrachloro- 1,2-difluoroethane					
76131		Fluorocarbon 113; see 1,1,2-Trichloro-1,2,2- trifluoroethane					
		Fluorocarbon 114; see 1,2-					

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			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
		Dichlorotetrafluoroethane					
75694		Fluorotrichloromethane; see Trichlorofluoromethane					
944229	S	Fonofos	--	0.1			
50000		Formaldehyde, see Section 5217	0.75	--		2	--
75127	S	Formamide	10	18			
64186		Formic acid	5	9		10	19
98011	S	Furfural	2	8			
98000	S	Furfuryl alcohol	10	40		15	60
8006619		Gasoline	300	900		500	1500
7782652		Germanium tetrahydride	0.2	0.6			
		Glass, fibrous	1.0 f/cc <sub>(q)</sub>				
111308		Glutaraldehyde <sup>(i)</sup>	0.05	0.2	C		
56815		Glycerin mist; see Particulates not otherwise regulated					
123944		Glyceryl stearate	--	10			
556525		Glycidol; 2,3-epoxy-1-propanol	2	6.1			
111762		Glycol monobutyl ether; see 2-Butoxyethanol					
110805		Glycol monoethyl ether; see 2-Ethoxyethanol					
109864		Glycol monoethyl ether; see 2-Methoxyethanol					
		Grain dust (oat, wheat, barley)	--	10			
7782425		Graphite, natural respirable dust		2.5			
		Graphite, synthetic					
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
13397245		Gypsum; Calcium sulfate dihydrate; see Particulates not otherwise regulated					
7440586		Hafnium	--	0.5			
151677		Halothane	2	16			
822060		HDI; see Hexamethylene diisocyanate					
7440597		Helium	(h)	--			
76448	S	Heptachlor; 1,4,5,6,7,8,8-hepta-chloro- 3a,4,7,7a-tetrahydro-4,7-methanoindene	--	0.05			
142825		n-Heptane	400	1,600		500	2000
118741	S	Hexachlorobenzene	--	0.002			
87683	S	Hexachlorobutadiene	0.02	0.24			
77474		Hexachlorocyclopentadiene	0.01	0.11			
67721	S	Hexachloroethane; perchloroethane	1	10			
1335871	S	Hexachloronaphthalene	--	0.2			
684162	S	Hexafluoroacetone; 1,1,1,3,3,3-hexafluoro- 2-propanone	0.1	0.7			
822060		Hexamethylene diisocyanate; HDI	0.005	0.034			
110543	S	n-Hexane	50	180			
		Hexane, other isomers	500	1800		1000	3600
124094		1,6-Hexanediamine	0.5	2.3			
591786		2-Hexanone; see Methyl butyl ketone					
592416		1-Hexene	50	180			
108101		Hexone; see Methyl isobutyl ketone					
108849		sec-Hexyl acetate; 4-methyl-2-pentyl acetate; 1,3-dimethyl-butyl acetate	50	300			
107415		Hexylene glycol	25	125	C		
302012	S	Hydrazine	0.01	0.013			

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			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
10035106		Hydrobromic acid; see Hydrogen bromide					
7647010		Hydrochloric acid; see Hydrogen chloride					
74908		Hydrocyanic acid; see Hydrogen cyanide					
7664393		Hydrofluoric acid; see Hydrogen fluoride					
1333740		Hydrogen	(h)	--			
61788327		Hydrogenated terphenyls	0.5	5			
10035106		Hydrogen bromide	3	10	C		
7647010		Hydrogen chloride; muriatic acid	5	7	C		
74908	S	Hydrogen cyanide	4.7	5	C		
7664393		Hydrogen fluoride, as F	3	2.5		6	--
7722841		Hydrogen peroxide, as H <sub>2</sub> O <sub>2</sub>	1	1.4			
7783075		Hydrogen selenide, as Se	0.05	0.2			
7783064		Hydrogen sulfide	10	14	50 ppm	15	21
123319		Hydroquinone; 1,4-benzenediol	--	2			
999611	S	2-Hydroxypropyl acrylate	0.5	3			
95136		Indene	10	48			
7440746		Indium	--	0.1			
		Indium compounds	--	0.1			
7553562		Iodine	0.1	1	C		
75478		Iodoform	0.6	10			
4098719		IPDI; see Isophorone diisocyanate					
1309371		Iron oxide fume	--	5			
13463406		Iron pentacarbonyl, as Fe	0.1	0.8		0.2	1.6
		Iron salts, soluble, as Fe	--	1			
123922		Isoamyl acetate; 3-methylbutyl acetate; see Pentyl acetate					
123513		Isoamyl alcohol; 3-methylbutanol				125	450
110190		Isobutyl acetate; 2-methylpropyl acetate	150	700			
78831		Isobutyl alcohol; 2-methylpropanol	50	150			
26675467		Isoflurane	2	15			
26952216	S	Isooctyl alcohol	50	270			
78591		Isophorone; 3,5,5-trimethyl-2-cyclohexene-1-one	4	23			
4098719	S	Isophorone diisocyanate; IPDI	0.005	0.045		0.02	--
109591		Isopropoxyethanol	25	105			
108214		Isopropyl acetate	250	950		310	1185
67630		Isopropyl alcohol	400	980		500	1225
75310		Isopropylamine	5	12		10	24
768525	S	N-isopropylaniline	2	10			
108203		Isopropyl ether; diisopropyl ether	250	1,050			
4016142		Isopropyl glycidyl ether; IGE; 1,2-epoxy-3-isopropoxypropane	50	240		75	360
1332587		Kaolin; (respirable dust containing no asbestos and <1% crystalline silica)	--	2			
463514		Ketene; ethenone	0.5	0.9		1.5	3
		Lead arsenate, see Sections 5214 and 5198					
7758976		Lead chromate, as Pb	--	0.020			
		as Cr	--	0.005			
		(see also Sections 5198, 1532.1, 1532.2, 5206 & 8359 )					
		Lead (metallic) and inorganic compounds, dust and fume, as Pb (see also Section 5198 )	--	0.05			
78002		Lead tetraethyl, see Tetraethyl lead					

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75741		Lead tetramethyl, see Tetramethyl lead					
1317653		Limestone; calcium carbonate; see Particulates not otherwise regulated					
58899	S	Lindane; 1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer	--	0.5			
7580678		Lithium hydride	--	0.025			
		L.P.G.; liquefied petroleum gas	1,000	1,800			
4485125		Lithium stearate	--	10			
13717005		Magnesite; magnesium carbonate; see Particulates not otherwise regulated					
1309484		Magnesium oxide fume, as Mg	--	10			
557040		Magnesium stearate	--	10			
121755	S	Malathion; o,o-dimethyl S-1(1,2- dicarboethoxyethyl) phosphorodithioate	--	10			
108316		Maleic anhydride; cis-butenedioic anhydride	0.1	0.4			
		Manganese and compounds, as Mn	--	0.2			
7439965		Manganese fume, as Mn	--	0.2		--	3
12079651	S	Manganese, cyclopentadienyl-tricarbonyl, as Mn	--	0.1			
		Manganese tetroxide	--	0.2			
		Marble; calcium carbonate; see Particulates not otherwise regulated					
101779	S	MDA; see 4,4'-Methylene dianiline					
101688		MDI; see Methylene bis(phenylisocyanate)					
7439976	S	Mercury alkyls, as Hg	--	0.01	0.04 mg/M <sup>3</sup>	--	0.03
7439976	S	Mercury, metallic and inorganic compounds as Hg	--	0.025	0.1 mg/M <sup>3</sup>		
7439976	S	Mercury aryl compounds as Hg	--	0.01	C		
108678		Mesitylene; see 1,3,5-Trimethylbenzene					
141797		Mesityl oxide; 4-methyl-3-pentene-2-one	15	60		25	100
79414	S	Methacrylic acid	20	70			
74828		Methane	(h)	--			
74931		Methanethiol; see Methyl mercaptan					
67561		Methanol; see Methyl alcohol					
16752775	S	Methomyl	--	2.5			
72435		Methoxychlor; 1,1,1-trichloro-2, 2-bis(p-methoxyphenyl)ethane	--	10			
109864	S	2-Methoxyethanol	5	16			
110496		2-Methoxyethyl acetate	5	24			
76380		Methoxyflurane	2	13			
150765		4-Methoxyphenol	--	5			
79209		Methyl acetate	200	610		250	760
74997		Methyl acetylene; propyne	1,000	1,650			
		Methyl acetylene-propadiene mixture; MAPP	1,000	1,800		1250	2250
96333	S	Methyl acrylate	10	35			
126987	S	alpha-Methylacrylonitrile	1	3			
624419		2-Methylbutyl acetate; see Pentyl acetate					
109875		Methylal; dimethoxymethane	1,000	3,100			
67561	S	Methyl alcohol; methanol	200	260	1000 ppm	250	325
74895		Methylamine	5	6.4		15	19
108112		Methyl amyl alcohol; see Methyl isobutyl carbinol					

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110430		Methyl n-amyl ketone; 2-heptanone	50	235			
100618	S	N-Methylaniline; monomethylaniline	0.5	2			
95534		o-Methylaniline; see o-Toluidine					
74839	S	Methyl bromide	1	3.88	20 ppm		
591786	S	Methyl butyl ketone; 2-hexanone	5	20			
74873		Methyl chloride	50	105	300 ppm	100	210
71556		Methyl chloroform; 1,1,1-trichloroethane	350	1900	800 ppm	450	2450
107302		Methyl chloromethyl ether; see Section 5209					
75058		Methyl cyanide; see Acetonitrile					
137053		Methyl 2-cyanoacrylate	0.2	0.908		4	
108872		Methylcyclohexane	400	1,600			
25639423		Methylcyclohexanol (meta- and para-isomer mixture)	50	235			
583608	S	o-Methylcyclohexanone	50	230		75	345
12108133	S	2-Methylcyclopentadienyl manganese tricarbonyl, as Mn	--	0.2			
8022002	S	Methyl demeton; a mixture of o,o-dimethyl o-(2-(ethylthio)ethyl) phosphorothioate and o,o-dimethyl S-(2-(ethylthio)-ethyl) phosphorothioate	--	0.5			
101144	S	4,4'-Methylene bis(2-chloroaniline), see also Section 5215	--	0.01			
5124301		Methylene bis(4-cyclohexylisocyanate); hydrogenated MDI	0.005	0.054			
101688		Methylene bis(phenylisocyanate); MDI; diphenylmethane diisocyanate	0.005	0.051			
75092		Methylene chloride; dichloromethane (see also section 5202)	25	87		125	435
101779	S	4,4'-Methylene dianiline; MDA (see also Sections 1535 and 5200 )	0.01	0.08		0.1	0.8
78933		Methyl ethyl ketone; MEK; 2-butanone; ethyl methyl ketone	200	590		300	885
1338234		Methyl ethyl ketone peroxide	0.2	1.5	C		
107313		Methyl formate	100	250		150	375
60344	S	Methyl hydrazine; monomethyl hydrazine	0.01	0.019			
74884	S	Methyl iodide	2	10			
110123		Methyl isoamyl ketone	50	234			
108112	S	Methyl isobutyl carbinol; 4-methyl-2-pentanol; methyl amyl alcohol	25	100		40	165
108101		Methyl isobutyl ketone; Hexone	50	205		75	300
624839	S	Methyl isocyanate	0.02	0.05			
563804		Methyl isopropyl ketone	200	705			
74931		Methyl mercaptan	0.5	1			
80626		Methyl methacrylate; methyl 2-methyl-2-propenoate	50	205		100	410
298000	S	Methyl parathion; o,o-dimethyl o-(p-nitrophenyl) phosphorothioate	--	0.2			
107879		Methyl propyl ketone; 2-pentanone	200	700		250	875
681845		Methyl silicate; tetramethyl silicate	1	6			
98839		alpha-Methylstyrene; 1-methyl- 1-phenylethene	50	240		100	485

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77781		Methyl sulfate; see Dimethyl sulfate					
1634044		Methyl tert-butyl ether; MTBE	40	144			
21087649		Metribuzin	--	5			
7786347	S	Mevinphos; 2-carbomethoxyl- 1-propen-2-yl dimethyl phosphate	0.01	0.1		0.03	0.3
		Mica, see Silicates					
		Mineral wool fiber; see Particulates not otherwise regulated					
7439987		Molybdenum, insoluble compounds, as Mo	--				
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	3			
		Molybdenum, soluble compounds, as Mo	--	0.5 <sup>(n)</sup>			
6923224		Monocrotophos	--	0.25			
100618		Monomethylaniline; see N-Methylaniline					
60344		Monomethylhydrazine; see Methyl hydrazine					
110918	S	Morpholine; tetrahydro-4H-1, 4-oxazine	20	70		30	105
7647010		Muriatic acid; see Hydrogen chloride					
300765	S	Naled; o,o-dimethyl o- (1,2-dibromo-2,2-dichloroethyl) phosphate	--	3			
8030317		Naphtha, coal tar	100	400			
91203		Naphthalene	10	50		15	75
134327		alpha-Naphthylamine; 1-naphthylamine, see Section 5209					
91598		beta-Naphthylamine; 2-naphthylamine, see Section 5209					
63252		1-Naphthyl N-methylcarbamate; see Carbaryl					
25551284		Naphthalene diisocyanate; NDI	0.01	0.085	C		
7440019		Neon	(h)				
13463393		Nickel carbonyl; Ni (CO) <sub>4</sub>	0.001	0.007			
7440020		Nickel metal, as Ni	--	1			
		Nickel, insoluble compounds, as Ni	--	1			
		Nickel, soluble compounds, as Ni	--	0.1			
54115	S	Nicotine; 1-methyl-2-(3-pyridyl)-pyrrolidine	0.075	0.5			
1929824		Nitrapyrin	--				
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
7697372		Nitric acid	2	5		4	10
10102439		Nitric oxide; NO	25	30			
100016	S	p-Nitroaniline	--	3			
98953	S	Nitrobenzene	1	5			
100005	S	p-Nitrochlorobenzene; 1-chloro-4-nitrobenzene	0.1	0.64			
92933		4-Nitrodiphenyl, see Section 5209					
79243		Nitroethane	100	310			
7727379		Nitrogen	(h)	--			
10102440		Nitrogen dioxide				1	1.8
		Nitrogen tetroxide; N <sub>2</sub> O <sub>4</sub> ; see Nitrogen dioxide					
7783542		Nitrogen trifluoride	10	29			
55630	S	Nitroglycerin		(k)		--	0.1
75525		Nitromethane	2	5			
108032		1-Nitropropane	25	90			
79469		2-Nitropropane	10	35			

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			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
62759		N-Nitrosodimethylamine, see Section 5209					
1321126, 99081, 88722, 99990	S	Nitrotoluene	2	11			
76062		Nitrotrichloromethane; see Chloropicrin					
10024972		Nitrous oxide	50	90			
111842		Nonane	200	1,050			
		Nuisance particulates, see Particulates not otherwise regulated					
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
2234131	S	Octachloronaphthalene	--	0.1		--	0.3
111659		Octane	300	1,450		375	1800
8012951		Oil (mineral) mist, particulate	--	(5) <sup>(l)</sup>			
		Oil (vegetable) mists (except castor, cashew nut or similar irritant oils); see Nuisance particulates					
		Organic arsenic compounds; see Arsenic, organic					
20816120		Osmium tetroxide, as Os	0.0002	0.002		0.0006	0.006
144627		Oxalic acid	--	1		--	2
7783417		Oxygen difluoride	0.05	0.1	C		
10028156		Ozone	0.1	0.2		0.3	0.6
8002742		Paraffin wax fume	--	2			
1910425, 2074502	S	Paraquat, total particulates	--	0.5			
1910425, 2074502	S	Paraquat, respirable sizes	--	0.1 <sup>(n)</sup>			
56382	S	Parathion; o,o-diethyl o-(p-nitrophenyl) phosphorothioate	--	0.1			
		Particulates not otherwise regulated					
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
		Particulate polycyclic; aromatic hydrocarbons (PPAH) see Coal tar pitch volatiles					
		PCB; see Chlorodiphenyl					
87865	S	PCP; see Pentachlorophenol					
19624227		Pentaborane	0.005	0.01		0.015	0.03
1321648	S	Pentachloronaphthalene	--	0.5			
87865	S	Pentachlorophenol; PCP	--	0.5			
115775		Pentaerythritol; tetrakis- (hydroxymethyl)methane; tetra-methylolmethane; see Particulates not otherwise regulated					
109660		Pentane	600	1,800			
107879		2-Pentanone; see Methyl propyl ketone					
628637; 626380; 123922; 625161; 620111; 624419		Pentyl acetate	50	266		100	532

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		Ceiling <sup>(g)</sup>	STEL <sup>(o)</sup>	
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
67721		Perchloroethane; see Hexachloroethane					
127184		Perchloroethylene	25	170	300 ppm	100	685
594423		Perchloromethyl mercaptan; trichloromethanethiol	0.1	0.8			
7616946		Perchloryl fluoride; ClO <sub>3</sub> F	3	14		6	28
382218		Perfluoroisobutylene	0.01	0.082	C		
		Perlite					
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
108952	S	Phenol	5	19			
92842	S	Phenothiazine; dibenzothiazine	--	5			
106503	S	p-Phenylenediamine	--	0.1			
101848		Phenyl ether, vapor	1	7			
100425		Phenylethylene; see Styrene					
122601	S	Phenyl glycidyl ether, PGE; 1,2-epoxy- 3-phenoxypropane	0.1	0.6			
100630	S	Phenylhydrazine	5	20		10	45
108985		Phenyl mercaptan	0.5	2			
638211		Phenylphosphine	0.05	0.25	C		
298022	S	Phorate; o,o-diethyl S-(ethylthio)methyl phosphorodithioate	--	0.05		--	0.2
75445		Phosgene; carbonyl chloride; COCl <sub>2</sub>	0.1	0.4			
7803512		Phosphine; PH <sub>3</sub>	0.3	0.4		1	1
7664382		Phosphoric acid	--	1		--	3
7723140		Phosphorus, yellow	--	0.1			
10025873		Phosphorus oxychloride	0.1	0.6			
10026138		Phosphorus pentachloride	0.1	1			
1314803		Phosphorus pentasulfide; P <sub>2</sub> S <sub>5</sub>	--	1		--	3
7719122		Phosphorus trichloride	0.2	1.5		0.5	3
85449		Phthalic anhydride	1	6			
626175		m-Phthalodinitrile	--	5			
1918021		Picloram	--				
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			
88891	S	Picric acid; 2,4,6-trinitrophenol	--	0.1			
83261		Pindone; 2-pivalyl-1, 3-indandione		0.1			
142643		Piperazine dihydrochloride	--	5			
26499650		Plaster of Paris; calcium sulfate hemihydrate; see Particulates not otherwise regulated					
7440064		Platinum, metal	--	1			
		Platinum, soluble salts, as Pt	--	0.002			
		Polychlorobiphenyls, see Chlorodiphenyl					
		Polytetrafluoroethylene, decomposition products	--	(m)			
		Portland Cement; see Particulates not otherwise regulated					
1310583		Potassium hydroxide; caustic potash	--	2	C		
593293		Potassium stearate	--	10			
74986		Propane	1000	1800 <sup>(h)</sup>			
107197	S	Propargyl alcohol; 2-propyn-1-ol	1	2			
57578		beta-Propiolactone, see Section 5209	0.5	1.5			
79094		Propionic acid	10	30			
114261		Propoxur; 2-isopropoxyphenyl N-methyl					

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		STEL <sup>(e)</sup>	
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>	Ceiling <sup>(g)</sup>	ppm <sup>(e)</sup>
		carbamate		0.5		
109604		n-Propyl acetate	200	840		250 1050
71238	S	n-Propyl alcohol	200	500		250 625
115071		Propylene	(h)	--		
78875		Propylene dichloride; 1,2-dichloropropane	75	350		110 510
6423434	S	Propylene glycol dinitrate; PGDN	0.05	0.3		
107982	S	Propylene glycol monomethyl ether	100	360		150 540
108656	S	Propylene glycol monomethyl ether acetate	100	541		150 811
75558	S	Propyleneimine; 2-methylaziridine	2	5		
75569		Propylene oxide; 1,2-epoxy-propane	2	4.75		
627134		n-Propyl nitrate	25	107		40 170
74997		Propyne; see Methylacetylene				
8003347		Pyrethrum	--	5		
110861		Pyridine	5	15		
106514		Quinone	0.1	0.4		
121824		RDX; see Cyclonite				
108463		Resorcinol	10	45		20 90
7440166		Rhodium, metal	--	0.1		
		Insoluble compounds, as Rh	--	0.1		
		Soluble salts, as Rh	--	0.001		
299843		Ronnel; o,o-dimethyl o-(2,4,5-trichlorophenyl) phosphorothioite	--	10		
		Rosin core solder, pyrolysis products, as formaldehyde	--	0.1		
83794		Rotenone, commercial	--	5		
1309371		Rouge; see Particulates not otherwise regulated				
		Rubber solvent (Naphtha)	400	1,600		
		Selenium compounds, as Se	--	0.2		
7783791		Selenium hexafluoride	0.05	0.4		
136787		Sesone; sodium 2,4-dichloro-phenoxyethyl sulfate				
		Total dust	--	10		
		Respirable fraction <sup>(n)</sup>	--	5		
61790532		Silica, amorphous				
		Diatomaceous earth				
		Total dust	--	6		
		Respirable fraction <sup>(n)</sup>	--	3		
		Precipitated and gel	--	6		
		Silica, crystalline				
14464461		Cristobalite, respirable dust	--	0.05		
14808607		Quartz, respirable dust	--	0.1		
14808607		Quartz, total dust	--	0.3		
60676860		Silica, fused, respirable dust	--	0.1		
15468323		Tridymite, respirable dust	--	0.05		
1317959		Tripoli, respirable dust	--	0.1		
		Silicates (<1% crystalline silica)				
12001262		Mica (respirable dust)	--	3		
		Soapstone, total dust	--	6		
		Soapstone, respirable dust	--	3		
		Talc (containing asbestos); see Section 5208				
14807966		Talc (containing no asbestos fibers),				

Footnotes (a) through (t) at end of Table AC-1

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		Ceiling <sup>(g)</sup>	STEL <sup>(e)</sup>	
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
		respirable dust	--	2			
		Tremolite (containing no asbestos fibers), respirable dust	--	2			
7440213		Silicon; see Particulates not otherwise regulated					
409212		Silicon carbide; SiC; see Particulates not otherwise regulated					
7803625		Silicon tetrahydride; silane	5	7			
7440224		Silver metal, as Ag	--	0.01			
		Silver, soluble compounds, as Ag	--	0.01			
		Soapstone, see Silicates					
26628228	S	Sodium azide	0.1	0.3	C		
7631905		Sodium bisulfite	--	5			
136787		Sodium 2,4-dichlorophenoxyethyl sulfate; see Sesone					
62748	S	Sodium fluoroacetate	--	0.05		--	0.15
1310732		Sodium hydroxide; caustic soda	--	2	C		
7681574		Sodium metabisulfite	--	5			
822162		Sodium stearate	--	10			
9005258		Starch; see Particulates not otherwise regulated					
7789062		Strontium chromate, as Cr (see also Sections 1532.2, 5206 & 8359) Stearates; see specific compound	--	0.0005			
7803523		Stibine; SbH <sub>3</sub>	0.1	0.5			
8052413		Stoddard solvent	100	525			
57249		Strychnine	--	0.15			
100425	S	Styrene (monomer); phenylethylene	50	215	500 ppm	100	425
9014011		Subtilisins (as pure crystalline proteolytic enzymes)	--				0.00006 <sup>(t)</sup>
57501		Sucrose; see Particulates not otherwise regulated					
74222972		Sulfometuron methyl	--	3.5			
3689245	S	Sulfotep; tetraethyl dithionopyrophosphate		0.2			
7446095		Sulfur dioxide	2	5		5	10
2551624		Sulfur hexafluoride	1,000	6,000			
7664939		Sulfuric acid	--	1		--	3
10025679		Sulfur monochloride; S <sub>2</sub> Cl <sub>2</sub>	1	6	C		
5714227		Sulfur pentafluoride; S <sub>2</sub> F <sub>10</sub>	0.01	0.1	C		
7783600		Sulfur tetrafluoride	0.1	0.4	C		
2699798		Sulfuryl fluoride; SO <sub>2</sub> F <sub>2</sub>	5	20		10	40
35400432		Sulprofos		1			
93765		2,4,5-T; 2,4,5-trichlorophenoxyacetic acid Talc; see Silicates	--	10			
7440257		Tantalum metal dust, as Ta	--	5			
1314610		Tantalum oxide dust, as Ta	--	5			
78308		TCP; see Triorthocresyl phosphate					
584849		TDI; see Toluene-2,4-diisocyanate					
3689245	S	TEDP; see Sulfotep					
		Tellurium and compounds, as Te	--	0.1			
7783804		Tellurium hexafluoride	0.02	0.2			
3383968		Temephos; o,o,o',o'-tetramethyl o,o'- thiodi-p-phenylene phosphorothioate					
		Total dust	--	10			
		Respirable fraction <sup>(n)</sup>	--	5			

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		Ceiling <sup>(g)</sup>	STEL <sup>(e)</sup>	
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
107493	S	TEPP; tetraethyl pyrophosphate;	0.004	0.05			
100210		Terephthalic acid	--	10			
		Terphenyls	0.5	5	C		
79276		1,1,2,2-Tetrabromoethane; see Acetylene tetrabromide					
76119		1,1,1,2-Tetrachloro-2,2-difluoroethane	500	4170			
76120		1,1,2,2-Tetrachloro-1,2-difluoroethane; fluorocarbon 112	500	4,170			
79345	S	1,1,2,2-Tetrachloroethane; acetylene tetrachloride	1	7			
127184		Tetrachloroethylene; see Perchloroethylene					
56235		Tetrachloromethane; see Carbon tetrachloride					
1335882	S	Tetrachloronaphthalene	--	2			
3689245		Tetraethyl dithionopyrophosphate; see Sulfotep					
78002	S	Tetraethyl lead; tetraethylplumbane, as Pb	--	0.075			
107493		Tetraethyl pyrophosphate; see TEPP					
109999		Tetrahydrofuran	200	590		250	735
75741	S	Tetramethyl lead; tetramethylplumbane, as Pb	--	0.075			
115775		Tetramethylmethane; see Pentaerythritol					
3333526	S	Tetramethyl succinonitrile (decomposition product of 2,2'-azobisisobutyronitrile)	0.5	3			
137268		Tetramethyl thiuram disulfide, see Thiram					
509148		Tetranitromethane	0.005	0.04			
7722885		Tetrasodium pyrophosphate	--	5			
479458	S	Tetryl; 2,4,6-trinitrophenylmethylnitramine	--	1.5			
	S	Thallium, soluble compounds, as Tl	--	0.1			
109999		THF; see Tetrahydrofuran					
96695		4,4'-Thiobis(6-tert-butyl-m-cresol)	--				
		Total dust	--	10			
		Respirable fraction <sup>(h)</sup>	--	5			
68111	S	Thioglycolic acid	1	3.8			
7719097		Thionyl chloride	1	5	C		
137268		Thiram; bis(dimethylthiocarbamoyl) disulfide	--	5			
	S	Tin, organic compounds, as Sn	--	0.1		--	0.2
21651194		Tin, tin oxide and inorganic compounds, except SnH <sub>4</sub> , as Sn	--	2			
13463677		Titanium dioxide, as Ti; see Particulates not otherwise regulated					
137268		TMTD; see Thiram					
118967		TNT; see 2,4,6-Trinitrotoluene					
108883	S	Toluene; toluol	50	188	500 ppm	150	560
584849		Toluene-2,4-diisocyanate; TDI	0.005	0.04	0.02 ppm	0.02	0.15
108441	S	m-Toluidine	2	9			
95534	S	o-Toluidine; o-methylaniline	2	9			
106490	S	p-Toluidine	2	9			
8001352		Toxaphene; see Chlorinated camphene					
115866		TPP; see Triphenyl phosphate					
		Tremolite, nonasbestiform; see Silicates					
75252		Tribromomethane; see Bromoform					
126738		Tributyl phosphate	0.2	2.5			
76039		Trichloroacetic acid	1	5			

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		Ceiling <sup>(g)</sup>	STEL <sup>(e)</sup>	
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
120821		1,2,4-Trichlorobenzene	5	40	C		
50293		1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane; see DDT					
71556		1,1,1-Trichloroethane; see Methyl chloroform					
79005	S	1,1,2-Trichloroethane	10	45			
79016		Trichloroethylene; trichloroethene	25	135	300 ppm	100	537
75694		Trichlorofluoromethane; Fluorocarbon 11	1,000	5,600	C		
67663		Trichloromethane; see Chloroform					
594423		Trichloromethanethiol; see Perchloromethyl mercaptan					
1321659	S	Trichloronaphthalene	--	5			
76062		Trichloronitromethane; see Chloropicrin					
93765		2,4,5-Trichlorophenoxyacetic acid see 2,4,5-T					
96184		1,2,3-Trichloropropane	10	60			
76131		1,1,2-Trichloro-1,2,2- trifluoroethane	1000	7600	2000 ppm	1250	9500
78308		Tricresyl phosphate; see Triorthocresyl phosphate					
13121705		Tricyclohexyltin hydroxide; see Cyhexatin					
102716		Triethanolamine	--	5			
121448	S	Triethylamine	1	4.1	C		
112492	S	Triethylene glycol dimethyl ether, Triglyme	5	36			
75638		Trifluorobromomethane	1,000	6,100			
2451629		1,3,5-Triglycidyl-s-triazinetrione		0.005			
552307		Trimellitic anhydride	0.005	0.04	C		
75503		Trimethylamine	5	12		15	36
		Trimethylbenzene, all isomers	25	125			
121459		Trimethyl phosphite	2	10			
88891		2,4,6-Trinitrophenol; see Picric acid					
479458		2,4,6-Trinitrophenylmethyl nitramine; see Tetryl					
118967	S	2,4,6-Trinitrotoluene; TNT	--	0.5			
78308	S	Triorthocresyl phosphate	--	0.1			
603349		Triphenylamine	--	5			
115866	S	Triphenyl phosphate; TPP	--	3			
7440337		Tungsten metal, as W	--	5			
		Tungsten, insoluble compounds, as W	--	5		--	10
		Tungsten, soluble compounds, as W	--	1		--	3
8006642		Turpentine	100	560			
		Uranium (natural), insoluble compounds, as U	--	0.2		--	0.6
		Uranium (natural), soluble compounds, as U	--	0.05			
110623		Valeraldehyde	50	175			
1314621		Vanadium pentoxide (V <sub>2</sub> O <sub>5</sub> ), respirable dust and fume	--	0.05 <sup>(n)</sup>			
75014	S	VC; see Vinyl chloride, Section 5210 Vegetable oil mists (except castor, cashew nut or similar irritant oils); see Particulates not otherwise regulated					
108054		Vinyl acetate	10	30		15	45
100425		Vinylbenzene; see Styrene					
593602		Vinyl bromide; bromoethylene	5	20			

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

Chemical Abstracts Registry Number <sup>(a)</sup>	Skin <sup>(b)</sup>	Name <sup>(c)</sup>	PEL <sup>(d)</sup>		Ceiling <sup>(g)</sup>	STEL <sup>(e)</sup>	
			ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>		ppm <sup>(e)</sup>	mg/M <sup>3(f)</sup>
75014	S	Vinyl chloride, see Section 5210	1				
107131	S	Vinyl cyanide, see Acrylonitrile, Section 5213					
100403	S	4-Vinyl cyclohexene	0.1	0.4			
106876	S	Vinyl cyclohexene dioxide	0.1	0.57			
75354		Vinylidene chloride; 1,1-dichloroethylene	1	4			
75387		Vinylidene fluoride	100	262			
25013154		Vinyltoluene	50	240			
8030306		VM & P (Varnish Makers and Painters) Naphtha	300	1,350		400	1800
81812		Warfarin; 3-(alpha-acetonyl-benzyl)-4-hydroxycoumarin	--	0.1			
		Welding fumes; total particulates (see also individual constituents)	--	5			
		Wood dust	--				
		All soft and hard woods, except Western red cedar	--	5		--	10
		Wood dust, Western red cedar--	--	2.5			
1330207		Xylene; xylol; dimethylbenzene	100	435	300 ppm	150	655
1477550	S	m-Xylene-a,a'-diamine	--	0.1	C		
1300738	S	Xylidine; aminodimethylbenzene	0.5	2.5			
		Yttrium compounds, as Y	--	1			
7646857		Zinc chloride fume	--	1		--	2
13530659		Zinc chromate, as Cr (see also Sections 1532.2, 5206 & 8359)	--	0.005			
15930946		Zinc chromate hydroxide, as Cr (see also Sections 1532.2, 5206 & 8359)	--	0.005			
1314132		Zinc oxide fume	--	5		--	10
		Zinc oxide dust, see Particulates not otherwise regulated					
11103869		Zinc potassium chromate, as Cr (see also Sections 1532.2, 5206 & 8359)	--	0.005			
557051		Zinc stearate	--	10			
37300235		Zinc yellow, as Cr (see also Sections 1532.2, 5206 & 8359)	--	0.005			
		Zirconium compounds, as Zr	--	5		--	10

Footnotes to Table AC-1

(a) The Chemical Abstracts Service Registry Number is a designation used to identify a specific compound or substance regardless of the naming system; these numbers were obtained from the Desk Top Analysis Tool for the Common Data Base and from the Chemical Abstracts Indexes.

(b) Refer to section 5155(d) for the significance of the Skin notation.

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

(c) Trade Names Removed from Table AC-1.

Trade Name	Chemical/Generic Name
Abate	see Temephos
Ammate	see Ammonium Sulfamate
Aqualin	see Acrolein
Arasan	see Thiram
Azodrin	see Moncrotophos
Baygon	see Propoxur
Bidrin	see Dicrotophos
Butyl Cellosolve	see 2-Butoxyethanol
Cellosolve	see 2-Ethoxyethanol
Cellosolve Acetate	see 2-Ethoxyethyl acetate
Compound 1080	see Sodium Fluoracetate
Coyden	see Clopidol
Crag Herbicide	see Sesone
Cythion	see Malathion
Dasanit	see Fensulfothion
Delnav	see Dioxathion
Dibrom	see Naled
Difolatan	see Captafol
Disyston	see Disulfoton
Dowtherm A	see Phenylether and Biphenyl
Dursban	see Chloropyrifos
Dyfonate	see Fonofos
Fermate	see Ferbam
Freons	see Fluorocarbons
Furadan	see Carbofuran
Guthion	see Azinphos Methyl
Korlan	see Ronnel
Lannate	see Methomyl
Mariate	see Methoxychlor
MLT	see Malathion
Moxie	see Methoxychlor
Nialate	see Ethion
Nankor	see Ronnel
Phosdrin	see Mevinphos
Pival	see Pindone
Plictran	see Cyhexatin
Santobrite	see Pentachlorophenol
Sevin	see Carbaryl
Systox	see Demeton
Teflon	see Polytetrafluoroethylene
Thimet	see Phorate
Thiodan	see Endosulfan
Tordon	see Picloram
Trolene	see Ronnel
Vapona	see Dichlorvos
Weedone 638	see 2, 4-D
Zoalene	see Dinitolmide

(d) For the definition and the application of the Permissible Exposure Limit (PEL), refer to section 5155(b) and (c)(1).

(e) Parts of gas or vapor per million parts of air by volume at 25oC and 760mm Hg pressure.

(f) Milligrams of substance per cubic meter of air at 25oC and 760mm Hg pressure.

(g) Refer to section 5155(b) and (c)(3) for the significance of the Ceiling notation. A "C" notation in this column means the values given in the PEL columns are ceiling values. A numerical entry in this column represents a ceiling value in addition to the TWA values.

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

(h) A number of gases and vapors, when present in high concentrations, act primarily as asphyxiants without other adverse effects. A concentration limit is not included for each material because the limiting factor is the available oxygen. (Several of these materials present fire or explosion hazards.)

(i) Coal tar pitch volatiles (benzene or cyclohexane-soluble fraction) include fused polycyclic hydrocarbons (some of which are known carcinogens) which volatilize from the distillation residues of coal, petroleum (excluding asphalt), wood, and other organic matter. Asphalt (CAS 8052-42-4, and CAS 64742-93-4) is not covered under the "coal tar pitch volatiles" standard.

(j) This standard applies to the cotton waste processing operations of waste recycling (sorting, blending, cleaning, and willowing) and ginning. It does not apply to cotton gins, cottonseed oil industry, or operations covered by section 5190.

(k) A PEL of 0.05 ppm shall apply to exposures involving a mixture of ethylene glycol dinitrate and nitroglycerin.

(l) As sampled by method that does not collect vapor.

(m) Thermal decomposition of the fluorocarbon chain in air leads to the formation of oxidized products containing carbon, fluorine and oxygen. An index of exposure to these products is possible through their alkaline hydrolysis followed by a quantitative determination of fluoride content. No particular concentration limit is specified pending evaluation of the toxicity of the products but concentrations should be kept below the sensitivity of the analytical method.

(n) The concentration and percentage of the particulate used for this limit are determined from the fraction passing a size selector with the following characteristics:

<i>Aerodynamic Diameter in Micrometers (unit density sphere)</i>	<i>Percent Passing Selector</i>
≤2 .....	90
2.5 .....	75
3.5 .....	50
5.0 .....	25
10 .....	0

Source: American Conference of Governmental Industrial Hygienists TLV Committee 1968 Proceedings.

(o) Refer to sections 5155(b) and (c)(2) for the definition and application of the Short Term Exposure Limit (STEL).

(p) (Reserved)

(q) Fibers per cubic centimeter of air at 25°C and 760mm Hg pressure. To be considered a fiber for this limit the glass particle must be longer than 5µm, have a length to diameter ratio of three or more, and have a diameter less than 3µm. The National Institute for Occupational Safety and Health (NIOSH), Method 7400, Issue 2, August 15, 1994, which is hereby incorporated by reference, shall be used for measuring airborne fiber concentrations.

TABLE AC-1  
PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS

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

(s) The concentration and percentage of the particulate used for this limit are determined from the fraction passing a size selector with the following characteristics:

<i>Aerodynamic Diameter in Micrometers (unit density sphere)</i>	<i>Percent Passing Selector</i>
0 .....	100
1 .....	97
2 .....	94
5 .....	87
10 .....	77
20 .....	65
30 .....	58
40 .....	54.5
50 .....	52.2
100 .....	50

(t) Glutaraldehyde can cause occupational asthma and skin sensitization responses such as contact dermatitis. Exposure related symptoms may include one or more of the following: shortness of breath, chest tightness, wheeze, cough, skin rash, hives, and irritation of the nose, throat, skin or eye. Hazard communication training required by sections 5191 or 5194 shall address these health hazards and symptoms along with the measures taken by the employer to evaluate and control exposures that can include medical evaluations, exposure monitoring, ventilation systems, work practices, and personal protective equipment. The communication system required by section 3203 shall inform employees where to report possible health symptoms and where to ask questions, report concerns, and receive information about the employer’s evaluation and control measures.