

§ 1915.1000

29 CFR Ch. XVII (7-1-14 Edition)

workplace and to specify what equipment employees may use in case of fire.

II. WORK SITE FIRE HAZARDS AND HOW TO PROPERLY CONTROL THEM

- A. Measures to contain fires.
B. Teaching selected employees how to use fire protection equipment.
C. What to do if you discover a fire.
D. Potential ignition sources for fires and how to control them.
E. Types of fire protection equipment and systems that can control a fire.
F. The level of firefighting capability present in the facility, vessel, or vessel section.
G. Description of the personnel responsible for maintaining equipment, alarms, and systems that are installed to prevent or control fire ignition sources, and to control fuel source hazards.

III. ALARM SYSTEMS AND HOW TO REPORT FIRES

- A. A demonstration of alarm procedures, if more than one type exists.
B. The work site emergency alarm system.
C. Procedures for reporting fires.

IV. HOW TO EVACUATE IN DIFFERENT EMERGENCY SITUATIONS

- A. Emergency escape procedures and route assignments.
B. Procedures to account for all employees after completing an emergency evacuation.
C. What type of evacuation is needed and what the employee's role is in carrying out the plan.
D. Helping physically impaired employees.

V. EMPLOYEE AWARENESS

Names, job titles, or departments of individuals who can be contacted for further information about this plan.

Subparts Q-Y [Reserved]

Subpart Z—Toxic and Hazardous Substances

SOURCE: 58 FR 35514, July 1, 1993, unless otherwise noted.

§ 1915.1000 Air contaminants.

Wherever this section applies, an employees's exposure to any substance listed in Table Z—Shipyards of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

(a)(1) Substances with limits preceded by "C"—Ceiling values. An employee's exposure to any substance in Table Z—

Shipyards, the exposure limit of which is preceded by a "C," shall at no time exceed the exposure limit given for that substance. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time over a working day.

(2) Other Substances—8-hour Time Weighted Averages. An employee's exposure to any substance in Table Z—Shipyards, the exposure limit of which is not preceded by a "C," shall not exceed the 8-hour Time Weighted Average given for that substance in any 8-hour work shift of a 40-hour work week.

(b)–(c) [Reserved]

(d) Computation formula. The computation formula which shall apply to employee exposure to more than one substance for which 8-hour time weighted averages are listed in subpart Z of 29 CFR part 1915 in order to determine whether an employee is exposed over the regulatory limit is as follows:

(1)(i) The cumulative exposure for an 8-hour work shift shall be computed as follows:

E = (C\_a T\_a + C\_b T\_b + ... C\_n T\_n) ÷ 8

Where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time T where the concentration remains constant.

T is the duration in hours of the exposure at the concentration C.

The value of E shall not exceed the 8-hour time weighted average specified in subpart Z of 29 CFR part 1915 for the material involved.

(ii) To illustrate the formula prescribed in paragraph (d)(1)(i) of this section, assume that Substance A has an 8-hour time weighted average limit of 100 ppm noted in Table Z—Shipyards. Assume that an employee is subject to the following exposure:

- Two hours exposure at 150 ppm
Two hours exposure at 75 ppm
Four hours exposure at 50 ppm

Substituting this information in the formula, we have

(2 × 150 + 2 × 75 + 4 × 50) ÷ 8 = 81.25 ppm

Since 81.25 ppm is less than 100 ppm, the 8-hour time weighted average limit, the exposure is acceptable.

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(2)(i) in case of a mixture of air contaminants an employer shall compute the equivalent exposure as follows:

$$E_m = (C_1+L_1+C_2+L_2)+\dots(C_n+L_n)$$

Where:

$E_m$  is the equivalent exposure for the mixture.

$C$  is the concentration of a particular contaminant.

$L$  is the exposure limit for that substance specified in subpart Z of 29 CFR part 1915.

The value of  $E_m$  shall not exceed unity (1).

(ii) To illustrate the formula prescribed in paragraph (d)(2)(i) of this

section, consider the following exposures:

Substance	Actual concentration of 8 hour exposure (ppm)	8 hr. TWA PEL (ppm)
B .....	500	1000
C .....	45	200
D .....	40	200

Substituting in the formula, we have:  
 $E_m=500\div1,000+45\div200+40\div200$   
 $E_m=0.500+0.225+0.200$   
 $E_m=0.925$

Since  $E_m$  is less than unity (1), the exposure combination is within acceptable limits.

TABLE Z—SHIPYARDS

Substance	CAS No. <sup>d</sup>	ppm <sup>a *</sup>	mg/m <sup>3</sup> <sup>b *</sup>	Skin Designation
Abate; see Temephos.				
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-Acetylaminofluorine; see § 1915.1014 .....	53-96-3			
Acetylene .....	74-86-2	E		
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 § 1915.1045 .....	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 .....	1344-28-1			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Aluminum, (as Al) Metal .....	7429-90-5			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Alundum; see alpha-Alumina.				
4-Aminodiphenyl; see § 1915.1011 .....	92-67-1			
2-Aminoethanol; see Ethanolamine.				
2-Aminopyridine .....	504-29-0	0.5	2	—
Ammonia .....	7664-41-7	50	35	—
Ammonium sulfamate .....	7773-06-0			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
n-Amyl acetate .....	628-63-7	100	525	—
sec-Amyl acetate .....	626-38-0	125	650	—
Aniline and homologs .....	62-53-3	5	19	X
Anisidine (o-, p-isomers) .....	29191-52-4	—	0.5	X
Antimony and compounds (as Sb) .....	7440-36-0	—	0.5	—
ANTU (alpha Naphthylthiourea) .....	86-88-4	—	0.3	—
Argon .....	7440-37-1	E		
Arsenic, inorganic compounds (as As); see § 1915.1018 .....	7440-38-2	—	—	—
Arsenic, organic compounds (as As) .....	7440-38-2	—	0.5	—
Arsine .....	7784-42-1	0.05	0.2	—

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> <sup>b</sup> *	Skin Designation
Asbestos; see 1915.1001.				
Azinphos-methyl .....	86-50-0	—	0.2	X
Barium, soluble compounds (as Ba) .....	7440-39-3	—	0.5	—
Barium sulfate .....	7727-43-7			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Benomyl .....	17804-35-2			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Benzene <sup>g</sup> ; see § 1915.1028 .....	71-43-2			
Benzidine; see § 1915.1010 .....	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	—	0.002	—
Biphenyl; see Diphenyl.				
Bismuth telluride, Undoped .....	1304-82-1			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Bisphenol A; see Diglycidyl ether.				
Boron oxide .....	1303-86-2			
Total dust .....		—	15	—
Boron tribromide .....	10294-33-4	1	10	—
Boron trifluoride .....	7637-07-2	(C)1	(C)3	—
Bromine .....	7726-95-6	0.1	0.7	—
Bromine pentafluoride .....	7789-30-2	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(l) .....	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 <sub>3</sub> ); see				
1915.1026 <sup>n</sup> .....	1189-85-1			
n-Butyl glycidyl ether (BGE) .....	2426-08-6	50	270	—
Butyl mercaptan .....	109-79-5	0.5	1.5	—
p-tert-Butyltoluene .....	98-51-1	10	60	—
Cadmium dust fume (as Cd); see				
1915.1027 .....	7440-43-9	—	—	—
Calcium carbonate .....	1317-65-3			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Calcium hydroxide .....	1305-62-0	—	—	—
Calcium hydroxide.				
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			

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> b*	Skin Designation
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	20	60	X
Carbon monoxide .....	630-08-0	50	55	—
Carbon tetrachloride .....	56-23-5	10	65	X
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	1	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	50	240	—
bis(Chloromethyl) ether; see § 1915.1008 ...	542-88-1			
Chloromethyl methyl ether; see § 1915.1006	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	—
Chromium (II) compounds.				
(as Cr) .....	7440-47-3	—	0.5	—
Chromium (III) compounds.				
(as Cr) .....	7440-47-3	—	0.5	—
Chromium (VI) compounds; see 1915.1026 <sup>e</sup> .				
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 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	—
Copper .....	7440-50-8			
Fume (as Cu) .....		—	0.1	—
Dusts and mists (as Cu) .....		—	1	—
Corundum; see Emery.				
Cotton dust (raw) .....		—	1	—
Crag herbicide (Sesone) .....	136-78-7			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> <sup>b</sup> *	Skin Designation
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) .....	Varies with	—	5	—
	Compound			
Cyanogen .....	460-19-5	10	—	—
Cyclohexane .....	110-82-7	300	1050	—
Cyclohexanol .....	108-93-0	50	200	—
Cyclohexanone .....	108-94-1	50	200	—
Cyclohexene .....	110-83-8	300	1015	—
Cyclonite .....	121-82-4	—	1.5	X
Cyclopentadiene .....	542-92-7	75	200	—
2,4-D (Dichlorophenoxyacetic 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 (CBCP); see § 1915.1044 .....	96-12-8		—	
1,2-Dibromoethane; see Ethylene dibromide.				
Dibutyl phosphate .....	107-66-4	1	5	—
Dibutyl phthalate .....	84-74-2	—	5	—
Dichloroacetylene .....	7572-29-4	(C)0.1	(C)0.4	—
o-Dichlorobenzene .....	95-50-1	(C)50	(C)300	—
p-Dichlorobenzene .....	106-46-7	75	450	—
3,3'-Dichlorobenzidine; see § 1915.1007 .....	91-94-1			
Dichlorodifluoromethane .....	75-71-8	1000	4950	—
1,3-Dichloro-5,5-dimethyl hydantoin .....	118-52-5	—	0.2	—
Dichlorodiphenyltrichloroethane (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.				
Dichloromonofluoromethane .....	75-43-4	1000	4200	—
1,1-Dichloro-1-nitroethane .....	594-72-9	(C)10	(C)60	—
1,2-Dichloropropane; see Propylene dichloride.				
Dichlorotetrafluoroethane .....	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	—
Diethylene triamine .....	111-40-0	(C)10	(C)42	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-Dimethylaminoazobenzene; see § 1915.1015 .....	60-11-7			
Dimethoxymethane; see Methylal.				
Dimethyl acetamide .....	127-19-5	10	35	X
Dimethylamine .....	124-40-3	10	18	—

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> b*	Skin Designation
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 .....	77-78-3	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	—
Diphenylamine .....	122-39-4	—	10	—
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	—
Endosulfan .....	115-29-7	—	0.1	X
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.				
Ethane .....	74-84-0	E		
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	0.5	1	—
Ethyl silicate .....	78-10-4	100	850	—
Ethylene .....	74-85-1	E		
Ethylene chlorohydrin .....	107-07-3	5	16	X
Ethylenediamine .....	107-15-3	10	25	—
Ethylene dibromide .....	106-93-4	(C)25	(C)190	X
Ethylene dichloride (1,2-Dichloroethane) .....	107-06-2	50	200	—
Ethylene glycol dinitrate .....	628-96-6	(C)0.2	(C)1	X
Ethylene glycol methyl acetate; see Methyl cellosolve acetate.				
Ethyleneimine; see § 1915.1012 .....	151-56-4			
Ethylene oxide; see § 1915.1047 .....	75-21-8			

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> b*	Skin Designation
Ethylidene chloride; see 1,1-Dichloroethane.				
N-Ethylmorpholine .....	100-74-3	20	94	X
Ferbam .....	14484-64-1			
Total dust .....		—	15	—
Ferrovandium dust .....	12604-58-9	—	1	—
Fibrous Glass.				
Total dust .....			15	—
Respirable fraction .....		—	5	—
Fluorides (as F) .....	Varies with compound	—	2.5	—
Fluorine .....	7782-41-4	0.1	0.2	—
Fluorotrichloromethane (Trichlorofluoromethane) .....	75-69-4	1000	5600	—
Formaldehyde; see § 1915.1048 .....	50-00-0			
Formic acid .....	64-18-6	5	9	—
Furfural .....	98-01-1	5	20	X
Furfuryl alcohol .....	98-00-0	50	200	—
Gasoline .....	8006-61-9		A <sup>3</sup>	—
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	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
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	—
Helium .....	7440-59-7	E		
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 .....	1333-74-0	E		
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	3	2	—
Hydrogen peroxide .....	7722-84-1	1	1.4	—
Hydrogen selenide (as Se) .....	7783-07-5	0.05		
Hydrogen sulfide .....	7783-06-4	10	15	—
Hydroquinone .....	123-31-9	—	2	—
Indene .....	95-13-6	10	45	—
Indium and compounds (as In) .....	7440-74-6	—	0.1	—
Iodine .....	7553-56-2	(C)0.1	(C)1	—
Iron oxide fume .....	1309-37-1	—	10	—
Iron salts (soluble) (as Fe) .....	Varies with compound	—	1	—
Isoamyl acetate .....	123-92-2	100	525	—
Isoamyl alcohol (primary and secondary) ....	123-51-3	100	360	—
Isobutyl acetate .....	110-19-0	150	700	—
Isobutyl alcohol .....	78-83-1	100	300	—

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> <sup>b</sup> *	Skin Designation
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 § 1915.1025 ...	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. (Liquefied 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		
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	—	0.1	X
Mercury (organo) alkyl compounds (as Hg) .....	7439-97-6	—	0.01	X
Mercury (vapor) (as Hg) .....	7439-97-6	—	0.1	X
Mesityl oxide .....	141-79-7	25	100	—
Methane .....	74-82-8	E		
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	100	210	—
Methyl chloroform (1,1,1-Trichloroethane) ...	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



TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> b*	Skin Designation
Methylene chloride; see § 1910.1052.				
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	0.5	1	—
Methyl methacrylate .....	80-62-6	100	410	100
Methyl propyl ketone; see 2-Pentanone.				
Methyl silicate .....	681-84-5	5	30	—
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.				
Mineral wool.				
Total dust .....		—	15	—
Respirable dust .....		—	5	—
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 § 1915.1004 .....	134-32-7			
beta-Naphthylamine; see § 1915.1009 .....	91-59-8			—
Neon .....	7440-01-9	.....		
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 § 1915.1003 .....	92-93-3			
Nitroethane .....	79-24-3	100	310	—
Nitrogen .....	7727-37-9	E		
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 § 1915.1016 ..	62-79-9			—
Nitrotoluene (all isomers) .....		5	30	X
o-isomer .....	88-72-2;			
m-isomer .....	99-08-1;			
p-isomer .....	99-99-0			
Nitrotrichloromethane; see Chloropicrin.				
Nitrous oxide .....	10024-97-2	E		
Octachloronaphthalene .....	2234-13-1	—	0.1	X
Octane .....	111-65-9	400	1900	—
Oil mist, mineral .....	8012-95-1	—	5	—
Osmium tetroxide (as Os) .....	20816-12-0	—	0.002	—

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TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> b*	Skin Designation
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; 1910-42-5; 2074-50-2	—	0.5	X
Parathion .....	56-38-2	—	0.1	—
Particulates not otherwise regulated. Total dust organic and inorganic ...		—	15	—
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	500	1500	—
2-Pentanone (Methyl propyl ketone) .....	107-87-9	200	700	—
Perchloroethylene (Tetrachloroethylene) .....	127-18-4	100	670	—
Perchloromethyl mercaptan .....	594-42-3	0.1	0.8	—
Perchloryl fluoride .....	7616-94-6	3	13.5	—
Perlite .....	93763-70-3			
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Petroleum distillates (Naphtha)(Rubber Sol- vent) .....			A <sup>3</sup>	—
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	—
Piperazine dihydrochloride .....	142-64-3	—	—	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	—
Polytetrafluoroethylene decomposition prod- ucts .....			A <sup>2</sup>	
Portland cement .....	65997-15-1			
Total dust .....		15	—	10
Respirable fraction .....		5	—	—
Propargyl alcohol .....	107-19-7	1	—	X
beta-Propriolactone; see § 1915.1013 .....	57-57-8			

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> <sup>b</sup> *	Skin Designation
Propionic acid .....	79-09-4	—	—	—
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	—	10	—
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	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silica, amorphous, diatomaceous earth, containing less than 1% crystalline silica .....	61790-53-2	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silica, crystalline cristobalite, respirable dust .....	14464-46-1	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silica, crystalline quartz, respirable dust .....	14808-60-7	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silica, crystalline tripoli (as quartz), respirable dust .....	1317-95-9	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silica, crystalline tridymite, respirable dust ..	15468-32-3	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silica, fused, respirable dust .....	60676-86-0	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silicates (less than 1% crystalline silica).				
Mica (respirable dust) .....	12001-26-2	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Soapstone, total dust .....	—	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Soapstone, respirable dust .....	—	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Talc (containing asbestos) .....	—	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Talc (containing no asbestos), respirable dust .....	14807-96-6	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Tremolite, asbestiform .....	—	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Silicon .....	7440-21-3	—	15	—
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Silicon carbide .....	409-21-2	—	15	—
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	—	15	—
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Stibine .....	7803-52-3	0.1	0.5	—
Stoddard solvent .....	8052-41-3	200	1150	—
Strychnine .....	57-24-9	—	0.15	—
Styrene .....	100-42-5	100	420	50
Sucrose .....	57-50-1	—	15	—
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Sulfur dioxide .....	7446-09-5	5	13	—
Sulfur hexafluoride .....	2551-62-4	1000	6000	—

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a*</sup>	mg/m <sup>3</sup> <sup>b*</sup>	Skin Designation
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-trichlorophenoxyacetic 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
Teflon decomposition products .....			A2	
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 pyrophosphate) .....	107-49-3	—	0.05	X
Terphenyls .....	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-Tetrachloroethane .....	79-34-5	5	35	X
Tetrachloroethylene; see Perchloroethylene.				
Tetrachloromethane; see Carbon tetra-				
chloride.				
Tetrachloronaphthalene .....	1335-88-2	—	2	X
Tetraethyl lead (as Pb) .....	78-00-2	—	0.1	X
Tetrahydrofuran .....	109-99-9	200	590	—
Tetramethyl lead, (as Pb) .....	75-74-1	—	0.15	X
Tetramethyl succinonitrile .....	3333-52-6	0.5	3	X
Tetranitromethane .....	509-14-8	1	8	—
Tetryl (2,4,6-Trinitrophenylmethylnitramine)	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	—
Tin oxide (as Sn) .....	21651-19-4	—	—	—
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Titanium dioxide .....	13463-67-7			
Total dust .....		—	15	—
Toluene .....	108-88-3	200	750	100
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 chloro-				
form.				
1,1,2-Trichloroethane .....	79-00-5	10	45	X
Trichloroethylene .....	79-01-6	100	535	—
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	—
Trimethyl benzene .....	25551-13-7	25	120	—
2,4,6-Trinitrophenyl; see Picric acid.				

TABLE Z—SHIPYARDS—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup> *	mg/m <sup>3</sup> <sup>b</sup> *	Skin Designation
2,4,6-Trinitrophenylmethylnitramine; 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	—
Tungsten (as W) .....	7440-33-7			
Insoluble compounds .....		—	5	—
Soluble compounds .....		—	1	—
Turpentine .....	8006-64-2	100	560	—
Uranium (as U) .....	7440-61-1			
Soluble compounds .....		—	0.2	—
Insoluble compounds .....		—	0.2	—
Vanadium .....	1314-62-1			
Respirable dust (as V <sub>2</sub> O <sub>5</sub> ) .....		—	(C)0.5	—
Fume (as V <sub>2</sub> O <sub>5</sub> ) .....		—	(C)0.1	—
Vegetable oil mist.				
Total dust .....		—	15	—
Respirable fraction .....		—	5	—
Vinyl benzene; see Styrene.				
Vinyl chloride; see § 1915.1017 .....	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	—

MINERAL DUSTS

Substance	mppcf <sup>(i)</sup>
SILICA:	
Crystalline	
Quartz. Threshold Limit calculated from the formula .....	250 <sup>(k)</sup>
	%SiO <sub>2</sub> +5
Cristobalite.	
Amorphous, including natural diatomaceous earth .....	20
SILICATES (less than 1% crystalline silica)	
Mica .....	20
Portland cement .....	50
Soapstone .....	20
Talc (non-asbestiform) .....	20
Talc (fibrous), use asbestos limit .....	--
Graphite (natural) .....	15
Inert or Nuisance Particulates: <sup>(m)</sup>	50 (or 15 mg/m <sup>3</sup> whichever is the smaller) of total dust <1% SiO <sub>2</sub>

Conversion factors.  
mppcf × 35.3 = million particles per cubic meter = particles per c.c.

## Footnotes to Table Z—Shipyards:

<sup>1</sup> [Reserved]<sup>2</sup> See Mineral Dusts Table.<sup>3</sup> Use Asbestos Limit § 1915.1001.<sup>4</sup> See 1915.1001.

\* 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.

<sup>a</sup> Parts of vapor or gas per million parts of contaminated air by volume at 25 °C and 760 torr.

<sup>b</sup> 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.

<sup>c</sup> [Reserved]

<sup>d</sup> 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.

<sup>e</sup><sup>1</sup> [Reserved]

<sup>g</sup> For sectors excluded from § 1915.1028 the limit is 10 ppm TWA.

<sup>h</sup> Where OSHA has published a proposal for a substance but has not issued a final rule, the proposal is referenced and the existing limit is published.

<sup>i</sup> [Reserved]

<sup>j</sup> Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.

<sup>k</sup> The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.

<sup>m</sup> Covers all organic and inorganic particulates not otherwise regulated. Same as Particulates Not Otherwise Regulated.

<sup>n</sup> If the exposure limit in § 1915.1026 is stayed or is otherwise not in effect, the exposure limit is a ceiling of 0.1 mg/m<sup>3</sup>.

<sup>o</sup> If the exposure limit in § 1915.1026 is stayed or is otherwise not in effect, the exposure limit is 0.1 mg/m<sup>3</sup> (as CrO<sub>3</sub>) as an 8-hour TWA.

The 1970 TLV uses letter designations instead of a numerical value as follows:

A<sup>1</sup> [Reserved]

A<sup>2</sup> Polytetrafluoroethylene decomposition products. Because these products decompose in part by hydrolysis in alkaline solution, they can be quantitatively determined in air as fluoride to provide an index of exposure. No TLV is recommended pending determination of the toxicity of the products, but air concentrations should be minimal.

A<sup>3</sup> Gasoline and/or Petroleum Distillates. The composition of these materials varies greatly and thus a single TLV for all types of these materials is no longer applicable. The content of benzene, other aromatics and additives should be determined to arrive at the appropriate TLV.

E Simple asphyxiants. The limiting factor is the available oxygen which shall be at least 18% and be within the requirement addressing explosion in subpart B of part 1915.

[58 FR 35514, July 1, 1993, as amended at 61 FR 56856, Nov. 4, 1996; 62 FR 1619, Jan. 10, 1997; 67 FR 44545, July 3, 2002; 71 FR 10377, Feb. 28, 2006; 71 FR 36009, June 23, 2006; 76 FR 80740, Dec. 27, 2011]

**§ 1915.1001 Asbestos.**

(a) *Scope and application.* This section regulates asbestos exposure in all shipyard employment work as defined in 29 CFR part 1915, including but not limited to the following:

(1) Demolition or salvage of structures, vessels, and vessel sections where asbestos is present;

(2) Removal or encapsulation of materials containing asbestos;

(3) Construction, alteration, repair, maintenance, or renovation of vessels, vessel sections, structures, substrates, or portions thereof, that contain asbestos;

(4) Installation of products containing asbestos;

(5) Asbestos spill/emergency cleanup; and

(6) Transportation, disposal, storage, containment of and housekeeping activities involving asbestos or products containing asbestos, on the site or location at which construction activities are performed.

(7) Coverage under this standard shall be based on the nature of the work operation involving asbestos exposure.

(8) This section does not apply to asbestos-containing asphalt roof cements, coatings and mastics.

(b) *Definitions.* *Aggressive method* means removal or disturbance of building/vessel materials by sanding, abrading, grinding, or other method that