

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Acetaldehyde [75-07-0] (1992)	—	C 25 ppm	A3	44.05	Eye & URT irr
Acetic acid [64-19-7] (2003)	10 ppm	15 ppm	—	60.00	URT & eye irr; pulm func
Acetic anhydride [108-24-7] (1990)	5 ppm	—	—	102.09	Eye & URT irr
Acetone [67-64-1] (1996)	500 ppm	750 ppm	A4; BEI	58.05	URT & eye irr; CNS impair; hematologic eff
Acetone cyanohydrin [75-86-5] , as CN (1991)	—	C 5 mg/m ³	Skin	85.10	URT irr; headache; hypoxia/cyanosis
Acetonitrile [75-05-8] (1996)	20 ppm	—	Skin; A4	41.05	LRT irr
Acetophenone [98-86-2] (1990)	10 ppm	—	—	120.15	Eye irr
Acetylene [74-86-2] (1990)		Simple asphyxiant ^(D)		26.02	Asphyxia
Acetylsalicylic acid (Aspirin) [50-78-2] (1977)	5 mg/m ³	—	—	180.15	Skin & eye irr
Acrolein [107-02-8] (1995)	—	C 0.1 ppm	Skin; A4	56.06	Eye & URT irr; pulm edema; pulm emphysema
Acrylamide [79-06-1] (2003)	0.03 mg/m ³ (IFV)	—	Skin; A3	71.08	CNS impair
Acrylic acid [79-10-7] (1986)	2 ppm	—	Skin; A4	72.06	URT irr
Acrylonitrile [107-13-1] (1997)	2 ppm	—	Skin; A3	53.05	CNS impair; LRT irr
Adipic acid [124-04-9] (1990)	5 mg/m ³	—	—	146.14	URT irr; ANS impair

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Adiponitrile [111-69-3] (1990)	2 ppm	—	Skin	108.10	URT & LRT irr
Alachlor [15972-60-8] (2006)	1 mg/m ³ (IFV)	—	SEN; A3	269.8	Hemosiderosis
Aldrin [309-00-2] (2006)	0.05 mg/m ³ (IFV)	—	Skin; A3	364.93	CNS impair; liver & kidney dam
Aliphatic hydrocarbon gases Alkane [C ₁ —C ₄] (2001)	1000 ppm	—	—	Varies	Card sens; CNS impair
Allyl alcohol [107-18-6] (1996)	0.5 ppm	—	Skin; A4	58.08	Eye & URT irr
Allyl chloride [107-05-1] (1990)	1 ppm	2 ppm	A3	76.50	Eye & URT irr; liver & kidney dam
Allyl glycidyl ether (AGE) [106-92-3] (1995)	1 ppm	—	A4	114.14	URT irr; dermatitis; eye & skin irr
Allyl propyl disulfide [2179-59-1] (2001)	0.5 ppm	—	SEN	148.16	URT & eye irr
Aluminum metal [7429-90-5] and Insoluble compounds (2007)	1 mg/m ³ (R)	—	A4	26.98 Varies	Pneumoconiosis; LRT irr; neurotoxicity
4-Aminodiphenyl [92-67-1] (1968)	— (L)	—	Skin; A1	169.23	Bladder & liver cancer
2-Aminopyridine [504-29-0] (1966)	0.5 ppm	—	—	91.11	Headache; nausea; CNS impair; dizziness
Amitrole [61-82-5] (1983)	0.2 mg/m ³	—	A3	84.08	Thyroid eff
Ammonia [7664-41-7] (1970)	25 ppm	35 ppm	—	17.03	Eye dam; URT irr

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	TWA	STEL	Notations		
Ammonium chloride fume [12125-02-9] (1970)	10 mg/m ³	20 mg/m ³	—	53.50	Eye & URT irr
Ammonium perfluorooctanoate [3825-26-1] (1992)	0.01 mg/m ³	—	Skin; A3	431.00	Liver dam
Ammonium sulfamate [7773-06-0] (1956)	10 mg/m ³	—	—	114.13	
tert-Amyl methyl ether (TAME) [994-05-8] (1999)	20 ppm	—	—	102.2	CNS impair; Embryo/fetal dam
Aniline [62-53-3] (1979)	2 ppm	—	Skin; A3; BEI	93.12	MeHb-emia
o-Anisidine [90-04-0] (1979)	0.5 mg/m ³	—	Skin; A3; BEI _M	123.15	MeHb-emia
p-Anisidine [104-94-9] (1979)	0.5 mg/m ³	—	Skin; A4; BEI _M	123.15	MeHb-emia
Antimony [7440-36-0] and compounds, as Sb (1979)	0.5 mg/m ³	—	—	121.75	Skin & URT irr
Antimony hydride [7803-52-3] (1990)	0.1 ppm	—	—	124.78	Hemolysis; kidney dam; LRT irr
Antimony trioxide [1309-64-4] production (1977)	— (L)	—	A2	291.5	Lung cancer; pneumoconiosis
ANTU [86-88-4] (1990)	0.3 mg/m ³	—	A4; Skin	202.27	Thyroid eff; nausea
Argon [7440-37-1] (1990)		Simple asphyxiant ^(D)		39.95	Asphyxia
Arsenic [7440-38-2] and inorganic compounds, as As (1990)	0.01 mg/m ³	—	A1; BEI	74.92 Varies	Lung cancer
Arsine [7784-42-1] (2006)	0.005 ppm	—	—	77.95	PNS impair; vascular system impair; kidney & liver impair

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	TWA	STEL	Notations		
Asbestos, All forms [1332-21-4] (1994)	0.1 f/cc ^(F)	—	A1	NA	Pneumoconiosis; lung cancer; mesothelioma
Asphalt (Bitumen) fume [8052-42-4], as benzene-soluble aerosol (1999)	0.5 mg/m ³ ^(I)	—	A4; BEI _P	—	URT & eye irr
Atrazine [1912-24-9] (1985)	5 mg/m ³	—	A4	216.06	CNS convul
Azinphos-methyl [86-50-0] (1999)	0.2 mg/m ³ ^(IFV)	—	Skin; SEN; A4; BEI _A	317.34	Cholinesterase inhib
Barium [7440-39-3] and soluble compounds, as Ba (1990)	0.5 mg/m ³	—	A4	137.30	Eye, skin, & GI irr; muscular stim
Barium sulfate [7727-43-7] (1983)	10 mg/m ³	—	—	233.43	Pneumoconiosis
Benomyl [17804-35-2] (2007)	1 mg/m ³ ^(I)	—	SEN; A3	290.32	URT irr; male repro dam; testicular dam; embryo/fetal dam
Benz[a]anthracene [56-55-3] (1990)	— ^(L)	—	A2; BEI _P	228.30	Skin cancer
Benzene [71-43-2] (1996)	0.5 ppm	2.5 ppm	Skin; A1; BEI	78.11	Leukemia
Benzidine [92-87-5] (1979)	— ^(L)	—	Skin; A1	184.23	Bladder cancer
Benzo[b]fluoranthene [205-99-2] (1990)	— ^(L)	—	A2; BEI _P	252.30	Cancer
Benzo[a]pyrene [50-32-8] (1990)	— ^(L)	—	A2; BEI _P	252.30	Cancer

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	TWA	STEL	Notations		
Benzotrichloride [98-07-7] (1994)	—	C 0.1 ppm	Skin; A2	195.50	Eye, skin, & URT irr
Benzoyl chloride [98-88-4] (1992)	—	C 0.5 ppm	A4	140.57	URT & eye irr
Benzoyl peroxide [94-36-0] (1990)	5 mg/m ³	—	A4	242.22	URT & skin irr
Benzyl acetate [140-11-4] (1990)	10 ppm	—	A4	150.18	URT irr
Benzyl chloride [100-44-7] (1990)	1 ppm	—	A3	126.58	Eye, skin, & URT irr
* Beryllium [7440-41-7] and compounds, as Be (2008)	0.00005 mg/m ³ (I)	—	Skin; SEN; A1	9.01	Beryllium sens; chronic beryllium disease (berylliosis)
Biphenyl [92-52-4] (1979)	0.2 ppm	—	—	154.20	Pulm func
Bis (2-dimethylaminoethyl) ether (DMAEE) [3033-62-3] (1997)	0.05 ppm	0.15 ppm	Skin	160.26	URT, eye, & skin irr
Bismuth telluride (1970)				800.83	Lung dam
Undoped [1304-82-1]	10 mg/m ³	—	A4		
Se-doped, as Bi ₂ Te ₃	5 mg/m ³	—	A4		
Borate compounds, Inorganic [1330-43-4; 1303-96-4; 10043-35-3; 12179-04-3] (2004)	2 mg/m ³ (I)	6 mg/m ³ (I)	A4	Varies	URT irr
Boron oxide [1303-86-2] (1985)	10 mg/m ³	—	—	69.64	Eye & URT irr

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	TWA	STEL	Notations		
Boron tribromide [10294-33-4] (1990)	—	C 1 ppm	—	250.57	URT irr
Boron trifluoride [7637-07-2] (1962)	—	C 1 ppm	—	67.82	LRT irr; pneumonitis
Bromacil [314-40-9] (1976)	10 mg/m ³	—	A3	261.11	Thyroid eff
Bromine [7726-95-6] (1991)	0.1 ppm	0.2 ppm	—	159.81	URT & LRT irr; lung dam
Bromine pentafluoride [7789-30-2] (1979)	0.1 ppm	—	—	174.92	Eye, skin, & URT irr
* Bromoform [75-25-2] (2008)	0.5 ppm	—	A3	252.73	Liver dam; URT & eye irr
1-Bromopropane [106-94-5] (2003)	10 ppm	—	—	122.99	Liver dam; embryo/fetal dam; neurotoxicity
1,3-Butadiene [106-99-0] (1994)	2 ppm	—	A2	54.09	Cancer
Butane, All isomers [106-97-8; 75-28-5]	See Aliphatic hydrocarbon gases: Alkane [C ₁ —C ₄]				
n-Butanol [71-36-3] (1998)	20 ppm	—	—	74.12	Eye & URT irr
sec-Butanol [78-92-2] (2001)	100 ppm	—	—	74.12	URT irr; CNS impair
tert-Butanol [75-65-0] (1992)	100 ppm	—	A4	74.12	CNS impair
Butenes, All isomers [106-98-9; 107-01-7; 590-18-1; 624-64-6; 25167-67-3]	250 ppm	—	—	56.11	Body weight eff
Isobutene [115-11-7] (2007)	250 ppm	—	A4	—	URT irr; body weight eff

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
2-Butoxyethanol (EGBE) [111-76-2] (1996)	20 ppm	—	A3	118.17	Eye & URT irr
2-Butoxyethyl acetate (EGBEA) [112-07-2] (2000)	20 ppm	—	A3	160.2	Hemolysis
n-Butyl acetate [123-86-4] (1995)	150 ppm	200 ppm	—	116.16	Eye & URT irr
sec-Butyl acetate [105-46-4] (1965)	200 ppm	—	—	116.16	Eye & URT irr
tert-Butyl acetate [540-88-5] (1965)	200 ppm	—	—	116.16	Eye & URT irr
n-Butyl acrylate [141-32-2] (1996)	2 ppm	—	SEN; A4	128.17	Skin, eye, & URT irr
n-Butylamine [109-73-9] (1985)	—	C 5 ppm	Skin	73.14	Headache; URT & eye irr
Butylated hydroxytoluene (BHT) [128-37-0] (2001)	2 mg/m ³ (IFV)	—	A4	220.34	URT irr
tert-Butyl chromate, as CrO ₃ [1189-85-1] (1960)	—	C 0.1 mg/m ³	Skin	230.22	LRT & skin irr
n-Butyl glycidyl ether (BGE) [2426-08-6] (2002)	3 ppm	—	Skin; SEN	130.21	Testicular dam
n-Butyl lactate [138-22-7] (1973)	5 ppm	—	—	146.19	Headache; URT irr
n-Butyl mercaptan [109-79-5] (1968)	0.5 ppm	—	—	90.19	URT irr
o-sec-Butylphenol [89-72-5] (1977)	5 ppm	—	Skin	150.22	URT, eye, & skin irr
p-tert-Butyl toluene [98-51-1] (1990)	1 ppm	—	—	148.18	Eye & URT irr; nausea

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	TWA	STEL	Notations		
Cadmium [7440-43-9] and compounds, as Cd (1990)	0.01 mg/m ³ 0.002 mg/m ³ (R)	— —	A2; BEI A2; BEI	112.40 Varies	Kidney dam
Calcium chromate [13765-19-0], as Cr (1988)	0.001 mg/m ³	—	A2	156.09	Lung cancer
Calcium cyanamide [156-62-7] (1973)	0.5 mg/m ³	—	A4	80.11	Eye & URT irr
Calcium hydroxide [1305-62-0] (1979)	5 mg/m ³	—	—	74.10	Eye, URT, & skin irr
Calcium oxide [1305-78-8] (1990)	2 mg/m ³	—	—	56.08	URT irr
Calcium silicate, synthetic nonfibrous [1344-95-2] (1988)	10 mg/m ³ (E)	—	A4	—	URT irr
Calcium sulfate [7778-18-9; 10034-76-1; 10101-41-4; 13397-24-5] (2005)	10 mg/m ³ (I)	—	—	136.14	Nasal symptoms
Camphor, synthetic [76-22-2] (1990)	2 ppm	3 ppm	A4	152.23	Eye & URT irr; anosmia
Caprolactam [105-60-2] (1997)	5 mg/m ³ (IFV)	—	A5	113.16	URT irr
Captafol [2425-06-1] (1990)	0.1 mg/m ³	—	Skin; A4	349.06	Skin irr
Captan [133-06-2] (1999)	5 mg/m ³ (I)	—	SEN; A3	300.60	Skin irr
Carbaryl [63-25-2] (2007)	0.5 mg/m ³ (IFV)	—	Skin; A4; BEI _A	201.20	Cholinesterase inhib; male repro dam; embryo dam

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	TWA	STEL	Notations		
Carbofuran [1563-66-2] (2001)	0.1 mg/m ³ (IFV)	—	A4; BEI _A	221.30	Cholinesterase inhib
Carbon black [1333-86-4] (1985)	3.5 mg/m ³	—	A4	—	
Carbon dioxide [124-38-9] (1983)	5000 ppm	30,000 ppm	—	44.01	Asphyxia
Carbon disulfide [75-15-0] (2005)	1 ppm	—	Skin; A4; BEI	76.14	PNS impair
Carbon monoxide [630-08-0] (1989)	25 ppm	—	BEI	28.01	COHb-emia
Carbon tetrabromide [558-13-4] (1972)	0.1 ppm	0.3 ppm	—	331.65	Liver dam; eye, URT, & skin irr
Carbon tetrachloride [56-23-5] (1990)	5 ppm	10 ppm	Skin; A2	153.84	Liver dam
Carbonyl fluoride [353-50-4] (1990)	2 ppm	5 ppm	—	66.01	LRT irr; bone dam
Catechol [120-80-9] (1985)	5 ppm	—	Skin; A3	110.11	Eye & URT irr; dermatitis
Cellulose [9004-34-6] (1985)	10 mg/m ³	—	—	NA	URT irr
Cesium hydroxide [21351-79-1] (1990)	2 mg/m ³	—	—	149.92	URT, skin, & eye irr
Chlordane [57-74-9] (1985)	0.5 mg/m ³	—	Skin; A3	409.80	Liver dam
Chlorinated camphene [8001-35-2] (1990)	0.5 mg/m ³	1 mg/m ³	Skin; A3	414.00	CNS convul; liver dam
o-Chlorinated diphenyl oxide [31242-93-0] (1979)	0.5 mg/m ³	—	—	377.00	Chloracne; liver dam
Chlorine [7782-50-5] (1986)	0.5 ppm	1 ppm	A4	70.91	URT & eye irr

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Chlorine dioxide [10049-04-4] (1991)	0.1 ppm	0.3 ppm	—	67.46	LRT irr; bronchitis
Chlorine trifluoride [7790-91-2] (1979)	—	C 0.1 ppm	—	92.46	Eye & URT irr; lung dam
Chloroacetaldehyde [107-20-0] (1990)	—	C 1 ppm	—	78.50	URT & eye irr
Chloroacetone [78-95-5] (1986)	—	C 1 ppm	Skin	92.53	Eye & URT irr
2-Chloroacetophenone [532-27-4] (1990)	0.05 ppm	—	A4	154.59	Eye, URT, & skin irr
Chloroacetyl chloride [79-04-9] (1988)	0.05 ppm	0.15 ppm	Skin	112.95	URT irr
Chlorobenzene [108-90-7] (1988)	10 ppm	—	A3; BEI	112.56	Liver dam
o-Chlorobenzylidene malononitrile [2698-41-1] (1990)	—	C 0.05 ppm	Skin; A4	188.61	URT irr; skin sens
Chlorobromomethane [74-97-5] (1979)	200 ppm	—	—	129.39	CNS impair; liver dam
Chlorodifluoromethane [75-45-6] (1990)	1000 ppm	—	A4	86.47	CNS impair; asphyxia; card sens
Chlorodiphenyl (42% chlorine) [53469-21-9] (1979)	1 mg/m ³	—	Skin	266.50	Liver dam; eye irr; chloracne
Chlorodiphenyl (54% chlorine) [11097-69-1] (1990)	0.5 mg/m ³	—	Skin; A3	328.40	URT irr; liver dam; chloracne
Chloroform [67-66-3] (1990)	10 ppm	—	A3	119.38	Liver dam; embryo/fetal dam; CNS impair

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	TWA	STEL	Notations		
bis(Chloromethyl) ether [542-88-1] (1979)	0.001 ppm	—	A1	114.96	Lung cancer
Chloromethyl methyl ether [107-30-2] (1979)	— (L)	—	A2	80.50	Lung cancer
1-Chloro-1-nitropropane [600-25-9] (1971)	2 ppm	—	—	123.54	Eye irr; pulm edema
Chloropentafluoroethane [76-15-3] (1978)	1000 ppm	—	—	154.47	Card sens
Chloropicrin [76-06-2] (1990)	0.1 ppm	—	A4	164.39	Eye irr; pulm edema
1-Chloro-2-propanol [127-00-4] and 2-Chloro-1-propanol [78-89-7] (1999)	1 ppm	—	Skin; A4	94.54	Liver dam
β-Chloroprene [126-99-8] (1990)	10 ppm	—	Skin	88.54	URT & eye irr
2-Chloropropionic acid [598-78-7] (1988)	0.1 ppm	—	Skin	108.53	Male repro dam
o-Chlorostyrene [2039-87-4] (1972)	50 ppm	75 ppm	—	138.60	CNS impair; peripheral neuropathy
o-Chlorotoluene [95-49-8] (1971)	50 ppm	—	—	126.59	URT, eye, & skin irr
Chlorpyrifos [2921-88-2] (2000)	0.1 mg/m ³ (IFV)	—	Skin; A4; BEI _A	350.57	Cholinesterase inhib
Chromite ore processing (Chromate), as Cr	0.05 mg/m ³	—	A1	—	Lung cancer

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	TWA	STEL	Notations		
Chromium, [7440-47-3] and inorganic compounds, as Cr (1991)					
Metal and Cr III compounds	0.5 mg/m ³	—	A4	Varies	URT & skin irr
Water-soluble Cr VI compounds	0.05 mg/m ³	—	A1; BEI	Varies	URT irr; cancer
Insoluble Cr VI compounds	0.01 mg/m ³	—	A1	Varies	Lung cancer
Chromyl chloride [14977-61-8] (1990)	0.025 ppm	—	—	154.92	URT & skin irr
Chrysene [218-01-9] (1990)	— (L)	—	A3; BEI _p	228.30	Cancer
Clopidol [2971-90-6] (1972)	10 mg/m ³	—	A4	192.06	URT irr
Coal dust (1995)					
Anthracite	0.4 mg/m ³ (R)	—	A4	—	Lung dam; pulm fibrosis
Bituminous	0.9 mg/m ³ (R)	—	A4	—	Lung dam; pulm fibrosis
Coal tar pitch volatiles [65996-93-2], as benzene soluble aerosol (1984)	0.2 mg/m ³	—	A1; BEI _p	—	Cancer
Cobalt [7440-48-4] and inorganic compounds, as Co (1993)	0.02 mg/m ³		A3; BEI	58.93 Varies	Asthma; pulm func; myocardial eff
Cobalt carbonyl [10210-68-1], as Co (1980)	0.1 mg/m ³	—	—	341.94	Pulm edema; spleen dam
Cobalt hydrocarbonyl [16842-03-8], as Co (1980)	0.1 mg/m ³	—	—	171.98	Pulm edema; lung dam

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	TWA	STEL	Notations		
Copper [7440-50-8] (1990)				63.55	Irr; GI; metal fume fever
Fume	0.2 mg/m ³	—	—		
Dusts and mists, as Cu	1 mg/m ³	—	—		
‡ Cotton dust, raw (1973)	(0.2 mg/m ³ (G))	—	(—)	—	(Asthma)
Coumaphos [56-72-4] (2005)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	362.8	Cholinesterase inhib
‡ Cresol, All isomers (1979) [1319-77-3; 95-48-7; 108-39-4; 106-44-5]	(5 ppm)	—	Skin; ()	108.14	(Eye, skin, & URT irr)
Crotonaldehyde [4170-30-3] (1995)	—	C 0.3 ppm	Skin; A3	70.09	Eye & URT irr
Crufomate [299-86-5] (1971)	5 mg/m ³	—	A4; BEI _A	291.71	Cholinesterase inhib
Cumene [98-82-8] (1997)	50 ppm	—	—	120.19	Eye, skin, & URT irr; CNS impair
Cyanamide [420-04-2] (1974)	2 mg/m ³	—	—	42.04	Skin & eye irr
Cyanogen [460-19-5] (1966)	10 ppm	—	—	52.04	LRT & eye irr
Cyanogen chloride [506-77-4] (1977)	—	C 0.3 ppm	—	61.48	Pulm edema; eye, skin, & URT irr
Cyclohexane [110-82-7] (1964)	100 ppm	—	—	84.16	CNS impair
Cyclohexanol [108-93-0] (1979)	50 ppm	—	Skin	100.16	Eye irr; CNS impair
Cyclohexanone [108-94-1] (1990)	20 ppm	50 ppm	Skin; A3	98.14	Eye & URT irr

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Cyclohexene [110-83-8] (1964)	300 ppm	—	—	82.14	URT & eye irr
Cyclohexylamine [108-91-8] (1990)	10 ppm	—	A4	99.17	URT & eye irr
Cyclonite [121-82-4] (1994)	0.5 mg/m ³	—	Skin; A4	222.26	Liver dam
Cyclopentadiene [542-92-7] (1963)	75 ppm	—	—	66.10	URT & eye irr
Cyclopentane [287-92-3] (1978)	600 ppm	—	—	70.13	URT, eye, & skin irr; CNS impair
Cyhexatin [13121-70-5] (1990)	5 mg/m ³	—	A4	385.16	URT irr; body weight eff; kidney dam
2,4-D [94-75-7] (1990)	10 mg/m ³	—	A4	221.04	URT & skin irr
DDT [50-29-3] (1979)	1 mg/m ³	—	A3	354.50	Liver dam
Decaborane [17702-41-9] (1979)	0.05 ppm	0.15 ppm	Skin	122.31	CNS convul; cognitive decrement
Demeton [8065-48-3] (1998)	0.05 mg/m ³ (IFV)	—	Skin; BEI _A	258.34	Cholinesterase inhib
Demeton-S-methyl [919-86-8] (1998)	0.05 mg/m ³ (IFV)	—	Skin; SEN; A4; BEI _A	230.3	Cholinesterase inhib
Diacetone alcohol [123-42-2] (1979)	50 ppm	—	—	116.16	URT & eye irr
Diazinon [333-41-5] (2000)	0.01 mg/m ³ (IFV)	—	Skin; A4; BEI _A	304.36	Cholinesterase inhib
Diazomethane [334-88-3] (1970)	0.2 ppm	—	A2	42.04	URT & eye irr
Diborane [19287-45-7] (1990)	0.1 ppm	—	—	27.69	URT irr; headache

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
2-N-Dibutylaminoethanol [102-81-8] (1980)	0.5 ppm	—	Skin; BEI _A	173.29	Eye & URT irr
Dibutyl phenyl phosphate [2528-36-1] (1987)	0.3 ppm	—	Skin; BEI _A	286.26	Cholinesterase inhib; URT irr
* Dibutyl phosphate [107-66-4] (2008)	5 mg/m ³ (IFV)	—	Skin	210.21	Bladder, eye & URT irr
Dibutyl phthalate [84-74-2] (1990)	5 mg/m ³	—	—	278.34	Testicular dam; eye & URT irr
Dichloroacetic acid [79-43-6] (2002)	0.5 ppm	—	Skin; A3	128.95	URT & eye irr; testicular dam
Dichloroacetylene [7572-29-4] (1992)	—	C 0.1 ppm	A3	94.93	Nausea; PNS impair
o-Dichlorobenzene [95-50-1] (1990)	25 ppm	50 ppm	A4	147.01	URT & eye irr; liver dam
p-Dichlorobenzene [106-46-7] (1990)	10 ppm	—	A3	147.01	Eye irr; kidney dam
3,3'-Dichlorobenzidine [91-94-1] (1990)	— (L)	—	Skin; A3	253.13	Bladder cancer; eye irr
1,4-Dichloro-2-butene [764-41-0] (1990)	0.005 ppm	—	Skin; A2	124.99	URT & eye irr
Dichlorodifluoromethane [75-71-8] (1979)	1000 ppm	—	A4	120.91	Card sens
1,3-Dichloro-5,5-dimethyl hydantoin [118-52-5] (1979)	0.2 mg/m ³	0.4 mg/m ³	—	197.03	URT irr
1,1-Dichloroethane [75-34-3] (1990)	100 ppm	—	A4	98.97	URT & eye irr; liver & kidney dam
1,2-Dichloroethylene, All isomers [540-59-0; 156-59-2; 156-60-5] (1990)	200 ppm	—	—	96.95	CNS impair; eye irr

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Dichloroethyl ether [111-44-4] (1985)	5 ppm	10 ppm	Skin; A4	143.02	URT & eye irr; nausea
Dichlorofluoromethane [75-43-4] (1977)	10 ppm	—	—	102.92	Liver dam
Dichloromethane [75-09-2] (1997)	50 ppm	—	A3; BEI	84.93	COHb-emia; CNS impair
1,1-Dichloro-1-nitroethane [594-72-9] (1978)	2 ppm	—	—	143.96	URT irr
1,3-Dichloropropene [542-75-6] (2003)	1 ppm	—	Skin; A3	110.98	Kidney dam
2,2-Dichloropropionic acid [75-99-0] (1997)	5 mg/m ³ (I)	—	A4	142.97	Eye & URT irr
Dichlorotetrafluoroethane [76-14-2] (1979)	1000 ppm	—	A4	170.93	Pulm func
Dichlorvos (DDVP) [62-73-7] (1998)	0.1 mg/m ³ (IFV)	—	Skin; SEN; A4; BEI _A	220.98	Cholinesterase inhib
Dicrotophos [141-66-2] (1998)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	237.21	Cholinesterase inhib
Dicyclopentadiene [77-73-6] (1973)	5 ppm	—	—	132.21	URT, LRT, & eye irr
Dicyclopentadienyl iron, as Fe [102-54-5] (1990)	10 mg/m ³	—	—	186.03	Liver dam
‡ Dieldrin [60-57-1] (1994)	(0.25 mg/m ³)	—	Skin; (A4)	380.93	(Liver dam; CNS convul)
Diesel fuel [68334-30-5; 68476-30-2; 68476-31-3; 68476-34-6; 77650-28-3] (2007) as total hydrocarbons	100 mg/m ³ (IFV)	—	Skin; A3	Varies	Dermatitis

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
* Diethanolamine [111-42-2] (2008)	1 mg/m ³ (IFV)	—	Skin; A3	105.14	Liver & kidney dam
Diethylamine [109-89-7] (1992)	5 ppm	15 ppm	Skin; A4	73.14	URT & eye irr
2-Diethylaminoethanol [100-37-8] (1991)	2 ppm	—	Skin	117.19	URT irr; CNS convul
Diethylene triamine [111-40-0] (1985)	1 ppm	—	Skin	103.17	URT & eye irr
Di(2-ethylhexyl)phthalate (DEHP) [117-81-7] (1996)	5 mg/m ³	—	A3	390.54	LRT irr
Diethyl ketone [96-22-0] (1995)	200 ppm	300 ppm	—	86.13	URT irr; CNS impair
Diethyl phthalate [84-66-2] (1996)	5 mg/m ³	—	A4	222.23	URT irr
Difluorodibromomethane [75-61-6] (1962)	100 ppm	—	—	209.83	URT irr; CNS impair; liver dam
Diglycidyl ether (DGE) [2238-07-5] (2006)	0.01 ppm	—	A4	130.14	Eye & skin irr; male repro dam
Diisobutyl ketone [108-83-8] (1979)	25 ppm	—	—	142.23	URT & eye irr
Diisopropylamine [108-18-9] (1979)	5 ppm	—	Skin	101.19	URT irr; eye dam
N,N-Dimethylacetamide [127-19-5] (1990)	10 ppm	—	Skin; A4; BEI	87.12	Liver dam; embryo/fetal dam
Dimethylamine [124-40-3] (1989)	5 ppm	15 ppm	A4	45.08	URT irr; GI dam
Dimethylaniline [121-69-7] (1990)	5 ppm	10 ppm	Skin; A4; BEI _M	121.18	MeHb-emia
Dimethyl carbamoyl chloride [79-44-7] (2006)	0.005 ppm	—	Skin; A2	107.54	Nasal cancer; URT irr

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Dimethyl disulfide [624-92-0] (2006)	0.5 ppm	—	Skin	94.2	URT irr; CNS impair
Dimethylethoxysilane [14857-34-2] (1991)	0.5 ppm	1.5 ppm	—	104.20	URT & eye irr; headache
Dimethylformamide [68-12-2] (1979)	10 ppm	—	Skin; A4; BEI	73.09	Liver dam
1,1-Dimethylhydrazine [57-14-7] (1993)	0.01 ppm	—	Skin; A3	60.12	URT irr; nasal cancer
Dimethyl phthalate [131-11-3] (2005)	5 mg/m ³	—	—	194.19	Eye & URT irr
Dimethyl sulfate [77-78-1] (1985)	0.1 ppm	—	Skin; A3	126.10	Eye & skin irr
Dimethyl sulfide [75-18-3] (2001)	10 ppm	—	—	62.14	URT irr
Dinitrobenzene, All isomers [528-29-0; 99-65-0; 100-25-4; 25154-54-5] (1979)	0.15 ppm	—	Skin; BEI _M	168.11	MeHb-emia; eye dam
Dinitro-o-cresol [534-52-1] (1979)	0.2 mg/m ³	—	Skin	198.13	Basal metab
3,5-Dinitro-o-toluamide [148-01-6] (2006)	1 mg/m ³	—	A4	225.16	Liver dam
Dinitrotoluene [25321-14-6] (1993)	0.2 mg/m ³	—	Skin; A3; BEI _M	182.15	Card impair; repro eff
1,4-Dioxane [123-91-1] (1996)	20 ppm	—	Skin; A3	88.10	Liver dam
Dioxathion [78-34-2] (2001)	0.1 mg/m ³ (IFV)	—	Skin; A4; BEI _A	456.54	Cholinesterase inhib
1,3-Dioxolane [646-06-0] (1997)	20 ppm	—	—	74.08	Hematologic eff

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Diphenylamine [122-39-4] (1990)	10 mg/m ³	—	A4	169.24	Liver & kidney dam; hematologic eff
Dipropyl ketone [123-19-3] (1978)	50 ppm	—	—	114.80	URT irr
Diquat [2764-72-9; 85-00-7; 6385-62-2] (1990)	0.5 mg/m ³ (I)	—	Skin; A4	Varies	LRT irr; cataract
	0.1 mg/m ³ (R)	—	Skin; A4		LRT irr; cataract
Disulfiram [97-77-8] (1979)	2 mg/m ³	—	A4	296.54	Vasodilation; nausea
Disulfoton [298-04-4] (2000)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	274.38	Cholinesterase inhib
Diuron [330-54-1] (1974)	10 mg/m ³	—	A4	233.10	URT irr
Divinyl benzene [1321-74-0] (1990)	10 ppm	—	—	130.19	URT irr
Dodecyl mercaptan [112-55-0] (2001)	0.1 ppm	—	SEN	202.4	URT irr
* Endosulfan [115-29-7] (2008)	0.1 mg/m ³ (IFV)	—	Skin; A4	406.95	LRT irr; liver & kidney dam
Endrin [72-20-8] (1979)	0.1 mg/m ³	—	Skin; A4	380.93	Liver dam; CNS impair; headache
Enflurane [13838-16-9] (1979)	75 ppm	—	A4	184.50	CNS impair; card impair
Epichlorohydrin [106-89-8] (1994)	0.5 ppm	—	Skin; A3	92.53	URT irr; male repro
EPN [2104-64-5] (2000)	0.1 mg/m ³ (I)	—	Skin; A4; BEI _A	323.31	Cholinesterase inhib
Ethane [74-84-0]	See Aliphatic hydrocarbon gases: Alkane [C ₁ —C ₄]				

Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
* Ethanol [64-17-5] (2008)	—	1000 ppm	A3	46.07	URT irr
Ethanolamine [141-43-5] (1985)	3 ppm	6 ppm	—	61.08	Eye & skin irr
Ethion [563-12-2] (2000)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	384.48	Cholinesterase inhib
2-Ethoxyethanol (EGEE) [110-80-5] (1981)	5 ppm	—	Skin; BEI	90.12	Male repro dam; embryo/fetal dam
2-Ethoxyethyl acetate (EGEEA) [111-15-9] (1981)	5 ppm	—	Skin; BEI	132.16	Male repro dam
Ethyl acetate [141-78-6] (1979)	400 ppm	—	—	88.10	URT & eye irr
Ethyl acrylate [140-88-5] (1986)	5 ppm	15 ppm	A4	100.11	URT, eye, & GI irr; CNS impair; skin sens
Ethylamine [75-04-7] (1991)	5 ppm	15 ppm	Skin	45.08	Eye & skin irr; eye dam
Ethyl amyl ketone [541-85-5] (2006)	10 ppm	—	—	128.21	Neurotoxicity
‡ Ethyl benzene [100-41-4] (1998)	(100 ppm)	125 ppm	A3; BEI	106.16	(URT & eye irr; CNS impair)
Ethyl bromide [74-96-4] (1990)	5 ppm	—	Skin; A3	108.98	Liver dam; CNS impair
Ethyl tert-butyl ether (ETBE) [637-92-3] (1997)	5 ppm	—	—	102.18	Pulm func; Testicular dam
Ethyl butyl ketone [106-35-4] (1995)	50 ppm	75 ppm	—	114.19	CNS impair; eye & skin irr
Ethyl chloride [75-00-3] (1992)	100 ppm	—	Skin; A3	64.52	Liver dam

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Ethyl cyanoacrylate [7085-85-0] (1995)	0.2 ppm	—	—	125.12	URT & skin irr
Ethylene [74-85-1] (2001)	200 ppm	—	A4	28.05	Asphyxia
Ethylene chlorohydrin [107-07-3] (1985)	—	C 1 ppm	Skin; A4	80.52	CNS impair; liver & kidney dam
Ethylenediamine [107-15-3] (1990)	10 ppm	—	Skin; A4	60.10	
Ethylene dibromide [106-93-4] (1980)	—	—	Skin; A3	187.88	
Ethylene dichloride [107-06-2] (1977)	10 ppm	—	A4	98.96	Liver dam; nausea
Ethylene glycol [107-21-1] (1992)	—	C 100 mg/m ³ (H)	A4	62.07	URT & eye irr
Ethylene glycol dinitrate (EGDN) [628-96-6] (1980)	0.05 ppm	—	Skin	152.06	Vasodilation; headache
Ethylene oxide [75-21-8] (1990)	1 ppm	—	A2	44.05	Cancer; CNS impair
* Ethyleneimine [151-56-4] (2008)	0.05 ppm	0.1 ppm	Skin; A3	43.08	URT irr; liver & kidney dam
Ethyl ether [60-29-7] (1966)	400 ppm	500 ppm	—	74.12	CNS impair; URT irr
Ethyl formate [109-94-4] (1970)	100 ppm	—	—	74.08	URT & eye irr
2-Ethylhexanoic acid [149-57-5] (1998)	5 mg/m ³ (IFV)	—	—	144.24	Teratogenic eff
Ethylidene norbornene [16219-75-3] (1971)	—	C 5 ppm	—	120.19	URT & eye irr
Ethyl mercaptan [75-08-1] (2003)	0.5 ppm	—	—	62.13	URT irr; CNS impair

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
N-Ethylmorpholine [100-74-3] (1985)	5 ppm	—	Skin	115.18	URT irr; eye dam
Ethyl silicate [78-10-4] (1979)	10 ppm	—	—	208.30	URT & eye irr; kidney dam
Fenamiphos [22224-92-6] (2005)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	303.40	Cholinesterase inhib
Fensulfothion [115-90-2] (2004)	0.01 mg/m ³ (IFV)	—	Skin; A4; BEI _A	308.35	Cholinesterase inhib
Fenthion [55-38-9] (2005)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	278.34	Cholinesterase inhib
* Ferbam [14484-64-1] (2008)	5 mg/m ³ (I)	—	A4	416.50	CNS impair; body weight eff; spleen dam
Ferrovandium dust [12604-58-9] (1990)	1 mg/m ³	3 mg/m ³	—	—	Eye, URT, & LRT irr
Flour dust (2001)	0.5 mg/m ³ (I)	—	SEN	—	Asthma; URT irr; bronchitis
Fluorides, as F (1979)	2.5 mg/m ³	—	A4; BEI	Varies	Bone dam; fluorosis
Fluorine [7782-41-4] (1970)	1 ppm	2 ppm	—	38.00	URT, eye, & skin irr
Fonofos [944-22-9] (2005)	0.01 mg/m ³ (IFV)	—	Skin; A4; BEI _A	246.32	Cholinesterase inhib
Formaldehyde [50-00-0] (1987)	—	C 0.3 ppm	SEN; A2	30.03	URT & eye irr
Formamide [75-12-7] (1985)	10 ppm	—	Skin	45.04	Eye & skin irr; kidney & liver dam
Formic acid [64-18-6] (1965)	5 ppm	10 ppm	—	46.02	URT, eye, & skin irr

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Furfural [98-01-1] (1978)	2 ppm	—	Skin; A3; BEI	96.08	URT & eye irr
Furfuryl alcohol [98-00-0] (1979)	10 ppm	15 ppm	Skin	98.10	URT & eye irr
Gallium arsenide [1303-00-0] (2004)	0.0003 mg/m ³ (R)	—	A3	144.64	LRT irr
Gasoline [86290-81-5] (1990)	300 ppm	500 ppm	A3	—	URT & eye irr; CNS impair
Germanium tetrahydride [7782-65-2] (1970)	0.2 ppm	—	—	76.63	Hematologic eff
Glutaraldehyde [111-30-8], activated and inactivated (1998)	—	C 0.05 ppm	SEN; A4	100.11	URT, skin, & eye irr; CNS impair
Glycerin mist [56-81-5] (1990)	10 mg/m ³	—	—	92.09	URT irr
Glycidol [556-52-5] (1993)	2 ppm	—	A3	74.08	URT, eye, & skin irr
Glyoxal [107-22-2] (1999)	0.1 mg/m ³ (IFV)	—	SEN; A4	58.04	URT irr; larynx metaplasia
Grain dust (oat, wheat, barley) (1985)	4 mg/m ³	—	—	NA	Bronchitis; URT irr; pulm func
Graphite (all forms except graphite fibers) [7782-42-5] (1988)	2 mg/m ³ (R)	—	—	—	Pneumoconiosis
Hafnium [7440-58-6] and compounds, as Hf (1990)	0.5 mg/m ³	—	—	178.49	URT & eye irr; liver dam
Halothane [151-67-7] (1979)	50 ppm	—	A4	197.39	Liver dam; CNS impair; vasodilation
Helium [7440-59-7] (1990)		Simple asphyxiant (D)		4.00	Asphyxia

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Heptachlor [76-44-8] and Heptachlor epoxide [1024-57-3] (1990)	0.05 mg/m ³	—	Skin; A3	373.32 389.40	Liver dam
Heptane, All isomers [142-82-5; 590-35-2; 565-59-3; 108-08-7; 591-76-4; 589-34-4] (1979)	400 ppm	500 ppm	—	100.20	CNS impair; URT irr
Hexachlorobenzene [118-74-1] (1994)	0.002 mg/m ³	—	Skin; A3	284.78	Porphyrin eff; skin dam; CNS impair
Hexachlorobutadiene [87-68-3] (1979)	0.02 ppm	—	Skin; A3	260.76	Kidney dam
Hexachlorocyclopentadiene [77-47-4] (1990)	0.01 ppm	—	A4	272.75	URT irr
Hexachloroethane [67-72-1] (1990)	1 ppm	—	Skin; A3	236.74	Liver & kidney dam
Hexachloronaphthalene [1335-87-1] (1965)	0.2 mg/m ³	—	Skin	334.74	Liver dam; chloracne
Hexafluoroacetone [684-16-2] (1986)	0.1 ppm	—	Skin	166.02	Testicular dam; kidney dam
Hexafluoropropylene [116-15-4] (2006)	0.1 ppm	—	—	150.02	Kidney dam
Hexahydrophthalic anhydride, All isomers [85-42-7; 13149-00-3; 14166-21-3] (2002)	—	C 0.005 mg/m ³ (IFV)	SEN	154.17	Resp sens; eye, skin, & URT irr
Hexamethylene diisocyanate [822-06-0] (1985)	0.005 ppm	—	—	168.22	URT irr; resp sens
Hexamethyl phosphoramidate [680-31-9] (1990)	—	—	Skin; A3	179.20	URT cancer

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
n-Hexane [110-54-3] (1996)	50 ppm	—	Skin; BEI	86.18	CNS impair; peripheral neuropathy; eye irr
Hexane, Other isomers (1979)	500 ppm	1000 ppm	—	86.18	CNS impair; URT & eye irr
1,6-Hexanediamine [124-09-4] (1990)	0.5 ppm	—	—	116.21	URT & skin irr
1-Hexene [592-41-6] (1999)	50 ppm	—	—	84.16	CNS impair
sec-Hexyl acetate [108-84-9] (1963)	50 ppm	—	—	144.21	Eye & URT irr
Hexylene glycol [107-41-5] (1974)	—	C 25 ppm	—	118.17	Eye & URT irr
Hydrazine [302-01-2] (1988)	0.01 ppm	—	Skin; A3	32.05	URT cancer
Hydrogen [1333-74-0] (1990)		Simple asphyxiant ^(D)		1.01	Asphyxia
Hydrogenated terphenyls (nonirradiated) [61788-32-7] (1990)	0.5 ppm	—	—	241.00	Liver dam
Hydrogen bromide [10035-10-6] (2001)	—	C 2 ppm	—	80.92	URT irr
Hydrogen chloride [7647-01-0] (2000)	—	C 2 ppm	A4	36.47	URT irr
Hydrogen cyanide and Cyanide salts, as CN (1991)					URT irr; headache; nausea; thyroid eff
Hydrogen cyanide [74-90-8]	—	C 4.7 ppm	Skin	27.03	
Cyanide salts [592-01-8; 151-50-8; 143-33-9]	—	C 5 mg/m ³	Skin	Varies	

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Hydrogen fluoride [7664-39-3], as F (2004)	0.5 ppm	C 2 ppm	Skin; BEI	20.01	URT, LRT, skin & eye irr; fluorosis
Hydrogen peroxide [7722-84-1] (1990)	1 ppm	—	A3	34.02	Eye, URT & skin irr
Hydrogen selenide [7783-07-5], as Se (1990)	0.05 ppm	—	—	80.98	URT & eye irr; nausea
‡ Hydrogen sulfide [7783-06-4] (1990)	(10 ppm)	(15 ppm)	—	34.08	()
Hydroquinone [123-31-9] (2007)	1 mg/m ³	—	SEN; A3	110.11	Eye irr; eye dam
2-Hydroxypropyl acrylate [999-61-1] (1997)	0.5 ppm	—	Skin; SEN	130.14	Eye & URT irr
Indene [95-13-6] (2007)	5 ppm	—	—	116.15	Liver dam
Indium [7440-74-6] and compounds, as In (1990)	0.1 mg/m ³	—	—	49.00	Pulm edema; pneumonitis; dental erosion; malaise
Iodine and Iodides (2007)					
Iodine [7553-56-2]	0.01 ppm ^(IFV)	0.1 ppm ^(V)	A4	Varies	Hypothyroidism; URT irr
Iodides	0.01 ppm ^(IFV)	—	A4	Varies	Hypothyroidism; URT irr
Iodoform [75-47-8] (1979)	0.6 ppm	—	—	393.78	CNS impair
Iron oxide (Fe ₂ O ₃) [1309-37-1] (2005)	5 mg/m ³ ^(R)	—	A4	159.70	Pneumoconiosis
Iron pentacarbonyl [13463-40-6], as Fe (1979)	0.1 ppm	0.2 ppm	—	195.90	Pulm edema; CNS impair

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV [®] Basis
	TWA	STEL	Notations		
Iron salts, soluble, as Fe (1990)	1 mg/m ³	—	—	Varies	URT & skin irr
Isoamyl alcohol [123-51-3] (1990)	100 ppm	125 ppm	—	88.15	Eye & URT irr
Isobutanol [78-83-1] (1973)	50 ppm	—	—	74.12	Skin & eye irr
Isobutyl acetate [110-19-0] (1966)	150 ppm	—	—	116.16	Eye & URT irr
Isobutyl nitrite [542-56-3] (2000)	—	C 1 ppm (IFV)	A3; BEI _M	103.12	Vasodilation; MeHb-emia
Isooctyl alcohol [26952-21-6] (1990)	50 ppm	—	Skin	130.23	URT irr
Isophorone [78-59-1] (1992)	—	C 5 ppm	A3	138.21	Eye & URT irr; CNS impair; malaise; fatigue
Isophorone diisocyanate [4098-71-9] (1985)	0.005 ppm	—	—	222.30	Resp sens
Isopropanol [67-63-0]	Name change; see 2-Propanol				
2-Isopropoxyethanol [109-59-1] (1990)	25 ppm	—	Skin	104.15	Hematologic eff
Isopropyl acetate [108-21-4] (2001)	100 ppm	200 ppm	—	102.13	Eye & URT irr; CNS impair
Isopropylamine [75-31-0] (1962)	5 ppm	10 ppm	—	59.08	URT irr; eye dam
N-Isopropylaniline [768-52-5] (1990)	2 ppm	—	Skin; BEI _M	135.21	MeHb-emia
Isopropyl ether [108-20-3] (1979)	250 ppm	310 ppm	—	102.17	Eye & URT irr

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Isopropyl glycidyl ether (IGE) [4016-14-2] (1979)	50 ppm	75 ppm	—	116.18	URT & eye irr; dermatitis
Kaolin [1332-58-7] (1990)	2 mg/m ³ (E,R)	—	A4	—	Pneumoconiosis
Kerosene [8008-20-6; 64742-81-0]/Jet fuels, as total hydrocarbon vapor (2001)	200 mg/m ³ (P)	—	Skin; A3	Varies	Skin & URT irr; CNS impair
Ketene [463-51-4] (1962)	0.5 ppm	1.5 ppm	—	42.04	URT irr; pulm edema
Lead [7439-92-1] and inorganic compounds, as Pb (1991)	0.05 mg/m ³	—	A3; BEI	207.20 Varies	CNS & PNS impair; hematologic eff
Lead chromate [7758-97-6], as Pb (1990) as Cr	0.05 mg/m ³	—	A2; BEI	323.22	Male repro dam; teratogenic eff; vasoconstriction
	0.012 mg/m ³	—	A2		
Lindane [58-89-9] (1990)	0.5 mg/m ³	—	Skin; A3	290.85	Liver dam; CNS impair
Lithium hydride [7580-67-8] (1990)	0.025 mg/m ³	—	—	7.95	Skin, eye, & URT irr
L.P.G. (Liquefied petroleum gas) [68476-85-7]	See Aliphatic hydrocarbon gases: Alkane [C ₁ —C ₄]				
Magnesium oxide [1309-48-4] (2000)	10 mg/m ³ (I)	—	A4	40.32	
Malathion [121-75-5] (2000)	1 mg/m ³ (IFV)	—	Skin; A4; BEI _A	330.36	Cholinesterase inhib
‡ Maleic anhydride [108-31-6] (1997)	(0.1 ppm)	—	SEN; A4	98.06	(Eye, URT, & skin irr)

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
‡ Manganese [7439-96-5] and inorganic compounds, as Mn (1992)	(0.2 mg/m ³)	—	(—)	54.94 Varies	(CNS impair)
Manganese cyclopentadienyl tricarbonyl [12079-65-1], as Mn (1992)	0.1 mg/m ³	—	Skin	204.10	Skin irr; CNS impair
Mercury [7439-97-6], as Hg (1991)				200.59	
Alkyl compounds (1992)	0.01 mg/m ³	0.03 mg/m ³	Skin	Varies	CNS & PNS impair; kidney dam
Aryl compounds	0.1 mg/m ³	—	Skin	Varies	CNS impair; kidney dam
Elemental and inorganic forms	0.025 mg/m ³	—	Skin; A4; BEI	Varies	CNS impair; kidney dam
Mesityl oxide [141-79-7] (1992)	15 ppm	25 ppm	—	98.14	Eye & URT irr; CNS impair
Methacrylic acid [79-41-4] (1992)	20 ppm	—	—	86.09	Skin & eye irr
Methane [74-82-8]	See Aliphatic hydrocarbon gases: Alkane [C ₁ —C ₄]				
Methanol [67-56-1] (1992)	200 ppm	250 ppm	Skin; BEI	32.04	Headache; eye dam
Methomyl [16752-77-5] (1992)	2.5 mg/m ³	—	A4; BEI _A	162.20	Cholinesterase inhib
Methoxychlor [72-43-5] (1992)	10 mg/m ³	—	A4	345.65	Liver dam; CNS impair
2-Methoxyethanol (EGME) [109-86-4] (2005)	0.1 ppm	—	Skin	76.09	Hematologic eff; repro eff
2-Methoxyethyl acetate (EGMEA) [110-49-6] (2005)	0.1 ppm	—	Skin	118.13	Hematologic eff; repro eff

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
(2-Methoxymethylethoxy)propanol (DPGME) [34590-94-8] (1979)	100 ppm	150 ppm	Skin	148.20	Eye & URT irr; CNS impair
4-Methoxyphenol [150-76-5] (1992)	5 mg/m ³	—	—	124.15	Eye irr; skin dam
1-Methoxy-2-propanol (PGME) [107-98-2] (1992)	100 ppm	150 ppm	—	90.12	Eye irr; CNS impair
Methyl acetate [79-20-9] (1992)	200 ppm	250 ppm	—	74.08	Headache; eye & URT irr; ocular nerve dam
Methyl acetylene [74-99-7] (1956)	1000 ppm	—	—	40.07	CNS impair
Methyl acetylene-propadiene mixture (MAPP) [59355-75-8] (1964)	1000 ppm	1250 ppm	—	40.07	CNS impair
Methyl acrylate [96-33-3] (1997)	2 ppm	—	Skin; SEN; A4	86.09	Eye, skin, & URT irr; eye dam
Methylacrylonitrile [126-98-7] (1992)	1 ppm	—	Skin	67.09	CNS impair; eye & skin irr
Methylal [109-87-5] (1970)	1000 ppm	—	—	76.10	Eye irr; CNS impair
Methylamine [74-89-5] (1990)	5 ppm	15 ppm	—	31.06	Eye, skin, & URT irr
Methyl n-amyl ketone [110-43-0] (1978)	50 ppm	—	—	114.18	Eye & skin irr
N-Methyl aniline [100-61-8] (1992)	0.5 ppm	—	Skin; BEI _M	107.15	MeHb-emia; CNS impair
Methyl bromide [74-83-9] (1994)	1 ppm	—	Skin; A4	94.95	URT & skin irr

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Methyl tert-butyl ether (MTBE) [1634-04-4] (1999)	50 ppm	—	A3	88.17	URT irr; kidney dam
Methyl n-butyl ketone [591-78-6] (1995)	5 ppm	10 ppm	Skin; BEI	100.16	Peripheral neuropathy; testicular dam
Methyl chloride [74-87-3] (1992)	50 ppm	100 ppm	Skin; A4	50.49	CNS impair; liver & kidney dam; testicular dam; teratogenic eff
Methyl chloroform [71-55-6] (1992)	350 ppm	450 ppm	A4; BEI	133.42	CNS impair; liver dam
Methyl 2-cyanoacrylate [137-05-3] (1995)	0.2 ppm	—	—	111.10	URT & eye irr
Methylcyclohexane [108-87-2] (1962)	400 ppm	—	—	98.19	URT irr; CNS impair; liver & kidney dam
Methylcyclohexanol [25639-42-3] (1966)	50 ppm	—	—	114.19	URT & eye irr
o-Methylcyclohexanone [583-60-8] (1970)	50 ppm	75 ppm	Skin	112.17	URT & eye irr; CNS impair
2-Methylcyclopentadienyl manganese tricarbonyl [12108-13-3], as Mn (1970)	0.2 mg/m ³	—	Skin	218.10	CNS impair; lung, liver, & kidney dam
Methyl demeton [8022-00-2] (2006)	0.05 mg/m ³ (IFV)	—	Skin; BEI _A	230.30	Cholinesterase inhib
Methylene bisphenyl isocyanate (MDI) [101-68-8] (1985)	0.005 ppm	—	—	250.26	Resp sens
4,4'-Methylene bis(2-chloroaniline) [MBOCA; MOCA®] [101-14-4] (1991)	0.01 ppm	—	Skin; A2; BEI	267.17	Bladder cancer; MeHb-emia

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Methylene bis(4-cyclohexylisocyanate) [5124-30-1] (1985)	0.005 ppm	—	—	262.35	Resp sens; LRT irr
4,4'-Methylene dianiline [101-77-9] (1992)	0.1 ppm	—	Skin; A3	198.26	Liver dam
Methyl ethyl ketone (MEK) [78-93-3] (1992)	200 ppm	300 ppm	BEI	72.10	URT irr; CNS & PNS impair
Methyl ethyl ketone peroxide [1338-23-4] (1992)	—	C 0.2 ppm	—	176.24	Eye & skin irr; liver & kidney dam
Methyl formate [107-31-3] (1962)	100 ppm	150 ppm	—	60.05	URT, LRT, & eye irr
Methyl hydrazine [60-34-4] (1991)	0.01 ppm	—	Skin; A3	46.07	URT & eye irr; lung cancer; liver dam
Methyl iodide [74-88-4] (1978)	2 ppm	—	Skin	141.95	Eye dam; CNS impair
Methyl isoamyl ketone [110-12-3] (1979)	50 ppm	—	—	114.20	URT & eye irr; kidney & liver dam; CNS impair
Methyl isobutyl carbinol [108-11-2] (1966)	25 ppm	40 ppm	Skin	102.18	URT & eye irr; CNS impair
‡ Methyl isobutyl ketone [108-10-1] (1992)	(50 ppm)	75 ppm	(); BEI	100.16	(URT & eye irr; kidney dam)
Methyl isocyanate [624-83-9] (1986)	0.02 ppm	—	Skin	57.05	URT irr
Methyl isopropyl ketone [563-80-4] (1992)	200 ppm	—	—	86.14	URT & eye irr
Methyl mercaptan [74-93-1] (2003)	0.5 ppm	—	—	48.11	Liver dam
Methyl methacrylate [80-62-6] (1992)	50 ppm	100 ppm	SEN; A4	100.13	URT & eye irr; body weight eff; pulm edema

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
1-Methyl naphthalene [90-12-0] and 2-Methyl naphthalene [91-57-6] (2006)	0.5 ppm	—	Skin; A4	142.2	LRT irr; lung dam
* Methyl parathion [298-00-0] (2008)	0.02 mg/m ³ (IFV)	—	Skin; A4; BEI _A	263.2	Cholinesterase inhib
Methyl propyl ketone [107-87-9] (2006)	—	150 ppm	—	86.17	Pulm func; eye irr
Methyl silicate [681-84-5] (1978)	1 ppm	—	—	152.22	URT irr; eye dam
‡ α-Methyl styrene [98-83-9] (1978)	(50 ppm)	(100 ppm)	(—)	118.18	(URT irr; CNS impair)
Methyl vinyl ketone [78-94-4] (1994)	—	C 0.2 ppm	Skin; SEN	70.10	URT & eye irr; CNS impair
Metribuzin [21087-64-9] (1981)	5 mg/m ³	—	A4	214.28	Liver dam; hematologic eff
Mevinphos [7786-34-7] (1998)	0.01 mg/m ³ (IFV)	—	Skin; A4; BEI _A	224.16	Cholinesterase inhib
Mica [12001-26-2] (1962)	3 mg/m ³ (R)	—	—	—	Pneumoconiosis
Molybdenum [7439-98-7], as Mo (1999)				95.95	
Soluble compounds	0.5 mg/m ³ (R)	—	A3		LRT irr
Metal and insoluble compounds	10 mg/m ³ (I)	—	—		
	3 mg/m ³ (R)	—	—		
Monochloroacetic acid [79-11-8] (2005)	0.5 ppm (IFV)	—	Skin; A4	94.5	URT irr
Monocrotophos [6923-22-4] (2002)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	223.16	Cholinesterase inhib

Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Morpholine [110-91-8] (1992)	20 ppm	—	Skin; A4	87.12	Eye dam; URT irr
Naled [300-76-5] (2002)	0.1 mg/m ³ (IFV)	—	Skin; SEN; A4; BEI _A	380.79	Cholinesterase inhib
Naphthalene [91-20-3] (1992)	10 ppm	15 ppm	Skin; A4	128.19	Hematologic eff; URT & eye irr; eye dam
β-Naphthylamine [91-59-8] (1979)	— (L)	—	A1	143.18	Bladder cancer
Natural gas [8006-14-2]	See Aliphatic hydrocarbon gases: Alkane [C ₁ —C ₄]				
Natural rubber latex [9006-04-6], as Inhalable allergenic proteins (2007)	0.0001 mg/m ³ (I)	—	Skin; SEN	Varies	Resp sens
Neon [7440-01-9] (1992)	Simple asphyxiant (D)			20.18	Asphyxia
Nickel, as Ni (1996)					
Elemental [7440-02-0]	1.5 mg/m ³ (I)	—	A5	58.71	Dermatitis; pneumoconiosis
Soluble inorganic compounds (NOS)	0.1 mg/m ³ (I)	—	A4	Varies	Lung dam; nasal cancer
Insoluble inorganic compounds (NOS)	0.2 mg/m ³ (I)	—	A1	Varies	Lung cancer
Nickel subsulfide [12035-72-2], as Ni	0.1 mg/m ³ (I)	—	A1	240.19	Lung cancer
Nickel carbonyl [13463-39-3], as Ni (1980)	0.05 ppm	—	—	170.73	Lung & nasal cancer
Nicotine [54-11-5] (1992)	0.5 mg/m ³	—	Skin	162.23	GI dam; CNS impair; card impair
Nitrapyrin [1929-82-4] (1992)	10 mg/m ³	20 mg/m ³	A4	230.93	Liver dam

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Nitric acid [7697-37-2] (1992)	2 ppm	4 ppm	—	63.02	URT & eye irr; dental erosion
Nitric oxide [10102-43-9] (1992)	25 ppm	—	BEI _M	30.01	Hypoxia/cyanosis; nitrosyl-Hb form; URT irr
p-Nitroaniline [100-01-6] (1992)	3 mg/m ³	—	Skin; A4; BEI _M	138.12	MeHb-emia; liver dam; eye irr
Nitrobenzene [98-95-3] (1992)	1 ppm	—	Skin; A3; BEI	123.11	MeHb-emia
p-Nitrochlorobenzene [100-00-5] (1985)	0.1 ppm	—	Skin; A3; BEI _M	157.56	MeHb-emia
4-Nitrodiphenyl [92-93-3] (1992)	— (L)	—	Skin; A2	199.20	Bladder cancer
Nitroethane [79-24-3] (1979)	100 ppm	—	—	75.07	URT irr; CNS impair; liver dam
Nitrogen [7727-37-9] (1992)		Simple asphyxiant ^(D)		14.01	Asphyxia
Nitrogen dioxide [10102-44-0] (1978)	3 ppm	5 ppm	A4	46.01	URT & LRT irr
Nitrogen trifluoride [7783-54-2] (1992)	10 ppm	—	BEI _M	71.00	MeHb-emia; liver & kidney dam
Nitroglycerin (NG) [55-63-0] (1980)	0.05 ppm	—	Skin	227.09	Vasodilation
Nitromethane [75-52-5] (1997)	20 ppm	—	A3	61.04	Thyroid eff; URT irr; lung dam
1-Nitropropane [108-03-2] (1992)	25 ppm	—	A4	89.09	URT & eye irr; liver dam
2-Nitropropane [79-46-9] (1992)	10 ppm	—	A3	89.09	Liver dam; liver cancer

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
N-Nitrosodimethylamine [62-75-9] (1992)	— (L)	—	Skin; A3	74.08	Liver & kidney cancer; liver dam
Nitrotoluene, All isomers (1992) [88-72-2; 99-08-1; 99-99-0]	2 ppm	—	Skin; BEI _M	137.13	MeHb-emia
5-Nitro-o-toluidine [99-55-8] (2006)	1 mg/m ³ (I)	—	A3	152.16	Liver dam
Nitrous oxide [10024-97-2] (1986)	50 ppm	—	A4	44.02	CNS impair; hematologic eff; embryo/fetal dam
Nonane [111-84-2], All isomers (1992)	200 ppm	—	—	128.26	CNS impair
Octachloronaphthalene [2234-13-1] (1970)	0.1 mg/m ³	0.3 mg/m ³	Skin	403.74	Liver dam
Octane, All isomers [111-65-9] (1979)	300 ppm	—	—	114.22	URT irr
‡ (Oil mist, mineral) (1992)	(5 mg/m ³ (O))	(10 mg/m ³ (O))	(—)	(—)	(Lung)
Osmium tetroxide [20816-12-0], as Os (1979)	0.0002 ppm	0.0006 ppm	—	254.20	Eye, URT, & skin irr
Oxalic acid [144-62-7] (1992)	1 mg/m ³	2 mg/m ³	—	90.04	URT, eye, & skin irr
p,p'-Oxybis(benzenesulfonyl hydrazide) [80-51-3] (1997)	0.1 mg/m ³ (I)	—	—	326.00	Teratogenic eff
Oxygen difluoride [7783-41-7] (1983)	—	C 0.05 ppm	—	54.00	Headache; pulm edema; URT irr

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV [®] Basis
	TWA	STEL	Notations		
Ozone [10028-15-6] (1995)				48.00	Pulm func
Heavy work	0.05 ppm	—	A4		
Moderate work	0.08 ppm	—	A4		
Light work	0.10 ppm	—	A4		
Heavy, moderate, or light workloads (≤ 2 hours)	0.20 ppm	—	A4		
Paraffin wax fume [8002-74-2] (1972)	2 mg/m ³	—	—	—	URT irr; nausea
Paraquat [4685-14-7] (1979)	0.5 mg/m ³	—	—	257.18	Lung dam
	0.1 mg/m ³ (R)	—	—		
Parathion [56-38-2] (2000)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI	291.27	Cholinesterase inhib
Particles (Insoluble or Poorly Soluble) Not Otherwise Specified	see Appendix B				
Pentaborane [19624-22-7] (1970)	0.005 ppm	0.015 ppm	—	63.17	CNS convul; CNS impair
Pentachloronaphthalene [1321-64-8] (1970)	0.5 mg/m ³	—	Skin	300.40	Liver dam; chloracne
Pentachloronitrobenzene [82-68-8] (1988)	0.5 mg/m ³	—	A4	295.36	Liver dam
Pentachlorophenol [87-86-5] (1992)	0.5 mg/m ³	—	Skin; A3; BEI	266.35	URT & eye irr; CNS impair; card impair
Pentaerythritol [115-77-5] (1970)	10 mg/m ³	—	—	136.15	Eye & URT irr

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Pentane, All isomers [78-78-4; 109-66-0; 463-82-1] (1989)	600 ppm	—	—	72.15	Peripheral neuropathy
Pentyl acetate, All isomers [628-63-7; 626-38-0; 123-92-2; 625-16-1; 624-41-9; 620-11-1] (1997)	50 ppm	100 ppm	—	130.20	URT irr
Perchloromethyl mercaptan [594-42-3] (1988)	0.1 ppm	—	—	185.87	Eye & URT irr
Perchloryl fluoride [7616-94-6] (1962)	3 ppm	6 ppm	—	102.46	LRT & URT irr; MeHb-emia; fluorosis
Perfluorobutyl ethylene [19430-93-4] (2001)	100 ppm	—	—	246.1	Hematologic eff
Perfluoroisobutylene [382-21-8] (1989)	—	C 0.01 ppm	—	200.04	URT irr; hematologic eff
Persulfates, as persulfate (1993)	0.1 mg/m ³	—	—	Varies	Skin irr
Phenol [108-95-2] (1992)	5 ppm	—	Skin; A4; BEI	94.11	URT irr; lung dam; CNS impair
Phenothiazine [92-84-2] (1968)	5 mg/m ³	—	Skin	199.26	Eye photosens; skin irr
N-Phenyl-β-naphthylamine [135-88-6] (1992)	— (L)	—	A4	219.29	Cancer
o-Phenylenediamine [95-54-5] (1988)	0.1 mg/m ³	—	A3	108.05	Anemia
m-Phenylenediamine [108-45-2] (1988)	0.1 mg/m ³	—	A4	108.05	Liver dam; skin irr
p-Phenylenediamine [106-50-3] (1988)	0.1 mg/m ³	—	A4	108.05	URT irr; skin sens
Phenyl ether [101-84-8], vapor (1979)	1 ppm	2 ppm	—	170.20	URT & eye irr; nausea

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV [®] Basis
	TWA	STEL	Notations		
Phenyl glycidyl ether (PGE) [122-60-1] (1992)	0.1 ppm	—	Skin; SEN; A3	150.17	Testicular dam
Phenylhydrazine [100-63-0] (1988)	0.1 ppm	—	Skin; A3	108.14	Anemia; URT & skin irr
Phenyl mercaptan [108-98-5] (2001)	0.1 ppm	—	Skin	110.18	CNS impair; eye & skin irr
Phenylphosphine [638-21-1] (1992)	—	C 0.05 ppm	—	110.10	Dermatitis; hematologic eff; testicular dam
Phorate [298-02-2] (2002)	0.05 mg/m ³ (IFV)	—	Skin; A4; BEI _A	260.40	Cholinesterase inhib
Phosgene [75-44-5] (1992)	0.1 ppm	—	—	98.92	URT irr; pulm edema; pulm emphysema
Phosphine [7803-51-2] (1992)	0.3 ppm	1 ppm	—	34.00	URT & GI irr; headache; CNS impair
Phosphoric acid [7664-38-2] (1992)	1 mg/m ³	3 mg/m ³	—	98.00	URT, eye, & skin irr
Phosphorus (yellow) [12185-10-3] (1992)	0.1 mg/m ³	—	—	123.92	LRT, URT, & GI irr; liver dam
Phosphorus oxychloride [10025-87-3] (1979)	0.1 ppm	—	—	153.35	URT irr
Phosphorus pentachloride [10026-13-8] (1985)	0.1 ppm	—	—	208.24	URT & eye irr
Phosphorus pentasulfide [1314-80-3] (1992)	1 mg/m ³	3 mg/m ³	—	222.29	URT irr
Phosphorus trichloride [7719-12-2] (1992)	0.2 ppm	0.5 ppm	—	137.35	URT, eye, & skin irr
Phthalic anhydride [85-44-9] (1992)	1 ppm	—	SEN; A4	148.11	URT, eye, & skin irr

Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
m-Phthalodinitrile [626-17-5] (1974)	5 mg/m ³ (IFV)	—	—	128.14	Eye & URT irr
Picloram [1918-02-1] (1992)	10 mg/m ³	—	A4	241.48	Liver & kidney dam
Picric acid [88-89-1] (1992)	0.1 mg/m ³	—	—	229.11	Skin sens; dermatitis; eye irr
Pindone [83-26-1] (1992)	0.1 mg/m ³	—	—	230.25	Coagulation
Piperazine dihydrochloride [142-64-3] (1992)	5 mg/m ³	—	—	159.05	Eye & skin irr; skin sens; asthma
Platinum [7440-06-4] (1979)					
Metal	1 mg/m ³	—	—	195.09	Asthma; URT irr
Soluble salts, as Pt	0.002 mg/m ³	—	—	Varies	Asthma; URT irr
Polyvinyl chloride (PVC) [9002-86-2] (2007)	1 mg/m ³ (R)	—	A4	Varies	Pneumoconiosis; LRT irr; pulm func changes
‡ Portland cement [65997-15-1] (1992)	(10 mg/m ³ (E))	—	(—)	—	(Resp irr; dermatitis)
Potassium hydroxide [1310-58-3] (1992)	—	C 2 mg/m ³	—	56.10	URT, eye, & skin irr
Propane [74-98-6]	See Aliphatic hydrocarbon gases: Alkane [C ₁ —C ₄]				
Propane sultone [1120-71-4] (1976)	— (L)	—	A3	122.14	Cancer
n-Propanol (n-Propyl alcohol) [71-23-8] (2006)	100 ppm	—	A4	60.09	Eye & URT irr
2-Propanol [67-63-0] (2001)	200 ppm	400 ppm	A4	60.09	Eye & URT irr; CNS impair

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Propargyl alcohol [107-19-7] (1992)	1 ppm	—	Skin	56.06	Eye irr; liver & kidney dam
β-Propiolactone [57-57-8] (1992)	0.5 ppm	—	A3	72.06	Skin cancer; URT irr
Propionaldehyde [123-38-6] (1998)	20 ppm	—	—	58.1	URT irr
Propionic acid [79-09-4] (1977)	10 ppm	—	—	74.08	Eye, skin, & URT irr
Propoxur [114-26-1] (1992)	0.5 mg/m ³	—	A3; BEI _A	209.24	Cholinesterase inhib
n-Propyl acetate [109-60-4] (1962)	200 ppm	250 ppm	—	102.13	Eye & URT irr
Propylene [115-07-1] (2005)	500 ppm	—	A4	42.08	Asphyxia; URT irr
Propylene dichloride [78-87-5] (2005)	10 ppm	—	SEN; A4	112.99	URT irr; body weight eff
Propylene glycol dinitrate [6423-43-4] (1980)	0.05 ppm	—	Skin; BEI _M	166.09	Headache; CNS impair
Propylene oxide [75-56-9] (2000)	2 ppm	—	SEN; A3	58.08	Eye & URT irr
* Propyleneimine [75-55-8] (2008)	0.2 ppm	0.4 ppm	Skin; A3	57.09	URT irr; kidney dam
n-Propyl nitrate [627-13-4] (1962)	25 ppm	40 ppm	BEI _M	105.09	Nausea; headache
Pyrethrum [8003-34-7] (1992)	5 mg/m ³	—	A4	345 (avg.)	Liver dam; LRT irr
Pyridine [110-86-1] (1992)	1 ppm	—	A3	79.10	Skin irr; liver & kidney dam
Quinone [106-51-4] (1970)	0.1 ppm	—	—	108.09	Eye irr; skin dam

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Resorcinol [108-46-3] (1992)	10 ppm	20 ppm	A4	110.11	Eye & skin irr
Rhodium [7440-16-6], as Rh (1981)				102.91	
Metal and Insoluble compounds	1 mg/m ³	—	A4	Varies	Metal = URT irr; Insoluble = LRT irr
Soluble compounds	0.01 mg/m ³	—	A4	Varies	Asthma
Ronnel [299-84-3] (2005)	5 mg/m ³ (IFV)	—	A4; BEI _A	321.57	Cholinesterase inhib
Rosin core solder thermal decomposition products (colophony) [8050-09-7] (1992)	— (L)	—	SEN	NA	Skin sens; dermatitis; asthma
Rotenone (commercial) [83-79-4] (1992)	5 mg/m ³	—	A4	391.41	URT & eye irr; CNS impair
Selenium [7782-49-2] and compounds, as Se (1992)	0.2 mg/m ³	—	—	78.96	Eye & URT irr
Selenium hexafluoride [7783-79-1], as Se (1992)	0.05 ppm	—	—	192.96	Pulm edema
Sesone [136-78-7] (1992)	10 mg/m ³	—	A4	309.13	GI irr
Silica, Crystalline — α -Quartz [14808-60-7; 1317-95-9] and Cristobalite [14464-46-1] (2005)	0.025 mg/m ³ (R)	—	A2	60.09	Pulm fibrosis; lung cancer
Silicon carbide [409-21-2] (1999)				40.10	
Nonfibrous	10 mg/m ³ (I,E)	—	—		URT irr
	3 mg/m ³ (R,E)	—	—		URT irr
Fibrous (including whiskers)	0.1 f/cc (F)	—	A2		Mesothelioma; cancer

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Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Silicon tetrahydride [7803-62-5] (1992)	5 ppm	—	—	32.12	URT & skin irr
Silver [7440-22-4] (1992)					Argyria
Metal, dust and fume	0.1 mg/m ³	—	—	107.87	
Soluble compounds, as Ag	0.01 mg/m ³	—	—	Varies	
‡ Soapstone (1992)	6 mg/m ³ (E)	—	—	—	LRT irr
	3 mg/m ³ (E,R)	—	—		
Sodium azide [26628-22-8] (1992)				65.02	Card impair; lung dam
as Sodium azide	—	C 0.29 mg/m ³	A4		
as Hydrazoic acid vapor	—	C 0.11 ppm	A4		
Sodium bisulfite [7631-90-5] (1992)	5 mg/m ³	—	A4	104.07	Skin, eye, & URT irr
Sodium fluoroacetate [62-74-8] (1992)	0.05 mg/m ³	—	Skin	100.02	CNS impair; card impair; nausea
Sodium hydroxide [1310-73-2] (1992)	—	C 2 mg/m ³	—	40.01	URT, eye, & skin irr
Sodium metabisulfite [7681-57-4] (1992)	5 mg/m ³	—	A4	190.13	URT irr
Starch [9005-25-8] (1992)	10 mg/m ³	—	A4	—	Dermatitis
Stearates ^(J) (1985)	10 mg/m ³	—	A4	Varies	Eye, skin, & URT irr
Stoddard solvent [8052-41-3] (1980)	100 ppm	—	—	140.00	Eye, skin, & kidney dam; nausea; CNS impair

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Strontium chromate [7789-06-2], as Cr (1989)	0.0005 mg/m ³	—	A2	203.61	Cancer
Strychnine [57-24-9] (1992)	0.15 mg/m ³	—	—	334.40	CNS impair
Styrene, monomer [100-42-5] (1996)	20 ppm	40 ppm	A4; BEI	104.16	CNS impair; URT irr; peripheral neuropathy
Subtilisins [1395-21-7; 9014-01-1], as crystalline active enzyme (1972)	—	C 0.00006 mg/m ³	—	—	Asthma; skin, URT, & LRT irr
Sucrose [57-50-1] (1992)	10 mg/m ³	—	A4	342.30	Dental erosion
Sulfometuron methyl [74222-97-2] (1991)	5 mg/m ³	—	A4	364.38	Hematologic eff
Sulfotepp (TEDP) [3689-24-5] (1993)	0.1 mg/m ³ (IFV)	—	Skin; A4; BEI _A	322.30	Cholinesterase inhib
* Sulfur dioxide [7446-09-5] (2008)	—	0.25 ppm	A4	64.07	Pulm func; LRT irr
Sulfur hexafluoride [2551-62-4] (1985)	1000 ppm	—	—	146.07	Asphyxia
Sulfuric acid [7664-93-9] (2000)	0.2 mg/m ³ (T)	—	A2 (M)	98.08	Pulm func
Sulfur monochloride [10025-67-9] (1986)	—	C 1 ppm	—	135.03	Eye, skin, & URT irr
Sulfur pentafluoride [5714-22-7] (1962)	—	C 0.01 ppm	—	254.11	URT irr; lung dam
Sulfur tetrafluoride [7783-60-0] (1992)	—	C 0.1 ppm	—	108.07	Eye & URT irr; lung dam

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Sulfuryl fluoride [2699-79-8] (1992)	5 ppm	10 ppm	—	102.07	CNS impair
* Sulprofos [35400-43-2] (2008)	0.1 mg/m ³ (IFV)	—	Skin; A4; BEI _A	322.43	Cholinesterase inhib
Synthetic Vitreous Fibers (1999)					
Continuous filament glass fibers	1 f/cc (F)	—	A4	—	URT irr
Continuous filament glass fibers	5 mg/m ³ (I)	—	A4	—	URT irr
Glass wool fibers	1 f/cc (F)	—	A3	—	
Rock wool fibers	1 f/cc (F)	—	A3	—	
Slag wool fibers	1 f/cc (F)	—	A3	—	
Special purpose glass fibers	1 f/cc (F)	—	A3	—	
Refractory ceramic fibers	0.2 f/cc (F)	—	A2	—	Pulm fibrosis; pulm func
2,4,5-T [93-76-5] (1992)	10 mg/m ³	—	A4	255.49	PNS impair
‡ Talc [14807-96-6] (1980)					
Containing no asbestos fibers	2 mg/m ³ (E,R)	—	A4	—	LRT irr
Containing asbestos fibers	Use asbestos TLV® (K)	—	A1	—	
‡ (Tantalum [7440-25-7] and Tantalum oxide [1314-61-0] dusts, as Ta) (1970)	(5 mg/m ³)	(—)	(—)	(180.95) (441.90)	(URT irr)
Tellurium [13494-80-9] and compounds (NOS), as Te, excluding hydrogen telluride (1992)	0.1 mg/m ³	—	—	127.60	Halitosis

Substance [CAS No.] (Documentation date)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Tellurium hexafluoride [7783-80-4], as Te (1992)	0.02 ppm	—	—	241.61	LRT irr
Temephos [3383-96-8] (2002)	1 mg/m ³ (IFV)	—	Skin; A4; BEI _A	466.46	Cholinesterase inhib
Terbufos [13071-79-9] (1999)	0.01 mg/m ³ (IFV)	—	Skin; A4; BEI _A	288.45	Cholinesterase inhib
Terephthalic acid [100-21-0] (1990)	10 mg/m ³	—	—	166.13	
Terphenyls [26140-60-3] (1977)	—	C 5 mg/m ³	—	230.31	URT & eye irr
1,1,2,2-Tetrabromoethane [79-27-6] (2005)	0.1 ppm (IFV)	—	—	345.70	Eye & URT irr; pulm edema; liver dam
1,1,1,2-Tetrachloro-2,2-difluoroethane [76-11-9] (2007)	100 ppm	—	—	203.83	Liver & kidney dam; CNS impair
1,1,2,2-Tetrachloro-1,2-difluoroethane [76-12-0] (2007)	50 ppm	—	—	203.83	Liver & kidney dam; CNS impair
1,1,2,2-Tetrachloroethane [79-34-5] (1995)	1 ppm	—	Skin; A3	167.86	Liver dam
Tetrachloroethylene [127-18-4] (1990)	25 ppm	100 ppm	A3; BEI	165.80	CNS impair
Tetrachloronaphthalene [1335-88-2] (1992)	2 mg/m ³	—	—	265.96	Liver dam
Tetraethyl lead [78-00-2], as Pb (1992)	0.1 mg/m ³	—	Skin; A4	323.45	CNS impair
Tetraethyl pyrophosphate (TEPP) [107-49-3] (2006)	0.01 mg/m ³ (IFV)	—	Skin; BEI _A	290.20	Cholinesterase inhib
Tetrafluoroethylene [116-14-3] (1997)	2 ppm	—	A3	100.20	Kidney & liver dam; liver & kidney cancer

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Tetrahydrofuran [109-99-9] (2002)	50 ppm	100 ppm	Skin; A3	72.10	URT irr; CNS impair; kidney dam
Tetrakis (hydroxymethyl) phosphonium salts (2002)					Skin irr
Tetrakis (hydroxymethyl) phosphonium chloride [124-64-1]	2 mg/m ³	—	A4	190.56	
Tetrakis (hydroxymethyl) phosphonium sulfate [55566-30-8]	2 mg/m ³	—	SEN; A4	406.26	
Tetramethyl lead [75-74-1], as Pb (1992)	0.15 mg/m ³	—	Skin	267.33	CNS impair
Tetramethyl succinonitrile [3333-52-6] (1992)	0.5 ppm	—	Skin	136.20	Headache; nausea; CNS convul
Tetranitromethane [509-14-8] (1992)	0.005 ppm	—	A3	196.04	Eye & URT irr; URT cancer
Tetryl [479-45-8] (1984)	1.5 mg/m ³	—	—	287.15	URT irr
‡ Thallium [7440-28-0] and soluble compounds, as TI (1992)	(0.1 mg/m ³)	—	Skin	204.37 Varies	(Alopecia)
‡ 4,4'-Thiobis(6-tert-butyl-m-cresol) [96-69-5] (1992)	(10 mg/m ³)	—	A4	358.52	(Liver & kidney dam)
Thioglycolic acid [68-11-1] (1992)	1 ppm	—	Skin	92.12	Eye & skin irr
‡ Thionyl chloride [7719-09-7] (1992)	—	(C 1 ppm)	—	118.98	(Eye & URT irr)
Thiram [137-26-8] (2007)	0.05 mg/m ³ (IFV)	—	SEN; A4	240.44	Body weight & hematologic eff

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Tin [7440-31-5], as Sn (1992)					
Metal	2 mg/m ³	—	—	118.69	Pneumoconiosis; eye & URT irr; headache; nausea
Oxide & inorganic compounds, except tin hydride	2 mg/m ³	—	—	Varies	
Organic compounds	0.1 mg/m ³	0.2 mg/m ³	Skin; A4	Varies	
Titanium dioxide [13463-67-7] (1992)	10 mg/m ³	—	A4	79.90	LRT irr
o-Tolidine [119-93-7] (1992)	—	—	Skin; A3	212.28	Eye, bladder, & kidney irr; bladder cancer; MeHb-emia
Toluene [108-88-3] (2006)	20 ppm	—	A4; BEI	92.13	Visual impair; female repro; pregnancy loss
‡ Toluene-2,4- or 2,6-diisocyanate (or as a mixture) [584-84-9; 91-08-7] (1992)	(0.005 ppm)	(0.02 ppm)	(); SEN; (A4)	174.15	(Resp sens; asthma; eye irr)
o-Toluidine [95-53-4] (1984)	2 ppm	—	Skin; A3; BEI _M	107.15	Eye, bladder, & kidney irr; MeHb-emia
m-Toluidine [108-44-1] (1984)	2 ppm	—	Skin; A4; BEI _M	107.15	
p-Toluidine [106-49-0] (1984)	2 ppm	—	Skin; A3; BEI _M	107.15	
Tributyl phosphate [126-73-8] (1992)	0.2 ppm	—	BEI _A	266.32	Nausea; headache; eye & URT irr
Trichloroacetic acid [76-03-9] (1992)	1 ppm	—	A3	163.39	Eye & URT irr

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
1,2,4-Trichlorobenzene [120-82-1] (1975)	—	C 5 ppm	—	181.46	Eye & URT irr
1,1,2-Trichloroethane [79-00-5] (1992)	10 ppm	—	Skin; A3	133.41	CNS impair; liver dam
Trichloroethylene [79-01-6] (2006)	10 ppm	25 ppm	A2	131.40	CNS impair; cognitive decrements; renal toxicity
Trichlorofluoromethane [75-69-4] (1992)	—	C 1000 ppm	A4	137.38	Card sens
Trichloronaphthalene [1321-65-9] (1970)	5 mg/m ³	—	Skin	231.51	Liver dam; chloracne
1,2,3-Trichloropropane [96-18-4] (1992)	10 ppm	—	Skin; A3	147.43	Liver & kidney dam; eye & URT irr
1,1,2-Trichloro-1,2,2-trifluoroethane [76-13-1] (1992)	1000 ppm	1250 ppm	A4	187.40	CNS impair
Trichlorphon [52-68-6] (1998)	1 mg/m ³ (I)	—	A4; BEI _A	257.60	Cholinesterase inhib
Triethanolamine [102-71-6] (1990)	5 mg/m ³	—	—	149.22	Eye & skin irr
Triethylamine [121-44-8] (1991)	1 ppm	3 ppm	Skin; A4	101.19	Visual impair
Trifluorobromomethane [75-63-8] (1979)	1000 ppm	—	—	148.92	CNS & card impair
1,3,5-Triglycidyl-s-triazinetriene [2451-62-9] (1994)	0.05 mg/m ³	—	—	297.25	Male repro dam
Trimellitic anhydride [552-30-7] (2007)	0.0005 mg/m ³ (IFV)	0.002 mg/m ³ (IFV)	Skin; SEN	192.12	Resp sens
Trimethylamine [75-50-3] (1990)	5 ppm	15 ppm	—	59.11	URT irr

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis
	TWA	STEL	Notations		
Trimethyl benzene (mixed isomers) [25551-13-7] (1970)	25 ppm	—	—	120.19	CNS impair; asthma; hematologic eff
Trimethyl phosphite [121-45-9] (1980)	2 ppm	—	—	124.08	Eye irr; cholinesterase inhib
2,4,6-Trinitrotoluene (TNT) [118-96-7] (1984)	0.1 mg/m ³	—	Skin; BEI _M	227.13	MeHb-emia; liver dam; cataract
Triorthocresyl phosphate [78-30-8] (1992)	0.1 mg/m ³	—	Skin; A4; BEI _A	368.37	Cholinesterase inhib
Triphenyl phosphate [115-86-6] (1992)	3 mg/m ³	—	A4	326.28	Cholinesterase inhib
Tungsten [7440-33-7], as W (1979)				183.85	
Metal and insoluble compounds	5 mg/m ³	10 mg/m ³	—	Varies	LRT irr
Soluble compounds	1 mg/m ³	3 mg/m ³	—	Varies	CNS impair; pulm fibrosis
Turpentine [8006-64-2] and selected monoterpenes [80-56-8; 127-91-3; 13466-78-9] (2001)	20 ppm	—	SEN; A4	136.00 Varies	URT & skin irr; CNS impair; lung dam
Uranium (natural) [7440-61-1] (1992)				238.03	Kidney dam
Soluble and insoluble compounds, as U	0.2 mg/m ³	0.6 mg/m ³	A1	Varies	
n-Valeraldehyde [110-62-3] (1984)	50 ppm	—	—	86.13	Eye, skin, & URT irr
* Vanadium pentoxide [1314-62-1] as V (2008)	0.05 mg/m ³ (1)	—	A3; BEI	181.88	URT & LRT irr
Vinyl acetate [108-05-4] (1992)	10 ppm	15 ppm	A3	86.09	URT, eye, & skin irr; CNS impair

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Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV [®] Basis
	TWA	STEL	Notations		
Vinyl bromide [593-60-2] (1996)	0.5 ppm	—	A2	106.96	Liver cancer
Vinyl chloride [75-01-4] (1997)	1 ppm	—	A1	62.50	Lung cancer; liver dam
4-Vinyl cyclohexene [100-40-3] (1994)	0.1 ppm	—	A3	108.18	Female repro dam; male repro dam
Vinyl cyclohexene dioxide [106-87-6] (1994)	0.1 ppm	—	Skin; A3	140.18	Female repro dam; male repro dam
Vinyl fluoride [75-02-5] (1996)	1 ppm	—	A2	46.05	Liver cancer; liver dam
N-Vinyl-2-pyrrolidone [88-12-0] (2000)	0.05 ppm	—	A3	111.16	Liver dam
Vinylidene chloride [75-35-4] (1992)	5 ppm	—	A4	96.95	Liver & kidney dam
Vinylidene fluoride [75-38-7] (1996)	500 ppm	—	A4	64.04	Liver dam
Vinyl toluene [25013-15-4] (1992)	50 ppm	100 ppm	A4	118.18	URT & eye irr
Warfarin [81-81-2] (1992)	0.1 mg/m ³	—	—	308.32	Coagulation

Substance [CAS No.] (<i>Documentation date</i>)	ADOPTED VALUES			MW	TLV® Basis—Critical Effect(s)
	TWA	STEL	Notations		
Wood dusts (2002)				NA	
Western red cedar	0.5 mg/m ³ (I)	—	SEN; A4		Asthma
All other species	1 mg/m ³ (I)	—	—		Pulm func
<i>Carcinogenicity</i>					
Oak and beech	—	—	A1		
Birch, mahogany, teak, walnut	—	—	A2		
All other wood dusts	—	—	A4		
Xylene [1330-20-7] (o, m & p isomers) [95-47-6; 108-38-3; 106-42-3] (1992)	100 ppm	150 ppm	A4; BEI	106.16	URT & eye irr; CNS impair
m-Xylene α,α' -diamine [1477-55-0] (1992)	—	C 0.1 mg/m ³	Skin	136.20	Eye, skin, & GI irr
Xylidine (mixed isomers) [1300-73-8] (1999)	0.5 ppm (IFV)	—	Skin; A3; BEI _M	121.18	Liver dam; MeHb-emia
Yttrium [7440-65-5] and compounds, as Y (1986)	1 mg/m ³	—	—	88.91	Pulm fibrosis
Zinc chloride fume [7646-85-7] (1992)	1 mg/m ³	2 mg/m ³	—	136.29	LRT & URT irr
Zinc chromates [13530-65-9; 11103-86-9; 37300-23-5], as Cr (1992)	0.01 mg/m ³	—	A1	Varies	Nasal cancer
Zinc oxide [1314-13-2] (2001)	2 mg/m ³ (R)	10 mg/m ³ (R)	—	81.37	Metal fume fever
Zirconium [7440-67-7] and compounds, as Zr (1992)	5 mg/m ³	10 mg/m ³	A4	91.22	

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