

CONTENTS

I Introduction: Toxicological Concepts	1
Toxicological Concepts—Setting Exposure Limits	3
II The Chemical Hazards	11
Acetaldehyde	13
Acetamide	14
Acetic acid	15
Acetic anhydride	16
Acetone	17
Acetonitrile	19
2-Acetylaminofluorene	20
Acetylene tetrabromide	22
Acrolein	22
Acrylamide	24
Acrylic acid	27
Acrylonitrile	28
Aldrin	30
Allyl alcohol	32
Allyl chloride	32
Allyl glycidyl ether	34
Allyl propyl disulfide	35
Aluminum	36
Aluminum oxides	38
4-Aminodiphenyl	40
<i>p</i> -Aminophenol	41
2-Aminopyridine	42
Amitrole	43
Ammonia	45
Ammonium chloride fume	46
Ammonium perfluorooctanoate	46
Ammonium sulfamate	48
<i>n</i> -Amyl acetate	48
<i>sec</i> -Amyl acetate	49
Aniline	50
Anisidine	52
Antimony (and compounds)	52
ANTU	54
Arsenic (and compounds)	55
Arsine	58
Asbestos	59
Asphalt fumes	61
Atrazine	63
Azinphos-methyl	64
Barium (and compounds)	65
Bauxite	66
Benomyl	67
Benz[<i>a</i>]anthracene	68
Benzene	69
Benzidine	73
2,3-Benzofuran	75
Benzoic acid	75
Benzo[<i>a</i>]pyrene	76
Benzotrichloride	78
Benzoyl peroxide	79
Benzyl chloride	80
Beryllium (and compounds)	81
Biphenyl	83
Bismuth telluride	84
Bisphenol A	85
Borates, tetra, sodium salts	87
Boron oxide	88
Boron tribromide	88
Boron trifluoride	89
Bromine	90
Bromine pentafluoride	91
Bromodichloromethane	91
Bromoform	93
1,3-Butadiene	94
<i>n</i> -Butane	96
<i>n</i> -Butyl acetate	98
<i>sec</i> -Butyl acetate	99
<i>tert</i> -Butyl acetate	99
<i>n</i> -Butyl acrylate	100
<i>n</i> -Butyl alcohol	101
<i>sec</i> -Butyl alcohol	102
<i>tert</i> -Butyl alcohol	102
Butylamine	103
<i>tert</i> -Butyl chromate	104
<i>n</i> -Butyl glycidyl ether	105
<i>n</i> -Butyl mercaptan	105
<i>o-sec</i> -Butylphenol	106
<i>p-tert</i> -Butyl toluene	107

Cadmium (and compounds)	108	Chromium (metal and inorganic compounds, as Cr)	172
Calcium carbonate	110	Chromyl chloride	175
Calcium cyanamide	111	Chrysene	176
Calcium hydroxide	111	Coal dust	177
Calcium oxide	112	Coal tar pitch volatiles	178
Calcium silicate	113	Cobalt	180
Calcium sulfate	114	Cobalt hydrocarbonyl	182
Camphor	114	Copper (dust and fume)	183
Caprolactam	115	Cotton dust, raw	184
Carbaryl	116	Cresol (all isomers)	186
Carbon black	118	Crotonaldehyde	187
Carbon dioxide	120	Cumene	188
Carbon disulfide	121	Cyanamide	189
Carbon monoxide	123	Cyanides	190
Carbon tetrabromide	126	Cyanogen	191
Carbon tetrachloride	126	Cyanogen chloride	193
Catechol	129	Cyclohexane	193
Cellulose (and compounds)	130	Cyclohexanol	195
Cesium hydroxide	131	Cyclohexanone	195
Chlordane	131	Cyclohexene	197
Chlordecone	133	Cycloheximide	197
Chlorinated dibenzo- <i>p</i> -dioxins	134	Cyclohexylamine	198
Chlorinated diphenyl oxide	137	Cyclopentadiene	199
Chlorine	138	Cyclopentane	200
Chlorine dioxide	140	Cymene	201
Chlorine trifluoride	142	DDT	202
Chloroacetaldehyde	142	Decaborane	203
Chloroacetone	143	Decalin	204
α -Chloroacetophenone	144	Demeton	206
Chloroacetyl chloride	145	Diacetone alcohol	207
Chlorobenzene	146	2,4-Diaminotoluene	208
<i>o</i> -Chlorobenzylidene malononitrile	147	Diazomethane	209
Chlorobromomethane	149	Dibenz[<i>a,b</i>]anthracene	210
<i>p</i> -Chloro- <i>m</i> -cresol	150	Diborane	211
Chlorodibromomethane	150	1,2-Dibromo-3-chloropropane	212
Chlorodifluoromethane	152	2- <i>N</i> -Dibutylaminoethanol	214
Chlorodiphenyl, 42% chlorine	153	2,6-Di- <i>tert</i> -butyl- <i>p</i> -cresol	215
Chlorodiphenyl, 54% chlorine	156	Dibutyl phenyl phosphate	216
Chloroform	158	Dibutyl phosphate	217
bis(Chloromethyl)ether	160	Dibutyl phthalate	217
Chloromethyl methyl ether	162	Dichloroacetylene	219
1-Chloro-1-nitropropane	163	<i>o</i> -Dichlorobenzene	220
Chloropentafluoroethane	164	<i>p</i> -Dichlorobenzene	221
Chloropicrin	165	3,3'-Dichlorobenzidine	223
β -Chloroprene	166	Dichlorodifluoromethane	225
<i>o</i> -Chlorostyrene	168	1,3-Dichloro-5,5-dimethylhydantoin	226
Chlorothalonil	168	1,1-Dichloroethane	227
<i>o</i> -Chlorotoluene	169	1,2-Dichloroethylene	228
Chlorpyrifos	170		

CONTENTS

Dichloroethyl ether	229	Disulfiram	287
Dichlorofluoromethane	230	Disulfoton	288
1,1-Dichloro-1-nitroethane	231	Divinyl benzene	289
2,4-Dichlorophenol	231	Endosulfan	290
2,4-Dichlorophenoxyacetic acid	233	Endrin	291
1,3-Dichloropropene	235	Enflurane	293
2,2-Dichloropropionic acid	237	Epichlorohydrin	294
Dichlorotetrafluoroethane	238	EPN	296
Dichlorvos	239	1,2-Epoxybutane	297
Dicyclopentadiene	241	Epoxy resins	298
Dicyclopentadienyl iron	242	Ethane	301
Dieldrin	243	Ethanolamine	302
Diepoxybutane	244	2-Ethoxyethanol	303
Diethanolamine	245	2-Ethoxyethyl acetate	304
Diethylamine	247	Ethyl acetate	306
2-Diethylaminoethanol	248	Ethyl acrylate	307
Diethylene triamine	249	Ethyl alcohol	308
Diethylhexyl adipate	250	Ethylamine	310
Di(2-ethylhexyl) phthalate	251	Ethyl amyl ketone	310
Diethyl ketone	253	Ethyl benzene	311
Diethyl phthalate	253	Ethyl bromide	312
Diethyl sulfate	254	Ethyl butyl ketone	314
Difluorodibromomethane	255	Ethyl chloride	314
Diglycidyl ether	256	Ethylene	316
Diisobutyl ketone	257	Ethylene chlorohydrin	317
Diisopropylamine	258	Ethylenediamine	318
Dimethoxyethyl phthalate	258	Ethylene dibromide	319
Dimethylacetamide	259	Ethylene dichloride	321
Dimethylamine	261	Ethylene glycol	323
4-Dimethylaminoazobenzene	262	Ethylene glycol dinitrate	325
<i>N,N</i> -Dimethylaniline	263	Ethylene glycol monobutyl ether	326
Dimethyl carbamoyl chloride	264	Ethylene oxide	328
Dimethylformamide	265	Ethylene thiourea	330
1,1-Dimethylhydrazine	267	Ethylenimine	332
Dimethyl hydrogen phosphite	268	Ethyl ether	333
Dimethyl methylphosphonate	270	Ethyl formate	334
2,4-Dimethylphenol	271	2-Ethylhexyl acrylate	334
Dimethyl phthalate	272	Ethylidene norbornene	335
Dimethyl sulfate	273	Ethyl mercaptan	336
Dinitrobenzene (all isomers)	275	<i>N</i> -Ethylmorpholine	337
Dinitro- <i>o</i> -cresol	277	Ethyl silicate	338
2,4-Dinitrophenol	278	Fenthion	338
Dinitrotoluene (all isomers)	279	Ferbam	340
Dioxane	281	Ferrovandium dust	341
Diphenylamine	283	Fibrous glass/glasswool	342
1,2-Diphenylhydrazine	284	Fluoranthene	344
Dipropylene glycol methyl ether	285	Fluorides	345
Dipropyl ketone	285	Fluorine	347
Diquat	286	Formaldehyde	347

Phthalic anhydride	586	Strychnine	639
<i>m</i> -Phthalodinitrile	587	Styrene, monomer	640
Picric acid	588	Styrene oxide	642
Pindone	589	Sulfolane	643
Piperazine dihydrochloride	589	Sulfur dioxide	644
Platinum (and soluble salts)	590	Sulfur hexafluoride	645
Polybrominated biphenyls	591	Sulfur monochloride	646
Polytetrafluoroethylene decomposition		Sulfur pentafluoride	647
products	593	Sulfur tetrafluoride	647
Portland cement	594	Sulfuric acid	648
Potassium hydroxide	596	Sulfuryl fluoride	650
Propane	596	Talc (nonasbestos form)	651
Propane sultone	597	Tantalum	654
Propargyl alcohol	598	Tellurium	654
Propene	599	Tellurium hexafluoride	655
β -Propiolactone	600	Terphenyls	656
Propionic acid	601	1,1,2,2-Tetrachloro-1,2-difluoroethane	657
<i>n</i> -Propyl acetate	602	1,1,2,2-Tetrachloroethane	657
<i>n</i> -Propyl alcohol	603	Tetrachloronaphthalene	659
Propylene dichloride	604	Tetraethyl lead	659
Propylene glycol dinitrate	605	Tetraethyl pyrophosphate	661
Propylene glycol monomethyl ether	607	Tetrahydrofuran	662
Propyleneimine	608	Tetralin	664
Propylene oxide	609	Tetramethyl lead	665
<i>n</i> -Propyl nitrate	611	Tetramethyl succinonitrile	666
Pyrethrum	612	Tetranitromethane	666
Pyridine	613	Tetrasodium pyrophosphate	667
Quinone	614	Tetryl	668
Radon	615	Thallium	669
RDX	616	Thiazoles—rubber components	671
Resorcinol	617	Thioacetamide	672
Rhodium (and compounds)	618	4,4'-Thiobis(6- <i>tert</i> -butyl- <i>m</i> -cresol)	672
Ronnel	620	Thioglycolic acid	673
Rotenone	620	Thionyl chloride	674
Rubber, natural latex	622	Thiram	675
Selenium (and compounds)	623	Tin (inorganic compounds)	677
Selenium hexafluoride	625	Tin (organic compounds)	678
Silica, amorphous—diatomaceous earth	625	Titanium dioxide	679
Silica, amorphous—fume	626	Toluene	681
Silica, crystalline—quartz	628	Toluene-2,4-diisocyanate	683
Silicon	630	Toluidine	686
Silicon carbide	631	Toxaphene	687
Silicon tetrahydride	632	Tributyl phosphate	689
Silver (and compounds)	632	Trichloroacetic acid	690
Soapstone	634	1,2,4-Trichlorobenzene	692
Sodium fluoroacetate	634	1,1,1-Trichloroethane	692
Sodium hydroxide	636	1,1,2-Trichloroethane	694
Sodium metabisulfite	637	Trichloroethylene	696
Stibine	638	Trichlorofluoromethane	698
Stoddard solvent	638	Trichloronaphthalene	699

CONTENTS

2,4,6-Trichlorophenol	700	<i>n</i> -Valeraldehyde	726
2,4,5-Trichlorophenoxyacetic acid	701	Vanadium pentoxide	726
1,2,3-Trichloropropane	703	Vinyl acetate	728
1,1,2-Trichloro-1,2,2-trifluoroethane	704	Vinyl bromide	730
Triethanolamine	706	Vinyl chloride	731
Triethylamine	707	4-Vinylcyclohexene	733
Triethylene tetramine	708	Vinyl cyclohexene dioxide	734
Trifluorobromomethane	709	Vinylidene chloride	736
Trimellitic anhydride	710	Vinyltoluene	738
Trimethylamine	712	VM&P naphtha	739
Trimethyl benzene	712	Warfarin	740
Trimethyl phosphite	713	Wood dust	741
2,4,6-Trinitrotoluene	714	Xylene	744
Triorthocresyl phosphate	716	Xylidine (mixed isomers)	746
Triphenyl amine	717	Yttrium	747
Triphenyl phosphate	718	Zinc chloride fume	748
Triphenyl phosphite	719	Zinc dithiocarbamates—rubber	
Tungsten (and compounds)	720	components	749
Turpentine	721	Zinc oxide	750
Uranium	722	Zirconium compounds	751
Used mineral-based crankcase oil	724		

III CAS Number Index 753

IV Index of Compounds and Synonyms 761

Formic acid	351	Isobutyl acetate	408
Fuel oils	352	Isobutyl alcohol	408
Furfural	353	Isooctyl alcohol	409
Furfuryl alcohol	354	Isophorone	410
Gasoline	356	Isophorone diisocyanate	411
Germanium tetrahydride	358	2-Isopropoxyethanol	412
Glutaraldehyde	358	Isopropyl acetate	412
Glycidol	360	Isopropyl alcohol	413
Graphite (natural)	361	Isopropylamine	415
Graphite (synthetic)	362	<i>N</i> -isopropylaniline	415
Hafnium (and compounds)	363	Isopropyl ether	417
Halothane	364	Isopropyl glycidyl ether	417
Helium	366	Jet fuels	418
Heptachlor	366	Ketene	420
Heptachlor epoxide	367	Lead (inorganic compounds)	420
<i>n</i> -Heptane	368	Lead arsenate	423
Hexachlorobenzene	369	Lead chromate	424
Hexachlorobutadiene	371	Lindane	426
Hexachlorocyclopentadiene	373	Liquefied petroleum gas	427
Hexachloroethane	374	Lithium hydride	428
Hexachloronaphthalene	375	Magnesite	429
Hexafluoroacetone	376	Magnesium oxide fume	429
Hexamethylene diisocyanate	378	Malathion	430
Hexamethyl phosphoramidate	379	Maleic anhydride	432
<i>n</i> -Hexane	380	Manganese (and compounds)	433
<i>sec</i> -Hexyl acetate	382	Manganese cyclopentadienyl tricarbonyl	435
Hexylene glycol	382	Manganese tetroxide	436
HMX	383	Mercury	436
Hydrazine	384	Mercury (alkyl compounds)	438
Hydrogenated terphenyls	386	Mesityl oxide	440
Hydrogen bromide	386	Methacrylic acid	441
Hydrogen chloride	387	Methane	442
Hydrogen cyanide	389	Methomyl	443
Hydrogen fluoride	390	Methoxychlor	444
Hydrogen peroxide (90%)	392	2-Methoxyethanol	445
Hydrogen selenide	393	2-Methoxyethyl acetate	447
Hydrogen sulfide	394	4-Methoxyphenol	448
Hydroquinone	395	Methyl acetate	449
Hydroxylamine (and salts)	397	Methyl acetylene	450
2-Hydroxypropyl acrylate	399	Methyl acrylate	450
Indene	399	Methylacrylonitrile	451
Indenol(1,2,3- <i>cd</i>)pyrene	400	Methylal	453
Indium (and compounds)	400	Methyl alcohol	453
Iodine	402	Methylamine	455
Iodoform	403	Methyl <i>n</i> -amyl ketone	455
Iron oxide fume	404	<i>N</i> -methyl aniline	456
Iron pentacarbonyl	405	Methyl bromide	457
Isoamyl acetate	405	Methyl butyl ketone	460
Isoamyl alcohol	406	Methyl chloride	462
Isobutane	407	Methyl 2-cyanoacrylate	463

CONTENTS

Methylcyclohexane	464	Nitroglycerin	527
Methylcyclohexanol	465	Nitromethane	529
<i>o</i> -Methylcyclohexanone	466	1-Nitropropane	530
2-Methylcyclopentadienyl		2-Nitropropane	531
manganese tricarbonyl	466	<i>N</i> -nitrosodimethylamine	532
4,4'-Methylene bis(2-chloroaniline)	467	<i>N</i> -nitrosodiphenylamine	534
Methylene bis-(4-hexylisocyanate)	469	<i>N</i> -nitrosodi- <i>n</i> -propylamine	535
Methylene bisphenyl isocyanate	470	<i>N</i> -nitrosomorpholine	536
Methylene chloride	471	Nitrotoluene	537
4,4'-Methylene dianiline	474	Nitrous oxide	538
Methyl ethyl ketone	476	Nonane	540
Methyl ethyl ketone peroxide	478	Nonylphenol	541
Methyl formate	479	Nuisance particulates	542
Methyl hydrazine	480	Octachloronaphthalene	543
Methyl iodide	481	Octane	544
Methyl isoamyl ketone	483	Oil mist (mineral)	544
Methyl isobutyl carbinol	483	Osmium tetroxide	546
Methyl isobutyl ketone	484	Oxalic acid	546
Methyl isocyanate	485	Oxygen difluoride	547
Methyl isopropyl ketone	486	Ozone	548
Methyl mercaptan	487	Paraquat	550
Methyl methacrylate	488	Parathion	552
Methyl parathion	490	Particulate matter	554
Methyl propyl ketone	492	Pentaborane	555
<i>N</i> -methyl-2-pyrrolidone	493	Pentachloroethane	556
Methyl silicate	494	Pentachloronaphthalene	558
α -Methyl styrene	495	Pentachlorophenol	559
Mevinphos	496	Pentaerythritol	561
Mica	497	Pentane	562
Molybdenum (and compounds)	498	2,4-Pentanedione	563
Morpholine	500	Perchloroethylene	564
Mustard gas	501	Perchloromethyl mercaptan	567
Naled	503	Perchloryl fluoride	567
Naphtha, coal tar	505	Phenol	568
Naphthalene	506	<i>p</i> -Phenylenediamine	570
β -Naphthylamine	507	2-Phenylethanol	571
Nickel (and inorganic compounds)	508	Phenyl ether	572
Nickel carbonyl	511	Phenyl glycidyl ether	573
Nicotine	512	Phenylhydrazine	574
Nitric acid	513	Phenyl mercaptan	575
Nitric oxide	514	<i>N</i> -Phenyl- β -naphthylamine	576
<i>p</i> -Nitroaniline	515	Phenylphosphine	578
Nitrobenzene	516	Phosgene	579
<i>p</i> -Nitrobiphenyl	518	Phosphine	580
<i>o</i> -Nitrochlorobenzene	519	Phosphoric acid	581
<i>p</i> -Nitrochlorobenzene	520	Phosphorus (yellow)	582
Nitroethane	522	Phosphorus oxychloride	584
Nitrogen dioxide	523	Phosphorus pentachloride	584
Nitrogen mustards (blister agents)	525	Phosphorus pentasulfide	585
Nitrogen trifluoride	526	Phosphorus trichloride	585