

## THE WHO GUIDELINES TO CLASSIFICATION OF PESTICIDES BY HAZARD\*

\* Adapted from WHO 1996.

Individual products are classified in a series of tables according to the products' oral and dermal toxicity and physical states. Technical products classified as Class IA (extremely hazardous, Class IB (highly hazardous), Class II (moderately hazardous) and Class III (slightly hazardous) are listed in table 62.1, table 62.2, table 62.3 and table 62.4, respectively.

Table 62.1. List of technical products classified in Class IA: "Extremely hazardous"

Name	Status	Main use	Chemical type	Physical state	Route	LD <sub>50</sub> (mg/kg)	Remarks
Acrolein	C	H		L	O	29	EHC 127; HSG 67
Alachlor	ISO	H		S	O	930	Adjusted classification; carcinogenic in rats and mice; DS 84
Aldicarb	ISO	I-S	C	S	O	0.93	DS 53; EHC 121; HSG 64
Arsenous oxide	C	R		S	O	180	Adjusted classification; minimum lethal dose for humans of 2 mg/kg; evidence of carcinogenicity for humans is sufficient; EHC 18; HSG 70
Brodifacoum	ISO	R		S	O	0.3	DS 57; EHC 175; HSG 93
Bromadiolone	ISO	R		S	O	1.12	DS 88; EHC 175; HSG 94
Bromethalin	ISO	R		S	O	2	
Calcium cyanide	C	FM		S	O	39	Adjusted classification; calcium cyanide is in Class IA as it reacts with moisture to produce hydrogen cyanide gas; the gas is not classified under the WHO system (see table 62.7)
Captafol	ISO	F		S	O	5,000	Adjusted classification; carcinogenic in rats and mice; HSG 49
Chlorfenvinphos	ISO	I	OP	L	O	10	
Chlormephos	ISO	I	OP	L	O	7	
Chlorophacinone	ISO	R		S	O	3.1	DS 62; EHC 175
Chlorthiophos	ISO	I	OP	L	O	9.1	
Coumaphos	ISO	AC, MT	OP	L	O	7.1	
CVP	N(J)						See chlorfenvinphos
Cycloheximide	ISO	F		S	O	2	
DBCP	N(J)						See dibromochloropropane
Demephion-O and -S	ISO	I	OP	L	O	15	
Demeton-O and -S	ISO	I	OP	L	O	2.5	DS 60
Dibromochloropropane	C	F-S		L	O	170	Adjusted classification; has been found to cause sterility in humans and is mutagenic and carcinogenic in animals
Difenacoum	ISO	R		S	O	1.8	EHC 175; HSG 95
Difethialone	ISO	R		S	O	0.56	EHC 175
Difolatan	N(J)						See captafol
Dimefox	ISO	I	OP	L	O	1	Volatile
Diphacinone	ISO	R		S	O	2.3	EHC 175
Disulfoton	ISO	I	OP	L	O	2.6	DS 68
EPN	N(A,J)	I	OP	S	O	14	Has been reported as causing delayed neurotoxicity in hens
Ethoprop	N(A)						See ethoprophos
Ethoprophos	ISO	I-S	OP	L	D	26	DS 70
Ethylthiometon	N(J)						See disulfoton
Fenamiphos	ISO	N	OP	L	O	15	DS 92
Fensulfothion	ISO	I	OP	L	O	3.5	DS 44
Flocoumafen	N(B)	R		S	O	0.25	EHC 175
Fonofos	ISO	I-S	OP	L	O	c8	
Hexachlorobenzene	ISO	FST		S	D	10,000	Adjusted classification; has caused a serious outbreak of porphyria in humans; DS 26
Leptophos	ISO	I	OP	S	O	50	Adjusted classification; has been shown to cause delayed neurotoxicity; DS 38
M74	N(J)						See disulfoton
MBCP	N(J)						See leptophos
Mephosfolan	ISO	I	OP	L	O	9	
Mercuric chloride	ISO	F-S		S	O	1	
Merkaptophos	N(U)						When mixed with merkaptophosteolovy, see demeton -O and -S

Metaphos	N(U)						See parathion-methyl
Mevinphos	ISO	I	OP	L	D	4	DS 14
Nitrofen	ISO	H		S	O	c3,000	Adjusted classification; carcinogenic in rats and mice; teratogenic in several species tested; DS 84
Parathion	ISO	I	OP	L	O	13	DS 6; HSG 74
Parathion-methyl	ISO	I	OP	L	O	14	DS 7; EHC 145; HSG 75
Phenylmercury acetate	ISO	FST		S	O	24	Adjusted classification; highly toxic to mammals and very small doses have produced renal lesions; teratogenic in the rat
Phorate	ISO	I	OP	L	O	2	DS 75
Phosfolan	ISO	I	OP	L	O	9	
Phosphamidon	ISO	I	OP	L	O	7	DS 74
Prothoate	ISO	AC,I	OP	L	O	8	
Red squill							See scilliroside
Schradan	ISO	I	OP	L	O	9	
Scilliroside	C	R		S	O	c0.5	Induces vomiting in mammals
Sodium fluoroacetate	C	R		S	O	0.2	DS 16
Sulfotep	ISO	I	OP	L	O	5	
TEPP	ISO	AC	OP	L	O	1.1	
Terbufos	ISO	I-S	OP	L	O	c2	
Thiofos	N(U)						See parathion
Thionazin	ISO	N	OP	L	O	11	
Timet	N(U)						See phorate

Source: WHO 1996.

Table 62.2. List of technical products classified in Class IB: "Highly hazardous"

Name	Status	Main use	Chemical type	Physical state	Route	LD50 (mg/kg)	Remarks
Aldoxycarb	ISO	I,N	C	S	O	27	
Aldrin	ISO	I	OC	S	D	98	DS41; EHC 91; HSG 21
Allyl alcohol	C	H		L	O	64	Highly irritant to skin and eyes
Aminocarb	ISO	I	C	S	O	50	
Antu	ISO	R		S	O	8	Induces vomiting in dogs. Some impurities are carcinogenic
Azinphos-ethyl	ISO	I	OP	S	O	12	DS 72
Azinphos-methyl	ISO	I	OP	S	O	16	DS 59
Benfuracarb	N(B)	I	C	L	O	138	
Bis(tributyltin) oxide	C	F,M		L	O	194	Irritant to skin. DS 65; EHC 15
Blasticidin-S	N(J)	F		S	O	16	
Bromophos-ethyl	ISO	I	OP	L	O	71	
Butocarboxim	ISO	I	C	L	O	158	
Butoxycarboxim	ISO	I	C	L	D	288	
Cadusafos	ISO	N,I	OP	L	O	37	
Calcium arsenate	C	I		S	O	20	
Carbofuran	ISO	I	C	S	O	8	DS 56
Carbophenothion	ISO	I	OP	L	O	32	
3-chloro-1,2-propanediol	C	R		L	O	112	In non-lethal dosage is a sterilant for male rats
Coumachlor	ISO	R		S	D	33	
Coumatetralyl	ISO	R		S	O	16	
Crotoxyphos	ISO	I	OP	L	O	74	
zeta-Cypermethrin	ISO	I	PY	L	O	c86	
DDVF	N(U)						See dichlorvos
DDVP	N(J)						See dichlorvos
Delnav	N(U)						See dioxathion
Demeton-S-methyl	ISO	I	OP	L	O	40	DS 61
Demeton-S-methylsulphon	ISO	I	OP	S	O	37	
Dichlorvos	ISO	I	OP	L	O	56	Volatile, DS 2; EHC 79; HSG 18
Dicrotophos	ISO	I	OP	L	O	22	
Dieldrin	ISO	I	OC	S	O	37	DS 17; EHC 91
Dimetilan	N(A,B)	I	C	S	O	47	
Dinoseb	ISO	H	CNP	L	O	58	
Dinoseb acetate	ISO	H	CNP	L	O	60	
Dinoterb	ISO	H	CNP	S	O	25	
Dioxathion	ISO	I	OP	L	O	23	
DMTP	N(J)						See methidathion
DNBP	N(J)						See dinoseb
DNBPA	N(J)						See dinoseb acetate
DNOC	ISO	I-S,H	CNP	S	O	25	
EDDP	N(J)						See edifenfos

Edifenphos	ISO	F	OP	L	O	150	
Endrin	ISO	I	OC	S	O	7	DS 1; EHC 130; HSG 60
ESP	N(J)	I	OP	L	O	105	
Famphur	N(A)	I	OP	S	O	48	
Flucythrinate	ISO	I	PY	L	O	c67	Irritant to skin and eyes
Fluoroacetamide	C	R		S	O	13	
Formetanate	ISO	AC	C	S	O	21	
Fosmethilan	ISO	I	OP	S	O	49	Irritant to skin and eyes.
Furathiocarb	N(B)	I-S	C	L	O	42	
Heptenophos	ISO	I	OP	L	O	96	
Isazofos	ISO	I-S	OP	L	O	60	
Isofenphos	ISO	I	OP	oil	O	28	
Isothioate	ISO	I	OP	L	O	150	
Isoxathion	ISO	I	OP	L	O	112	
Lead arsenate	C	L		S	O	c10	
Mecarbam	ISO	I	C	oil	O	36	
Mercuric oxide	ISO	O		S	O	18	
Methamidophos	ISO	I	OP	L	O	30	HSG 79
Methidathion	ISO	I	OP	L	O	25	
Methomyl	ISO	I	C	S	O	17	DS 55, EHC 178; HSG 97
Methyl-merkpto-phosteolovy	N(U)						See demeton-S-methyl
Metilmerkpto-phosoksid	N(U)						See oxydemeton-methyl
Metiltriiazotio	N(U)						See azinphos-methyl
Monocrotophos	ISO	I	OP	S	O	14	HSG 80
MPP	N(J)						See fenthion
Nicotine	ISO			L	D	50	
Omethoate	ISO	I	OP	L	O	50	
Oxamyl	ISO	I	C	S	O	6	DS 54
Oxydemeton-methyl	ISO	I	OP	L	O	65	
Oxydeprofos	N(B)						See ESP
Paris green	C	L		S	O	22	Copper-arsenic complex
Pentachlorophenol	ISO	I,F,H	CNP	S	D	80	Irritant to skin; EHC 71; HSG 19
Phenylmercury nitrate	C	FST	OM	S			Oral LD50 not available, rat i.v. LD50 is 27 mg/kg
Pirimiphos-ethyl	ISO	I	OP	L	O	140	
Propaphos	N(J)	I	OP	L	O	70	
Propetamphos	ISO	I	OP	L	O	106	
Sodium arsenite	C	R		S	O	10	
Sodium cyanide	C	R		S	O	6	
Strychnine	C	R		S	O	16	
TBTO							See bis-(tributyltin) oxide
Tefluthrin	N(B)	I-S	PY	S	O	c22	
Thallium sulfate	C	R		S	O	11	DS 10
Thiofanox	ISO	I-S	C	S	O	8	
Thiometon	ISO	I	OP	oil	O	120	DS 67
Thioxamyl							See oxyamyl
Triamiphos	ISO	F		S	O	20	
Triazophos	ISO	I	OP	L	O	82	
Triazotio	N(U)						See azinphos-ethyl
Vamidothion	ISO	I	OP	L	O	103	
Warfarin	ISO	R		S	O	10	DS 35, EHC 175; HSG 96
Zinc phosphide	C	R		S	O	45	DS 24, EHC 73

Source WHO 1996.

Table 62.3. List of technical products classified in Class II: "Moderately hazardous"

Name	Status	Main use	Chemical type	Physical state	Route	LD <sub>50</sub> (mg/kg)	Remarks
Alanycarb	ISO	I	C	S	O	330	
Allidochlor	ISO	H		L	O	700	Irritant to skin and eyes
Anilofos	ISO	H		S	O	472	
Azaconazole	N(B)	F		S	O	308	
Azocyclotin	ISO	AC	OT	S	O	80	
Bendiocarb	ISO	I	C	S	O	55	DS 52
Bensulide	ISO	H		L	O	270	
Benzofos	N(U)						See phosalone
BHC	ISO						See HCH
gamma-BHC							See gamma-HCH
Bifenthrin	N(B)	I	PY	S	O	c55	
Bilanafos	ISO	H		S	O	268	
Binapacryl	ISO	AC		S	O	421	
Bioallethrin	C	I	PY	L	O	c700	Bioallethrin, esbiothrin, esbiol and esdepalithrine are members of the allethrin series; their

							toxicity varies considerably within this series according to concentrations of isomers.
Bisthiosemi	N(J)	R		S	O	c150	Induces vomiting in non-rodents
BPMC							See fenobucarb
Bromoxynil	ISO	H		S	O	190	
Bronopol	N(B)	B		S	O	254	
Bufencarb	ISO	I	C	S	O	87	
Butamifos	ISO	H		L	O	630	
Butenachlor	ISO	H		L	O	1,630	
Butylamine	ISO	F		L	O	380	Irritant to skin
Camphochlor	ISO	I	OC	S	O	80	DS 20; EHC 45
Carbaryl	ISO	I	C	S	O	c300	DS 3; EHC 153; HSG 78
Carbosulfan	ISO	I		L	O	250	
Cartap	ISO	I		S	O	325	
Chloralose	C	R		S	O	400	
Chlordane	ISO	I	OC	L	O	460	DS 36; EHC 34; HSG 13
Chlordimeform	ISO	AC	OC	S	O	340	
Chlorphenamide	N(J)						See chlordimeform
Chlorphonium	ISO	PGR		S	O	178	Irritant to skin and eyes
Chlorpyrifos	ISO	I	OP	S	O	135	DS 18
Clomazone	ISO	H		L	O	1,369	
Copper sulfate	C	F		S	O	300	
Cuprous oxide	C	F		S	O	470	
Cyanazine	ISO	H	T	S	O	288	
Cyanofenphos	ISO	I	OP	S	O	89	Has been reported as causing delayed neurotoxicity in hens; no longer manufactured
Cyanophos	ISO	I	OP	L	O	610	
CYAP	N(J)						See cyanophos
Cyfluthrin	ISO	I	PY	S	O	c250	
beta-Cyfluthrin	ISO	I	PY	S	O	450	
Cyhalothrin	ISO	Ix	PY	oil	O	c144	EHC 99
lambda-Cyhalothrin	N(B)	I	PY	S	O	c56	EHC 142; HSG 38
CYP	N(J)						See cyanofenphos
Cypermethrin	ISO	I	PY	S	O	c250	DS 58; EHC 82; HSG 22
alpha-Cypermethrin	ISO	I	PY	S	O	c79	EHC 142
beta-Cypermethrin	ISO	I	PY	S	O	166	
Cyphenothrin ((1R)-isomers)	ISO	I	PY	L	O	318	
Cyprofuram	ISO	F		S	O	174	
2,4-D	ISO	H	PA	S	O	375	DS 37; EHC 29; EHC 84
DAPA	N(J)						See fenaminosulf
DDT	ISO	I	OC	S	O	113	DS 21; EHC 9; EHC 83
Deltamethrin	ISO	I	PY	S	O	c135	DS 50; EHC 97; HSG 30
Dialifor	N(A,J)						See dialifos
Dialifos	ISO	I	OP	S	D	145	
Di-allate	ISO	H	TC	L	O	395	
Diazinon	ISO	I	OP	L	O	300	DS 45
Dibrom	N (Denmark)						See naled
Dichlofenthion	ISO	I-S	OP	L	O	270	
Difenzoquat	ISO	H		S	O	470	
Dimethoate	ISO	I	OP	S	O	c150	DS 42; EHC 90; HSG 20
Dinobuton	ISO	AC,F		S	O	140	
Dioxabenzophos	N(B)	I	OP	S	O	125	
Dioxacarb	ISO	I	C	S	O	90	
Diquat	ISO	H	P	S	O	231	Irritant to skin, and eyes, and damages nails; DS 40; EHC 39; HSG 52
Drazoxolon	(ISO)	FST		S	O	126	
ECP	N(J)						See dichlofenthion
Endosulfan	ISO	I	OC	S	O	80	DS 15; EHC 40; HSG 17
Endothal-sodium	(ISO)	H		S	O	51	
EPBP	N(J)	I-S	OP	oil	O	275	
EPTC	ISO	H	TC	L	O	1,652	
Esbiol							See bioallethrin
Esbiothrin							See bioallethrin
Esdepallothrine							See bioallethrin
Esfenvalerate	ISO	I	PY	S	O	87	
Ethiofencarb	ISO	I	C	L	O	411	
Ethion	ISO	I	OP	L	O	208	
Etrimfos	ISO	I	OP	L	O	1,800	
Fenaminosulf	ISO	F-S		S	O	60	
Fenazaquin	ISO	AC		S	O	134	
Fenchlorphos	ISO	I	OP	L	O	1,740	DS 69
Fenitrothion	ISO	I	OP	L	O	503	DS 30; EHC 133; HSG 65
Fenobucarb	N(B)	I	C	S	O	620	

Fenpropathrin	ISO	I	PY	S	O	c66	
Fenthion	ISO	I,L	OP	L	D	586	DS 23
Fentin acetate	(ISO)	F	OT	S	O	125	DS 22
Fentin hydroxide	(ISO)	F	OT	S	O	108	DS 22
Fenvalerate	ISO	I	PY	L	O	c450	EHC 95, DS 90; HSG 34
Fipronil	N(B)	I	Pyrazole	S	O	92	
Fluvalinate	N(B)	I		oil	O	282	Irritant to skin
Fluxofenim	ISO	H		oil	O	670	
Formothion	ISO	I	OP	L	O	365	
Fosfamid	N(U)						See dimethoate
Furconazole-cis	ISO	F		S	O	450	
Guazatine	N(B)	FST		S	O	230	LD <sub>50</sub> value refers to triacetate
Haloxyfop	N(A,B)	H		S	O	393	
HCH	ISO	I	OC	S	O	100	The LD <sub>50</sub> varies according to the mixture of isomers. The value shown has been chosen, and the technical product placed in Class II, as a result of the cumulative properties of the beta isomer
Gamma-HCH	ISO	I	OC	S	O	88	DS 12; EHC 124; HSG 54
Heptachlor	ISO	I	OC	S	O	100	DS 19; EHC 38; HSG 14
Imazalil	ISO	F		S	O	320	
Imidacloprid	N(B)	I	Nitro-guanidine	S	O	450	
Iminoctadine	ISO	F		S	O	300	Eye irritant
Ioxynil	ISO	H		S	O	110	
Ioxynil octanoate	(ISO)	H		S	O	390	
Isoprocarb	ISO	I	C	S	O	403	
Karbation	N(U)						See metam-sodium
Lindane	ISO						See gamma-HCH
MEP	N(J)						See fenitrothion
Mercaptodimethur							See methiocarb
Mercurous chloride	C	F		S	O	210	
Metaldehyde	ISO	M		S	O	227	
Metam-sodium	(ISO)	F-S		S	O	285	
Methacrifos	ISO	I	OP	L	O	678	
Methasulfocarb	ISO	F		S	O	112	
Methiocarb	ISO	I	C	S	O	100	
Methyl isothiocyanate	ISO	F-S		S	O	72	Skin and eye irritant
Metolcarb	ISO	I	C	S	O	268	
MICP	N(J)						See isoprocarb
Molinate	ISO	H	TC	L	O	720	
MPMC							See xylylcarb
Nabam	ISO	F	TC	S	O	395	Goitrogenic in rats
NAC	N(J)						See carbaryl
Naled	ISO	I	OP	L	O	430	DS 39
Norbormide	ISO	R		S	O	52	
2,4-PA	N(J)						See 2,4-D
PAP	N(J)						See phenthoate
Paraquat	ISO	H	P	S	O	150	Has serious delayed effects if absorbed; is relatively low hazard in actual use but is dangerous if accidentally taken orally; DS 4; EHC 39; HSG 51
Pebulate	ISO	H	TC	L	O	1,120	
Permethrin	ISO	I	PY	L	O	c500	DS 51; EHC 94; HSG 33
PHC	N(J)						See propoxur
Phenthoate	ISO	I	OP	L	O	c400	DS 48
Phosalone	ISO	I	OP	L	O	120	
Phosmet	ISO	I,AC	OP	S	O	230	
Phoxim	ISO	I	OP	L	D	1,975	DS 31
Phthalofos	N(U)						See phosmet
Pindone	ISO	R		S	O	50	
Piperophos	ISO	H		oil	O	324	
Pirimicarb	ISO	AP	C	S	O	147	
Polychlorcamphene	N(U)						See camphechlor
Prallethrin	ISO	I	PY	oil	O	460	
Profenofos	ISO	I	OP	L	O	358	
Promacyl	N(Aust)	Ix	C	L	O	1,220	
Promecarb	ISO	I	C	S	O	74	
Propiconazole	ISO	F		L	O	1,520	
Propoxur	ISO	I	C	S	O	95	DS 25
Prosulfocarb	ISO	H		L	O	1,820	
Prothiofos	ISO	I	OP	L	O	925	

Prothiophos							See prothiophos
Pyraclifos	N(B)	I	OP	L	O	237	
Pyrazophos	ISO	F		S	O	435	
Pyrethrins	C	I		L	O	500-1,000	Mixture of compounds present in Pyrethrum, Cinerariaefolium and other flowers; DS 11
Pyroquilon	ISO	F		S	O	320	
Quinalphos	ISO	I	OP	S	O	62	
Quizalofop-p-tefuryl	ISO	H		L	O	1,012	
Reglon	N(U)						See diquat
Ronnel	N(A)						See fenclorphos
Rotenone	C	I		S	O	132-1,500	Compounds from roots of Derris and Lonchocarpus spp.; HSG 73
Salithion							See dioxabenzofos
SAP	N(J)						See bensulide
Sec-butylamine							See butylamine
Sevin	N(U)						See carbaryl
Sodium fluoride	ISO	I		S	O	180	
Sodium hexafluorosilicate	ISO	L-S		S	O	125	
Sulfallate	ISO	H		oil	O	850	Irritant to skin and eyes
Sulprofos	ISO	I	OP	oil	O	130	
2,4,5-T	ISO	H		S	O	500	May contain a contaminant TCDD which affects toxicity: it should not exceed 0.01 mg/kg technical material; DS 13
TCA	ISO						The data shown refer to sodium trichloroacetic acid. In many countries, the term TCA refers to the free acid (now accepted by ISO); this is a solid with an oral LD <sub>50</sub> of 400 mg/kg and if used as a pesticide is placed in Class II. It is highly corrosive to skin.
Terbumeton	ISO	H	T	S	O	483	
Tetraconazole	ISO	F		oil	O	1,031	
Thiazafuron	ISO	H		S	O	278	
Thiazfluron	N(B)						See thiazafuron
Thicyofen	ISO	F		S	O	368	
Thiobencarb	ISO	H	TC	L	O	1,300	
Thiocyclam	ISO	I		S	O	310	
Thiodan	N(U)						See endosulfan
Thiodicarb	ISO	I		S	O	66	
Tolyl-methyl-carbamate							See metolcarb
Toxaphene	N(A)						See camphechlor
Tralomethrin	N(B)	I	PY	S	O	c85	
Trichloroacetic acid							
Tricyclazole	ISO	F		S	O	305	
Tridemorph	ISO	F		oil	O	650	
Vernolate	ISO	H	TC	L	O	1,780	
Xylylcarb	N(B)	I	C	S	O	380	

Source: WHO 1996.

Table 62.4. List of technical products classified in Class III: "Slightly hazardous"

Name	Status	Main use	Chemical type	Physical state	Route	LD <sub>50</sub> (mg/kg)	Remarks
Acephate	ISO	I	OP	S	O	945	
Acetochlor	ISO	H		L	O	2,950	
Acifluorfen	ISO	H		S	O	1,370	Strong irritant to eyes
Allethrin	ISO	I	PY	oil	O	c685	EHC 87; HSG 24
Ametryn	ISO	H	T	S	O	1,110	
Amitraz	ISO	AC		S	O	800	
Azamethiphos	ISO	I	OP	S	O	1,010	
Azidithion	N(F)						See menazon
Barban	ISO	H		S	O	1,300	
Bensultap	ISO	I		S	O	1,100	
Bentazone	ISO	H		S	O	1,100	
Benzoylprop-ethyl	(ISO)	H		S	O	1,555	
Benzthiazuron	ISO	H		S	O	1,280	
Bromofenoxim	ISO	H		S	O	1,217	
Bromophos	ISO	I	OP	S	O	c1,600	DS 76
Buthidazole	ISO	H		S	O	1,480	
Cacodylic acid							See dimethylarsinic acid

Carbofos	N(U)						See malathion
Chlorfenac	ISO	H	OC	S	O	575	
Chlorfenethol	ISO	AC	OC	S	O	930	
Chlorfenson	ISO	AC	OC	S	O	c2,000	Irritant to skin
Chlorinat	N(U)						See barban
Chlormequat (chloride)	ISO	PGR		S	O	670	
Chloroacetic acid	C	H		S	O	650	Irritant to skin and eyes; data refer to sodium salt
Chlorobenzilate	ISO	AC	OC	S	O	700	
Chlorocholine chloride	C						See chlormequat
Chlorthiamid	ISO	H		S	O	757	
Cismethrin	ISO						Resmethrin is a mixture of isomers, the trans isomer (70-80%) being also known as bioresmethrin and the cis isomer (20-30%) as cismethrin. Bioresmethrin (see table 62.5) alone is of much lower toxicity (oral LD <sub>50</sub> 9,000 mg/kg) (DS 34)
Citrex	N(U)						See dodine
Clofop	ISO	H		L	O	1,208	
Copper hydroxide	C	F		S	O	1,000	
Copper oxychloride	C	F		S	O	1,440	
4-CPA	ISO	PGR		S	O	850	
Crufomate	ISO	I	OP	S	O	770	
Cycloate	ISO	H	TC	L	O	+2,000	
Cyhexatin	ISO	AC	OT	S	O	540	
Cymoxanil	ISO	F		S	O	1,196	
Cyproconazole	N(B)	F		S	O	1,020	
Dazomet	ISO	F-S		S	O	640	Irritant to skin and eyes
2,4-DB	N(B)	H		S	O	700	
DCBN	N(J)						See chlorthiamid
Deet							See diethyltoluamide
Dehydroacetic acid	C	F		S	O	1,000	
2,4-DES	N(B,U)						See disul
Desmetryn	ISO	H	T	S	O	1,390	
Diallyl dichloroacetamide							See dichlormid
Dicamba	ISO	H		S	O	1,707	
Dichlone	ISO	FST		S	O	1,300	
Dichlormid	N(A)	H		L	O	2,080	
Dichlorobenzene	C	FM		S	O	500-5,000	Mixture of isomers
Dichlorophen	ISO	F	OC	S	O	1,250	
Dichlorprop	ISO	H		S	O	800	
Diclofop	ISO	H		S	O	565	
Dicofol	ISO	AC		S	O	c690	DS 81
Dienochlor	ISO	AC		S	O	3,160	Acutely toxic by inhalation; skin sensitizer
Diethyltoluamide	ISO	RP (insect)		L	O	c2,000	DS 80
Difenoconazole	ISO	F	T	S	O	1,453	
Dimepiperate	ISO	H	TC	S	O	946	
Dimethachlor	ISO	H		S	O	1,600	
Dimethametryn	ISO	H	T	L	O	3,000	
Dimethipin	ISO	H		S	O	1,180	
Dimethylarsinic acid	C	H		S	O	1,350	
Diniconazole	ISO	F		S	O	639	
Dinocap	ISO	AC,F	CNP	S	O	980	
Diphenamid	ISO	H		S	O	970	
Disul	ISO	H		S	O	730	
Dithianon	ISO	F		S	O	640	
2,4-DP	N(U)						See dichlorprop
Dodine	ISO	F		S	O	1,000	
Dogquadine	N(F)						See dodine
DSMA							See methylarsonic acid
Empenthrin ((1R) isomers)	ISO	I	PY	oil	O	+2,280	
Ephirsulphonate	N(U)						See chlorfenson
Esprocarb	ISO	H	TC	L	O	+2,000	Skin and eye irritant
Etacelasil	ISO	PGR		L	O	2,065	
Etaconazole	ISO	F		S	O	1,340	
Ethohexadiol	N(A)	RP (insect)		L	O	2,400	
Etridiazole	ISO	F		L	O	2,000	
Fenoprop	ISO	H		S	O	650	
Fenson	ISO	AC		S	O	1,550	
Fenothiocarb	ISO	L	C	S	O	1,150	
Fenpropidin	ISO	F		S	O	1,440	

Fenthiafop	N(B)	H		S	O	915	
Ferimzone	ISO	F		S	O	725	
Flamprop	ISO	H		S	O	1,210	
Fluchloralin	ISO	H		S	O	1,550	
Fluoroglycofen	N(B)	H		S	O	1,500	
Flurprimidol	ISO	PGR		S	O	709	
Flusilazole	N(B)	F		S	O	1,110	
Flutriafol	ISO	F,FST	T	S	O	1,140	
Fomesafen	ISO	H	OC	S	O	1,250	
Fuberidazole	ISO	F		S	O	1,100	
Furalaxyl	ISO	F		S	O	940	
Glufosinate	ISO	H		S	O	1,625	
Heptopargil	ISO	PGR		L	O	2,100	
Hexazinone	ISO	H		S	O	1,690	
Hydramethylnon	N(A,B)	I		S	O	1,200	
IBP							See iprobenphos
Iprobenphos	N(B)	F		S	O	600	
Isoprothiolane	ISO	F		S	O	1,190	
Isoproturon	ISO	H		S	O	1,800	
Isouron	ISO	H		S	O	630	
Isoxapyrifop	ISO	H		S	O	500	
Kelthane	N(J)						See dicofol
Malathion	ISO	I	OP	L	O	c2,100	LD <sub>50</sub> value can vary according to impurities. This value has been adopted for classification purposes and is that of a technical product conforming to WHO specifications; DS 29
Maldison	N(Aus,NZ)						See malathion
MCPA	ISO	H		S	O	700	
MCPA-thioethyl	ISO	H		S	O	790	
MCPB	ISO	H		S	O	680	
Mecoprop	ISO	H		S	O	930	
Mecoprop-P	ISO	H		S	O	1,050	
Mefluidide	ISO	H		S	O	1,920	
Menazon	ISO	AP	OP	S	O	1,950	
Mepiquat	ISO	PGR		S	O	1,490	
Metalaxyl	ISO	F		S	O	670	
Metaxon	N(U)						See MCPA
Metconazole	ISO	F		S	O	660	
Methazole	N(A,B)	H		S	O	4,543	Slightly irritant to eyes
2-Methoxyethylmercury silicate	C	FST	OM	S	O	1,140	
Methylarsonic acid	ISO	H		S	O	1,800	
Metolachlor	ISO	H		L	O	2,780	
MSMA							See methylarsonic acid
Myclobutanil	N(B)	F		S	O	1,600	
2-Napthoxy acetic acid	ISO	PGR		S	O	600	
Nitrapyrin	ISO	B-S		S	O	1,072	
Nuarimol	ISO	F		S	O	1,250	
Octhilinone	ISO	F		S	O	1,470	
N-octyl bicycloheptene dicarboximide	C	SY		L	O	2,800	
Oxadixyl	N(B)	F		S	O	1,860	
Paclobutrazol	ISO	PGR		S	O	1,300	
Pallethrine	N(F)						See allethrin
Para-dichlorobenzene							See dichlorobenzene
Pendimethalin	ISO	H		S	O	1,050	
Perfluidone	ISO	H		S	O	920	
Pimaricin	N(B)	F		S	O	2,730	Antibiotic, identical with tennecetin and natamycin
Piproctanyl	ISO	PGR		S	O	820	
Pirimiphos-methyl	ISO	I	OP	L	O	2,018	DS 49
Prochloraz	ISO	F		S	O	1,600	
Propachlor	ISO	H		S	O	1,500	DS 78
Propanil	ISO	H		S	O	c1,400	
Propargite	ISO	AC		L	O	2,200	
Pyrazoxyfen	ISO	H		S	O	1,644	
Pyridaben	ISO	AC		S	O	820	
Pyridaphenthion	N(J)	I	OP	S	O	769	
Pyridate	ISO	H		S	O	c2,000	
Pyrifenox	ISO	F		L	O	2,900	
Quinoclamine	ISO	H		S	O	1,360	
Quizalofop	N(B)	H		S	O	1,670	



Resmethrin	ISO	I	PY	S	O	2,000	See cismethrin; EHC 92, DS 83, HSG 25
Ryania	C	I		S	O	c750	LD50 varies: vegetable product
Sesamex	N(A)	SY		L	O	2,000	
Sethoxydim	ISO	H		L	O	3,200	
Silvex	N(A)						See fenoprop
Simetryn	ISO	H	T	S	O	1,830	
Sodium chlorate	ISO	H		S	O	1,200	
Sulfluramid	ISO	I		S	O	543	
Sulfoxide	N(A)	SY		L	O	2,000	
2,3,6-TBA	ISO	H		S	O	1,500	
Tebuthiuron	ISO	H		S	O	644	
Thiram	ISO	F		S	O	560	DS 71
TMTD	N(U)						See thiram
2,4,5-TP	N(F,J,U)						See fenoprop
Tralkoxydim	ISO	H		S	O	934	
Triadimefon	ISO	F		S	O	602	
Triadimenol	ISO	FST		S	O	900	
Tri-allate	ISO	H	TC	L	O	2,165	HSG 89
Trichlorfon	ISO	H	OP	S	O	560	DS 27; EHC 132; HSG 66
Triclopyr	ISO	H		S	O	710	
Tridiphane	N(B)	H		S	O	1,740	
Trifenmorph	ISO	M		S	O	1,400	DS 64
Triflumizole	N(B)	F		S	O	695	
Undecan-2-one	C	RP (dogs, cats)		oil	O	2,500	
Uniconazole	ISO	PGR		S	O	1,790	
XMC	N(J)	I	C	S	O	542	
Ziram	ISO	F		S	O	1,400	Irritant to skin; DS 73

Source: WHO 1996.

Technical products unlikely to present any acute hazard in normal use are listed in table 62.5.

Table 62.5. List of technical products unlikely to present acute hazard in normal use

Name	Status	Main use	Chemical type	Physical state	Route	LD <sub>50</sub> (mg/kg)	Remarks
Aclonifen	N(B)	H		S	O	+5,000	
Acrinathrin	ISO	MT		S	O	+5,000	
Alloxydim	ISO	H		S	O	2,260	
Aminotriazole	N(F)						See amitrole
Amitrole	ISO	H	T	S	O	5,000	EHC 158, DS 79; HSG 85
Ammonium sulfamate	ISO	H		S	O	3,900	
Ancymidol	ISO	PGR		S	O	4,500	
Anilazine	ISO	F	T	S	O	2,710	Irritant to eyes and skin
Anthraquinone	ISO	RP (birds)		S	O	+5,000	
Asulam	ISO	H	TC	S	O	+4,000	
Atrazine	ISO	H	T	S	O	c2,000	DS 82; HSG 47
Aziprotryne	ISO	H	T	S	O	3,600	
Benalaxyl	ISO	F		S	O	c4,200	
Benazolin	ISO	H		S	O	3,200	Irritant to skin and eyes
Benefin	N(A)						See benfluralin
Benfluralin	ISO	H		S	O	+10,000	
Benfuresate	ISO	H		S	O	2,031	
Benomyl	ISO	F	TC	S	O	+10,000	EHC 148, DS 87; HSG 81
Benoxacor	ISO	H		S	O	+5,000	
Bensulfuron	N(B)	H		S	O	+5,000	
Benthrondine	N(J)						See benfluralin
Benzamizole							See isoxaben
Benzoximate	ISO	AC		S	O	+10,000	
Bifenox	ISO	H		S	O	+6,400	
Bioresmethrin	ISO	I	PY	L	O	+7,000	DS 34
Biphenyl	ISO	F		S	O	3,280	
Bispyribac	ISO	H		S	O	2,635	
Bitertanol	ISO	F		S	O	+5,000	
Borax	ISO	F		S	O	4,500	
Bromacil	ISO	H		S	O	5,200	
Bromobutide	ISO	H		S	O	+5,000	
Bromocyclen	ISO	I,AC		S	O	+10,000	
Bromopropylate	ISO	AC		S	O	+5,000	
Bupirimate	ISO	F		S	O	c4,000	

Buprofezin	ISO	I		S	O	2,200	
Butachlor	ISO	H		L	O	3,300	
Buthiobate	ISO	F		L	O	3,200	
Butopyronoxyl	N(A)	RP (insects)		L	O	7,840	
Butralin	ISO	H		S	O	+10,000	
Buturon	ISO	H		S	O	3,000	
Butylate	ISO	F	TC	L	O	+4,000	
Captan	ISO	F		S	O	9,000	Irritant to skin; DS 9; HSG 50
Carbendazim	ISO	F		S	O	+10,000	DS 89; EHC 149; HSG 82
Carbetamide	ISO	H		S	O	+10,000	
Carboxin	ISO	FST		S	O	3,820	
Chinomethionat	ISO	AC,F		S	O	2,500	
Chlormethoxyfen	N(B)	H		S	O	+10,000	
Chloramben	ISO	H		S	O	5,620	
Chlorbromuron	ISO	H		S	O	+5,000	
Chlorbufam	ISO	H		S	O	2,500	
Chlorfenidim	N(U)						See monuron
Chlorfluazuron	ISO	IGR		S	O	8,500	
Chlorflurecol	N(B)						See chlorflurenol
Chlorflurenol	ISO	PGR	OC	S	O	+10,000	
Chloridazon	ISO	H		S	O	2,420	
Chlorimuron	N(B)	H		S	O	4,102	
Chlornitrofen	ISO	H		S	O	+10,000	
Chloromethiuron	ISO	Ix		S	O	2,500	
Chloroneb	ISO	H	OC	S	O	+10,000	
Chloropropylate	ISO	AC	OC	S	O	+5,000	
Chlorothalonil	ISO	F		S	O	+10,000	
Chlorotoluron	ISO	H		S	O	+10,000	
Chloroxifenidim	N(U)						See chloroxuron
Chloroxuron	ISO	H		S	O	+3,000	
Chlorphoxim	ISO	I	OP	S	O	+2,500	DS 32
Chlorpropham	ISO	H		S	O	+5,000	
Chlorpyrifos methyl	ISO	I	OP	L	O	+3,000	DS 33
Chlorsulfuron	ISO	H		S	O	5,545	
Chlorthal-dimethyl	ISO	H		S	O	+3,000	
Chlzolinate	N(B)	F		S	O	+4,000	
Cinmethylin	ISO	H		L	O	3,960	
Cinosulfuron	ISO	H		S	O	+5,000	
Clofentezine	N(B)	AC		S	O	+5,200	
Clomeprop	ISO	H		S	O	+5,000	
Clonitralide	N(A)						See niclosamide
Clopyralid	N(B)	H		S	O	4,300	Severe irritant to eyes
Cloxyfonac	ISO	PGR		S	O	+5,000	
CNA	N(J)						See dicloran
COMU	N(J)						See cycluron
Credazine	N(J)	H		S	O	3,090	
Cryolite	C	I		S	O	+10,000	
Cycloprothrin	ISO	I	PY	L	O	+5,000	
Cycloxydim	N(B)	H		S	O	3,900	
Cycluron	ISO	H		S	O	2,600	
Cyometrinil	N(B)	H		S	O	2,277	
Cyromazine	ISO	L		S	O	3,300	
Caimuron	ISO	H		S	O	+5,000	
Dalapon	N(A,B,F)	H		S	O	9,330	
Daminozide	ISO	H		S	O	8,400	
Desmedipham	ISO	H		S	O	+9,600	
Diafenthuron	ISO	AC		S	O	2,068	
Dichlobenil	ISO	H		S	O	3,160	
Dichlorfenidim	N(U)						See diuron
Dichlofluanid	ISO	F		S	O	+5,000	
Dichloropicolinic acid							See clopyralid
Diclobutrazol	ISO	F	T	S	O	+4,000	
Diclomezine	ISO	F		S	O	+10,000	
Dicloran	N(B)	F		S	O	4,000	
Diethatyl	ISO	H		S	O	2,300	
Diethofencarb	ISO	F		S	O	+5,000	
Difenoxuron	ISO	H		S	O	+7,750	
Diflubenzuron	ISO	L		S	O	+4,640	DS 77
Diflufenican	N(B)	H		S	O	+2,000	
Dikegulac	ISO	PGR		S	O	+10,000	
Dimefuron	ISO	H		S	O	+2,000	
Dimethirimol	ISO	F		S	O	2,350	
Dimethomorph	ISO	F		S	O	+5,000	
Dimethyl phthalate	C	RP (insect)		L	O	8,200	

Dinitramine	ISO	H		S	O	3,000	
Diphenyl							See biphenyl
Dipropetryn	ISO	H	T	S	O	4,050	
Dipropyl isocinchomerate	C	RP (fly)		L	O	5,230	
Disodium octaborate							See borax
Ditalmifos	ISO	F	OP	S	O	5,660	Irritant to skin; allergenic
Dithiopyr	ISO	H			O	+5,000	
Diuron	ISO	H		S	O	3,400	
Dodemorph	ISO	H		L	O	4,500	
Eglinazine	ISO	H		S	O	+10,000	
Ethalfuralin	ISO	H		S	O	+10,000	
Ethephon	N(A)	PGR		S	O	+4,000	
Ethidimuron	ISO	H		S	O	+5,000	
Ethirimol	ISO	FST		S	O	6,340	
Ethofumesate	ISO	H		S	O	+6,400	
Etofenprox	N(B)	I		S	O	+10,000	
Fenarimol	ISO	F		S	O	2,500	
Fenbutatin oxide	ISO	MT	OT	S	O	2,630	EHC 15
Fenchlorazole	ISO	H		S	O	+5,000	
Fenclorim	ISO	H		S	O	+5,000	
Fenfuram	ISO	FST		S	O	+10,000	
Fenidim	N(U)						See fenuron
Fenitropan	ISO	F		S	O	3,230	
Fenoxaprop-ethyl	N(B)	H		S	O	2,350	
Fenoxycarb	ISO	I	C	S	O	+10,000	
Fenpiclonil	ISO	FST		S	O	+5,000	
Fenpropimorph	ISO	F		oil	O	3,515	
Fenuron	ISO	H		S	O	6,400	
Fenuron-TCA	(ISO)	H		S	O	4,000	
Ferbam	ISO	F	TC	S	O	+10,000	
Flamprop-M	ISO	H		S	O	+3,000	
Fluazifop	ISO	H	P	L	O	3,330	
Flubenzimine	ISO	AC		S	O	3,000	
Flucycloxuron	ISO	AC		S	O	+5,000	
Flufenoxuron	ISO	I		S	O	+3,000	
Flumetralin	N(B)	PGR		S	O	+5,000	
Flumetsulam	ISO	H		S	O	+5,000	
Fluometuron	ISO	H		S	O	+8,000	
Fluorodifen	ISO	H		S	O	9,000	
Fluoromide	N(J)	F		S	O	+10,000	
Flupropanate	ISO	H		S	O	+10,000	
Flurecol butyl							See flurenol
Flurenol	ISO	PGR		S	O	+5,000	
Fluridone	ISO	H		S	O	+10,000	
Flurochloridone	ISO	H		S	O	4,000	
Fluthiacet	ISO	H		S	O	+5,000	
Fluroxypyr	N(B)	H		S	O	+5,000	
Fluthiacet	ISO	H		S	O	+5,000	
Flutolanil	ISO	F		S	O	+10,000	
Tau-fluvalinate	ISO	I	PY	oil	O	+3,000	Skin and eye irritant
Folpet	ISO	F		S	O	+10,000	HSG 72
Fosamine	ISO	H		S	O	2,400	
Fosetyl	N(B)	F		S	O	5,800	
Furmecyclox	N(B)	FST		S	O	3,780	
Gibberellic acid	N(B)	PGR		S	O	+10,000	
Glyphosate	ISO	H		S	O	4,230	EHC 159, DS 91
Glyphosine	ISO	H		S	O	3,920	
Hexaconazole	N(B)	F		S	O	2,180	
Hexaflumuron	ISO	I		S	O	+5,000	
Hexythiazox	N(B)	AC		S	O	+5,000	
Hydroprene	N(A)	IGR		L	O	+10,000	
2-Hydroxyethyl octyl sulphide	C	RP (insect)		L	O	8,530	
Hydroxyisoxazole	N(J)						See hymexazol
Hymexazol	N(B)	FST		S	O	3,900	
Imazamethabenz-methyl	(ISO)	H		S	O	+5,000	
Imazapyr	ISO	H		S	O	+5,000	Irritant to eyes
Imazaquin	ISO	H		S	O	+5,000	
Imazethapyr	N(B)	H		S	O	+5,000	
Imibenconazole	ISO	F		S	O	+5,000	
Inabenfide	ISO	PGR		S	O	+10,000	
Iodofenphos	N(A,B)						See jodfenphos
Iprodione	ISO	F		S	O	3,500	
Isopropalin	ISO	H		L	O	+5,000	
Isoxaben	N(B)	H		S	O	+10,000	
Jodfenphos	ISO	I	OP	S	O	2,100	DS 43

Karbutilate	ISO	H		S	O	3,000	
Kasugamycin	N(J)	F		S	O	+10,000	
Kinoprene	ISO	IGR		S	O	4,900	
Lenacil	ISO	H		S	O	+10,000	
Linuron	ISO	H		S	O	4,000	
Maleic hydrazide	ISO	PGR		S	O	6,950	
Mancozeb	ISO	F	TC	S	O	+8,000	Irritant to skin on multiple exposure; DS 94
Maneb	ISO	F	TC	S	O	6,750	Irritant to skin on multiple exposure; DS 94
Mefenacet	ISO	H		S	O	+5,000	
Mepanipyrim	ISO	F		S	O	+5,000	
Mepronil	N(J)	F		S	O	+10,000	
Metamitron	ISO	H		S	O	3,343	
Metazachlor	ISO	H		S	O	2,150	
Methabenzthiazuron	ISO	H		S	O	+2,500	
Methoprene	ISO	IGR		L	O	+10,000	DS 47
Methoprotryne	ISO	H		S	O	+5,000	
Methoxychlor	ISO	I	OC	S	O	6,000	DS 28
Methoxyphenone	N(J)	H		S	O	+4,000	
Methylmymron	N(J)	H		S	O	3,948	
Metiram	N(J)	F		S	O	+10,000	
Metobromuron	ISO	H		S	O	2,500	
Metosulam	ISO	H		S	O	+5,000	
Metoxuron	ISO	H		S	O	+3,200	
Metribuzin	ISO	H	T	S	O	2,200	
Metsulfovax	ISO	F		S	O	3,929	
Metsulfuron	N(A,B)	H		S	O	+5,000	
Monalide	ISO	H		S	O	+4,000	
Monolinuron	ISO	H		S	O	2,250	
Monuron	ISO	H		S	O	3,600	
Monuron-TCA	N(A)	H		S	O	3,700	
Naphthalene	C	F		S	O	2,200	
Naphthalic anhydride	C	PGR		S	O	+10,000	
2-(1-naphthyl) acetamide	ISO	PGR		S	O	6,400	
1-naphthylacetic acid	ISO	PGR		S	O	c3,000	
Napropamide	ISO	H		S	O	5,000	
Naptalam	ISO	PGR		S	O	8,200	
Neburon	ISO	H		S	O	+10,000	
Niclosamide	ISO	M		S	O	5,000	DS 63
Nicosulfuron	ISO	H		S	O	+5,000	Irritant to eyes
Nitralin	ISO	H		S	O	+2,000	
Nitrothal-isopropyl	ISO	F		S	O	6,400	
Norflurazon	ISO	H		S	O	+8,000	
(octylthio)ethanol	C						See 2-hydroxyethyl octyl sulphide
Ofurace	ISO	F		S	O	2,600	
Oryzalin	ISO	H		S	O	+10,000	
Oxabetrinil	ISO	H		S	O	+5,000	
Oxadiazon	ISO	H		S	O	+8,000	
Oxine copper	ISO	F		S	O	10,000	
Oxycarboxin	ISO	F		S	O	2,000	
Oxyfluorfen	ISO	H		S	O	+5,000	
Penconazole	N(B)	F		S	O	2,120	
Pencycuron	ISO	F		S	O	+5,000	
Pentanochlor	ISO	H		S	O	+10,000	
Phenisobromolate	N(J)						See bromopropylate
Phenisopham	ISO	H		S	O	+4,000	
Phenmedipham	ISO	H		S	O	+8,000	
Phenothrin	ISO	I	PY	L	O	+5,000	DS 85; EHC 96; HSG 32
2-Phenylphenol	ISO	F		S	O	2,480	
Phosdiphen	N(J)	F		L	O	6,200	
Phthalide	N(J)	F		S	O	+10,000	
Picloram	ISO	H		S	O	8,200	
Piperonyl butoxide	N(A)	SY		oil	O	+7,500	
Pretilachlor	ISO	H		L	O	6,100	
Primisulfuron	ISO	H		S	O	+5,050	
Probenazole	N(J)	F		S	O	2,030	
Procyimidone	ISO	F		S	O	6,800	
Prodiamine	ISO	H		S	O	+5,000	
Profluralin	ISO	H		S	O	c10,000	
Proglinazine	ISO	H		S	O	+8,000	
Prometon	ISO	H	T	S	O	2,980	
Prometryn	ISO	H	T	S	O	3,150	
Pronamide	N(A)						See propyzamide
Propamocarb	ISO	F		S	O	8,600	
Propaquizafop	ISO	H		S	O	+5,000	

Propazine	ISO	H	T	S	O	+5,000	
Propham	ISO	H		S	O	5,000	
Propineb	ISO	H	TC	S	O	8,500	
Propyzamide	ISO	H		S	O	5,620	
Pyracarbolid	ISO	F		S	O	+10,000	
Pyrazolynate	ISO	H		S	O	9,550	
Pyrazon	N(A)						See chloridazon
Pyrazosulfuron	ISO	H		S	O	+5,000	
Pyrimethanil	ISO	F		S	O	4,150	
Pyriminobac	ISO	H		S	O	+5,000	
Pyriproxyfen	N(B)	I		S	O	+5,000	
Quinclorac	ISO	H		S	O	2,680	
Quinmerac	ISO	H		S	O	+5,000	
Quinomethinoate	N(B)						See chinomethionat
Quinonamid	ISO	F		S	O	+10,000	
Quintozene	ISO	F		S	O	+10,000	EHC 41
Rimsulfuron	C	H		S	O	+5,000	
Secbumeton	ISO	H	T	S	O	2,680	
Siduron	ISO	H		S	O	+7,500	
Simazine	ISO	H	T	S	O	+5,000	
Sodium metaborate	C						See borax
Sodium trichloroacetate							The data shown refer to sodium trichloroacetic acid. In many countries, the term TCA refers to the free acid (now accepted by ISO): this is a solid with an oral LD <sub>50</sub> of 400 mg/kg and if used as a pesticide is placed in Class II. It is highly corrosive to skin
Solan	N(A)						See pentanochlor
Stirofos	N(A)						See tetrachlorvinphos
Sulfometuron	N(B)	H		S	O	+5,000	
Sulfur	N(A,J)						See sulphur
Sulphur	ISO	F,I		S	O	+3,000	Irritant to skin and mucous membranes. Sulphur dust can spontaneously ignite unless diluted about 50% with inert material
TCA	ISO	H		S	O	3,200	Irritant to skin and eyes; see sodium trichloroacetate
Tebuconazole	ISO	F		S	O	4,000	
Tebutam	ISO	H		oil	O	6,210	
Tecnazene	ISO	F		S	O	+10,000	EHC 42; HSG 12
Tedion	N(U)						See tetradifon
Teflubenzuron	N(B)	I		S	O	+5,000	
Temephos	ISO	I	OP	L	O	8,600	DS 8
Terbacil	ISO	H		S	O	+5,000	
Terbutylazine	ISO	H	T	S	O	2,160	
Terbutryn	ISO	H	T	S	O	2,400	
Tetrachlorvinphos	ISO	I	OP	S	O	4,000	
Tetradifon	ISO	AC		S	O	+10,000	EHC 67; HSG 11
Tetramethrin	ISO	O	PY	S	O	+5,000	EHC 98; HSG 31
Tetrasul	ISO	AC		S	O	6,810	
Thiabendazole	ISO	F		S	O	3,330	
Thidiazuron	ISO	PGR		S	O	+4,000	
Thifensulfuron	N(B)	H		S	O	+5,000	
Thiophanate	ISO	F		S	O	+10,000	
Thiophanate-methyl	ISO	F		S	O	+6,000	
Tiocarbazil	ISO	H	TC	L	O	10,000	
Tolclofos-methyl	ISO	F-S		S	O	c5,000	
Tolyfluanid	ISO	F		S	O	+5,000	
Transfluthrin	ISO	I	PY	S	O	+5,000	
Triasulfuron	ISO	H		S	O	+5,000	
Tribenuron	N(B)	H		S	O	+5,000	
Trichlamide	ISO	F		S	O	+5,000	
Trietazine	ISO	H	T	S	O	2,830	
Trifluralin	ISO	H		S	O	+10,000	
Triflumuron	ISO	PGR		S	O	+5,000	
Triforine	ISO	F		S	O	+6,000	
Triticonazole	N(B)	F	triazole	S	O	+2,000	
Validamycin	N(J)	F		S	O	+10,000	
Vinclozolin	ISO	F		S	O	10,000	
Zineb	ISO	F		S	O	+5,000	DS 94

The classification given in tables 62.1 to 62.5 is of technical compounds and only forms the starting point for the final classification of an actual formulation: the final classification of any product depends on its formulation. Classification of mixtures of pesticides is not included; many of these mixtures are marketed with varying concentrations of active constituents. (For information on how to find the hazard class of formulations and mixtures, see WHO 1996.) Technical products believed to be obsolete or discontinued (see table 62.6) are not included in the Classification.

Table 62.6. Technical products not included in the WHO Classification and believed to be obsolete or discontinued for use as pesticides

Allylcarb	Dinex	Methacarbate
Amidithion	Dinocton	Methiuron
Aramite	Endothion	2-Methoxymethyl mercury chloride (DS 66)
Athidithion	Erbon	Methylmercury dicyandiamide
Atraton	Ethiolate	Mexacarbate
Azothoate	Ethoate-methyl	Mipafox
Barium carbonate	Ethyleneglycol	Mirex (EHC 44; HSG 39)
Benodanil	Bis(trichloracetate)	Morfamquat
Benquinox	EXD	Myclozolin
Butacarb	Fenazaflor	Nitrilacarb
Butam	Fluotrimazole	Noruron
Butonate	Fosthietan	Oxapyrazon
Calcium cyanamide	Fluometil	Oxydisulfoton
Carbamorph	Glyodin	Parafluron
Carbanolate	Griseofulvin	Phenkapton
Chloethocarb	Halacrinat	Phenobenzuron
Chloraniformethan	Haloxydine	Phenylmercury dimethyldithiocarbamate
Chloranil	Hexachloroacetone	Phosacetim
Chloranocryl	Hexaflurate	Potassium cyanate
Chlorbenside	Hydroxyquinoline sulfate	Propyl isome
Chlorbicyclen	Ipazine	Prothiocarb
Chlordecone (EHC 43; HSG 41)	IPSP	Proxan
Chlorfenprop-methyl	Isobenzan	Pydanon
Chlorfensulphide	Isobornyl thiocynoacetate	Pyridinitril
Chlorfentezine	Isocarbamid	Quinacetol-sulfate
Chloromebuform	Isocil	Sabadilla
Chlorquinox	Isodrin	Salicylanilide
Crimidine	Isomethiozin	Schradan
Cyanthoate	Isonorunlisoprothiolane	Swep
Cypendazole	Kelevan (EHC 66; HSG 2)	TDE
Cypromid	Lythidathion	Terbucarb
Delachlor	Malonoben	Thioquinox
Diamidafos	MCC	Triapenthenol
Dibutyl phthalate	Mebenil	Triarimol
Dibutyl succinate	Mecarbinzid	Tricamba
Dichlozoline	Mecarphon	Trichloronat
Dimexano	Medinoterb acetate	Trimethacarb

Source: WHO 1996.

Table 62.7 lists gaseous fumigants not included in the WHO Recommended Classification of Pesticides by Hazard.

Table 62.7. List of gaseous or volatile fumigants not classified under the WHO Recommended Classification of Pesticides by Hazard

Acrylonitrile (EHC 28; HSG 1)	Ethylene dichloride (EHC 176)
Aluminium phosphide (EHC 73; HSG 28)	Ethylene oxide (EHC 55; HSG 16)
Carbon disulfide (EHC 10)	Formaldehyde (EHC 89; HSG 57)
Chloropicrin	Hydrogen cyanide
1,2-Dichloropropane (EHC 146; HSG 76)	Magnesium phosphide (EHC 73; HSG 28)
1,3-Dichloropropene (EHC 146; HSG 76)	Methyl bromide (DS 5; EHC 166; HSG 86)
Epoxyethane (ethylene oxide) (EHC 55; HSG 16)	Phosphine (DS 46; EHC 73; HSG 28)
Ethylene dibromide (EHC 177)	Sulfuryl fluoride

Note: The WHO Classification does not set out any criteria for air concentrations on which classification could be based. Most of these compounds are of high hazard and recommended exposure limits for occupational exposure have been adopted by national authorities in many countries.

Source: WHO 1996.

The entries and abbreviations used in the tables' various columns are explained here under the corresponding heading.

#### Name

The first column in the tables list the approved name of active ingredients. Trade names are not listed since there are many of these.

#### Status

The following abbreviations are used:

· ISO: Indicates the common name approved by the International Organization for Standardization (ISO). Such names are, when available, preferred by the WHO to all

other common names. However, some of these names may not be acceptable for national use in some countries. If the letters ISO appear within parentheses (e.g., with fentin acetate), this indicates that ISO has standardized (or is in the process of standardizing) the name of the base, but not the name of the derivative listed in the "Name" column. (Fentin is an ISO name, but fentin acetate is not.)

- N( ): Indicates approval by a national ministry or other body, which is shown in parentheses as follows: A: United States Environmental Protection Agency (EPA), American National Standards Institute (ANSI), the Weed Science Society of America or the Entomological Society of America; B: British Standards Institution or the British Pharmacopoeia Commission; F: Association française de normalisation; J: Japanese Ministry of Agriculture and Forestry; U: Gosudarstvennyi Komitet Standartov, former USSR.
- C: Chemical, trivial or other common name.

#### Main use

In most cases only a single use is given. This is only for identification purposes and does not exclude other uses. The following abbreviations are used:

- AC: acaricide
- AP: aphicide
- B: bacteriostat (soil)
- FM: fumigant
- F: fungicide, other than for seed treatment
- FST: fungicide, for seed treatment
- H: herbicide
- I: insecticide
- IGR: insect growth regulator
- Ix: ixodicide (for tick control)
- L: larvicide
- M: molluscicide
- N: nematocide
- O: other use for plant pathogens
- PGR: plant growth regulator
- R: rodenticide
- RP( ): repellent (species)
- -S: applied to soil; not used with herbicides or PGRs
- SY: synergist.

#### Chemical type

A limited number of chemical types are shown in this column. Most have some significance in the sense that they may have a common antidote or may be confused in the nomenclature with other chemical types. For example, thiocarbamates are not cholinesterase inhibitors and do not have the same effects as carbamates. The following abbreviations are used:

- C: carbamate
- CNP: chloronitrophenol derivative
- OC: organochlorine compound
- OM: organomercury compound
- OP: organophosphorus compound
- OT: organotin compound
- P: pyridyl derivative
- PA: phenoxyacetic acid derivative
- PY: pyrethroid
- T: triazine derivative
- TC: thiocarbamate.

These chemical classification are included only for convenience and do not represent a recommendation on the part of the WHO as to the way in which pesticides should be classified. It should, furthermore, be understood that some pesticides may fall into more than one type.

Chemical type is not shown where it is apparent from the name.

#### Physical state

This refers only to the technical compound. The following are used:

- L: liquid, including solids with a melting point below 50°C
- oil: oily liquid; refers to physical state only
- S: solid, includes waxes.

It may happen in a few cases that where the technical product is a solid, highly concentrated liquid formulations may need to be classified in a more hazardous class. In most cases, oils have been classified as liquids unless very viscous at ordinary temperatures.

#### Route

Oral route values are used unless the dermal route values place the compound in a hazardous class or the dermal values are significantly lower than the oral values, although in the same class. The following abbreviations are used:

- D: dermal
- O: oral.

#### LD<sub>50</sub> (mg/kg)

The LD<sub>50</sub> value is a statistical estimate of the number of mg of toxicant per kg of body weight required to kill 50% of a large population of test animals; the rat is used unless otherwise states. A single value is given: "c" preceding the value indicates that it is a value within a wider than usual range, adopted for classification purposes; "+" preceding the value indicates that the kill at the stated dose was less than 50% of the test animals.

The toxicity data for pyrethroids are highly variable according to isomer ratios, the vehicle for oral administration and the husbandry of the test animals. The variability is reflected in the prefix "c". The single LD<sub>50</sub> value now chosen for classification purposes is based on administration in corn oil and is much lower than that in aqueous solutions. This has resulted in considerable changes in the classification of some products and also underlines the need for classification by formulation if labelling is to reflect true hazard.

The figures in this column are not median values; rather, a safety margin is incorporated by choosing the lower confidence limit in most cases. Where a sex difference occurs in  $LD_{50}$  values, the value for the more sensitive sex is used. A number of classification adjustments have been made in respect of some pesticides and these are explained. A borderline case has been classified in the more or less hazardous class after consideration of its toxicology and use experience.

In table 62.5, a number of pesticides are listed as unlikely to present any acute hazard in normal use. The WHO Classification is open-ended but it is clear that there must be a point at which the acute hazard posed by the use of these compounds is so low as to be negligible provided that the necessary precautions are taken. For the purposes of this table, it has been assumed that this point is an oral  $LD_{50}$  of 2,000 mg/kg for solids and 3,000 mg/kg for liquids. However, it should not be overlooked that in formulations of these technical products, solvents or vehicles may present a greater hazard than the actual pesticide and therefore classification of a formulation in one of the higher hazard classes may be necessary.

Biological pesticides are not included in the WHO Classification because the methods of the safety testing of live biological agents are not appropriate to classification procedures applied to chemical compounds.

**Remarks**

Where the classification of a technical product has been adjusted, the basis for this is indicated in this column. Major irritant properties are noted; these do not affect classification. Where the name of a technical product is cross-referenced, the referenced product will be found in the same table. Abbreviations are used to indicate that a WHO/FAO Data Sheet (DS) or an issue of International Programme on Chemical Safety (IPCS) Environmental Health Criteria (EHC) Series or Health and Safety Guide contains further information on the product; the relevant issue numbers follow the abbreviations.