

Pesticide Education Center

P.O. Box 225279, San Francisco, CA 94122-5279 Telephone 415-665-4722 Fax 415-665-2693
pec@igc.org www.pesticides.org

Summary Table of Animal Toxicology Data on Pesticides

from Cal-EPA (California Environmental Protection Agency) SB950 Reports

September 2002 (update)

Background

Any pesticide sold in the U.S. must be registered with the EPA (Environmental Protection Agency). Current law requires pesticide manufacturers to test animals for potential long-term (chronic) effects before a pesticide can be sold. Hundreds of pesticides already on the market were registered before long-term animal studies were required by law in 1975. The law requires that these older pesticides be reassessed and re-registered to meet current standards.

The State of California has its own pesticide registration program. In 1984, California passed a law to speed up the reassessment and re-registration process, since EPA was moving so slowly. This law, called *The Birth Defects*

Prevention Act (SB950) requires that pesticides sold and used in California be evaluated for their potential to cause cancer, birth defects, genetic damage, and other chronic effects. The evaluations are done by Cal-EPA toxicologists hired for this purpose.

If the required chronic toxicity studies have not been done, or if the studies already done are inadequate, there is a “gap” in the data. The missing or inadequate studies are called *data gaps*. The following table summarizes the chronic effects study results for pesticides that have been evaluated by Cal-EPA as of September, 2002.

Explanation of the Table

The numbers in the columns tell you what the status is for a particular pesticide. The **best number is 4** which means there are no missing data and *no* adverse (bad) effects. **The worst number is 1** which means there are no missing data and there *are* adverse (bad) effects.

Worst →	1 possible adverse effect, no missing data, (no data gap)	5 not required
	2 possible adverse effect, missing data (data gap)	6 not required possible adverse effect
	3 no adverse effect, missing data (data gap)	N no study on file
Best →	4 no adverse effect, no missing data (no data gap)	P study in progress

Definitions

Chronic: refers to long term effects that are not tumors or cancer – for example liver, kidney, lung, eye damage, effects on the bone marrow, etc.

Oncogen: a substance that causes tumors. A tumor is an abnormal growth of tissue in the body, and can be benign or malignant. A malignant tumor is known as cancer. A characteristic of cancerous tumors is that they spread (metastasize). Substances that cause cancer are called *carcinogens*.

Reproductive (Repro): includes effects such as death of the embryo (resorption [equivalent to spontaneous abortion in humans]), death of a viable fetus (stillbirth), low birth weight, subfertility, infertility, sterility.

Birth defects: refers to structural defects such as heart defects, cleft lip/palate, missing limbs, spina bifida, etc. Substances that cause birth defects are called *teratogens*.

Genetic mutation, chromosome damage, DNA repair: refers to effects on genetic material (genes, chromosomes, DNA). Three tests are required because the genetic system is so complex and one test may not give enough information. A substance that causes changes in genetic material is called a *mutagen*.

Neurotoxic: A test done in hens to determine if a pesticide causes paralysis of the lower limbs – called pesticide-induced-delayed neuropathy. Neurotoxic means damage to the brain and nervous system.

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Ins	Acephate	4	1	4	1	4	4	4	1	1	1	1	6-07-02
Ins	Acequinocyl (Kanemite)	1	4	4	4	1	1	4	4	4	4	5	8-30-02
Ins	Acetamiprid	4	4	4	4	4	4	4	4	1	4	5	10-11-00
Fun	Acibenzolar-S-methyl	1	4	1	4	4	1	4	4	1	4	5	4-22-99
Her/Dye	Acid Blue 9	3	N	3	N	3	3	3	4	N	N	5	4-03-02
Her	Acid yellow 23	3	3	3	N	3	3	3	N	N	N	5	1-25-02
Her	Acifluorfen, sodium salt	3	3	3	2	4	3	3	4	2	1	5	04-21-94
Her	Acrolein	3	1	1	3	1	2 ^a	4	1	2	2	5	8-18-94
Amc	<i>Agrogacterium radiobacter</i>	N	N	N	N	N	N	N	3	N	N	5	1-03-02
Her	Alachlor	1	4	1	1	4	4	4	4	4	1	5	3-23-90
Ins	Aldicarb (Temik)	1	4	4	4	4	4	4	4	4	4	5	11-20-98
Ins	Aldrin	N	N	2	2	2	2 ^a	2 ^d	N	N	N	5	4-8-87
Ins	Allethrin	4	4	4	4	4	4	4	4	4	4	5	12-10-90
Ins	Amitraz	4	4	4	4	4	4	4	1	4	4	5	12-22-98
Her	Amitrole	1	2	1	1	2	4	1	4	4	1	5	5-16-89
Pgr	Ancymidol	N	N	N	N	N	3	N	4	3	3	5	2-01-02
Fun	Anilazine	N	4	4	4	4	4	4	4	1	4	5	3-17-99
Ins/Her	Arsenic - inorganic	1	1	1	1	N	1	4	1	1	1	1	5-02-89
Her	Asulam	1	2	1	2	3	3	3	3	3	3	5	3-10-88
Her	Atrazine	4	1	1	4	4	4	4	4	4	4	5	7-27-01
Ins	Avermectin	1^a	4	4	4	1	1^a	4	4	4	4	5	3-14-90
Her	Azafenidin	1	4	1	1	1	1	4	4	4	4	4	9-07-00

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Ins	Azinphosmethyl	4	4	1	4	4	4	4	4	1	4	5	11-15-01
Ins	<i>Bacillus thuringiensis</i> (BT)	3	N	3	N	N	N	N	3	N	3	5	09-18-98
Her	Barban (Carbyne)	N	N	N	N	3	3	N	N	N	N	5	12-10-86
Ins	Barium metaborate	1	N	N	N	N	N	4	4	4	N	4	12-14-98
NA	BAS 510F	3	4	2	4	4	4	4	4	4	4	5	05-02-02
Ins	Bendiocarb	2	4	4	4	2	3	4	4	1	4	5	04-03-97
Her	Benefin	4	4	1	4	4	4	4	3	4	4	5	04-21-00
Fun	Benomyl and MBC metabolite	1	1	4	1	1	1	1	1	1	1	5	10-01-97
Her	Bensulide	4	4	4	4	4	4	4	4	4	4	1	03-26-01
Her	Bentazon	1	1	4	1	1	1	1	4	4	4	5	09-30-99
Amc	Beta-bromo-beta-nitrostyrene	N	N	N	N	N	1	N	2	1	3	5	08-23-02
Ins	Bifenazate	4	4	4	4	4	4	4	4	4	4	5	08-25-00
Her	Bifenox	4	3	4	1	3	4	4	4	1	4	5	08-04-88
Ins	Bifenthrin	4	4	4	1	4	4	4	4	4	4	4	04-04-00
Her	Bispybac sodium (KiH-2023)	4	4	4	4	4	4	4	4	4	4	5	05-23-01
Ins	Boric acid	2	2	N	3	3 ^a	1	1	4	4	1	5	01-20-95
Rod	Brodifacoum	N	N	N	N	N	4	4	4	4	4	5	05-28-02
Her	Bromacil	4	4	4	1	4	4	4	1	1	4	5	11-14-97
Rod	Bromadiolone	N	N	N	N	N	3	3	1	4	4	5	03-05-97
Amc/Fun	1-Bromo-3-chloro-5,5-dimethylhydantoin	N	N	N	N	N	N	3	N	N	N	5	10-18-01
Her	Bromoxynil	1	4	1	1	1	1	1	1	1	1	5	03-10-95
Igr	Buprofezin	4	4	4	1	4	1	1	4	4	4	5	03-22-01
Ins	2-(2-Butoxy ethoxy)ethylthiocyanate (Lethane)	4	2	4	4	2	4	4	1	4	4	5	08-08-91

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Ins	Butoxypolypropylene glycol (Stabilene)	3	3	N	N	N	N	N	1	1	4	5	02-05-02
Rep	Butylacetylaminopropionic acid (Skin-So-Soft)	N	N	N	N	4	1	4	4	1	4	5	03-04-99
Her	Butylate	4	4	4	3	4	4	4	4	1	4	1	2-27-98
Her/Def	Cacodylic acid	4	4	1	2	3	1	4	4	4	1	5	02-20-96
Fun	Captafol	1	4	1	1	4	4	4	1	4	N	5	01-11-89
Fun	Captan	4	4	1	1	4	4	4	1	1	1	5	07-06-92
Ins	Carbaryl	1	4	1	1	4	4	4	4	1	4	5	04-12-02
Ins	Carbofuran	4	1	4	4	1	4	4	1	4	4	5	07-17-02
Amc	Carbolic acid (phenol)	2	2	2	2	N	3	3 ^a	1	2	2	5	08-27-98
Fun	Carboxin	1	4	4	1	1	4	4	4	1	1	5	05-02-94
Her	Chloramben (Amiben)	3	3	3	2	3	3	2	1	1	4	5	07-01-87
Ins	Chlordane	2	N	1	1	3	N	3	1	3	3	5	07-31-87
Ins	Chlorfenapyr	4	4	4	4	4	4	1	4	4	4	4	08-24-01
Pgr	Chlorflurenol	3	1	3	3	2	1	3	4	4	4	5	09-28-00
Amc	Chlorhexidine diacetate	N	N	N	N	N	3	N	2	3	3	5	06-14-01
Ins	Chlorobenzilate	2	2	2	2	4	3	3	3	N	3	5	03-27-87
Fun	Chloroneb	3	2	N	N	3	3	2	4	3	3	5	07-17-89
Rod	Chlorophacinone	N	3	N	N	N	1	4	4	4	3	5	07-02-02
Fum	Chloropicrin	1	4	4	4	4	4	4	1	1	4	5	11-15-01
Fun	Chlorothalonil	1	4	1	1	4	4	4	4	4	4	5	02-17-98
Amc	Chloroxlenol	N	N	N	N	N	4	N	4	2	3	5	07-21-00
Her/Pgr	Chlorpropham	2	3	2	2	3	3	4	1	4	1	5	09-00-94
Ins	Chlorpyrifos	1	4	4	4	4	4	4	4	4	1	4	09-27-01

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		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Her	Chlorsulfuron	4	1	4	4	4	4	4	4	4	4	5	09-20-91
Wp	Chromic acid	3	2	3	N	N	4	2	1	1	1	5	11-30-00
Her	Clethodim	4	4	4	4	4	4	4	4	1	4	5	11-09-93
Her	Clomazone	3	4	3	2	4	1	4	4	4	4	5	4-25-02
Soap	Coconut oil fatty acids	N	N	N	N	N	4	N	3	4	3	5	04-30-02
Fun/Amc	Copper compounds	N	N	N	N	N	N	N	N	N	N	5	10-30-87
Wp/Ins	Copper naphthenate	N	N	N	N	N	4	N	1	4	3	5	12-20-00
Ins	Coumaphos	4	2	4	3	2	4	4	4	1	4	4	06-05-92
Wp	Creosote	N	N	N	1	1	1	4	1	4	N	5	01-09-98
Ins	Cryolite	4	4	1	4	4	4	4	4	4	4	5	11-15-95
Her	Cyanazine	4	4	1	4	1	1	4	1	4	1	5	05-18-95
Her	Cyanuric acid	4	4	4	1	1	1	4	0	0	0		09-28-95
Her	Cycloate	1	1	4	1	1	4	4	1	1	1	1	10-09-98
Ins	Cyfluthrin	4	1	4	4	1	1	1	4	4	4	3	8-28-00
Her	Cyhalofop-butyl	3	4	3	4	4	4	4	4	1	4	4	02-16-01
Fun	Cyhexatin (Plictran)	2	4	4	4	P	3	1	4	4	4	5	05-27-87
Ins	Cypermethrin	4	4	4	1	1	4	4	4	4	4	2	02-06-02
Ins	Cyphenothrin	4	1	4	4	4	4	4	4	4	4	5	05-01-95
Igr	Cyromazine	1	N	1	1	4	3	1	N	3	N	5	08-08-86
Her	2,4-D	1	1	4	1	1	4	4	4	4	1	5	02-24-00
Her	Dacthal (chlorthal-dimethy, DCPA)	1	4	1	1	4	4	4	4	4	4	5	04-26-94
Her	Dalapon	3	2	N	3	3	2	N	3	3	3	5	08-08-86
Pgr	Daminozide (Alar)	1	4	1	1	4	4	4	4	4	4	5	08-01-91

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		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Fun	Dazomet	4	1	4	4	4	4	1	1	1	4	5	07-21-98
Her	2,4-DB (dichlorophenoxy butyric acid)	4	4	4	4	1	4	4	4	1	1	5	07-19-99
Ins	DDVP (Dichlorvos)	4	4	1	1	4	4	4	1	4	1	1	11-09-99
Rep	Deet	4	4	4	4	4	4	1	4	4	4	5	06-21-99
Her	DEF	1	1	4	1	1	4	4	4	4	4	1	05-15-02
Ins	Deltamethrin	4	1	4	4	4	4	4	4	4	4	1	05-24-00
Ins	Demeton	3	N	N	N	N	3	N	N	N	N	3	07-15-86
Rep	Denatonium saccharide	3	3 ^e	3	N	N	N	N	N	N	N	5	03-30-00
Her	Desmedipham	4	4	4	4	4	4	4	1	4	4	5	07-20-00
Ins	Diatomaceous earth	N	N	N	N	N	N	N	N	N	N	5	12-31-01
Ins	Diazinon	4	4	4	4	1	4	4	4	1	1	4	04-15-99
Her	Dicamba	1	4	1	1	1	4	4	4	4	1	1	03-18-96
Her	Dichlobenil	1	4	1	1	4	4	4	4	4	4	5	05-15-96
Her	Dichlofop-methyl	1	3	1	2	2	4	3	4	4	4	5	03-24-98
Fun	Dichloran (DCNA)	2	1	3	4	1	4	4	1	1	4	5	05-06-02
Amc/Fun	1,3-Dichloro-5,5-dimethylhydantoin	N	N	N	N	N	N	N	N	N	N	N	10-19-01
Fum	1,3-Dichloropropene (Telone II)	1	1	1	1	4	4	4	1	4	1	5	09-23-99
Her	Dichlorprop-P	4	4	4	4	4	4	4	4	4	4	4	03-13-02
Her	Diclofop-methyl	1	3	1	2	2	4	3	4	4	4	5	03-24-98
Ins	Dicofol	1	4	4	1	1	4	4	4	4	4	4	05-24-93
Amc	Didecyldimethylammoniumchloride (1682)	4	4	4	4	4	4	4	4	4	4	5	05-19-95
Her	Diethatyl ethyl	4	4	4	4	3	4	4	4	4	4	5	11-29-93

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Her	Difenzoquat	4	4	4	4	4	4	4	4	4	4	5	01-25-99
Ins	Diflubenzuron (Dimilin)	1	1	4	4	4	4	4	4	4	4	5	06-23-97
Her	Diflufenzopyr	4	4	4	4	4	4	4	4	4	4	4	07-13-00
Her/Pgr	Dikegulac sodium	N	N	N	N	N	3	3	4	4	N	5	04-20-99
Pgr/Def	Dimethipin	4	1	4	4	4	4	4	1	4	4	5	10-12-01
Ins	Dimethoate	4	4	4	4	1	4	4	4	4	1	5	09-23-98
Fun	Dimethomorph	4	4	1	4	4	4	4	4	1	4	5	06-01-01
Amc	Dimethoxane	3	N	3	2	N	4	N	4	1	4	5	11-10-99
Amc/Fun	Dimethyldithiocarbamate, potassium salt	N	N	N	N	N	4	1	1	3	4	5	08-14-02
Fun	Dimethyldithiocarbamate, sodium salt	N	N	N	N	N	4	4	1	2	4	5	06-14-02
Rep	Dimethyl phthalate	N	N	N	N	N	N	N	N	N	N	5	12-24-86
Fun	Dinocap	3	1	3	2	3	3	1	1	4	4	5	09-28-90
Ins	Dioxathion	N	N	2	3	3	N	N	N	N	N	N	03-09-87
Rod	Diphacinone	N	N	N	N	N	4	N	4	4	4	5	03-07-96
Her	Diphenamid	3	3	3	N	3	3	3	3	N	3	5	12-19-89
Fun/Pgr	Diphenylamine	1	1	1	4	4	4	4	4	4	4	5	08-08-96
Rep	Dipropyl isocinchomeronate	1	4	1	4	4	4	4	4	4	4	5	09-15-95
Her	Diquat	1	1	4	1	1	1	1	1	1	1	5	05-23-95
Her	Diruon	1	1	1	1	4	4	4	4	1	4	5	11-17-97
Ins	Disulfuton	4	4	4	4	4	4	4	4	1	1	4	06-02-00
Her/Amc	Dodine	4	4	4	1	4	4	4	4	4	4	5	05-27-99
Pgr	Ecolyst (diethyl-2-(4-methylbenzyloxy)ethylamine)	4	4	4	4	4	4	4	4	1	4	5	10-02-00
Her	Emamectin benzoate	1	1	1	1	1	4	1	4	4	4	1	12-02-99

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Ins	Endosulfan (thiodan)	1	4	1	4	4	4	4	4	4	4	4	03-05-99
Her/Def	Endothall	4	1	1	1	4	4	4	4	1	4	5	10-25-95
Ins	Endrin	2	2	3	3	N	N	N	N	N	N	5	09-22-87
Her	EPTC	1	1	4	4	4	1	4	1	1	4	4	10-22-99
Ins	Esbiothrin	3	3	3	3	2	4	4	2	3	3	5	10-03-97
Ins	Esfenvalerate	1 ^a	4	4	4	4	4	4	4	4	4	4	02-21-01
Her	Ethafluralin	4	1	1	4	4	4	4	1	1	4	5	09-21-93
PGR	Ethephon	4	4	4	4	4	4	4	1	1	1	4	11-24-97
Her	Ethofumesate	4	4	4	4	4	4	1	4	4	4	5	07-25-95
Ins	Ethoprop	4	1	4	4	1	4	4	4	1	1	4	04-09-98
Pgr	Ethylene	3	N	3	N	N	N	N	N	N	N	N	12-21-01
Fum	Ethylene dibromide	N	N	1	1	N	2	N	1	1	1	5	10-22-86
Fum/Ins	Ethylene dichloride	N	N	2	2	N	N	N	1	3	N	5	10-24-86
Fum	Ethylene oxide	1	N	1	1	1	1	4	1	1	1	5	10-28-96
Fun	Fenamidone	4	4	4	4	4	4	4	1	1	4	5	3-21-02
Nem	Fenamiphos (Nemacur)	4	4	4	4	4	4	4	4	1	4	5	02-08-00
Fun	Fenarimol (Rubigan)	4	4	1	4	4	4	4	4	4	4	5	09-09-93
Ins	Fenbutatin oxide	4	3	4	3	1	3	4	4	4	4	5	01-12-02
Her	Fenoxaprop	4	4	4	4	4	4	4	4	4	4	5	02-18-94
Igr	Fenoxycarb	4	4	4	2	4	3	3	4	3	4	5	11-21-97
Ins	Fenpropathrin	1	1	4	4	4	4	4	4	4	4	2	03-12-91
Ins	Fenpyroximate	4	1	4	4	4	4	4	4	4	4	4	08-29-01
Ins	Fensulfothion (Danasit)	N	4	N	N	3	4	2	4	4	3	4	05-05-88

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		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Ins	Fenthion	1	4	4	4	1	4	4	1	1	1	1	12-02-97
Ins	Fenvalerate	4	N	4	1	3	3	3	3	3	3	1	02-21-01
Fun	Ferbam	3	3	N	3	N	N	N	N	N	N	5	9-21-87
Her	Fluazifop-p-butyl	3	1	3	2 ^d	2	1	4	4	4	3	5	05-20-02
Her	Fluchloralin	3	N	N	3	3	N	3	N	3	N	5	11-03-86
Ins	Flucythrinate	2	1	2	4	2	3	3	3	3	3	5	08-12-87
Her	Fluometuron	1	4	1	1	4	4	4	4	4	4	5	10-25-89
Her	Fluridone	1	4	1	1	4	4	4	4	4	4	5	02-09-00
Ins	Fluvalinate	1	1	1	1	1	4	1	1	4	4	5	03-07-88
Fun	Fosetyl-Al	1	4	1	4	4	4	4	4	4	4	5	12-23-98
Fun	Folpet	1	4	1	1	4	1	4	1	4	1	5	12-01-88
Ins	Fonophos	4	4	4	4	3	1a	1	4	1	4	1	3-31-98
Fum	Formaldehyde	2	N	2	1	2	3	3a	1	1	1	5	01-02-97
Ins	Formetanate	4	4	4	4	4	4	4	1	1	3	5	08-29-02
Pgr	Fosamine	N	N	N	N	3	2	N	4	1	4	5	12-12-86
Pgr	Gibberellins	4	N	N	N	N	4	4	4	1	4	5	07-21-99
Amc/Fun	Gluteraldehyde	1	3	1	3	4	4	4	1	1	4	5	01-19-01
Amc	Glycolic acid	N	N	N	N	N	4	5	4	5	4	5	10-11-01
Her	Glyphosate	4	4	1	1	4	4	4	4	4	4	5	11-3-92
Ins	Heptachlor	2	N	2	2	2	N	3	4	2	2	5	11-13-86
Amc	Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	N	N	N	N	N	4	N	1	4	2	5	08-09-02
Her	Hexazinone	4	1	4	1	4	4	4	4	1	4	5	09-06-02
Ins	Hydramethylnon (Amdro)	1	4	4	4	1	4	4	4	4	4	5	06-14-02

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Amc	Hydroxymethylamino ethanol	N	N	N	N	N	4	N	1	4	4	5	01-08-02
Amc	Hydroxymethoxymethyl-aza-dioxabicyclo octane	N	N	N	N	N	N	N	3	4	1	5	03-27-92
Her	Imazamethabenz-methyl	4	4	4	4	4	4	4	4	4	4	5	04-06-99
Her	Imazamox	4	4	4	4	4	4	4	4	4	4	5	10-24-00
Fun	Imazilil	4	4	4	1	1	1	1	4	4	4	5	11-10-95
Ins	Imidacloprid	1	4	1	4	4	1	4	4	1	1	5	05-16-94
Ins	Imiprothrin	4	1	4	4	4	4	4	4	1	4	1	03-03-99
Ins	Indoxycarb	1a	4	4	4	4	4	4	4	4	4	4	03-11-99
Amc	Iodine	3	N	N	N	2	2	2	2	N	2	5	07-30-02
Amc	Iodine compounds	3	N	N	N	2	2	2	2	2	2	5	08-16-02
Amc	Iodine-nonylphenoxypolyoxyethylene ethanol cmplx	N	N	N	N	N	3	N	N	N	N	5	06-19-02
Fun	Iprodione	1	4	1	1	4	4	4	4	4	1	5	10-24-97
Ins	Isazophos	1	4	1	4	1	2	4	4	4	4	4	07-21-92
Ins	Isofenphos	3	3	N	3	2	2	3	4	4	4	4	04-28-89
Sol	Isoparaffinic hydrocarbons	N	N	N	2	N	N	N	4	3	N	5	09-30-88
Amc/Sol	Isopropyl alcohol	N	N	N	N	N	N	N	N	N	N	5	05-29-87
Her	Isoxaben	4	4	1	1	4	4	4	4	1	4	5	09-25-91
Ins	Kerosene	N	N	N	2	N	3	N	2	1	N	5	12-14-01
Fun	Krexosim methyl	1	4	1	4	4	4	4	4	4	4	4	12-23-99
Ins	Lindane	4	4	1	1	1	4	4	4	2	4	5	11-30-98
Her	Linuron	1	1	1	1	1	4	4	4	4	4	5	09-30-93
Amc	Lithium hypochlorite	N	N	N	N	2	2 ^a	3	4	4	4	5	10-23-91
Ins/Adj	Lithium (perfluorooctane) sulfonate	N	N	N	N	N	4	4	4	4	4	5	05-10-00

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Ins	Malathion	1	4	4	1	4	4	4	4	4	4	4	09-25-97
Pgr	Maleic-hydrazide	4	4	4	4	4	4	4	4	1	1	5	11-29-95
Fun	Mancozeb	1	1	4	1	4	4	4	4	1	4	5	02-10-00
Fun	Maneb	1	1	4	1	4	4	1	2	1	4	5	01-11-93
Her	MCPA	4	4	4	4	4	4	4	4	1	4	5	03-17-00
Her	MCPPP	4	4	4	1	4	4	4	4	1	4	5	09-15-99
Her	Mefluidide	1	1	4	1	4	4	4	4	4	4	5	11-21-94
Her	Mepiquat	4	4	4	4	4	4	4	3	4	4	5	08-27-02
Fun	Metalaxyl	4	4	1	4	4	4	4	4	1	4	5	02-15-96
Mol	Metaldehyde	1	1	1	1	4	4	4	4	4	4	5	01-02-01
Fun	Metam sodium	1	4	1	1	4	1	1	1	1	4	5	11-19-01
Ins	Methamidophos	1	1	4	1	1	1	4	1	1	4	4	11-22-99
1Ins	Methidathion	4	1	4	1	4	4	4	4	1	4	4	08-19-98
Ins	Methomyl	1	1	4	4	4	4	4	4	4	4	5	01-12-99
Ins	Methoxychlor	3	3	3	3	2	2	N	N	N	N	5	08-11-96
Ins	Methoxyfenozide	4	4	4	4	4	4	4	4	4	4	5	09-19-00
Fum	Methyl bromide	1	1	1	1	1	1	1	1	1	1	2	03-05-99
Sol	Methyl isobutyl ketone	N	N	N	N	N	3	3	3	3	3	5	12-22-88
Fum	Methylisothiocyanate (MITC)	4	3	4	4	N	4	4	4	4	4	5	02-04-99
Rep	Methyl nonyl ketone	N	N	N	N	N	3	N	4	4	4	5	05-13-02
Ins	Methyl parathion	1	4	1	4	1	1	4	1	4	4	4	06-07-02
Ins	Methyl salicylate	2	3	N	N	2	2	2 ^d	2	N	N	5	06-09-00
Amc/Fun	Methylene bis(thiocyanate)	4	1	4	4	4	4	4	1	1	4	5	10-01-98

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Sol/Rep	Methylene chloride	N	N	N	N	N	N	N	N	N	N	5	4-21-87
Fun	Metiram	2	2e	3	2	3	2	N	4	2	1	5	09-12-91
Her	Metolachlor	1	4	1	4	4	4	4	4	4	4	5	08-29-97
Her	Metribuzin (Sencor)	1	1	1	4	4	4	4	4	1	4	4	02-16-00
Her	Metsulfuron methyl	2	3	2	3	3	4	4	4	1	4	5	07-30-86
Ins	Mevinphos (Phosdrin)	4	3	4	4	4	4	4	1	1	1	4	03-22-94
Ins	Milbemectin	4	4	4	4	1	4	4	4	4	4	5	04-27-01
Ins	Minerals oils (401)	2	2	2	2	N	3	N	1	4	N	3	12-14-01
Her	Molinate (Ordram)	1	1	1	1	1	1	4	1	4	4	N	09-06-00
Ins	Monocrotophos (Azodrin)	1a	4	4	4	1	4	4	1	1	1	4	07-07-88
Amc	Monosodium isocyanurate	1	1	1	4	4	4	1	4	4	4	5	09-28-95
Her	MSMA (Monosodium methanearsonate) MAA	1	4	1	P	3	4	4	4	4	4	5	02-23-91
Phe	Muscalure ((Z)-9-Tricosene)	N	N	N	N	N	3	N	3	N	N	5	03-07-02
Fun	Myclobutanil	1	4	1	4	4	1	4	4	4	4	5	09-21-00
Fun/Her	Nabam	N	N	N	N	N	N	1	4	1	1	4	01-02-02
Ins	Naled	1	1	1	4	1	4	4	4	4	4	4	10-02-00
Fum	Naphthalene	N	N	N	N	N	N	4	4	4	4	5	08-08-89
Pgr	Naphthaleneacetic acid	4	1	1	N	1	2	2	4	4	N	5	03-09-01
Her	Napropamide	1	4	1	4	4	4	4	1	4	4	5	04-24-95
Her	Naptalam	3	4	3	1	3	3	3	4	1	4	5	03-23-90
Na	Nithiazine	N	N	N	N	N	N	N	4	4	4	5	06-14-00
Fun	Nitrapyrin	1	4	1	1	4	1	4	4	4	4	5	12-08-97
Her	Norfluazon	1	4	4	1	4	4	4	4	4	4	5	03-12-01

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Her	Novaluron	N	N	N	N	N	4	N	4	4	4	5	03-23-01
Amc/Fun	Octhilione	N	N	N	3	N	N	N	N	1	4	5	02-14-01
Syn	Octyl bicycloheptenedicarboximide (MGK-264)	1	4	1	1	4	4	4	4	4	4	5	07-18-97
Amc/Fun	Ortho-benzyl-para-chlorophenol	2	N	1	2	N	4	1	4	4	4	5	02-11-00
Fun	Ortho-phenylphenol	1	4	1	1	1	1	4	1	1	4	5	03-16-01
Her	Oryzalin	4	4	1	4	4	4	4	4	4	4	5	05-28-93
Her	Oxadiazon	1	4	1	1	4	1	1	1	4	1	5	05-26-95
Ins	Oxamyl	1	4	4	4	4	4	4	4	4	4	5	05-04-98
Fun	Oxycarboxin	2	3	N	N	3	3	N	3	N	N	5	09-29-87
Ins	Oxydemeton-methyl (metasystox-R)	4	4	4	4	1	4	4	1	1	1	4	10-15-97
Her	Oxyfluorfen	4	4	4	1	4	1	4	1	4	4	5	12-31-92
Fum	Oxythioquinox	1	1	1	4	1	1	4	1	1	4	5	08-09-96
Her	Paraquat	1	1	1	4	4	4	4	4	1	1	5	10-06-93
Ins/Rep	Para-dichlorobenzene	4	4	1	1	1	4	4	4	4	4	5	03-06-97
Rep	Para-menthane-3-8-diol	N	N	N	N	N	4	N	4	4	4	5	03-24-99
Amc	Para-tertiary-amylphenol	N	N	N	N	N	N	N	N	N	N	5	12-28-00
Ins	Parathion	1	3	1	1	4	4	4	1	4	4	4	10-10-91
Fun	PCNB (pentachloronitrobenzene)	1	4	1	1	4	4	4	4	1	4	5	07-10-95
Her	Pebulate	1	1	1	4	4	4	4	4	4	4	5	01-21-98
Her	Pendamethalin	1	4	1	4	4	4	4	4	4	4	5	04-15-97
Wp	Pentachlorophenol	4	1	1	1	4	1	4	4	1	1	5	02-26-98
Ins	Permethrin	4	1	4	1	1	4	4	4	4	4	5	04-07-97
Ins	Petroleum distillates (2106)*	N	N	N	2	N	N	N	1	N	N	5	07-19-01

Use	Pesticide	Chronic		Oncogen		Repro	Birth Defects		Gene	Chrom.	DNA	Neuro-	Latest update
		Rat	Dog	Rat	Mouse	Rat	Rat	Rabbit	Mut.	damage	damage	toxic	
Ins/Sol	Petroleum hydrocarbons (401)*	2 ^e	2	N	2	N	N	N	N	N	N	5	12-18-01
I/H/F/A	Petroleum oil, unclassified (765)*	N	N	N	2	N	N	N	4	3	N	5	07-19-01
Her	Phenmedipham	3	3	3	4	3	4	4	4	4	4	5	03-08-00
Ins	Phenothrin	1	4	1	1	1	4	4	4	4	4	5	06-20-96
Fun	Phenylmercuric acetate	2	N	N	N	N	4	2	2	2	2	2	02-01-90
Fun	Phenylmercuric oleate	2	N	N	N	N	2	2	2	2	3	2	07-30-87
Ins	Phorate (Thimet)	4	4	4	4	4	4	4	4	4	4	4	03-25-96
Ins	Phosalone	3	3	N	4	3	2	1	3	3	N	4	09-18-89
Ins	Phosmet (Imidan)	4	4	4	1	1	4	4	1	1	4	4	08-6-92
Ins	Phosphamidon	4	4	4	3	4	4	4	4	1	4	4	07-13-90
Fum	Phosphine (released from Al and Mg phosphide)	4	N	4	N	N	4	N	4	1	4	5	05-01-02
Her	Picloram	4	4	1	4	4	4	4	4	1	4	5	10-22-99
Ins/Amc	Pine oil	n	N	N	N	N	4	N	4	4	4	5	01-12-98
Syn	Piperonyl butoxide	4	4	4	1	4	4	4	4	4	4	5	11-27-95
Ins	Pirimiphos-methyl	3	4	N	3	2	3	3	N	3	3	2	11-28-88
Ins	Profenofos	4	1	4	4	4	4	4	4	4	4	4	04-03-98
Fun	Prohexadione calcium	4	4	4	4	4	4	4	4	1	4	5	04-05-00
Pgr	Promalin (cytokin and 6-benzyladenine)	N	N	N	N	3	4	N	4	4	3	5	03-26-02
Her	Prometon	4	4	4	4	4	4	4	4	4	4	5	02-14-89
Her	Prometryn	4	4	4	4	4	4	4	4	4	4	5	08-18-92
Fun	Propamocarb	3	1	3	3	3	1	4	4	4	4	5	08-26-88
Her	Propanil	1	1	1	1	4	4	4	4	3	3	5	08-14-00

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Ins	Propargite	4	4	1	4	1	4	4	4	4	4	5	09-28-00
Ins	Propetamphos	4	4	4	4	1	4	4	4	4	4	5	07-27-01
Fun	Propiconazole	4	3	4	1	4	1	4	4	4	4	5	10-19-90
Fun/Amc	Propionic acid	N	N	N	N	N	N	N	3	N	N	5	03-13-01
Ins	Propoxur	1	1	1	1	4	4	4	4	4	4	5	12-05-97
Fum	Propylene oxide	N	N	1	1	3	3	2	1	1	1	5	03-15-91
Her	Propyzamide	4	4	1	1	4	4	4	4	4	4	5	11-09-01
Fun	Pyraclostrobin	4	4	4	4	4	4	4	4	4	4	5	06-05-01
Her	Pyrazon	4	4	4	4	4	4	3	4	4	4	5	05-17-00
Ins	Pyrethrins	4	4	1	1	1	4	4	4	4	1	4	10-08-96
Her	Quinclorac	4	4	4	4	4	4	4	4	1	4	5	04-27-00
Fun	Quinoxifen	4	1	4	4	4	4	4	4	4	4	5	10-04-01
Ins	Resmethrin	1	1	1	1	1	4	1	4	4	4	5	08-06-98
Her	Rimsulfuron	1a	1	4	4	4	4	4	4	4	4	5	05-27-93
Ins	Rotenone	3	3	2	3	2	2	2	2	2	2	5	02-18-97
Ins	Sabadilla alkaloids	N	N	N	N	N	4	N	4	1	4	5	03-02-01
Her	Sethoxydim	4	4	4	4	4	1	4	4	4	4	5	11-23-98
Her	Siduron	N	3	2	N	3	4	N	4	4	4	5	07-30-99
Amc	Silver sodium hydrogen zirconium phosphate	N	N	N	N	N	4	N	4	4	4	5	08-17-01
Her	Simazine	1	4	1	4	4	4	4	4	4	4	5	10-08-93
Her/Ins	Sodium arsenite	N	N	N	N	N	N	N	N	N	N	5	12-24-86
Mol/Her	Sodium bromide	N	N	N	N	2	4	N	4	3	4	5	10-31-00
Her/Amc	Sodium chlorate	N	N	N	N	N	4	N	4	4	1	5	12-08-98

Use	Pesticide	Chronic		Oncogen		Repro	Birth Defects		Gene	Chrom.	DNA	Neuro-	Latest update
		Rat	Dog	Rat	Mouse	Rat	Rat	Rabbit	Mut.	damage	damage	toxic	
Amc	Sodium chlorite (includes chlorine dioxide)	3	N	N	N	N	N	4	1	1	4	5	09-10-01
Amc	Sodium dichloro-S-triazinetrione	1	2	1	4	1	3	3	4	3	3	5	07-20-87
Amc/Fun	Sodium hydromethylglycinate	N	N	N	N	N	4	N	4	4	4	5	03-17-00
Amc	Sodium hypochlorite	N	N	N	3	N	3	N	N	3	N	5	09-29-87
Des	Sulfur dioxide	N	N	N	N	N	N	N	N	N	N	5	12-24-86
Fum	Sulfuryl fluoride	1	4	4	4	4	4	4	4	4	4	5	04-23-02
Amc/fun	TCMTB (2-(thiocyanomethylthio)benzothiazole)	1	4	1	4	4	4	4	4	4	4	5	08-12-02
Her	Tebuthiuron	N	4	3	3	3	3	2	2	1	4	5	09-20-00
Ins	Temephos	3	N	3	N	3	N	3	3	4	4	4	11-09-99
Her	Terbacil	3	3	3	2	3	4	4	4	4	4	5	07-17-87
Fun	Terrazole	2	3	2	1	3	4	2	4	1	1	5	01-19-90
Ins	Tetrachlorvinphos	4	4	1	1	4	4	4	4	1	1	5	03-12-97
Amc	Tetraglycine hydroperiodide	N	N	N	N	N	N	N	3	2	3	5	08-16-02
Ins	Tetramethrin	1	1	1	1	1	1	4	4	4	4	5	01-03-01
Fun	Thiabendazole	1a	4	1	4	4	1a	4	4	4	4	5	11-17-98
Fun	Thiabendazole hypophosphite salt	2 ^a	4	3	4	4	2	1	4	4	4	5	12-20-90
Fin	Thiamethoxam	1	1	1	1	4	4	4	4	4	4	4	08-23-00
Her	Thiobencarb (Bolero)	4	4	4	4	4	4	4	4	4	1	5	01-12-96
Ins	Thiodicarb	1	4	1	1	1	4	4	1	4	4	4	11-16-98
Fun	Thiophanate-methyl	1	1	1	1	4	4	4	4	4	4	5	02-21-96
Fun	Thiram	1	4	1	4	4	1	4	4	4	4	2	03-25-96
Ins	Toxaphene	N	N	2	2	N	N	N	N	N	N	5	09-30-87

Use	Pesticide	Chronic		Oncogen		Repro	Birth Defects		Gene	Chrom.	DNA	Neuro-	Latest update
		Rat	Dog	Rat	Mouse	Rat	Rat	Rabbit	Mut.	damage	damage	toxic	
Her	Tralkoxydim	1	4	1	4d	4	1	4	4	4	4	4	09-28-00
Ins	Triadimefon	4	4	1	1	1	1	1	4	4	4	5	02-19-98
Fun	Triadimenol	4	4	4	4	4	4	4	4	4	4	5	06-07-00
Her	Triallate	4d	4	4d	4	4	4	4	1	1	1	1	03-04-99
Ins	Triazamate	1	1	4	4	4	4	4	4	4	4	4	01-24-00
Fun	Tributyltin benzoate	1	1	1	4	4	1	1	4	4	4	5	11-03-95
Amc/Fun	Tributyltin oxide	2	2	2	4	4	2	3	3	3	4	5	05-25-93
Her	Trichlopyr (Garlon)	4	4	4	4	1	4	4	4	1	4	5	02-10-00
Ins	Trichlorfon	1	1	4	1	1	4	4	1	1	1	4	01-06-99
Amc	Trichloromelamine	3	3	N	3	N	4	4	1	1	4	5	04-02-02
Her	Trichloro-S-triazinetrione	1	1	1	4	4	4	3	4	4	4	5	05-31-89
Fun	<i>Trichoderma harzianum</i>	N	N	N	N	N	N	N	N	4	N	5	04-09-99
Phe	(E)-4-Tridecen-1-yl acetate & (Z)-4-tridecen-1-yl)	N	N	N	N	N	N	N	4	4	4	5	04-08-02
Adj/Amc	Triethylene glycol	3	N	N	N	N	N	3a	N	N	N	5	04-25-02
Fung	Trifloxystrobin	4	4	4	4	4	4	4	1	4	4	4	06-26-01
Her	Trifluralin	1	4	1	4	4	4	4	4	4	4	5	11-29-95
Fun	Triforine	4	4	1	4	4	4	4	4	4	4	5	07-11-94
Amc	Tris-hydroxymethyl) nitromethane	N	N	N	N	N	1	4	4	3	3	5	04-12-02
Fun	Vancide TH (hexahydrotriethyl-S-triazine)	N	N	N	N	N	1	N	1	4	1	5	04-30-93
Her	Vernolate	4	4	4	3	2	1	4	4	1	4	4	07-13-90
Fun	Vinclozolin	1	4	1	1	1	1	4	1	4	4	5	07-20-98
Wp	Zinc naphthenate	N	N	N	N	N	4	N	1	1	3	5	12-20-00

Use	Pesticide	Chronic		Oncogen		Repro Rat	Birth Defects		Gene Mut.	Chrom. damage	DNA damage	Neuro- toxic	Latest update
		Rat	Dog	Rat	Mouse		Rat	Rabbit					
Fun	Ziram	1	1	1	4	4	4	4	1	4	4	5	05-22-96
Fun	Zoxzmid	4	1	4	4	4	4	4	4	1	4	5	06-12-01

a = in the mouse **b** = in the rat **d** = in the hamster **e** = in the monkey

* Cal-EPA chemical code number.

<u>Number Key</u>	
1	No data gap - possible adverse effects
2	Data gap - possible adverse effects
3	Data gap - no adverse effects
4	No data gap - no adverse effects
5	Not required at this time
N	No study available
P	Study in progress

<u>Abbreviations</u>	
Adj	Adjuvant
Amc	Antimicrobial
Def	Defoliant
Des	Dessicant
Fum	Fumigant
Fun	Fungicide
Her	Herbicide
Igr	Insect Growth Regulator
Ins	Insecticide
Mol	Molluscicide
Nem	Nematocide
Pgr	Plant Growth Regulator
Phe	Pheromone
Rep	Repellent
Rod	Rodenticide
Sol	Solvent
Syn	Synergist