

## NAMES, CLASSIFICATION, AND TOXICITY OF INSECTICIDES

The following chart will help you identify specific pesticides and give you an indication of their toxicities.

**Names** — Each generally used name of each pesticide is listed alphabetically in the left-hand column of the chart. Synonyms in general usage are listed in the next column opposite each entry. Trade names are indicated by the superscript “\*”; they should be capitalized. Other names are usually not capitalized.

**Classes** — Most insecticides are classified chemically as:

- OP = organic phosphates
- OX = oxidiazines
- CH = chlorinated hydrocarbons
- Car. = carbamate
- Pyr. = natural pyrethrins
- B = bacterial origin
- SyP. = synthetic pyrethroid
- Misc. = chemistry unclear
- IGR = insect growth regulator
- F = fungal origin
- NEO = neonicotinoids

**Toxicity Categories and LD<sub>50</sub> Values** — When registering pesticides, the Environmental Protection Agency uses acute LD<sub>50</sub> values to determine the toxicity category and words or symbols that must be placed on the label. For this purpose, the test animals are usually rats, mice, or rabbits, but other mammals are sometimes used.

Toxicity Category	Signal Words Required On Label by EPA	ORAL LD <sub>50</sub> (mg/kg)	DERMAL LD <sub>50</sub> (mg/kg) 24-Hr. Exposure	Probable Lethal Oral Dose For Adult Humans
I. Highly Toxic	DANGER, POISON, Plus Skull & Crossbones Symbol	0 to 50	0 to 200	A few drops to 1 t
II. Moderately Toxic	WARNING	50 to 500	50 to 2,000	1 t to 2 T
III. Slightly Toxic	CAUTION	500 to 5,000	2,000 to 20,000	1 oz to 1 pt (1 lb)
IV. Low Toxicity	CAUTION	5,000	20,000	1 pt (1 lb) or more

The LD<sub>50</sub> is the dosage of the chemical at which one-half of the test animals are killed. It is based on the bodyweight of the animal and is expressed in milligrams of the chemical per kilogram of animal (mg/kg). A mg/kg is equivalent to 1 ppm. The lower the LD<sub>50</sub> value, the higher the toxicity. Although most reported LD<sub>50</sub> values are for technical material or actual toxicant, they are based on formulated products in some instances. All of these in the charts are for the technical material unless otherwise indicated. The toxicity categories given in the following charts are based on available data and are not necessarily the toxicity categories that would be assigned by EPA for the specific pesticides. Formulated pesticides usually have a higher LD<sub>50</sub> than the technical material and may not fall in the same toxicity category as the technical material.

The usual ways of administering chemicals are oral (by mouth), dermal (applied to the skin), and inhalation. Inhalation toxicity is expressed as LC<sub>50</sub> (lethal concentration). It is not as generally used as the other two.

Toxicity may be either acute or chronic. Acute refers to rather quick action from a single exposure, while chronic refers to the toxic effect of many exposures over a period of time.

## INSECTICIDES

Insecticide Names	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub> Values for White Rats	
				ORAL (mg/kg)	DERMAL (mg/kg)
Abate*	Biothion*, temephos	OP**	III	8600-13000	>4000
acephate	Orthene*, SpitFire	OP	III	866-945	>10,250 (rabbit)
acetamiprid	Intruder*	NEO	III	1064	>2000
Actellic*	pirimiphos-methyl, Actellifog*	OP	III	>2000	>4592
Admire	imidacloprid, Provado, Merit, Gaucho, Trimax	NEO	III	4350	>5050 (rabbit)
Advantage	imidacloprid	NEO	III	1732-1943	>2000
Agritol*	<i>Bacillus thuringiensis</i>	B	IV	Non-toxic to mammals	
aldicarb	Temik*	Car.	I	0.93	>5.0 (rabbit)
allethrin	Pynamin*	SyP	III	680-1000	>11,200
Altosid*	methoprene	IGR	III	>34,600	>3000 (rabbit)
Ambush*	permethrin	SyP	II	430-4000	>4000
Amdro*	hydramethylnon	OP	III	1131-1300	>5000 (rabbit)
Ammo*	cypermethrin	SyP	I	247	>2000
arprocarb	Baygon*, propoxur	Car.	II	128	800-1000
Asana XL	esfenvalerate, Asana*	SyP	II	458	>2000 (rabbit)
Atroban*	permethrin	SyP	II	>4000	>4000
Aluminum Phosphide	Phostoxin*	Misc.	I	20	
azinphos-methyl	Guthion*	OP	I	5-20	220
Aztec	cyfluthrin + tebuipirimfos	SyP + OP	I	1.3	
<i>Bacillus thuringiensis</i>	Biotrol*, Dipel*, Thuricide*, Agritol*, Sok-BT*, Javelin*, Bactur*	B	IV	Non-toxic to mammals	
<i>Bacillus thuringiensis</i> <i>var. israelensis</i>	Design, Agree, Xentari				
Baygon*	Bti, Bactomos*, Teknar*, Vectobac*	B	IV	Non-toxic to mammals	
Baytex*	propoxur, arprocarb	Car.	II	128	800-1000
Baythroid XL*	fenthion, Entex*, Spotton*	OP	II	215-245	330
Belt	beta-cyfluthrin	SyP	III	647	>2000
Bidrin*	flubendiamide	Misc.	II	<2000	>4000
bifenthrin	dicrotophos*	OP	I	17-22	224 (rabbit)
	Bifenture*, Bisect*, Sniper*, UpStar*, Menace*, Tundra*, Capture*, Talstar*, Brigade*, Fanfare*, Discipline*	SYP	III	375	>2000 (rabbit)
Bifenture*	bifenthrin	SyP	II	375	>2000 (rabbit)
Bisect*	bifenthrin	SyP	II	375	>2000 (rabbit)
Biothion*	Abate*, temephos	OP	III	8600-13,000	>4000
Biotrol*	<i>Bacillus thuringiensis</i>	B	IV	Non-toxic to mammals	
Bisect	bifenthrin	SyP	II	275	>2000 (rabbit)
Capture*	bifenthrin, Talstar*, Brigade*	SyP	II	357	>2000 (rabbit)
carbaryl	Sevin*	Car.	III	246-283	4000
carbofuran	Furadan*	Car.	I	11	10,200 (rabbit)
carzal	Formetanate hydrochloride	Misc.	I	21	10,200
Centric	thiamethoxam	NEO	III	>5000	>2000
chlorpyrifos	Dursban*, Lorsban*	OP	II	97-276	2000 (rabbit)
chlorpyrifos-methyl	Reldan*	OP	II	1000-3700	>2000

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				ORAL (mg/kg)	DERMAL (mg/kg)
Comite*	propargite, Omite*	Misc.	I	2200	
Condor	<i>Bacillus thuringiensis</i>	B	IV	Non-toxic to mammals	
Confirm	Tebufenozide	IGR	IV	5000	>5000Co-Ral*
coumaphos	OP	I	15.5-41	860	
coumaphos	Co-Ral*	OP	I	15.5-41	860
Counter*	terbufos	OP	I	4.5-9.0	1.1 (rabbit)
Curacron*	profenofos	OP	I	622	472 (rabbit)
Cruiser	thiamethoxam, Centric*	NEO	III	>5000	>2000
beta-cyfluthrin	Baythroid XL*	SyP	I	647	>5000
Cymbush	cypermethrin, Ammo*	SyP	I	247	>2000
cypermethrin	Ammo*, Cymbush*	SyP	I	247	>2000
Cythion*	malathion, Fyfanon	OP	III	1000-1375	>4444
DDVP	dichlorvos, dichlorphos, Vapona*	OP	I	56-80	75-107
Demon*	cypermethrin	SyP	I	247	>2000
Denim	emamectin benzoate	Misc.	I	2950	>2000 (rabbit)
Design	<i>Bacillus thuringiensis</i>	B	IV	Non-toxic to mammals	
Diamond	novaluron	IGR	III	3914	8,000 (rabbit)
Diazinon*	Spectracide*, Dryzon	OP	II, III	300-400	3600 (rabbit)
Dibrom*	naled	OP	I	430	1100 (rabbit)
dichlorphos	dichlorvos, Vapona*, DDVP	OP	I	50	250
dichlorvos	dichlorphos, Vapona*, DDVP	OP	I	50	250
dicofol	Kelthane*	CH	II, III	820-960	1000-1230
dicrotophos	Bidrin*	OP	I	17-22	224 (rabbit)
diflubenzuron	Dimilin*	IGR	III	4540	
dimethoate	Dimate, Dimethoate	OP	II	215	400-610
Dimilin*	diflubenzuron	IGR	III	>4640	
Dipel ESNT	<i>Bacillus thuringiensis</i>	B	IV	Non-toxic to mammals	
Dipterex*	Dylox*, trichlorfon, Neguvon*, Anthon*, Proxol*, GX-130*	OP	III	560-630	2000
disulfoton	Di-Syston*	OP	I	2-10	6-20
Di-Syston*	disulfoton	OP	I	2-10	6-20
Dragnet*	permethrin	SyP	I-III	430-4000	>4000
Dursban*	chlorpyrifos, Lorsban*	OP	II	97-276	2000 (rabbit)
Dylox*	trichlorfon, Dipterex*, Neguvon*, Proxol*	OP	III	560-630	>2000
Ectiban*	permethrin	SyP	II	4000	>4000
endosulfan	Thiodan*, Phaser	CH	I	30-110	359 (rabbit)
Entex*	fenthion, Baytex*	OP	II	250	2000
esfenvalerate	Asana XL*	SyP	II	458	72,000 (rabbit)
Expar*	permethrin	SyP	II	>4000	>4000
famphur	Warbex*	OP	I	35-62	1460-5093 (rabbit)
fenpyroximate	Portal	Misc.	III	810	>5,000
fenthion	Baytex*, Entex*	OP	II	250	2000
fenvalerate	Ectrin	SyB	III	451	5000

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				ORAL (mg/kg)	DERMAL (mg/kg)
Ficam	bendiocarb	Car	I	40	566
Fumitoxin*	Aluminum Phosphide, Phostoxin*	Misc.	I	20	
Furadan*	carbofuran	Car.	I	11	10,200 (rabbit)
Gaucho	imidacloprid	NEO	III	609	>2000
Guthion*	azinphos-methyl	OP	I	11-13	220
Halofenozide	Mach II	IGR	IV	2850	>2850
imidacloprid	Admire, Provado, Gaucho, Merit, Trimax, Alias	NEO	III	4350	>5050 (rabbit)
Imidan*	phosmet	OP	II	147-316	>4640 (rabbit)
indoxacarb	Steward	OX	III	268	>5000
Intrepid	methoxyfenozide	IGR	IV		
Intruder	acetamiprid	NEO	III	1064	>2000
Ivermectin*	Ivomec*	Misc.			
Ivomec*	Ivermectin*	Misc.			
Javelin	<i>Bacillus thuringiensis</i>	B	IV	Non-toxic to mammals	
Karate*	cyhalothrin	SyP	I	56	
Kelthane*	dicofol	CH	II, III	820-960	1000-1230
Knox Out 2FM*	encapsulated diazinon	OP	III	>21,000	>10,000 (rabbit)
Lannate*	methomyl	Car.	I	17-24	>5880 (rabbit)
Larvadex*	cyromazine	IGR	IV	3387	>3100
Larvin*	thiodicarb	Car.	II	66-120	>2000 (rabbit)
lindane	gamma isomer of BHC	CH	II	88-125	1000
Lorsban*	chlorpyrifos, Dursban*	OP	II	97-276	2000 (rabbit)
Mach II	Tebufofenozide	IGR	IV	2850	>2850
malathion	Cythion,* Fyfanon	OP	III	1000-1375	4100 (rabbit)
Menace*	bifenthrin	SyP	II	375	>2000 (rabbit)
MesuroI*	methiocarb, Slug-Geta*, Bug-Geta*	Car.	II	10-130	5000 (rabbit)
Metaldehyde*		Misc.	II, III	630	
methamidophos	Monitor*	OP	I	15-18	150
methidathion	Supracide*	OP	I	44	200 (rabbit)
methiocarb	MesuroI*	Car.	II	10	5000 (rabbit)
methomyl	Lannate*	Car.	I	17-24	5880 (rabbit)
methoxyfenozide	Intrepid	IGR	IV		
Methyl Bromide		Misc.	I	214 (Highly toxic)	
methyl parathion		OP	I	5	50
methoprene	Altosid*	IGR	III	>34,600	>3000 (rabbit)
Monitor*	methamidophos	OP	I	15-18	150
Mustang Max	zeta-cypermethrin	SyP	I	106	
MVP II	<i>Bacillus thuringiensis</i>	B	IV	Non-toxic to mammals	
naled	Dibrom*	OP	II	430	1100 (rabbit)
Neguvon*	trichlorfon, Dipterex*	OP	III	560-630	>2000
	Dylox*, GX-130*, Proxol*				
Oberon	spiromesifen	Misc.	III	>2000	>4000
Oftanol*	isofenphos	OP	II	20-30	
Omite*	propargite, Comite*	Misc.	III	2200	
Orthene*	acephate	OP	III	866-945	>2000 (rabbit)

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				ORAL (mg/kg)	DERMAL (mg/kg)
Overtime*	permethrin	SyP	II	4000	4000
oxamyl	Vydate*	Car.	I	5.4	37
paradichlorobenzene	PDB*	CH	III	500-5000	2000 (rabbit)
pentachlorophenol					
PDB*	paradichlorobenzene	CH	II	500	
Pennacap-M*	microencapsulated methyl parathion	OP	II	>600	>5400
Permethrin II*	permethrin	SyP	II	430-4000	>4000
permethrin	Ambush*, Atroban*, Overtime*, Permethrin II*, Ectiban*, Pounce	SyP	I-III	430-4000	>4000
Phaser*	endosulfan	CH	I	30-110	359 (rabbit)
phorate	Thimet*	OP	I	2-4	20-30 (guinea pig)
phosmet	Imidan*	OP	II	147-316	>4640 (rabbit)
phostoxin	Aluminum Phosphide	Misc.	I	20	
piperonyl butoxide	Butacide*, Incite*	Misc.	III	>7500	
Pounce*	permethrin	SyP	I	439-4000	>4000
Premise	imidacloprid	NEO	III	4143-4870	>2000
profenofos	Curacron*	OP	I	622	472 (rabbit)
propargite	Omite*, Comite*	Misc.	III	2200	
propoxur	Baygon*, arprocarb	Car.	II	128	800-1000
Provado	imidacloprid, Admire, Gaucho, Merit, Trimax	NEO	III	4350	>5050 (rabbit)
Proxol*	trichlorfon, Dylox*	OP	III	560-630	>2000
pyrethrins	pyrethrum	Pyr.	III	1500	>1800
pyrethrum	pyrethrum	Pyr.	III	1500	>1800
Rabon*	tetrachlorvinphos, Ravap*	OP	III	4000-5000	>2500 (rabbit)
Ravap*	tetrachlorvinphos	OP	III	4000-5000	>2500 (rabbit)
Reldan*	chlorpyrifos-methyl	OP	II	2000-3000	>2000 (rabbit)
resmethrin	Chryson*, Synthrin*	Pyr.	III	4240	2500 (rabbit)
Sevin*	carbaryl	Car.	III	246-283	4000
Sniper*	bifenthrin	SyP	II	347	>2000 (rabbit)
Spectracide*	diazinon	OP	II, III	300-400	3600 (rabbit)
spinosad	Tracer, Spintor	F	IV	5000	
spiromesifen	Oberon*	Misc.	III	>2000	>4000
SpitFire	acephate	OP	III	866-945	>10,250 (rabbit)
Spotton*	fenthion	OP	II	250	2000
Steward	indoxacarb	OX	III	268	>5000
Supracide*	methidathion	OP	I	44	200 (rabbit)
Taktic*	amitraz	Misc.	II	400	>1600
Talstar*	bifenthrin	SyP	II	375	>2000 (rabbit)
Tame*	Danitol*, fenpropathrin	SyP	I	68	
Tebufenozide	Confirm, Mach II	IGR	IV	5000	>5000
Temik*	aldicarb	Car.	I	0.93	3.15
temephos	Abate*, Biothion*	OP	III	8600-13,000	>4000
terbufos	Counter*	OP	I	4.5-9.0	1.1 (rabbit)
tetrachlorvinphos	Rabon*	OP	III	4000-5000	>2500 (rabbit)

Insecticide Names	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub> Values for White Rats	
				ORAL (mg/kg)	DERMAL (mg/kg)
Thimet*	phorate	OP	I	204	20-30 (guinea pig)
thiodicarb	Larvin*	Car.	II	66-120	>2000 (rabbit)
Thiodan*	endosulfan	CH	I	30-110	359 (rabbit)
Tiguvon*	fenthion	OP	II	250	2000
Torpedo*	permethrin	SyP	II	430-4000	>4000
Tracer	spinosad, Spintor	F	IV	5000	
Tribute	fenvalerate, Pydrin, Ectrin	SyP	I	451	
trichlorfon	Dylox*, Dipterox*, Neguvon*	OP	III	560-630	>2000
Trimax	imidacloprid, Admire, Provado, Gaucho, Merit	NEO	III	4350	>5050 (rabbit)
Triumph	isazophos	OP	I	40-60	118
Tundra*	bifenthrin	SyP	II	347	>2000 (rabbit)
UpStar*	bifenthrin	SyP	II	34	>2000 rabbit
Vapona*	dichlorphos, DDVP, dichlorvos	OP	I	80	107
Vendex*	fenbutatin-Oxide	Misc.	I	2631	>2000
Vydate*	oxamyl	Car.	I	5.4	37
Warbex*	famphur	OP	I	35-62	1460-5093 (rabbit)
Zeal	etoxazole	Misc.	III	>5,000	>5,000
Zephyr	abamectin	F	II	300	>1800
zeta-cypermethrin	Mustang Max	SyP	II	106	

#### Ecological Characteristics of Some Agricultural Insecticides Commonly Used in Arkansas

Insecticide (common name)	Relative Toxicity <sup>a</sup>		
	fish	birds	to: bees
acephate (orthene)	VL	H	M
<i>Bacillus thuringiensis</i> (Dipel)	NT	NT	NT
carbaryl (Sevin)	M	VH	L
carbofuran (furadan)	H	H	VH
chlorpyrifos (Lorsban-Dursban)	VH	H	H
diazinon	VH	H	H
dimethoate (Cygon)	M	H	M
esfenvalerate (Asana)	VH	H	L
fonofos (Dyfonate)	H	M	M
malathion	M	H	H
methomyl (Lannate)	M	H	H
methyl parathion (encapsulated)	VL	H	H
permethrin (Ambush, Pounce, etc.)	VH	H	L
phorate (Thimet)	VH	M	VH
phosmet (Imidan)	VH	VH	VL
tefluthrin	VH	H	L
terbufos (Counter)	VH	M	H
thiodicarb (Larvin)	M	M	L
trimethacarb	H	M	L

<sup>a</sup>VL=very low; L=low; M=moderate; H=high; VH=very high; NT=no evidence of acute or chronic toxicity.