

**2005 STATUS REPORT  
PESTICIDE CONTAMINATION  
PREVENTION ACT**

Annual Report  
Posted to the  
Department of Pesticide Regulation's  
Web Site



California Environmental Protection Agency  
DEPARTMENT OF PESTICIDE REGULATION

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EH05-07

# **California Department of Pesticide Regulation**

**Arnold Schwarzenegger, Governor**  
State of California

**Alan Lloyd, Secretary**  
California Environmental Protection Agency

**Mary-Ann Warmerdam, Director**  
Department of Pesticide Regulation

**2005 Status Report  
Pesticide Contamination  
Prevention Act**

**Murray Clayton  
Associate Environmental Research Scientist**

December 2005

California Environmental Protection Agency  
Department of Pesticide Regulation  
Environmental Monitoring Branch  
Environmental Hazards Assessment Program  
P.O. Box 4015  
Sacramento, California 95812-4015  
(916) 324-4100

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## **EXECUTIVE SUMMARY**

### **PURPOSE**

The provisions of Food and Agricultural Code (FAC) section 13144(b) require the Department of Pesticide Regulation (DPR) to annually post to the department's web site information regarding the status of the ground water protection data call-in of pesticidal active ingredients registered for agricultural use, the pesticide active ingredients with data exceeding specific numerical values (SNVs), and sales and use information. The ground water protection data for each active ingredient include information on certain physical and chemical properties and environmental fate. Active ingredients with properties that exceed the SNVs established by DPR are considered to have the potential to contaminate ground water. Active ingredients exceeding the SNV criteria are listed with the information on the reported sale and use in California.

### **BACKGROUND**

The Pesticide Contamination Prevention Act (PCPA) of 1985 established a set of data requirements for identifying and tracking potential and actual ground water contaminants. The PCPA directed DPR to establish SNVs as a basis to estimate relative risk to ground water of pesticide active ingredients. If a pesticide was classified as a potential leacher then it is potentially subject to monitoring to determine whether it has contaminated ground water. The PCPA establishes procedures for reviewing chemicals found in ground water or in soil as a result of legal agricultural use and for modifying or canceling use of such chemicals.

Under the data call-in provisions of the PCPA, California registrants of agricultural use pesticides must provide DPR with data on physical and chemical properties and environmental fate of the active ingredients in their products. Based on this information, DPR identified active ingredients with data that meet or exceed the SNVs for water solubility, soil adsorption, hydrolysis half-life, aerobic soil metabolism half-life, and anaerobic soil metabolism half-life. Since the enactment of the PCPA, the ability to establish an SNV for field dissipation could not be scientifically determined.

Active ingredients that meet or exceed criteria for SNVs and are labeled for agricultural use are

placed on the Ground Water Protection List (GWPL) found in Title 3 of the California Code of Regulations. The GWPL consists of two sublists. One sublist [6800(b)] consists of chemicals that meet the conditions specified in FAC section 13145(d). These chemicals must also have pesticide product labels that allow application by chemigation or by application to or injection into the soil or that the application be followed by flood or furrow irrigation within 72 hours. This list is used to determine the pesticides to sample for their presence in ground water. The second sublist [6800(a)] consists of chemicals that have been detected in ground water or soil in California pursuant to FAC section 13149. DPR takes immediate regulatory measures for these chemicals under the PCPA.

## **REPORT SUMMARY**

This report complies with the requirements of FAC section 13144(b). In 1986, 524 registered active ingredients were subject to a data call-in for physical-chemical properties. However, 377 of these compounds were not subject to the data call-in for one or more of the following reasons: they were used indoors; they were used in ways that would not result in contact with the soil; they were applied in amounts below limits of detection; they occurred naturally in soil; or they were no longer registered for agricultural use in California. Acceptable data is on file with DPR for the remaining 147 pesticidal active ingredients.

Throughout the years the list has been subject to decline from active ingredients that were no longer registered for use in California and to increases from active ingredients with new registrations. The list from last year (2004) contained 141 active ingredients meeting or exceeding the SNVs. For this current year three additional active ingredients were added that met or exceeded the SNVs and were registered for use in California. The mean physical-chemical properties relating to the SNVs are given in the report. Information comprising of California sales of these active ingredients, a description of their use, and statewide applications are also specified.

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## **REPORT REQUIREMENTS PURSUANT TO THE PESTICIDE CONTAMINATION PREVENTION ACT**

The Pesticide Contamination Prevention Act of 1985 requires the Department of Pesticide Regulation (DPR) to provide the following information for economic poisons registered for agricultural use in California. The information is reported on the department's web site.

1. A list of each active ingredient, other specified ingredient, or degradation product of an active ingredient of an economic poison for which there is a ground water protection data gap.
  
2. A list of economic poisons that contain an active ingredient, other specified ingredient, or degradation product of an active ingredient that is greater than one or more of the numerical values established pursuant to the Act or is less than the numerical value in the case of the soil adsorption coefficient in both of the following categories:
  - (a) Water solubility or soil adsorption coefficient ( $K_{oc}$ ); and
  - (b) Hydrolysis, aerobic soil metabolism, anaerobic soil metabolism, or field dissipation.
  
3. Provide for each economic poison listed pursuant to number 2 (if information is available), the amount sold in California during the most recent year (for which sales information is available), and where and for what purpose the economic poison was used.

The information is presented in two sections: 1) "Status of the Ground Water Protection Data Call-in", 2) "Physical-Chemical Properties, Sales, Use, and Mode of Action for Active Ingredients Exceeding the Specific Numerical Values", which lists the properties of pesticides associated with leaching potential and the specific numerical values established by DPR.

## SECTION 1: STATUS OF THE GROUND WATER PROTECTION DATA CALL-IN

A.	Total active ingredients for possible data call-in: (This list was established in 1986.)	524
	Active ingredients not subject to the data call-in:	
	Active ingredients no longer registered:	152
	Active ingredients on which data are not required at this time <sup>1</sup> :	225
		<u>377</u>
	The number of active ingredients subject to the data call-in:	147
B.	Status of the active ingredients subject to the data call-in.	
	Adequate studies on file:	147
		<u>        </u>
	Inadequate or pending studies:	0

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<sup>1</sup>Products are not registered for agriculture use, or are registered for uses for which data are not currently required such as indoor use or animal ear tags.



## **SECTION 2: PHYSICAL-CHEMICAL PROPERTIES, SALES, USE, AND MODE OF ACTION FOR ACTIVE INGREDIENTS EXCEEDING THE SPECIFIC NUMERICAL VALUES**

This report evaluates the potential of pesticide active ingredients to leach to ground water. Section 13144 (a) of the Pesticide Contamination Prevention Act of 1985 (PCPA, Stats. 1985, Ch. 1298, section 1) requires the Department of Pesticide Regulation (DPR) to establish thresholds known as specific numerical values (SNVs) for six physicochemical characteristics of environmental fate: water solubility, soil adsorption coefficient ( $K_{oc}$ ), hydrolysis half-life, aerobic and anaerobic soil metabolism half-lives, and field dissipation half-life. These parameters are presumed by the PCPA to correlate with the potential of a pesticide to leach to ground water. Water solubility and  $K_{oc}$  are considered indicators of the mobility of an active ingredient within the soil, while the half-lives for hydrolysis, aerobic and anaerobic soil metabolism and field dissipation are considered indicators of the persistence of the chemical in the soil.

Statistical comparison procedures were used to calculate the SNVs. Based on nationwide ground water studies, a list of pesticide active ingredients was created and separated into two groups: 1) chemicals that had been detected in ground water as a result of legal agricultural use (leachers), and 2) chemicals that had been sampled for and not found in ground water as a result of legal agricultural use (non-leachers). Estimates of the physicochemical parameter values for the chemicals in each group were determined from data available in the open literature and from DPR-approved studies submitted by pesticide registrants in fulfillment of the data call-in requirements in PCPA section 13143. The data for each of the parameter values were tested for their usefulness in discriminating between leachers and non-leachers by determining whether the means of the two groups were significantly different. The tests showed that the means of the data for water solubility, hydrolysis half-life,  $K_{oc}$ , and the anaerobic soil metabolism half-life for chemicals identified as leachers were significantly different from the means of chemicals identified as non-leachers. The SNVs for these properties were established as those values that would identify as leachers 90 percent of the chemicals found in ground water due to agricultural use (Wilkerson and Kim, 1986). The means of the two groups for aerobic soil metabolism, however, were not significantly different. Because the PCPA requires DPR to establish an SNV for each physicochemical property, the SNV for the aerobic soil metabolism half-life was set at a value that minimized its importance in the discrimination procedure. The SNVs established by DPR are reevaluated periodically to incorporate new data into the calculations. Details on revisions to the SNVs can be found in subsequent reports

(Johnson, 1991; Johnson, 1989; Johnson, 1988). The SNVs currently in regulation (Titles 3 and 26, California Code of Regulations, section 6804) are:

(a)	Water solubility	3 ppm
(b)	Soil adsorption coefficient ( $K_{oc}$ )	1900 cm <sup>3</sup> /g
(c)	Hydrolysis half-life	14 days
(d)	Aerobic soil metabolism half-life	610 days
(e)	Anaerobic soil metabolism half-life	9 days

The SNV for field dissipation half-life has not yet been established. The SNVs are required by PCPA section 13144 to be at least equal to those established by the United States Environmental Protection Agency (USEPA). To date, the USEPA has not established any SNVs.

Pursuant to PCPA section 13144(b), pesticide active ingredients are tested against the SNVs and are placed on a list of candidates as potential leachers if both the mobility and persistence parameter values exceed (or are less than in the case of the  $K_{oc}$ ) the SNV for water solubility or  $K_{oc}$  and the SNV for the hydrolysis or aerobic soil metabolism or anaerobic soil metabolism or field dissipation half-life. If a potential leacher has a pesticide label that requires or recommends the application method to be by injection into the soil or by chemigation or that application is to be followed by flood or furrow irrigation within 72 hours, then the chemical is placed on the Groundwater Protection List [FAC section 6800 (b)]. Table 1 is a list of candidate potential leachers that are contained in currently registered economic poisons specifying their respective mean physicochemical parameter values.

There are three active ingredients categorized as potential leachers that are new to the 2005 list:

mesosulfuron-methyl  
penoxsulam  
trifloxysulfuron-sodium

All three active ingredients are herbicides.

The following active ingredients exceeded the SNVs, but because they are not used in economic poisons currently registered for use in California (registration status as of December 1, 2005), they have not been included in Table 1:

2,4-D, alkanolamine salts (ethanol and isopropanol amines)  
2,4-D, butyl ester  
2,4-D, diethylamine salt  
2,4-D, n-oleyl-1,3-propylenediamine salt  
2,4-D, octyl ester  
2,4-D, propylene glycol butyl ether ester  
2,4-D, triethylamine salt  
ametryne  
amitrole  
anilazine  
azafenidin  
bromoxynil butyrate  
cyanazine  
dicamba, diethanolamine salt  
dichlorprop-p  
dicrotophos  
diethatyl-ethyl  
diphenamid  
dodecyl ammonium methanearsonate  
dodemorph acetate  
DSMA  
endothall, disodium salt  
fensulfothion  
fenthion  
flonicamid  
fluazifop-butyl  
fluometuron  
flurprimidol  
fonofos

glyphosate-trimesium  
halofenozide  
hymexazol  
\*imazapic  
iodomethane  
isazophos  
MCPP, diethanolamine salt  
metolachlor  
metsulfuron-methyl  
mevinphos  
naptalam, sodium salt  
octylammonium methanearsonate  
parathion  
pebulate  
phosalone  
phosphamidon  
picloram, potassium salt  
propamocarb hydrochloride  
\*propoxycarbazone-sodium  
pyridate  
sulprofos  
terbacil  
terbutryn  
thifensulfuron-methyl  
triallate  
triticonazole  
vernolate  
zoxamide

\* New to the list this year

PCPA section 13144(b) also requires DPR to provide, for each active ingredient in Table 1, a list of the amount sold in California, and a list of where and for what purpose the economic poison

was used. The 2004 pesticide sales data are shown in Table 2. Information on the active ingredients and their modes of action can be found in Table 3. The 2004 Pesticide Use Reporting, the most recent and complete set of data available, are found in Table 4.

Table 1. Currently registered active ingredients exceeding the specific numerical values (SNVs) and their respective mean physical-chemical property values (2005 Report).

<b>Active ingredient</b>	<b>Solubility (ppm) SNV &gt; 3</b>	<b>K<sub>oc</sub> (cm<sup>3</sup>/g) SNV &lt; 1,900</b>	<b>Aerobic metabolism (days) SNV &gt; 610</b>	<b>Anaerobic metabolism (days) SNV &gt; 9</b>	<b>Hydrolysis (days) SNV &gt; 14</b>
2,4-D	27600	46	34	333	39 <sup>a</sup>
2,4-D, 2-ethylhexyl	0	46	34	333	1
2,4-D, butoxyethanol	NA <sup>b</sup>	46	34	333	1
2,4-D, diethanolamine	657000	46	34	333	39 <sup>a</sup>
2,4-D, dimethylamine	657000	46	34	333	39 <sup>a</sup>
2,4-D, isooctyl ester	NA	46	34	333	1
4(2,4-DB), dimethylamine salt	742000	191	25	269	35
Acephate	818000	3	3	6	169
Acetamiprid	3660	343	10	330	35 <sup>a</sup>
Acibenzolar-s-methyl	8	1100	4	50	76
Alachlor	200	131	20	5	30 <sup>a</sup>
Aldicarb	5870	239	2	2	28 <sup>a</sup>
Atrazine	33	93	146	159	30 <sup>a</sup>
Azinphos-methyl	28	882	44	68	19
Azoxystrobin	6	581	112	119	31 <sup>a</sup>
Bensulfuron methyl	281	332	75	168	103
Bensulide	6	16600	432	1890	220
Bentazon, sodium salt	530	116	40	365	30 <sup>a</sup>
Bifenazate	4	4060	1	78	1
Bromacil	929	17	347	73	30 <sup>a</sup>
Butylate	44	397	70	64	533
Cacodylic acid	2570000	2660	NA	365	35 <sup>a</sup>
Calcium acid methanearsonate	1040000	1680	269	NA	35 <sup>a</sup>
Carbaryl	116	326	6	87	12
Carbofuran	351	NA	22	20	18
Chloropicrin	2000	25	3	NA	191 <sup>a</sup>
Chlorothalonil	1	1790	35	8	49 <sup>a</sup>
Chlorsulfuron	28300	35	28	162	1230
Clethodim	6630	116	3	191	30 <sup>a</sup>
Clomazone	1100	244	66	19	34 <sup>a</sup>
Clopyralid	106000	5	152	365	30 <sup>a</sup>
Clothianidin	259	160	214	27	33 <sup>a</sup>

Active ingredient	Solubility	K <sub>oc</sub>	Aerobic	Anaerobic	Hydrolysis
	(ppm) SNV > 3	(cm <sup>3</sup> /g) SNV < 1,900	metabolism (days) SNV > 610	metabolism (days) SNV > 9	(days) SNV > 14
Cycloate	95	12900	43	109	30 <sup>a</sup>
Cyprodinil	16	1470	126	183	32 <sup>a</sup>
Cyromazine	13600	756	63	97	28 <sup>a</sup>
Dazomet	3630	NA	1	14	0
Diazinon	60	1580	40	16	138
Dicamba	27200	5	10	88	30 <sup>a</sup>
Dicamba, dimethylamine salt	NA	5	10	88	30 <sup>a</sup>
Dichlobenil	21	0	NA	NA	1810
Dicloran	6	804	549	66	72 <sup>a</sup>
Difenzoquat methyl salt	817000	74100	1600	6810	NA
Diflufenzopyr, sodium salt	4200	292	55	164	NA
Dimethipin	4600	11	NA	1280	60 <sup>a</sup>
Dimethoate	39800	11	2	22	68
Dimethomorph	12	1360	NA	26	NA
Dinotefuran	NA	30	51	NA	365
Diquat dibromide	677000	353000	3450	1060	30 <sup>a</sup>
Disulfoton	12	522	9	NA	177
Dithiopyr	1	1040	871	21700	NA
Diuron	36	499	372	995	1290
Dodine	1040	2570000	7	365	914
Emamectin benzoate	101	283000	211	427	42 <sup>a</sup>
Endothall, dipotassium salt	NA	750	9	8	36 <sup>a</sup>
EPTC	345	170	42	65	30 <sup>a</sup>
Ethofumesate	50	150	93	NA	2900
Ethoprop	843	161	34	130	449
Fenamiphos	482	341	24	88	301
Fenarimol	15	757	1100	1620	28
Fenhexamid	150	853	1	97	30 <sup>a</sup>
Fenoxycarb	6	1540	85	136	3140
Fipronil	22	749	366	123	30 <sup>a</sup>
Fludioxonil	2	1610	102	365	30 <sup>a</sup>
Flutolanil	NA	905	NA	NA	30 <sup>a</sup>
Foramsulfuron	32600	78	28	31	128
Formetanate hydrochloride	822000	371	8	15	1

Active ingredient	Solubility	K <sub>oc</sub>	Aerobic	Anaerobic	Hydrolysis
	(ppm) SNV > 3	(cm <sup>3</sup> /g) SNV < 1,900	metabolism (days) SNV > 610	metabolism (days) SNV > 9	(days) SNV > 14
Fosetyl-al	136000	325	0	2	30 <sup>a</sup>
Glufosinate-ammonium	NA	785	20	NA	30 <sup>a</sup>
Glyphosate, isopropyl	11600	6920	96	22	35 <sup>a</sup>
Halosulfuron	1650	124	51	23	14
Hexazinone	29800	640	222	232	56 <sup>a</sup>
Imazamox, ammonium salt	4410	58	134	213	30 <sup>a</sup>
Imazapyr	10500	348	507	30	30 <sup>a</sup>
Imazethapyr	351	54	2410	568	NA
Imidacloprid	514	262	997	27	30 <sup>a</sup>
Iprodione	12	NA	64	32	5
Isoxaben	2	351	205	NA	1270
Kresoxim-methyl	2	437	2	1	34
Linuron	77	341	22	102	262
Malathion	125	291	3	30	6
MCPA, dimethylamine salt	1470000	34	24	1870	30 <sup>a</sup>
MCPP	734	26	13	541	31
MCPP, dimethylamine	1060000	26	13	541	31
MCPP, potassium salt	1060000	26	13	541	31
Mecoprop-p	869	119	20	NA	30 <sup>a</sup>
Mepiquat chloride	500000	NA	40	359	NA
<sup>c</sup> Mesosulfuron-methyl	21	NA	39	23	NA
Metalaxyl	8410	163	62	68	1000
Metaldehyde	190	35	67	223	6150
Methamidophos	1200000	8	1	NA	21
Methidathion	221	341	3	NA	26
Methiocarb	27	655	64	64	24
Methomyl	54700	43	46	1	30 <sup>a</sup>
Methoxyfenozide	3	501	680	654	30 <sup>a</sup>
Methyl isothiocyanate	8230	NA	NA	NA	20
Methyl parathion	70	476	12	1	45
Metiram	NA	913	1	15	1070
Metribuzin	1030	106	140	276	4760
Milbemectin	4	2820	30	241	30 <sup>a</sup>
Molinate	970	199	NA	105	1560



Active ingredient	Solubility	K <sub>oc</sub>	Aerobic	Anaerobic	Hydrolysis
	(ppm) SNV > 3	(cm <sup>3</sup> /g) SNV < 1,900	metabolism (days) SNV > 610	metabolism (days) SNV > 9	(days) SNV > 14
MSMA	1040000	1680	269	NA	35 <sup>a</sup>
Napropamide	74	726	455	51	35 <sup>a</sup>
Nicosulfuron	18500	37	26	63	30 <sup>a</sup>
Nitrapyrin	72	333	30	59	8
Norflurazon	34	617	172	348	2650
Orthosulfamuron	629	353	31	NA	24
Oryzalin	3	848	63	10	28 <sup>a</sup>
Oxydemeton-methyl	NA	30	6	4	40
Paraquat dichloride	626000	NA	620	644	30 <sup>a</sup>
<sup>c</sup> Penoxsulam	470	119	57	8	30 <sup>a</sup>
Phenmedipham	6	NA	54	47	1
Phorate	29	657	3	14	3
Phosmet	20	5810	7	27	0
Piperalin	20	23600	NA	NA	16
Piperonyl butoxide	14	1810	79	927	251
Profenofos	28	2010	2	3	43
Prohexadione calcium	179	570	NA	NA	65
Prometon	718	124	459	61	1130
Prometryn	33	277	274	316	28 <sup>a</sup>
Propanil	152	518	2	3	5000
Propiconazole	100	656	72	211	NA
Propyzamide	13	889	392	762	42 <sup>a</sup>
Pymetrozine	290	1100	491	91	30 <sup>a</sup>
Pyraclostrobin	20	9300	136	3	30 <sup>a</sup>
Pyrazon	380	13800	124	489	NA
Pyriithiobac-sodium	NA	14	60	128	35 <sup>a</sup>
Quinclorac	72	37	211	364	30 <sup>a</sup>
Rimsulfuron	3750	49	21	18	7
(S)-metolachlor	480	185	38	61	200
Sethoxydim	6950	47	7	25	47
Siduron	22	201	895	3770	30 <sup>a</sup>
Simazine	6	340	110	71	28 <sup>a</sup>
Sulfometuron-methyl	4250	89	52	116	30 <sup>a</sup>
Tebuconazole	NA	1000	597	1260	28 <sup>a</sup>

Active ingredient	Solubility	K <sub>oc</sub>	Aerobic	Anaerobic	Hydrolysis
	(ppm) SNV > 3	(cm <sup>3</sup> /g) SNV < 1,900	metabolism (days) SNV > 610	metabolism (days) SNV > 9	(days) SNV > 14
Tebufenozide	1	605	405	179	30 <sup>a</sup>
Tebuthiuron	2600	90	1220	1520	395 <sup>a</sup>
Terrazole	105	107	19	1	92
Thiamethoxam	4100	64	229	NA	6080
Thiazopyr	2	204	274	338	30 <sup>a</sup>
Thiobencarb	28	530	37	306	160 <sup>a</sup>
Thiophanate-methyl	25	225	1	2	41
Tralkoxydim	6	131	5	NA	112
Triadimefon	64	365	6	23	1760
Triclopyr, butoxyethyl ester	7	62	13	27	7
Triclopyr, triethylamine salt	NA	62	13	1600	NA
<sup>c</sup> Trifloxysulfuron-sodium	26	1770	55	24	20
Triflumizole	18	1240	23	67	116
Triflusulfuron-methyl	2820	61	89	23	32 <sup>a</sup>
Trinexapac-ethyl	11400	440	0	13	456
Uniconazole-p	8	NA	332	NA	30 <sup>a</sup>
Vinclozolin	3	260	28	15	1

<sup>a</sup>No hydrolysis occurred during the study. The hydrolysis half-life is greater than the value listed, which is the length of the study.

<sup>b</sup>Not available.

<sup>c</sup>New active ingredient; these active ingredients were not listed in the 2004 report.

Table 2. Sales during 2004 of active ingredients exceeding the specific numerical values (2005 Report).

<b>Active ingredient</b>	<b>Pounds Sold<sup>a</sup></b>
2,4-D	305,695
2,4-D, 2-ethylhexyl ester	51,773
2,4-D, butoxyethanol ester	2,083
2,4-D, diethanolamine salt	5,367
2,4-D, dimethylamine salt	991,102
2,4-D, isooctyl ester	13,322
4(2,4-DB), dimethylamine salt	54,810
Acephate	6,152,634
Acetamiprid	38,281
Acibenzolar-s-methyl	CI <sup>b</sup>
Alachlor	CI
Aldicarb	CI
Atrazine	46,732
Azinphos-methyl	69,810
Azoxystrobin	CI
Bensulfuron methyl	CI
Bensulide	298,065
Bentazon, sodium salt	CI
Bifenazate	CI
Bromacil	71,648
Butylate	44,752
Cacodylic acid	858
Calcium acid methanearsonate	3,920
Carbaryl	388,185
Carbofuran	CI
Chloropicrin	4,508,575
Chlorothalonil	1,064,051
Chlorsulfuron	CI
Clethodim	CI
Clomazone	CI
Clopyralid	CI
Clothianidin	CI
Cycloate	89,452
Cyprodinil	CI
Cyromazine	CI
Dazomet	46,950
Diazinon	809,707
Dicamba	11,944
Dicamba, dimethylamine salt	69,266
Dichlobenil	25,213
Dicloran	105,820
Difenzoquat methyl sulfate	CI
Diflufenzopyr, sodium salt	CI
Dimethipin	CI
Dimethoate	393,596

<b>Active ingredient</b>	<b>Pounds Sold<sup>a</sup></b>
Dimethomorph	CI
Diquat dibromide	130,603
Disulfoton	97,426
Dithiopyr	17,660
Diuron	1,672,839
Dodine	87,467
Emamectin benzoate	CI
Endothall, dipotassium salt	CI
EPTC	323,375
Ethofumesate	19,803
Ethoprop	41,278
Fenamiphos	CI
Fenarimol	4,886
Fenhexamid	CI
Fenoxycarb	12
Fipronil	1,250,490
Fludioxonil	CI
Flutolanil	17,224
Formetanate hydrochloride	34,132
Fosetyl-al	329,965
Glufosinate-ammonium	40,033
Glyphosate, isopropylamine salt	1,650,764
Halosulfuron	CI
Hexazinone	CI
Imazamox, ammonium salt	CI
Imazethapyr	CI
Imidacloprid	208,922
Iprodione	364,962
Isoxaben	28,135
Kresoxim-methyl	CI
Linuron	61,620
Malathion	1,550,527
MCPA, dimethylamine salt	213,703
MCPP	61,406
MCPP, dimethylamine salt	80,394
MCPP, potassium salt	3,826
Mecoprop-p	81,918
Mepiquat chloride	28,080
Mesosulfuron-methyl	CI
Metalaxyl	1,474
Metaldehyde	333,562
Methamidophos	115,513
Methidathion	CI
Methiocarb	3,527
Methomyl	331,235
Methoxyfenozide	CI
Methyl isothiocyanate	NS <sup>c</sup>

<b>Active ingredient</b>	<b>Pounds Sold<sup>a</sup></b>
Methyl parathion	87,190
Metiram	CI
Metribuzin	39,456
Milbemectin	CI
Molinate	303,634
MSMA	261,476
Napropamide	27,419
Nicosulfuron	CI
Nitrapyrin	CI
Norflurazon	CI
Oryzalin	941,116
Oxydemeton-methyl	234,251
Paraquat dichloride	1,520,905
Phenmedipham	7,676
Phorate	36,032
Phosmet	813,208
Piperalin	CI
Piperonyl butoxide	138,049
Profenofos	CI
Prohexadione calcium	CI
Prometon	20,048
Prometryn	273,582
Propamocarb hydrochloride	CI
Propanil	2,158,997
Propiconazole	26,158
Propyzamide	CI
Pymetrozine	CI
Pyraclostrobin	CI
Pyrazon	CI
Pyridate	CI
Pyrithiobac-sodium	CI
Quinclorac	CI
Rimsulfuron	CI
(S)-metolachlor	CI
Sethoxydim	CI
Siduron	15,531
Simazine	1,074,616
Sulfometuron-methyl	CI
Tebuconazole	1,642,410
Tebufenozide	CI
Tebuthiuron	9,653
Terrazole	1,957
Thiamethoxam	CI
Thiazopyr	CI
Thiobencarb	1,616,179
Thiophanate-methyl	194,146
Triadimefon	4,611

<b>Active ingredient</b>	<b>Pounds Sold<sup>a</sup></b>
Triclopyr, butoxyethyl ester	162,122
Triclopyr, triethylamine salt	129,023
Triflumizole	CI
Triflusulfuron-methyl	CI
Trinexapac-ethyl	CI
Uniconazole-p	CI
Vinclozolin	18,264
<b>Total</b>	<b>39,656,277</b>

<sup>a</sup>Sales data derived from DPR sales database for year 2004.

<sup>b</sup>Confidential information. Three or less registrants for this active ingredient.

<sup>c</sup>No sales reported for this active ingredient during 2004.

Table 3. Description of use for currently registered active ingredients exceeding the specific numerical values (2005 report).

<b>Active Ingredient</b>	<b>Use</b>	<b>Description</b>
2,4-D	Herbicide	Hormone type
2,4-D, 2-ethylhexyl ester	Herbicide	Hormone type
2,4-D, butoxyethanol and isooctyl esters	Herbicide	Hormone type
2,4-D, diethanolamine salt	Herbicide	Hormone type
2,4-D, dimethylamine salt	Herbicide	Hormone type
2,4-D, isooctyl ester	Herbicide	Hormone type
4(2,4-DB), dimethylamine salts	Herbicide	Selective, post-emergent
Acephate	Insecticide	Contact, systemic
Acetamiprid	Insecticide	Systemic
Acibenzolar-s-methyl	Fungicide	Selective, systemic
Alachlor	Herbicide	Pre-emergent
Aldicarb	Insecticide/ acaricide	Systemic
Atrazine	Herbicide	Selective, residual
Azinphos-methyl	Insecticide	Contact, non-systemic
Azoxystrobin	Fungicide	Foliar
Bensulfuron methyl	Herbicide	Selective
Bensulide	Herbicide	Selective, pre-emergent
Bentazon, sodium salt	Herbicide	Selective, pre-emergent
Bifenazate	Insecticide/ acaricide, miticide	Contact
Bromacil	Herbicide	Pre-emergent
Butylate	Herbicide	Selective, preplant
Cacodylic acid	Herbicide/ silvicide	Harvest aid
Calcium acid methanearsonate	Herbicide	Selective
Carbaryl	Insecticide	Broad spectrum
Carbofuran	Insecticide/ acaricide/ nematicide	Soil, foliar
Chloropicrin	Warning agent/ fumigant	Space, commodity, soil
Chlorothalonil	Fungicide	Broad spectrum, protectant
Chlorsulfuron	Herbicide	Selective
Clethodim	Herbicide	Systemic, post-emergent
Clomazone	Herbicide	Broad spectrum, preplant, pre-emergent
Clopyralid	Herbicide	Selective, post-emergent
Clothianidin	Insecticide	Systemic
Cycloate	Herbicide	Selective, preplant
Cyprodinil	Fungicide	Systemic

<b>Active Ingredient</b>	<b>Use</b>	<b>Description</b>
Cyromazine	Insecticide	Growth regulator
Dazomet	Fungicide/ nematocide/ herbicide/ slimicide	Preplant
Diazinon	Insecticide/ nematocide	Soil/ foliar/ seed
Dicamba	Herbicide	Selective, systemic
Dicamba, dimethylamine salt	Herbicide	Selective, systemic
Dichlobenil	Herbicide	Selective, cellulose
Dicloran	Fungicide	Pre-, post-harvest
Difenzoquat methyl sulfate	Herbicide	Selective, post-emergent
Diflufenzopyr, sodium salt	Herbicide	Selective, post-emergent
Dimethipin	Plant growth regulator	Systemic
Dimethoate	Insecticide/ acaricide	Systemic
Dimethomorph	Fungicide	Selective, post-emergent
Dinotefuran	Insecticide	Selective, systemic
Diquat dibromide	Desiccant/ herbicide	Contact
Disulfoton	Insecticide/ acaricide	Systemic
Dithiopyr	Herbicide	Pre-, post-emergent
Diuron	Herbicide	Selective, general
Dodine	Fungicide	Systemic, preventative, foliar
Enamectin benzoate	Insecticide	Systemic, contact
Endothall, dipotassium salt	Herbicide/ algicide/ growth regulator	Pre-, post-emergent
EPTC	Herbicide	Selective
Ethofumesate	Herbicide	Selective
Ethoprop	Insecticide/ nematocide	Soil
Fenamiphos	Nematocide	Selective
Fenarimol	Fungicide	Systemic, foliar
Fenhexamid	Fungicide	Systemic, curative, foliar
Fenoxycarb	Insecticide	Growth regulator
Fipronil	Insecticide	Contact, stomach
Fludioxonil	Fungicide	Contact
Flutolanil	Fungicide	Systemic
Foramsulfuron	Herbicide	Selective, post-emergent
Formetanate hydrochloride	Acaricide/ insecticide	Foliar
Fosetyl-Al, technical	Fungicide	Systemic, preventative
Glufosinate-ammonium	Herbicide	Selective
Glyphosate, isopropylamine salt	Herbicide	Nonselective, post-emergent



<b>Active Ingredient</b>	<b>Use</b>	<b>Description</b>
Halosulfuron	Herbicide	Pre-, post-emergent
Hexazinone	Herbicide	Contact, residual
Imazamox, ammonium salt	Herbicide	Selective, post-emergent
Imazapyr	Herbicide	Nonselective, broad-spectrum systemic
Imazethapyr	Herbicide	Selective, pre-, post-emergent
Imidacloprid	Insecticide	Systemic
Iprodione	Fungicide	Contact
Isoxaben	Herbicide	Soil, pre-emergent
Kresoxim-methyl	Fungicide	Non-systemic, preventive, curative, foliar
Linuron	Herbicide	Selective
Malathion	Insecticide	Nonsystemic foliar
MCPA, dimethylamine salt	Herbicide	Hormone-type
MCPP acid (mecoprop, MCPPA)	Herbicide	Systemic
MCPP, dimethylamine salt	Herbicide	Systemic
MCPP, potassium salt	Herbicide	Systemic
Mecoprop-p	Herbicide	Systemic hormone-type
Mepiquat chloride	Bioregulator	Harvest aid
Mesosulfuron-methyl	Herbicide	Selective, post-emergent
Metalaxyl	Fungicide	Seed treatment, soil, foliar
Metaldehyde	Molluscicide	Contact
Methamidophos	Insecticide/ acaricide	Narrow spectrum
Methidathion	Insecticide/ acaricide	Nonsystemic
Methiocarb	Insecticide/ acaricide	Nonsystemic
Methomyl	Insecticide	Broad spectrum
Methoxyfenozide	Insecticide	Insect growth regulator
Methyl isothiocyanate	Fumigant	Soil, preplant
Methyl parathion	Insecticide	Broad spectrum
Metiram	Fungicide	EBDC type, broad spectrum
Metribuzin	Herbicide	Selective, systemic
Milbemectin	Insecticide/ miticide	Contact, stomach action
Molinate	Herbicide	Selective
MSMA	Herbicide	Post-emergent
Napropamide	Herbicide	Selective
Nicosulfuron	Herbicide	Selective, systemic
Nitrapyrin	Nitrification inhibitor	Selective

<b>Active Ingredient</b>	<b>Use</b>	<b>Description</b>
Norflurazon	Herbicide	Selective, preplant
Orthosulfamuron	Herbicide	Selective, post-emergent
Oryzalin	Herbicide	Selective, pre-emergent
Oxydematon-methyl	Insecticide/ acaricide	Systemic, contact
Paraquat dichloride	Desiccant/ herbicide	Contact
Penoxsulam	Herbicide	Post-emergent
Phenmedipham	Herbicide	Post-emergent
Phorate	Insecticide	Systemic, soil
Phosmet	Insecticide	Broad spectrum
Piperalin	Fungicide	Ornamental
Piperonyl butoxide, technical	Synergist	Use with pyrethroids, pyrethrins
Profenofos	Insecticide/ acaricide	Broad spectrum
Prohexadione calcium	Herbicide	Plant growth regulator
Prometon	Herbicide	Nonselective, pre-, post-emergent
Prometryn	Herbicide	Selective, pre-, post-emergent
Propanil	Herbicide	Contact, post-emergent
Propiconazole	Fungicide	Foliar
Propyzamide	Herbicide	Pre-, post-emergent
Pymetrozine	Insecticide	Systemic, contact and stomach, soil or foliar
Pyraclostrobin	Fungicide	Foliar, respiration inhibitor
Pyrazon	Herbicide	Pre-, early post-emergent
Pyriithiobac sodium	Herbicide	Pre-, post-emergent
Quinclorac	Herbicide	Selective, pre-, post-emergent
Rimsulfuron	Herbicide	Selective, systemic
(S)-metolachlor	Herbicide	Selective, preplant
Sethoxydim	Herbicide	Systemic, post-emergent
Siduron	Herbicide	Selective, pre-emergent
Simazine	Herbicide	Selective
Sulfometuron-methyl	Herbicide	Contact, residual
Tebuconazole	Fungicide	Systemic
Tebufenozide	Insecticide	Systemic
Tebuthiuron	Herbicide	Nonselective
Terrazole	Fungicide	Ornamental, turf
Thiamethoxam	Insecticide	Systemic
Thiazopyr	Herbicide	Selective, pre-emergent

<b>Active Ingredient</b>	<b>Use</b>	<b>Description</b>
Thiobencarb	Herbicide	Pre-, post-emergent
Thiophanate-methyl	Fungicide	Systemic, broad spectrum
Tralkoxydim	Herbicide	Selective, post-emergent
Triadimefon	Fungicide	Systemic
Triclopyr, butoxyethyl ester	Herbicide	Systemic, post-emergent
Triclopyr, triethylamine salts	Herbicide	Systemic, post-emergent
Trifloxysulfuron-sodium	Herbicide	Selective, post-emergent
Triflumizole	Fungicide	Systemic, broad spectrum
Triflusulfuron-methyl	Herbicide	Growth regulator, soil
Trinexapac-ethyl	Herbicide	Growth regulator, soil
Uniconazole-p	Herbicide	Plant growth regulator
Vinclozolin	Fungicide	Contact, broad spectrum

Information derived from:

- i. Farm Chemicals Handbook. 2003. Meister Publishing Co., Willoughby, OH
- ii. Thomson, W.T. 2000. Agricultural Chemicals. Books I to IV, Thomson Publications, Fresno, CA
- iii. Merck Index, 12th edition. 1996. Merck & Co., Inc. Rahway, NJ

Table 4. Pesticide use reported during 2004 for active ingredients exceeding the specific numerical values (2005 Report).

<b>Active Ingredient</b>	<b>Pounds Applied</b>
2,4-D	1,828
2,4-D, 2-ethylhexyl ester	20,816
2,4-D, alkanolamine salts (ethanol and isopropanol amines)	624
2,4-D, butoxyethanol ester	4,837
2,4-D, diethanolamine salt	5,024
2,4-D, dimethylamine salt	475,718
2,4-D, isooctyl ester	10,039
2,4-D, triethylamine salt	391
4(2,4-DB), dimethylamine salt	35,848
Acephate	205,421
Acetamiprid	35,649
Acibenzolar-s-methyl	727
Alachlor	27,229
Aldicarb	231,012
Amitrole	20
Anilazine	672
Atrazine	38,701
Azinphos-methyl	50,578
Azoxystrobin	88,158
Bensulfuron methyl	1,727
Bensulide	236,817
Bentazon, sodium salt	1,370
Bifenazate	64,964
Bromacil	56,760
Bromoxynil butyrate	36
Butylate	20,323
Cacodylic acid	115
Calcium acid methanearsonate	2
Carbaryl	240,071
Carbofuran	30,354
Chloropicrin	5,135,924
Chlorothalonil	572,349
Chlorsulfuron	9,978
Clethodim	20,591
Clomazone	49,625
Clopyralid	12
Cyanazine	8
Cycloate	43,249
Cyprodinil	115,422
Cyromazine	12,884
Dazomet	58,567
Diazinon	493,650
Dicamba	795
Dicamba, dimethylamine salt	27,872
Dichlobenil	21,466
Dicloran	92,624
Diethatyl-ethyl	240

<b>Active Ingredient</b>	<b>Pounds Applied</b>
Difenzoquat methyl sulfate	1,142
Diflufenzopyr, sodium salt	259
Dimethipin	328
Dimethoate	334,398
Dimethomorph	27,075
Diphenamid	88
Diquat dibromide	67,245
Disulfoton	41,211
Dithiopyr	4,486
Diuron	1,398,521
Dodemorph acetate	8
Dodine	2,480
DSMA	18
Emamectin benzoate	1,157
Endothall, dipotassium salt	2,520
EPTC	182,245
Ethofumesate	13,173
Ethoprop	23,130
Fenamiphos	58,691
Fenarimol	5,335
Fenhexamid	54,895
Fenoxycarb	34
Fensulfothion	<1
Fenthion	36
Fipronil	49,950
Fluazifop-butyl	34
Fludioxonil	6,817
Flutolanil	10,530
Fonofos	30
Formetanate hydrochloride	30,651
Fosetyl-al	276,638
Glufosinate-ammonium	15,534
Glyphosate, isopropylamine salt	5,866,705
Glyphosate-trimesium	48,520
Halosulfuron	3,532
Hexazinone	115,037
Imazamox, ammonium salt	3,135
Imazethapyr	5,177
Imidacloprid	132,995
Iprodione	268,063
Isoxaben	17,894
Kresoxim-methyl	7,450
Linuron	69,289
Malathion	498,253
MCPA, dimethylamine salt	201,075
MCPP	262
MCPP, diethanolamine salt	<1
MCPP, dimethylamine salt	5,347
MCPP, potassium salt	2,471
Mecoprop-p	1,102

<b>Active Ingredient</b>	<b>Pounds Applied</b>
Mepiquat chloride	20,565
Mesosulfuron-methyl	<1
Metalaxyl	3,148
Metaldehyde	48,631
Methamidophos	31,332
Methidathion	61,206
Methiocarb	2,800
Methomyl	264,226
Methoxyfenozide	75,503
Methyl isothiocyanate	1,357
Methyl parathion	71,573
Metiram	5
Metolachlor	2,284
Metribuzin	23,218
Mevinphos	1
Molinate	367,155
Msma	45,347
Napropamide	40,391
Nicosulfuron	2,063
Nitrapyrin	12
Norflurazon	140,143
Oryzalin	576,053
Oxydemeton-methyl	105,310
Paraquat dichloride	979,791
Parathion	240
Pebulate	10,118
Phenmedipham	4,483
Phorate	60,247
Phosmet	658,093
Piperalin	2,372
Piperonyl butoxide	44,665
Profenofos	15,620
Prohexadione calcium	185
Prometon	20
Prometryn	154,407
Propamocarb hydrochloride	5
Propanil	1,691,685
Propiconazole	18,777
Propyzamide	119,274
Pymetrozine	5,286
Pyraclostrobin	65,970
Pyrazon	5,824
Pyridate	92
Pyrithiobac-sodium	3,971
Quinclorac	1,227
Rimsulfuron	2,003
(S)-metolachlor	390,688
Sethoxydim	29,908
Siduron	9,513
Simazine	732,176

<b>Active Ingredient</b>	<b>Pounds Applied</b>
Sulfometuron-methyl	20,199
Tebuconazole	38,891
Tebufenozide	22,128
Tebuthiuron	8,195
Terrazole	1,100
Thiamethoxam	10,380
Thiazopyr	923
Thiobencarb	521,586
Thiophanate-methyl	120,195
Triadimefon	2,110
Triallate	6
Triclopyr, butoxyethyl ester	73,607
Triclopyr, triethylamine salt	69,901
Triflumizole	21,380
Triflurosulfuron-methyl	503
Trinexapac-ethyl	3,077
Uniconazole-p	3
Vernolate	41
Vinclozolin	14,863
<b>Total</b>	<b>26,214,104</b>

## REFERENCES

Johnson, B. 1991. Setting Specific Numerical Values April 1991. EH91-06.

Johnson, B. 1989. Setting Specific Numerical Values October 1989. EH89-13.

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