2006 STATUS REPORT
PESTICIDE CONTAMINATION PREVENTION ACT

Annual Report
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California Environmental Protection Agency
DEPARTMENT OF PESTICIDE REGULATION

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California Department of Pesticide Regulation

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2006 Status Report
Pesticide Contamination
Prevention Act

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March 2007

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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 required DPR to establish SNVs as a basis to estimate relative risk to ground water of pesticide active ingredients. Pesticides classified as potential ground water contaminants (leachers) are potentially subject to monitoring to determine whether they have 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 has not been 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 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 (2005) contained 151 active ingredients meeting or exceeding the SNVs. For this current year, thirteen 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 on 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:		524
	(This list was established in 1986.)		
	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[1]:	225	
		377	
	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
	Inadequate or pending studies:		0

[1]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^3/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 thirteen active ingredients categorized as potential leachers that are new to the 2006 list:

Bispyribac-sodium
Bromoxynil heptanoate
Bromoxynil octanoate
Clopyralid, monoethanolamine salt
Clopyralid, triethylamine salt

Dicamba, diglycolamine salt
Dicamba, sodium salt
Dichlorprop-P, dimethylamine salt
Dichlorprop-P, isooctyl ester
Endothall, mono (N,N-dimethyl alkylamine) salt
Flonicamid
Mefenoxam (Metalaxyl-M)
Sulfentrazone

Flonicamid is an insecticide, while mefenoxam is a fungicide; the remaining eleven 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 October 2, 2006), 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
* aminopyralid
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
fluazifop-butyl
fluometuron
flurprimidol
fonofos
glyphosate-trimesium
halofenozide
hymexazol
iodomethane
isazophos
MCPP, diethanolamine salt
metolachlor
metsulfuron-methyl
mevinphos
naptalam, sodium salt
octylammonium methanearsonate
* orthosulfamuron
parathion
pebulate
phosalone
phosphamidon
picloram, potassium salt
propamocarb hydrochloride
propoxycarbazone-sodium
pyridate
* sulfosulfuron

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 2005 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 2005 Pesticide Use Reporting, the most recent and complete set of data available, are found in Table 4. DPR's Registration Branch web site, available at http://www.cdpr.ca.gov/docs/registration/regmenu.htm, provides updated information on the status of pesticide active ingredients and their respective products.

Table 1. Currently registered active ingredients exceeding the specific numerical values (SNVs) and their respective mean physical-chemical property values (2006 Report).

Active ingredient	Solubility (ppm) SNV > 3	K_{oc} (cm^3/g) SNV < 1,900	Aerobic metabolism (days) SNV > 610	Anaerobic metabolism (days) SNV > 9	Hydrolysis (days) SNV > 14
2,4-D	27600	46	34	333	39[a]
2,4-D, 2-ethylhexyl	0	46	34	333	1
2,4-D, butoxyethanol	NA[b]	46	34	333	1
2,4-D, diethanolamine	657000	46	34	333	39[a]
2,4-D, dimethylamine	657000	46	34	333	39[a]
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[a]
Acibenzolar-s-methyl	8	1100	4	50	76
Alachlor	200	131	20	5	30[a]
Aldicarb	5870	239	2	2	28[a]
Atrazine	33	93	146	159	30[a]
Azinphos-methyl	28	882	44	68	19
Azoxystrobin	6	581	112	119	31[a]
Bensulfuron methyl	281	332	75	168	103
Bensulide	6	16600	432	1890	220
Bentazon, sodium salt	530	116	40	365	30[a]
Bifenazate	4	4060	1	78	1
[c]Bispyribac-sodium	73000	272	50	101	476
Bromacil	929	17	347	73	30[a]
[c]Bromoxynil heptanoate	27	202	NA	NA	52
[c]Bromoxynil octanoate	27	1003	NA	NA	52
Butylate	44	397	70	64	533
Cacodylic acid	2570000	2660	NA	365	35[a]
Calcium acid methanearsonate	1040000	1680	269	NA	35[a]
Carbaryl	116	326	6	87	12
Carbofuran	351	NA	22	20	18
Chloropicrin	2000	25	3	NA	191[a]
Chlorothalonil	1	1790	35	8	49[a]
Chlorsulfuron	28300	35	28	162	1230
Clethodim	6630	116	3	191	30[a]

Active ingredient	Solubility (ppm) SNV > 3	K_{oc} (cm^3/g) SNV < 1,900	Aerobic metabolism (days) SNV > 610	Anaerobic metabolism (days) SNV > 9	Hydrolysis (days) SNV > 14
Clomazone	1100	244	66	19	34[a]
Clopyralid	106000	5	152	365	30[a]
[c]Clopyralid, monoethanolamine salt	106000	5	152	365	30[a]
[c]Clopyralid, triethylamine salt	106000	5	152	365	30[a]
Clothianidin	259	160	214	27	33[a]
Cycloate	95	12900	43	109	30[a]
Cyprodinil	16	1470	126	183	32[a]
Cyromazine	13600	756	63	97	28[a]
Dazomet	3630	NA	1	14	0
Diazinon	60	1580	40	16	138
Dicamba	27200	5	10	88	30[a]
[c]Dicamba, diglycolamine salt	675000	5	10	88	30[a]
Dicamba, dimethylamine salt	NA	5	10	88	30[a]
[c]Dicamba, sodium salt	675000	5	10	88	30[a]
Dichlobenil	21	0	NA	NA	1810
[c]Dichlorprop-P, dimethylamine salt	130000	16	14	159	30[a]
[c]Dichlorprop-P, isooctyl ester	130000	16	14	159	30[a]
Dicloran	6	804	549	66	72[a]
Difenzoquat methyl salt	817000	74100	1600	6810	NA
Diflufenzopyr, sodium salt	4200	292	55	164	NA
Dimethipin	4600	11	NA	1280	60[a]
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[a]
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[a]
Endothall, dipotassium salt	NA	750	9	8	36[a]
[c]Endothall, mono (N,N-dimethyl alkylamine) salt	110000	750	9	8	36[a]
EPTC	345	170	42	65	30[a]
Ethofumesate	50	150	93	NA	2900

Active ingredient	Solubility (ppm) SNV > 3	K_{oc} (cm^3/g) SNV < 1,900	Aerobic metabolism (days) SNV > 610	Anaerobic metabolism (days) SNV > 9	Hydrolysis (days) SNV > 14
Ethoprop	843	161	34	130	449
Fenamiphos	482	341	24	88	301
Fenarimol	15	757	1100	1620	28
Fenhexamid	150	853	1	97	30[a]
Fenoxycarb	6	1540	85	136	3140
Fipronil	22	749	366	123	30[a]
Fludioxonil	2	1610	102	365	30[a]
[c]Flonicamid	5200	13	1	161	30[a]
Flutolanil	NA	905	NA	NA	30[a]
Foramsulfuron	32600	78	28	31	128
Formetanate hydrochloride	822000	371	8	15	1
Fosetyl-al	136000	325	0	2	30[a]
Glufosinate-ammonium	NA	785	20	NA	30[a]
Glyphosate, isopropyl	11600	6920	96	22	35[a]
Halosulfuron	1650	124	51	23	14
Hexazinone	29800	640	222	232	56[a]
Imazamox, ammonium salt	4410	58	134	213	30[a]
[c]Imazapic, ammonium salt	259000	81	1200	2400	30[a]
Imazapyr	10500	348	507	30	30[a]
Imazethapyr	351	54	2410	568	NA
Imidacloprid	514	262	997	27	30[a]
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[a]
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[a]
[c]Mefenoxam (Metalaxyl-M)	8410	163	62	68	1000
Mepiquat chloride	500000	NA	40	359	NA
Mesosulfuron-methyl	21	NA	39	23	NA

Active ingredient	Solubility (ppm) SNV > 3	K_{oc} (cm^3/g) SNV < 1,900	Aerobic metabolism (days) SNV > 610	Anaerobic metabolism (days) SNV > 9	Hydrolysis (days) SNV > 14
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[a]
Methoxyfenozide	3	501	680	654	30[a]
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[a]
Molinate	970	199	NA	105	1560
MSMA	1040000	1680	269	NA	35[a]
Napropamide	74	726	455	51	35[a]
Nicosulfuron	18500	37	26	63	30[a]
Nitrapyrin	72	333	30	59	8
Norflurazon	34	617	172	348	2650
Orthosulfamuron	629	353	31	NA	24
Oryzalin	3	848	63	10	28[a]
Oxydemeton-methyl	NA	30	6	4	40
Paraquat dichloride	626000	NA	620	644	30[a]
Penoxsulam	470	119	57	8	30[a]
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[a]
Propanil	152	518	2	3	5000
Propiconazole	100	656	72	211	NA

Active ingredient	Solubility (ppm) SNV > 3	K_{oc} (cm^3/g) SNV < 1,900	Aerobic metabolism (days) SNV > 610	Anaerobic metabolism (days) SNV > 9	Hydrolysis (days) SNV > 14
Propyzamide	13	889	392	762	42[a]
Pymetrozine	290	1100	491	91	30[a]
Pyraclostrobin	20	9300	136	3	30[a]
Pyrazon	380	13800	124	489	NA
Pyrithiobac-sodium	NA	14	60	128	35[a]
Quinclorac	72	37	211	364	30[a]
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[a]
Simazine	6	340	110	71	28[a]
[c]Sulfentrazone	400	169	331	3300	291
Sulfometuron-methyl	4250	89	52	116	30[a]
Tebuconazole	NA	1000	597	1260	28[a]
Tebufenozide	1	605	405	179	30[a]
Tebuthiuron	2600	90	1220	1520	395[a]
Terrazole	105	107	19	1	92
Thiamethoxam	4100	64	229	NA	6080
Thiazopyr	2	204	274	338	30[a]
Thiobencarb	28	530	37	306	160[a]
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
Trifloxysulfuron-sodium	26	1770	55	24	20
Triflumizole	18	1240	23	67	116
Triflusulfuron-methyl	2820	61	89	23	32[a]
Trinexapac-ethyl	11400	440	0	13	456
Uniconizole-p	8	NA	332	NA	30[a]
Vinclozolin	3	260	28	15	1

[a]No hydrolysis occurred during the study. The hydrolysis half-life is greater that the value listed, which is the length of the study.
[b]Not available.
[c]New active ingredient; these active ingredients were not listed in the 2005 report.

Table 2. Sales during 2005 of active ingredients exceeding the specific numerical values (2006 Report).

Active ingredient	Pounds Sold[a]
2,4-D	373731.24
2,4-D, 2-ethylhexyl ester	27,637.86
2,4-D, butoxyethanol ester	49278.77
2,4-D, diethanolamine salt	5526.80
2,4-D, dimethylamine salt	700051.28
2,4-D, isooctyl ester	31592.89
4(2,4-DB), dimethylamine salt	147238.35
Acephate	253953.78
Acetamiprid	40280.91
Acibenzolar-s-methyl	1411.50
Alachlor	15247.99
Aldicarb	232374.75
Atrazine	44727.69
Azinphos-methyl	70,620.00
Azoxystrobin	138755.91
Bensulfuron methyl	1302.07
Bensulide	223601.11
Bentazon, sodium salt	6218.23
Bifenazate	109747.79
Bispyribac-sodium	11088.10
Bromacil	67234.38
Bromoxynil heptanoate	36605.33
Bromoxynil octanoate	47771.63
Butylate	29897.23
Cacodylic acid	641.36
Calcium acid methanearsonate	7311.92
Carbaryl	410169.62
Carbofuran	40168.60
Chloropicrin	4301992.28
Chlorothalonil	1101257.99
Chlorsulfuron	16083.57
Clethodim	28748.33
Clomazone	48617.50
Clopyralid	5.46
Clopyralid, monoethanolamine salt	11155.34
Clopyralid, triethylamine salt	1800.16
Clothianidin	NS[b]
Cycloate	25240.22
Cyprodinil	138832.69
Cyromazine	131422.78
Dazomet	100138.86
Diazinon	500956.59
Dicamba	18,809.52
Dicamba, diglycolamine salt	68413.04

Active ingredient	Pounds Sold[a]
Dicamba, dimethylamine salt	49176.60
Dicamba, sodium salt	140336.16
Dichlobenil	37071.01
Dichlorprop-P, dimethylamine salt	2895.08
Dichlorprop-P, isooctyl ester	6.97
Dicloran	300520.03
Difenzoquat methyl sulfate	NS
Diflufenzopyr, sodium salt	778.24
Dimethipin	NS
Dimethoate	416433.65
Dimethomorph	50641.54
Dinotefuran	739.40
Diquat dibromide	182629.16
Disulfoton	79648.96
Dithiopyr	13052.31
Diuron	2172655.78
Dodine	6058.26
Emamectin benzoate	2551.85
Endothall, dipotassium salt	7260.38
Endothall, mono (N,N-dimethyl alkylamine) salt	3809.27
EPTC	767244.63
Ethofumesate	21496.37
Ethoprop	33609.84
Fenamiphos	93825.10
Fenarimol	8103.86
Fenhexamid	78672.97
Fenoxycarb	19.15
Fipronil	21711.04
Flonicamid	NS
Fludioxonil	10933.40
Flutolanil	22,246.17
Foramsulfuron	352.03
Formetanate hydrochloride	35,284.30
Fosetyl-al	515,163.20
Glufosinate-ammonium	51606.65
Glyphosate, isopropylamine salt	9166191.73
Halosulfuron-methyl	60778.87
Hexazinone	184622.27
Imazamox, ammonium salt	8383.80
Imazapic, ammonium salt	110.09
Imazapyr	NS
Imazethapyr	3189.27
Imidacloprid	169475.30
Iprodione	313869.11
Isoxaben	38,304.62
Kresoxim-methyl	17607.50

Active ingredient	Pounds Sold[a]
Linuron	111990.00
Malathion	1069598.22
MCPA, dimethylamine salt	185924.54
MCPP	10,778.32
MCPP, dimethylamine salt	40870.75
MCPP, potassium salt	1583.17
Mecoprop-P	115,542.96
Mefenoxam	107474.03
Mepiquat chloride	35515.53
Mesosulfuron-methyl	540.25
Metalaxyl	1693.48
Metaldehyde	409920.70
Methamidophos	43271.45
Methidathion	82854.17
Methiocarb	2275.20
Methomyl	428530.76
Methoxyfenozide	187921.65
Methyl isothiocyanate	NS
Methyl parathion	96543.40
Metiram	NS
Metribuzin	31746.06
Molinate	191229.51
MSMA	223440.01
Napropamide	69815.47
Nicosulfuron	2189.29
Nitrapyrin	NS
Norflurazon	121617.78
Orthosulfamuron	NS
Oryzalin	951898.12
Oxydemeton-methyl	334610.84
Paraquat dichloride	1437514.52
Penoxsulam	3609.72
Phenmedipham	8549.24
Phorate	69664.00
Phosmet	442751.02
Piperalin	3069.30
Piperonyl butoxide	514794.90
Profenofos	32672.78
Prohexadione calcium	45.38
Prometon	17295.75
Prometryn	210464.58
Propanil	2170099.65
Propiconazole	35732.28
Propyzamide	146566.41
Pymetrozine	7492.58
Pyraclostrobin	125861.43

Active ingredient	Pounds Sold[a]
Pyrazon	14560.00
Pyrithiobac-sodium	73498.23
Quinclorac	2701.37
Rimsulfuron	2427.92
Sethoxydim	69461.95
Siduron	24882.00
Simazine	1367534.03
S-metolachlor	369849.96
Sulfometuron-methyl	8419.50
Tebuconazole	92332.60
Tebufenozide	10278.09
Tebuthiuron	13551.64
Terbacil	72.00
Terrazole	588.21
Thiamethoxam	41735.15
Thiazopyr	4310.64
Thiobencarb	635334.55
Thiophanate-methyl	251698.51
Tralkoxydim	488.89
Triadimefon	3645.08
Triclopyr, butoxyethyl ester	152977.62
Triclopyr, triethylamine salt	119948.01
Trifloxysulfuron-sodium	208.50
Triflumizole	30682.36
Triflusulfuron-methyl	6229.00
Trinexapac-ethyl	7225.97
Uniconizole-P	2.92
Vinclozolin	1173.13
Total	38098104.00

[a]Sales data derived from DPR sales database for year 2005.
[b]No sales reported for this active ingredient during 2005.

Table 3. Description of use for currently registered active ingredients exceeding the specific numerical values (2006 report).

Active Ingredient	Use	Description
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
Bispyribac-sodium	Herbicide	Selective, post-emergent
Bromacil	Herbicide	Pre-emergent
Bromoxynil heptanoate	Herbicide	Selective, post-emergent
Bromoxynil octanoate	Herbicide	Selective, post-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

Active Ingredient	Use	Description
Clopyralid, monoethanolamine salt	Herbicide	Selective, post-emergent
Clopyralid, triethylamine salt	Herbicide	Selective, post-emergent
Clothianidin	Insecticide	Systemic
Cycloate	Herbicide	Selective, preplant
Cyprodinil	Fungicide	Systemic
Cyromazine	Insecticide	Growth regulator
Dazomet	Fungicide/ nematicide/ herbicide/ slimicide	Preplant
Diazinon	Insecticide/ nematicide	Soil/foliar/seed
Dicamba	Herbicide	Selective, systemic
Dicamba, diglycolamine salt	Herbicide	Selective, systemic
Dicamba, dimethylamine salt	Herbicide	Selective, systemic
Dicamba, sodium salt	Herbicide	Selective, systemic
Dichlobenil	Herbicide	Selective, cellulose
Dichlorprop-P, dimethylamine salt	Herbicide	Selective, post-emergent
Dichlorprop-P, isooctyl ester	Herbicide	Selective, post-emergent
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
Emamectin benzoate	Insecticide	Systemic, contact
Endothall, dipotassium salt	Herbicide/ algicide/ growth regulator	Pre-, post-emergent
Endothall, mono (N,N-dimethyl alkylamine) salt	Desiccant/ algicide	Contact
EPTC	Herbicide	Selective
Ethofumesate	Herbicide	Selective
Ethoprop	Insecticide/ nematicide	Soil
Fenamiphos	Nematicide	Selective

Active Ingredient	Use	Description
Fenarimol	Fungicide	Systemic, foliar
Fenhexamid	Fungicide	Systemic, curative, foliar
Fenoxycarb	Insecticide	Growth regulator
Fipronil	Insecticide	Contact, stomach
Flonicamid	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
Halosulfuron	Herbicide	Pre-, post-emergent
Hexazinone	Herbicide	Contact, residual
Imazamox, ammonium salt	Herbicide	Selective, post-emergent
Imazapic, ammonium salt	Herbicide	Selective, pre-, 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
Mefenoxam	Fungicide	Seed treatment, soil, foliar
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

Active Ingredient	Use	Description
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
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

Active Ingredient	Use	Description
Pyrithiobac 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
Sulfentrazone	Herbicide	Selective, pre-, post-emergent
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
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
Uniconizole-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 2005 for active ingredients exceeding the specific numerical values (2006 Report).

Active Ingredient	Pounds Applied
2,4-D	1552.22
2,4-D, 2-ethylhexyl ester	26541.89
2,4-D, alkanolamine salts (ethanol and isopropanol amines)	457.68
2,4-D, butoxyethanol ester	8189.292363
2,4-D, butyl ester	9.8
2,4-D, diethanolamine salt	3961.14
2,4-D, dimethylamine salt	455399.23
2,4-D, isooctyl ester	10313.6
2,4-D, triethylamine salt	202.69
4(2,4-DB), dimethylamine salt	42482.42
Acephate	195056.8
Acetamiprid	31177.52
Acibenzolar-s-methyl	1223.49
Alachlor	21052.11
Aldicarb	229673.91
Amitrole	2.93
Anilazine	0.48
Atrazine	32882.11
Azinphos-methyl	55150.82
Azoxystrobin	133152.27
Bensulfuron methyl	787.78
Bensulide	247233.42
Bentazon, sodium salt	2272.25
Bifenazate	87280.37
Bispyribac-sodium	2069.63
Bromacil	48837.27
Bromoxynil butyrate	0.088
Bromoxynil heptanoate	20580.014
Bromoxynil octanoate	34481.18
Butylate	9922.99
Cacodylic acid	131.32
Calcium acid methanearsonate	3.77
Carbaryl	189799.41
Carbofuran	28092.91
Chloropicrin	4866787.39
Chlorothalonil	754390.75
Chlorsulfuron	3230.084
Clethodim	25091.098
Clomazone	39199.3
Clopyralid	1.95
Clopyralid, monoethanoloamine salt	9213.46
Clopyralid, triethylamine salt	2888.22
Cyanazine	7.038
Cycloate	39955.52
Cyprodinil	144846.011
Cyromazine	11451.74
Dazomet	47925.94

Active Ingredient	Pounds Applied
Diazinon	402858.056
Dicamba	1038.49
Dicamba, diethanolamine salt	0.0046
Dicamba, diglycolamine salt	53211.8
Dicamba, dimethylamine salt	27638.37
Dicamba, sodium salt	6364.61
Dichlobenil	45028.56
Dicloran	94818.69
Dicrotophos	2.01
Diethatyl-ethyl	3.0
Difenzoquat methyl sulfate	739.18
Diflufenzopyr, sodium salt	591.25
Dimethoate	311923.55
Dimethomorph	49481.25
Dinotefuran	194.47
Diquat dibromide	68532.14
Disulfoton	32065.19
Dithiopyr	5355.8
Diuron	950028.049
Dodecyl ammonium methanearsonate	0.02
Dodemorph acetate	11.24
Dodine	6278.93
DSMA	1.69
Emamectin benzoate	1351.45
Endothall, dipotassium salt	2511.2
Endothall, mono (N,N-dimethyl alkylamine) salt	15075.28
EPTC	181790.089
Ethofumesate	12453.53
Ethoprop	18896.43
Fenamiphos	46262.68
Fenarimol	7508.36
Fenhexamid	72502.81
Fenoxycarb	30.003
Fenthion	15.029
Fipronil	66823.71
Fluazifop-butyl	41.016
Fludioxonil	11316.71
Flutolanil	11087.82
Fonofos	14.96742
Foramsulfuron	41.85
Formetanate hydrochloride	30674.24
Fosetyl-Al	433014.35
Glufosinate-ammonium	27093.032
Glyphosate, isopropylamine salt	4658208.61
Glyphosate-trimesium	25501.75
Halosulfuron-methyl	3954.69
Hexazinone	106696.21
Imazamox, ammonium salt	4105.052
Imazethapyr	3412.41

Active Ingredient	Pounds Applied
Imidacloprid	163979.78
Iprodione	290740.71
Isoxaben	23594.75
Kresoxim-methyl	15579.46
Linuron	71613.69
Malathion	424393.46
MCPA, dimethylamine salt	179788.43
MCPP	286.45
MCPP, diethanolamine salt	0.4
MCPP, dimethylamine salt	4322.33
MCPP, potassium salt	1861.36
Mecoprop-P	1575.8
Mefenoxam (Metalaxyl-M)	70024.32
Mepiquat chloride	26377.63
Mesosulfuron-methyl	267.9
Metalaxyl	3459.76
Metaldehyde	52409.3
Methamidophos	37865.5
Methidathion	48856.93
Methiocarb	2455.26
Methomyl	349264.38
Methoxyfenozide	158204.19
Methyl isothiocyanate	1549.16
Methyl parathion	79000.34
Metolachlor	1067.83
Metribuzin	29263.53
Mevinphos	159.96
Molinate	171361.79
MSMA	48562.25
Napropamide	32192.014
Nicosulfuron	1396.89
Nitrapyrin	170.92
Norflurazon	93775.92
Octylammonium methanearsonate	0.02
Oryzalin	702697.023
Oxydemeton-methyl	122067.75
Paraquat dichloride	1039652.74
Parathion	854.82
Pebulate	1154.22
Penoxsulam	2643.091
Phenmedipham	5418.58
Phorate	48138.9
Phosmet	547002.96
Piperalin	2255.39
Piperonyl butoxide	68368.76
Profenofos	23923.88
Prohexadione calcium	74.27
Prometon	3.028
Prometryn	140622.98

Active Ingredient	Pounds Applied
Propanil	1418130.95
Propiconazole	29642.38
Propyzamide	117129.16
Pymetrozine	5327.24
Pyraclostrobin	113524.77
Pyrazon	4880.32
Pyridate	156.72
Pyrithiobac-sodium	5189.02
Quinclorac	1348.49
Rimsulfuron	1992.052
S-metolachlor	367117.41
Sethoxydim	34482.56
Siduron	13661.64
Simazine	626187.32
Sulfometuron-methyl	23448.72
Tebuconazole	49285.011
Tebufenozide	10261.79
Tebuthiuron	10150.54
Terrazole	750.024
Thiamethoxam	16014.14
Thiazopyr	2081.48
Thiobencarb	448208.38
Thiophanate-methyl	159543.76
Triadimefon	1896.49
Triclopyr, butoxyethyl ester	115013.53
Triclopyr, triethylamine salt	65117.54
Trifloxysulfuron-sodium	33.7
Triflumizole	24953.78
Triflusulfuron-methyl	444.97
Trinexapac-ethyl	4719.66
Uniconizole-P	2.091
Vinclozolin	3573.15
Total	24,426,082.53

REFERENCES

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

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

Johnson, B. 1988. Setting Specific Numerical Values November 1988. EH88-12.

Wilkerson, M.R., K.D. Kim. 1986. The Pesticide Contamination Prevention Act: Setting Specific Numerical Values. EH86-02.