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Environmental Protection
Agency

Pesticides Industry Sales and Usage

2006 and 2007 Market Estimates

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By
Arthur Grube,
David Donaldson,
Timothy Kiely, and
La Wu

Biological and Economic Analysis Division
Office of Pesticide Programs
Office of Chemical Safety and Pollution Prevention
U.S. Environmental Protection Agency
Washington, DC 20460

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1. Introduction

Purpose of Report

Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDCA), the U.S. Environmental Protection Agency (EPA), in cooperation with states and other agencies, such as the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA), is responsible for regulating the production and use of pesticides in the United States. This report provides contemporary and historical economic information on the U.S. pesticide producing and using sectors covered by these state and federal regulatory programs. Economic profile information covers a variety of topics, particularly the pesticide market with respect to dollar values and quantities of active ingredient. The EPA Pesticide Program has issued such market reports since 1979.

This report is intended only to present objective economic profile and trend information reflecting the best information available to EPA on pesticide sales and use. It does not attempt to interpret, reach conclusions about, or make inferences about the data. Detailed analysis of causal factors or implications, such as potential impacts on human health, the environment, or the economy, falls beyond the scope of this project.

We caution the reader not to infer too much from changes in the amount of pesticides used from year to year. Changes in the amount of pesticides used are not necessarily correlated with changes in the level of pest control or changes in the human health and environmental risks associated with pesticide use.

Data Sources

Neither EPA nor any other federal agency has a program devoted specifically to estimating the overall pesticide market in terms of dollars spent and quantity of active ingredient used on an annual basis. This report uses the best available information from the public domain and private marketing research companies (proprietary data sources). The numbers in the report represent approximate values rather than precise values with known statistical properties.

The Agency has a wide variety of public and proprietary information upon which to base estimates of pesticide sales and use. The Biological and Economic Analysis Division (BEAD) of EPA's Office of Pesticide Programs (OPP) maintains extensive files and library materials. These materials cover different pesticide types and groupings in the agricultural and non-agricultural market sectors. In compiling the report, the Agency used several database services, including one from the USDA and others from private pesticide marketing research companies. The private marketing research data, produced by well-known organizations, also serve pesticide registrants and other private sector firms analyzing the U.S. and world pesticide market.

Overview of Contents/Scope of Report

This report profiles the U.S. pesticide industry, on an annual basis, for the years 2006 and 2007, and provides data covering the years 1988–2005 in the historical data tables. Data for 2002–2005 were not reported in previous publications. Data were estimated using several different parameters (e.g., pesticide type, pesticide group, market sector) and appear in tabular format. The scope of the report is largely inclusive of the U.S. pesticide industry and includes data on expenditures, volume, imports, exports, firms, individuals involved in production and use of pesticides, number of pesticides, and number of certified applicators, among other topics. Data on expenditures and sales are reported in nominal terms for the year indicated (i.e., not adjusted or indexed for inflation). The report includes graphical representations of the data where useful. The historical section of the report provides data from 1988 to 2007. Data from 1980 to 1987 are available on the EPA website (http://www.epa.gov/opp00001/pestsales).

Following this Introduction (Section 1), Section 2 of the report summarizes world and U.S. pesticide user expenditures in 2006 and 2007, and Section 3 summarizes world and U.S. pesticide amounts used in 2006 and 2007. Section 4 presents background information on pesticide market sectors. Finally, Section 5 presents historical data summarizing pesticide expenditures and estimates of amounts used from 1988 to 2007.

The writing of the 2008 and 2009 pesticides industry sales and usage report is scheduled to begin once all of the supporting pesticide sales and usage data for 2009 are published and available to EPA. If you have questions regarding this report or need further information, please contact the authors by e-mail (or telephone): kiely.timothy@epa.gov (703-308-8112), and donaldson.david@epa.gov (703-308-9546).

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2. 2006 and 2007 Sales

2.1 World and U.S. Pesticide Expenditures

World pesticide expenditures totaled more than $35.8 billion in 2006 and more than $39.4 billion in 2007 (see Table 2.1). Expenditures on herbicides accounted for the largest portion of total expenditures (approximately 40%), followed by expenditures on insecticides, fungicides, and other pesticides, respectively. Total expenditures increased in 2007 due to increased spending on all pesticide types.

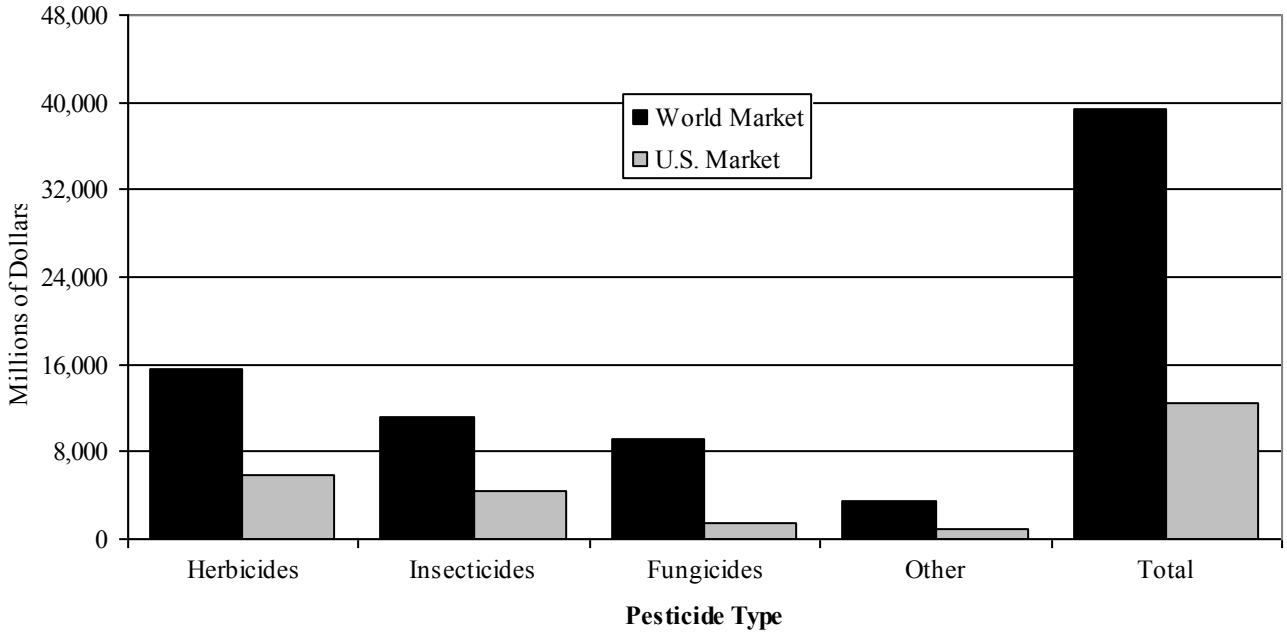
U.S. pesticide expenditures totaled $11.8 billion in 2006 and $12.5 billion in 2007, in proportions similar to those of world expenditures, with a relatively larger proportion of total U.S. expenditures on herbicides (see Figure 2.1). In 2007, U.S. expenditures accounted for 32% of total world on pesticides, 38% of world expenditures on herbicides, 39% of world expenditures on insecticides, 15% of world expenditures on fungicides, and 25% of world expenditures on other pesticides. The Agency based its estimates of world and U.S. pesticide expenditures on the estimated pesticide expenditures and changes in pesticide expenditures from public and proprietary EPA databases. See Section 2.3 for a more detailed look at U.S. expenditures on pesticides in 2006 and 2007. See Section 5.1 for historical data on U.S. pesticide expenditures from 1988 to 2007.

Table 2.1
World and U.S. Pesticide Expenditures at User Level by Pesticide Type, 2006 and 2007 Estimates

Year and Pesticide Type	World Market		U.S. Market		U.S. Percentage of World Market
	Millions of $	%	Millions of $	%	
2006					
Herbicides[1]	14,247	40	5,673	48	40
Insecticides[2]	10,259	29	4,091	35	40
Fungicides[2]	7,987	22	1,165	10	15
Other[3]	3,320	9	855	7	26
Total	35,814	100	11,784	100	33
2007					
Herbicides[1]	15,512	39	5,856	47	38
Insecticides[2]	11,158	28	4,337	35	39
Fungicides[2]	9,216	23	1,375	11	15
Other[3]	3,557	9	886	7	25
Total	39,443	100	12,454	100	32

Note: Totals may not add due to rounding. Table data do not cover wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: Cropnosis Limited (www.cropnosis.com), USDA/NASS (www.nass.usda.gov), and EPA proprietary data.
1. "Herbicides" include herbicides and plant growth regulators (PGRs).
2. "Other" includes nematicides, fumigants, and other miscellaneous conventional pesticides, plus other chemicals used as pesticides (e.g., sulfur and petroleum oil).

Figure 2.1
World and U.S. Pesticide Expenditures at User Level
by Pesticide Type, 2007 Estimates



2.2 Value of U.S. Pesticides: Producer Level

Table 2.2 summarizes the 2006 and 2007 average value of U.S. pesticides at the producer level. The table includes production, import, export, and supply (total and net). There was an annual average of $9.8 billion from domestic pesticide production, $1.6 billion imports, $2.1 billion exports, and $9.3 billion net supply at the producer level for 2006 and 2007.

Table 2.2
Value of U.S. Pesticide Production, Imports, Exports, and Supply at Producer Level

	Annual Sales (Billions of Dollars)
	Average of 2006 and 2007
Production	9.8
Imports	1.6
Total Supply	11.4
Exports	2.1
Net Supply	9.3

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites. Includes conventional pesticides and other chemicals used as pesticides (e.g., sulfur and petroleum oil).
Source: USDA/FAS (www.fas.usda.gov).

2.3 User Expenditures on Pesticides in the United States

U.S. expenditures at the user level for conventional and other pesticides totaled $11.8 billion in 2006 and $12.5 billion in 2007 (see Table 2.3). Pesticides included in the estimates are herbicides, plant growth regulators, insecticides, miticides, fungicides, nematicides, fumigants, sulfur, petroleum oil, and others. The estimates exclude expenditures on wood preservatives, specialty biocides, and chlorine/hypochlorites.

Increase in spending in the agricultural sector on all pesticide types and increases in spending in the non-agricultural sectors (industry/commercial/government and home and garden) in 2007 resulted in an increase in total 2007 expenditures. Expenditures in the agriculture sector accounted for nearly two-thirds of total expenditures in both years. Expenditures on herbicides and plant growth regulators dominated in all sectors except the home and garden sector, where insecticides comprised more than 60% of all expenditures. The Agency based its estimates of U.S. pesticide expenditures on the estimated pesticide expenditures and estimated changes in pesticide expenditures from public and proprietary EPA databases. See Section 5.1 for historical data on U.S. pesticide expenditures from 1988 to 2007.

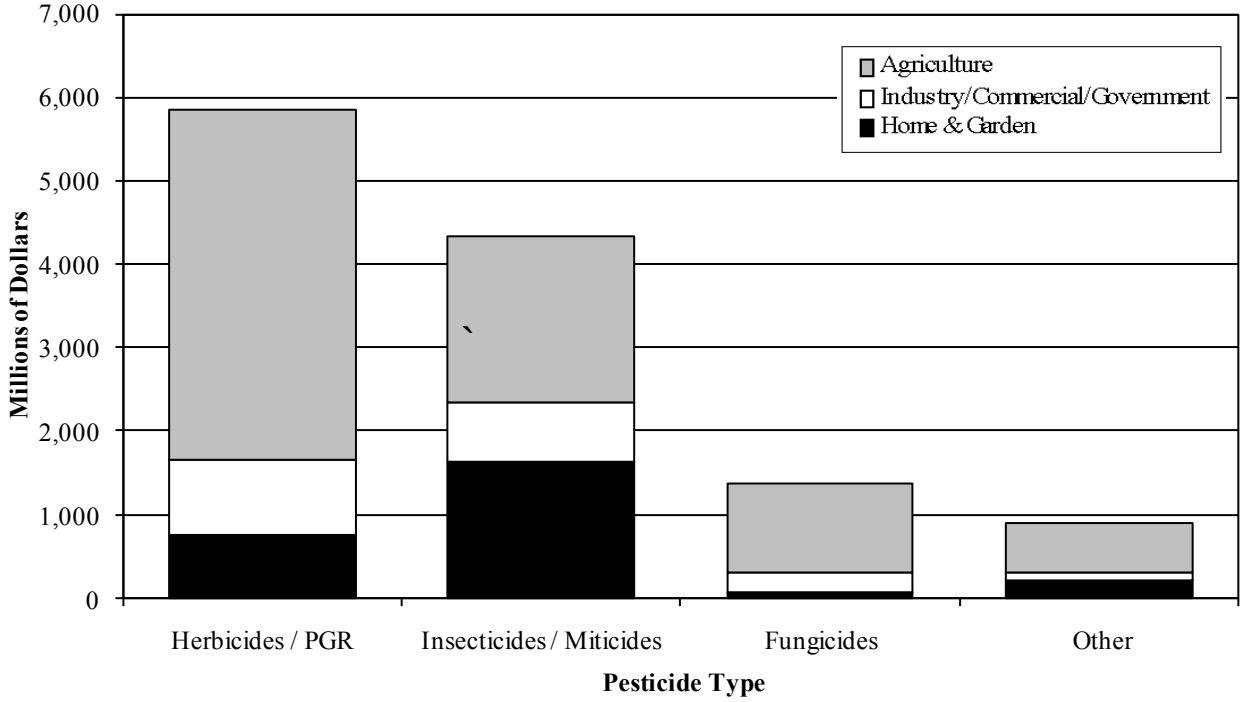
As a result of limitations in the source data on U.S. pesticide expenditures, estimates provided in Table 2.3 group nematicides and fumigants, other miscellaneous conventional pesticides, and other chemicals used as pesticides into the "Other" category. Estimates of pounds of nematicides and fumigants, other miscellaneous conventional pesticides, and other chemicals used as pesticides are provided in Section 3 (see Tables 3.4 and 3.11).

Table 2.3
User Expenditures on Pesticides in the United States
by Pesticide Type and Market Sector, 2006 and 2007 Estimates

Year and Market Sector	Herbicides/Plant Growth Regulators		Insecticides/ Miticides		Fungicides		Other*		Total	
	Mil $	%	Mil $	%	Mil $	%	Mil $	%	Mil $	%
2006										
Agriculture	4,077	72	1,830	45	861	74	571	67	7,339	62
Ind/Comm/Gov	873	15	694	17	240	21	71	8	1,878	16
Home & Garden	723	13	1,567	38	64	5	213	25	2,567	22
Total	5,673	100	4,091	100	1,165	100	855	100	11,784	100
2007										
Agriculture	4,211	72	1,999	46	1,066	78	593	67	7,869	63
Ind/Comm/Gov	896	15	709	16	243	18	73	8	1,921	15
Home & Garden	749	13	1,629	38	66	5	220	25	2,664	21
Total	5,856	100	4,337	100	1,375	100	886	100	12,454	100

Note: Totals may not add due to rounding. Table does not cover wood preservatives, specialty biocides, and chlorine/hypochlorites. Due to lack of data resources, the home and garden market sector estimates for 2006 and 2007 as well as the industrial/commercial/government sector's estimate for 2007 were calculated based on the percentage change from 2004 and 2005 data. See Section 5.1 for 2004 and 2005 data. See Tables 5.1 to 5.4 for 1988–2007 estimates.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
* "Other" includes nematicides, fumigants, other miscellaneous conventional pesticides, and other chemicals used as pesticides (e.g., sulfur and petroleum oil).

Figure 2.2
User Expenditures on Pesticides in the United States
by Pesticide Type and Market Sector, 2007 Estimates



2.4 Farm Expenditures on Pesticides in the United States

Pesticides are a significant component of total farm expenditures and an important element of farm budgeting and management. U.S. pesticide expenditures in 2006 and 2007 totaled 3.1% and 2.8% of total farm expenditures, respectively (see Table 2.4). Both farm expenditures and pesticide expenditures increased in 2007. Total farm expenditures are based on USDA estimates, and pesticide expenditure estimates are based on Table 2.3.

Table 2.4
Farm Expenditures on Pesticides in the United States

Expenditure (Billion $)	2006	2007
Total	$237.8	$283.5
Pesticides	$7.3	$7.9
Pesticides as % of Total	3.1%	2.8%

Source: EPA estimates based on Table 2.3 and USDA/NASS (www.nass.usda.gov).

3. 2006 and 2007 Usage

3.1 World and U.S. Pesticide Amount Used

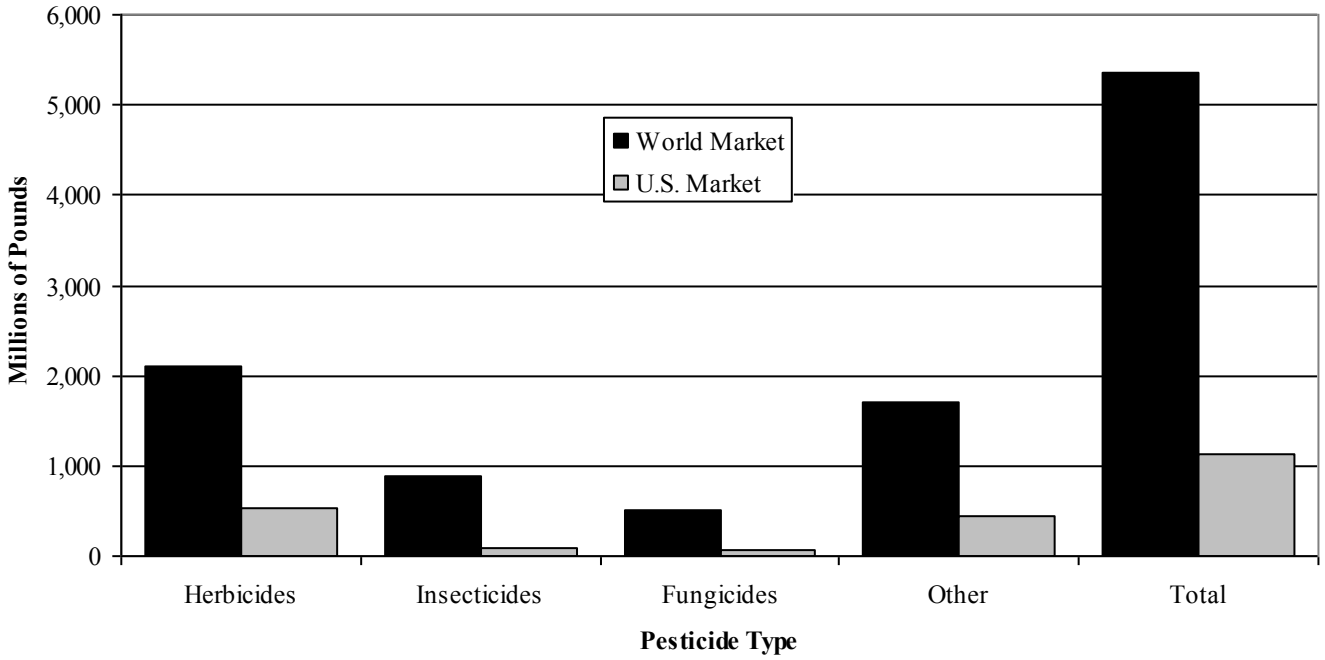
World pesticide amount used was approximately 5.2 billion pounds in both 2006 and 2007 (see Table 3.1). Herbicides accounted for the largest portion of total use, followed by other pesticides, insecticides, and fungicides. Total world pesticide amount used increased in 2007. U.S. pesticide amount used in both 2006 and 2007 exceeded 1.1 billion pounds, in proportions similar to those of world pesticide use, with herbicides and other pesticides representing a larger portion of total U.S. pesticide use (see Figure 3.1). U.S. pesticide amount used accounted for 22% of total world pesticide amount used, 25% of world herbicide amount used, 10% of world insecticide amount used, 14% of world fungicide amount used, and more than 25% of other pesticide amount used in both years. The Agency based its estimates of world and U.S. pesticide amount used on the estimated pesticide amount used and estimated changes in pesticide amount used from public and proprietary EPA databases. See Section 5.2 for historical data on U.S. pesticide amount used from 1988 to 2007. Data in this section were developed to compare world with U.S. pesticide use. For a more detailed look at U.S. pesticide use and a further breakout of the "other" pesticide category, see tables 3.3, 3.4, and 3.11 through 3.13.

Table 3.1
World and U.S. Amount of Pesticide Active Ingredient Used by Pesticide Type, 2006 and 2007 Estimates

Year and Pesticide Type	World Market		U.S. Market		U.S. Percentage of World Market
	Mil lbs	%	Mil lbs	%	
2006					
Herbicides[1]	2,018	39	498	44	25
Insecticides	955	18	99	9	10
Fungicides	519	10	73	6	14
Other[2]	1,705	33	457	41	27
Total	5,197	100	1,127	100	22
2007					
Herbicides[1]	2,096	40	531	47	25
Insecticides	892	17	93	8	10
Fungicides	518	10	70	6	14
Other[2]	1,705	33	439	39	26
Total	5,211	100	1,133	100	22

Note: Totals may not add due to rounding. Does not include wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Cropnosis Limited (www.cropnosis.com), USDA/NASS (www.nass.usda.gov), and EPA proprietary data.
1. "Herbicides" include herbicides and plant growth regulators.
2. "Other" includes nematicides, fumigants, and other miscellaneous conventional pesticides, and other chemicals used as pesticides such as sulfur, petroleum oil, and sulfuric acid.

Figure 3.1
World and U.S. Pesticide Amounts of Active Ingredient at User Level by Pesticide Type, 2007 Estimates



3.2 Pesticide Supply in the United States: Producer Level

Table 3.2 summarizes the 2006 and 2007 average U.S. distribution of pesticides at the producer level, including the amount of production, imports, exports, and supply (total and net). The pesticide amount related to U.S. pesticide production and consumption comprised 1.2 billion pounds of domestic production, 0.2 billion pounds of imports, 0.3 billion pounds of exports, and 1.1 billion pounds of net supply.

Table 3.2
U.S. Pesticide Production, Imports, Exports, and Supply in Amount of Active Ingredient at Producer Level

	Active Ingredient (Billions of Pounds)
	Average of 2006 and 2007
Production	1.2
Imports	0.2
Total Supply	1.4
Exports	0.3
Net Supply	1.1

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites. Includes conventional pesticides and other chemicals used as pesticides (e.g., sulfur and petroleum oil).
Source: EPA estimates based on USDA/FAS (www.fas.usda.gov) and EPA proprietary data.

3.3 Pesticide Amount Used in the United States: Total

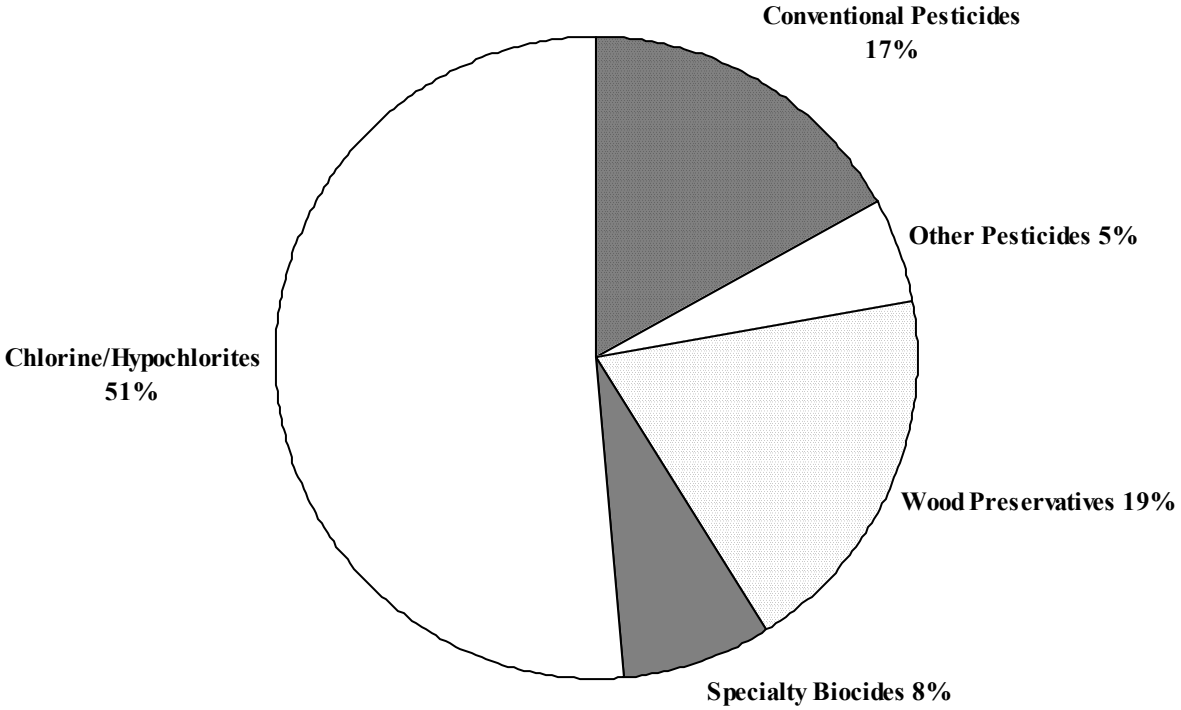
Total pesticide amount used in the United States was approximately 5.1 billion pounds in both 2006 and 2007 (see Table 3.3). These estimates include conventional pesticides, other chemicals used as pesticides, wood preservatives, specialty biocides, and chlorine/hypochlorites. With more than 2.6 billion pounds used, the amount of chlorine/hypochlorites used was greater than for all other pesticide groups combined (see Figure 3.2). The estimates of use by group rely on the estimated amount used and changes in estimated amount used by pesticide group derived from public and proprietary EPA databases. A discussion of the amount used of each pesticide group in 2006 and 2007 appears in subsequent sections (see footnotes to Table 3.3 for locations).

Table 3.3
Amount of Pesticides Used in the United States
by Pesticide Group, 2006 and 2007 Estimates

Pesticide Group	Total (Million Pounds)	
	2006	2007
Conventional Pesticides[1]	821	857
Other Pesticides[2]	306	276
Specialty Biocides[3]	379	389
Chlorine/Hypochlorites Used In Water Treatment[4]	2,609	2,609
Wood Preservatives[5]	985	954
Total	5,100	5,085

1. See Table 3.4 (conventional pesticides) for additional details and specific source information.
2. "Other pesticides" include other chemicals used as pesticides (e.g., sulfur and petroleum oil). See Table 3.11 (other pesticides) for additional details and specific source information.
3. See Table 3.12 (specialty biocides) for additional details and specific source information.
4. Due to the lack of data on chlorine/hypochlorites use, the estimate is based on the amount reported in the previous report (U.S. EPA, "Pesticide Industry Sales and Usage, 2000 and 2001 Market Estimates," 2004).
5. Due to the lack of data available for 2006, the estimate of the amount of wood preservatives used in 2006 is based on data from 2004. See Table 3.13 for additional details and specific source information.

Figure 3.2
Amount of Pesticides Used in the United States
by Pesticide Group, 2007 Estimates



3.4 Amount of Pesticides Used in the United States: Conventional

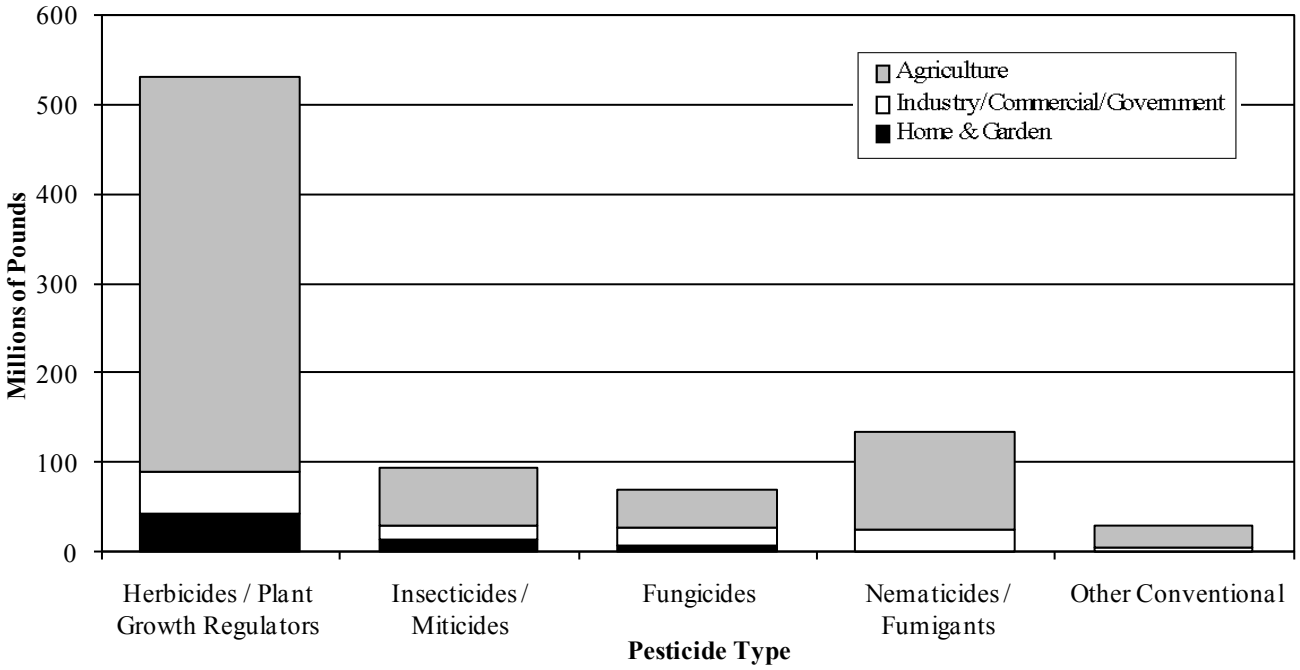
Table 3.4 shows that the amount of conventional pesticide used in 2006 and 2007 totaled 821 and 857 million pounds of active ingredient, respectively. This category of pesticide use was third highest among all pesticide groups in the United States after chlorine/hypochlorites and wood preservatives. Table 3.4 shows the breakout of this use by pesticide type and market sector. Pesticide types in this group include herbicides, plant growth regulators (PGRs), insecticides, miticides, fungicides, nematicides, fumigants, and others. The amount used in the agricultural sector accounted for the majority of the total amount used in 2006 and 2007, with the two non-agricultural sectors (industry/commercial/government and home & garden) cumulatively accounting for approximately one-fifth of the total use in each year (see Table 3.4). The amount used in the agriculture sector also accounted for the majority of the total amount used by pesticide type—70% or more of the total amount used of each type, except for fungicides in 2006 (63%) and 2007 (63%). Figure 3.3 graphs the distribution of use by pesticide type and sector in 2007. The estimated use levels rely on the estimated amount used and changes in amount used of conventional pesticides by sector and type derived from public and proprietary EPA databases.

Table 3.4
Amount of Conventional Pesticide Active Ingredient Used in the United States by Pesticide Type and Market Sector, 2006 and 2007 Estimates

Year and Market Sector	Herbicides/Plant Growth Regulators		Insecticides/ Miticides		Fungicides		Nematicide/ Fumigant		Other Conventional*		Total	
	Mil lbs	%	Mil lbs	%	Mil lbs	%	Mil lbs	%	Mil lbs	%	Mil lbs	%
2006												
Agriculture	407	82	69	70	46	63	96	79	25	83	643	78
Ind/Comm/Gov	45	9	14	14	20	27	24	20	4	13	107	13
Home & Garden	46	9	16	16	7	10	1	1	1	3	71	9
Total	498	100	99	100	73	100	121	100	30	100	821	100
2007												
Agriculture	442	83	65	70	44	63	108	81	25	83	684	80
Ind/Comm/Gov	46	9	14	15	19	27	24	18	4	13	107	12
Home & Garden	43	8	14	15	7	10	1	1	1	3	66	8
Total	531	100	93	100	70	100	133	100	30	100	857	100

Note: Totals may not add due to rounding. Table does not cover wood preservatives, specialty biocides, chlorine/hypochlorites, and other chemicals used as pesticides (e.g., sulfur and petroleum oil). The abbreviation "a.i." stands for active ingredient.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
See Tables 5.5 to 5.8 for 1988–2007 estimates.
* "Other Conventional" pesticides include rodenticides and other miscellaneous conventional pesticides.

Figure 3.3
Amount of Conventional Pesticide Active Ingredient Used in the United States by Pesticide Type and Market Sector, 2007 Estimates



3.5 Share of U.S. Amount of Conventional Pesticide Active Ingredient Used in the Agricultural and Non-Agricultural Market Sectors

Table 3.5 shows the agricultural and non-agricultural market share of total conventional pesticides consumed in 2006 and 2007. The agricultural sector accounts for nearly 80% of the total amount of conventional pesticides used in both years. See Table 5.9 in Section 5.2 for historical data covering the years 1970 through 2007.

Table 3.5
Share of U.S. Amount of Conventional Pesticide Active Ingredient Used in the Agricultural and Non-Agricultural Market Sectors, 2006 and 2007 Estimates

Year	U.S.	Agricultural Market Sector		Non-Agricultural Market Sector	
	Mil lbs	Mil lbs	% of U.S.	Mil lbs	% of U.S.
2006	821	643	78	178	22
2007	857	684	80	173	20

Note: Table data include conventional pesticides only, and exclude sulfur, petroleum oil, and other chemicals used as pesticides (e.g., sulfuric acid and insect repellents), wood preservatives, specialty biocides, and chlorine/hypochlorites. See Table 5.9 for 1970–2007 data.
Source: EPA estimates based on Table 3.4.

3.6 Most Commonly Used Conventional Pesticide Active Ingredients in the U.S. Agricultural Market Sector

Table 3.6 shows the 25 most commonly used conventional pesticide active ingredients in the agricultural sector in 2007 and selected earlier years. Glyphosate was the most used active ingredient in 2007 (180 million to 185 million pounds used). It has been the most used active ingredient in agriculture since 2001. Thirteen of the top 25 active ingredients used in the agricultural sector are herbicides; 3 are fungicides; 3 are insecticides; 5 are fumigants; and 1 is a plant growth regulator. The rankings rely on the estimated pounds of conventional pesticides used in the agricultural sector, taken from public and proprietary databases.

Table 3.6
Most Commonly Used Conventional Pesticide Active Ingredients, Agricultural Market Sector, 2007, 2005, 2003, and 2001 Estimates (Ranked by Range in Millions of Pounds of Active Ingredient)

Active Ingredient	Type	2007		2005		2003		2001	
		Rank	Range	Rank	Range	Rank	Range	Rank	Range
Glyphosate	H	1	180-185	1	155-160	1	128-133	1	85-90
Atrazine	H	2	73-78	2	70-75	2	75-80	2	74-80
Metam Sodium	Fum	3	50-55	3	39-44	3	45-50	3	57-62
Metolachlor-S	H	4	30-35	5	27-32	6	28-33	9	20-24
Acetochlor	H	5	28-33	6	26-31	5	30-35	4	30-35
Dichloropropene	Fum	6	27-32	4	30-35	7	20-24	8	20-25
2,4-D	H	7	25-29	7	24-28	4	30-35	5	28-33
Methyl Bromide	Fum	8	11-15	8	12-16	8	13-17	7	20-25
Chloropicrin	Fum	9	9-11	10	9-12	9	9-12	18	5-9
Pendimenthalin	H	10	7-9	9	9-12	10	9-12	11	15-19
Ethephon	PGR	11	7-9	11	8-10	15	6-7	21	5-8
Chlorothalonil	F	12	7-9	13	7-9	14	7-9	13	8-11
Metam Potassium	Fum	13	7-9	20	4-6	20	4-6	—	1-2
Chlorpyrifos	I	14	7-9	15	6-8	13	7-9	15	8-11
Copper Hydroxide	F	15	6-8	12	8-10	12	7-9	14	8-10
Simazine	H	16	5-7	17	5-7	17	6-7	23	5-7
Trifluralin	H	17	5-7	14	7-9	11	8-10	12	12-16
Propanil	H	18	4-6	18	4-6	18	5-7	17	6-9
Mancozeb	F	19	4-6	16	6-8	16	6-7	20	6-8
Aldicarb	I	20	3-4	21	3-5	25	4-6	—	3-5
Acephate	I	21	2-4	24	2-4	—	1-3	—	1-3
Diuron	H	22	2-4	19	4-6	21	4-6	—	3-6
MCPA	H	23	2-4	—	2-4	24	4-6	—	3-5
Paraquat	H	24	2-4	25	2-4	—	3-4	—	3-5
Dimethenamid	H	25	2-4	—	2-4	23	4-6	19	6-8

Note: List is limited to conventional pesticides and does not include sulfur and petroleum oil (see Table 3.11). H indicates herbicide; I, insecticide; Fum, fumigant; F, fungicide; and PGR, plant growth regulator. A dash (—) indicates that the pesticide was not one of the 25 most commonly used (pesticides) in the given year. Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.

3.7 Most Commonly Used Conventional Pesticide Active Ingredients in the U.S. Non-Agricultural Market Sectors

Tables 3.7 and 3.8 show the 10 most commonly used conventional pesticide active ingredients in the two non-agricultural sectors (home & garden and industry/commercial/government) for 2007 and selected earlier years. In both sectors, 2,4-D was the most used active ingredient, with between 8 and 11 million pounds used in the home and garden sector (see Table 3.7) and between 19 and 22 million pounds used in the industry/commercial/government sector (see Table 3.8). Seven of the top 10 active ingredients used in the home and garden sector are herbicides, and three are insecticides. Six of the top 10 active ingredients used in the industry/commercial/government sector are herbicides, two are fungicides, and two are insecticides. As noted in Table 3.8, because some applicators apply pesticides in both markets, there may be some usage reported in one market that may have occurred in the other. The rankings are based on EPA proprietary data.

Table 3.7
Most Commonly Used Conventional Pesticide Active Ingredients
Home and Garden Market Sector
2007, 2005, 2003, and 2001 Estimates
(Ranked by Range in Millions of Pounds of Active Ingredient)

Active Ingredient	Type	2007 & 2005		2003		2001	
		Rank	Range	Rank	Range	Rank	Range
2,4-D	H	1	8-11	1	8-11	1	8-11
Glyphosate	H	2	5-8	5	5-8	2	5-8
Carbaryl	I	3	4-6	2	6-9	6	2-4
MCPP	H	4	4-6	3	5-8	5	4-6
Pendimethalin	H	5	3-5	4	5-8	3	3-6
Pyrethroids	I	6	2-4	7	2-4	—	<1
Malathion	I	7	2-4	6	3-6	8	2-4
Dicamba	H	8	1-3	9	1-3	7	2-4
Trifluralin	H	9	1-3	—	<1	—	<1
Pelarganoc Acid	H	10	<1	—	<1	—	<1

Note: Does not include moth controls: Paradiclorobenzene (30–35 million pounds per year) and naphthalene (2–4 million pounds per year). Also does not include insect repellent N,N-diethyl-meta-toluamide (5–7 million pounds per year). H indicates herbicide, and I indicates insecticide. A dash (—) indicates that an estimate is not available. Due to lack of data, the same estimates are used for both 2005 and 2007 in this report. Source: EPA estimates based on EPA proprietary data.

Table 3.8
Most Commonly Used Conventional Pesticide Active Ingredients
Industry/Commercial/Government Market Sector
2007, 2005, 2003, and 2001 Estimates
(Ranked by Range in Millions of Pounds of Active Ingredient)

Active Ingredient	Type	2007 & 2005		2003		2001	
		Rank	Range	Rank	Range	Rank	Range
2,4-D	H	1	19-22	1	19-22	1	16-18
Glyphosate	H	2	13-15	2	13-15	2	13-15
Chlorothalonil	F	3	3-5	4	3-5	5	2-4
MSMA	H	4	2-4	5	3-5	8	2-4
Diuron	H	5	2-4	6	2-4	7	2-4
Pendimethalin	H	6	2-4	8	2-4	4	3-5
Triclopyr	H	7	2-4	7	2-4	9	1-3
Copper Sulfate	F	8	2-4	3	4-6	3	4-6
Malathion	I	9	1-3	9	1-3	10	1-3
Sulfuryl fluoride	I	10	1-3	10	1-3	—	—

Note: Includes applications to homes and gardens by professional applicators. Does not include sulfur or petroleum oil. H indicates herbicide; I, insecticide; and F, fungicide. A dash (—) indicates that an estimate is not available. Due to lack of data, the same estimate is used for both 2005 and 2007 in this report. Source: EPA estimates based on EPA proprietary data.

3.8 Amount of Organophosphate Insecticides Used in the United States

Table 3.9 shows the total amount of organophosphate insecticide used annually since 1990. The top 10 active ingredients used in 2007 in this pesticide class are chlorpyrifos, malathion, acephate, naled, dicrotophos, phosmet, phorate, diazinon, dimethoate, and azinphos-methyl (see Table 3.10). Since the passage of the Food Quality Protection Act (FQPA) in 1996, this class of conventional pesticides has been a primary focus of EPA reregistration and registration review activities. For more information on the active ingredients included in this pesticide class and their registration status, refer to U.S. EPA's Office of Pesticide Programs Special Docket EPA-HQ-OPP-2007-0151 at www.regulations.gov.

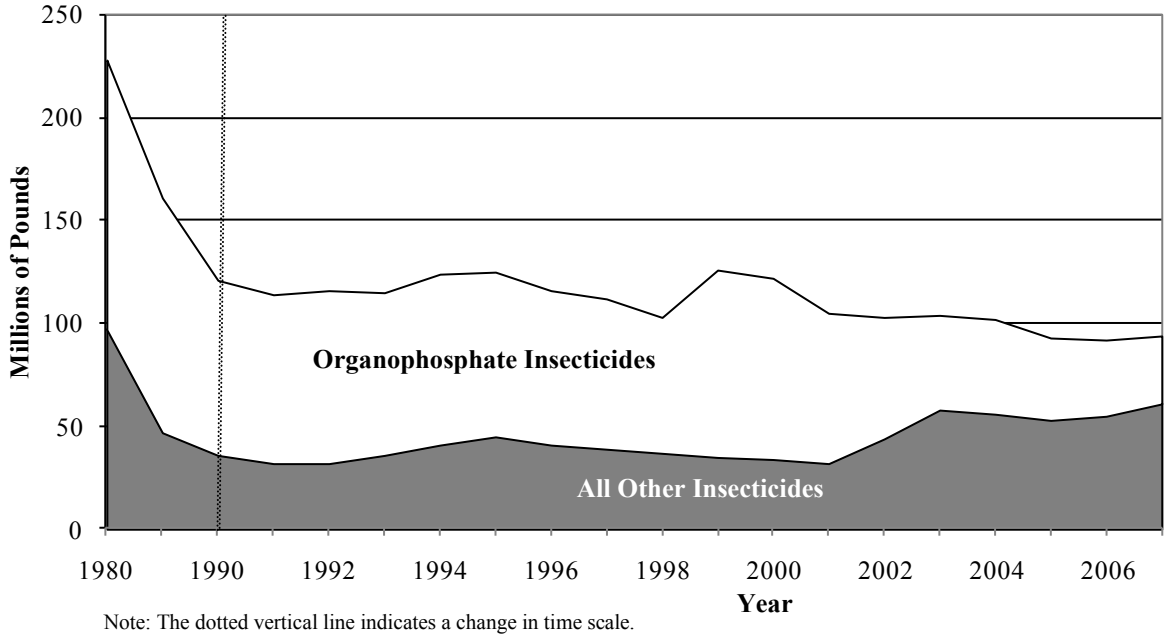
The amount of organophosphate insecticides used has declined more than 60% since 1990, from an estimated 85 million pounds in 1990 to 33 million pounds in 2007 (see Table 3.9). Organophosphate use as a percent of total insecticide use has decreased from 70% in 1990 to 36% in 2007. The estimates of organophosphate insecticide use rely on the estimated amount used and changes in the amount used of organophosphates from public and proprietary EPA databases.

Table 3.9
Amount of Organophosphate Insecticide Active Ingredients Used in the United States
All Market Sectors, 1990–2007 Estimates

Year	All Insecticides	Organophosphate Insecticides	
	Mil lbs	Mil lbs	% of All Insecticides
1980	228	131	57
1985	161	114	71
1990	121	85	70
1991	114	82	72
1992	116	84	72
1993	115	79	69
1994	124	83	67
1995	125	80	64
1996	116	75	65
1997	112	73	65
1998	103	66	64
1999	126	91	72
2000	122	88	72
2001	105	73	70
2002	130	59	45
2003	115	46	40
2004	114	46	40
2005	104	40	39
2006	99	37	38
2007	93	33	35

Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.

Figure 3.4
Total Amount of Organophosphate and All Other Insecticide Active Ingredients Used in the United States in All Market Sectors, 1990–2007



Note: The dotted vertical line indicates a change in time scale.

Table 3.10
Most Commonly Used Organophosphate Insecticide Active Ingredients, All Market Sectors, 2007, 2005, 2003, and 2001 Estimates (Ranked by Range in Millions of Pounds of Active Ingredient)

Active Ingredient	2007		2005		2003		2001	
	Rank	Range	Rank	Range	Rank	Range	Rank	Range
Chlorpyrifos	1	8-11	2	7-9	2	9-11	2	11-16
Malathion	2	5-9	1	11-13	1	11-13	1	23-32
Acephate	3	4-6	3	4-6	5	2-4	5	2-3
Naled	4	1-2	5	1-2	7	1-2	—	—
Dicrotophos	5	1-2	7	1-2	—	—	—	—
Phosmet	6	1-2	4	1-2	6	1-2	8	1-2
Phorate	7	1-2	6	1-2	9	1-2	6	2-3
Diazinon	8	<1	8	<1	3	3-5	3	4-7
Dimethoate	9	<1	10	<1	—	—	10	1-2
Azinphos-Methyl	10	<1	9	<1	8	1-2	9	1-2

Note: A dash (—) indicates that an estimate is not available.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.

3.9 Pesticide Amount Used in the United States: Other

The total amount of other pesticides used in the United States was more than 300 million pounds in 2006 and more than 275 million pounds in 2007 (see Table 3.11). The pesticides in this group include sulfur; petroleum oil; other chemicals used as pesticides, such as sulfuric acid; insect repellents (e.g., DEET); moth control products (e.g., paradichlorobenzene); and others. In 2007, nearly all of the sulfur and oil used (84%) was in the agricultural sector, while the use of the other pesticides in this group was mainly in the agricultural and home and garden sectors (91%). The decrease in the amount used from 2006 to 2007 resulted mainly from a decrease in the use of other pesticides in the agricultural sector. Nearly three-fourths of the total amount of sulfur, oil, and other pesticides used was in the agricultural sector. The estimated use levels rely on the amount used and changes in the amount used of sulfur, oil, and other pesticides by sector and type derived from public and proprietary EPA databases.

Table 3.11
Other Pesticides Used in the United States
by Pesticide Type and Market Sector, 2006 and 2007 Estimates

Year and Market Sector	Sulfur and Oil[1]		Other[2]		Total	
	Mil lbs	%	Mil lbs	%	Mil lbs	%
2006						
Agriculture	159	85	64	54	223	73
Ind/Comm/Gov	14	7	8	7	22	7
Home & Garden	15	8	46	39	61	20
Total	188	100	118	100	306	100
2007						
Agriculture	152	84	41	43	193	70
Ind/Comm/Gov	14	8	8	8	22	8
Home & Garden	15	8	46	48	61	22
Total	181	100	95	100	276	100

Note: Totals may not add due to rounding. Table estimates do not include conventional pesticides, wood preservatives, specialty biocides, or chlorine/hypochlorites. The abbreviation "a.i." is for active ingredient.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
See Tables 5.5 to 5.8 for 1988–2007 estimates. Due to lack of available data, the estimated amount of sulfur and petroleum oil and the estimated amount of other pesticides in the industry/commercial/government sector were carried forward from the 2001 report.
1. "Sulfur and Oil" includes sulfur, petroleum distillate, and petroleum oil.
2. "Other" includes sulfuric acid, phosphoric acid, insect repellents, zinc sulfate, moth control chemicals (e.g., paradichlorobenzene and naphthalene), and other miscellaneous chemicals used as pesticides but produced largely for non-pesticidal purposes.

3.10 Pesticide Amount Used in the United States: Specialty Biocides and Wood Preservatives

Tables 3.12 and 3.13 show the total amount of specialty biocides and wood preservatives by end-use market in the United States in 2006 and 2007, respectively. Specialty biocides include water treatment chemicals, disinfectants and sanitizers, and products for other uses, such as in adhesives, sealants, and leather. More than 80% of the total amount of specialty biocides used in 2006 and 2007 were water treatment chemicals. Wood preservatives include waterborne preservatives, oilborne preservatives, and creosote. Creosote accounted for 78% of the total wood preservative amount used in 2007.

Table 3.12
Specialty Biocides Used in the United States by End-Use Market, 2006 and 2007 Estimates

Year and End Use Market	Total	
	Mil lbs	%
2006		
Recreational and Industrial Water Treatment[1]	311	82
Disinfectants and Sanitizers[2]	25	7
Other Specialty Biocides[3]	44	12
Total	379	100
2007		
Recreational and Industrial Water Treatment[1]	319	82
Disinfectants and Sanitizers[2]	26	7
Other Specialty Biocides[3]	45	12
Total	389	100

Note: Totals do not sum due to rounding.
Source: EPA estimates based on EPA proprietary data.
1. "Recreational and Industrial Water Treatment" does not include hypochlorite or chlorine use.
2. "Disinfectants and Sanitizers" includes industrial/institutional applications and household cleaning products. Does not include hypochlorite or chlorine use.
3. "Other Specialty Biocides" includes biocides for adhesives and sealants, leather, synthetic latex polymers, metalworking fluids, paints and coatings, petroleum products, plastics, mineral slurries, and textiles.

Table 3.13
Wood Preservatives Used in the United States by End-Use Market, 2004 and 2007 Estimates

Year and End Use Market	Total	
	Mil lbs	%
2006		
Waterborne Preservatives	183	19
Oilborne Preservatives	23	2
Creosote	779	79
Total	985	100
2007		
Waterborne Preservatives	185	19
Oilborne Preservatives	23	2
Creosote	746	78
Total	954	100

Note: Due to lack of data resources, data are only available for the years 2004 and 2007. Percentages for 2007 do not sum to 100 due to rounding.
Source: Statistical Overview of the U.S. Wood Preservatives Industry: 2004 and 2007. by Richard P. Vlosky. "Wood Preservatives" include creosote, pentachlorophenol, chromated copper arsenate (CCA), and micronized copper systems.

4. Producers and Users

4.1 Pesticide Producers and Users in 2007

Table 4.1 lists 2007 estimates of the number of firms that are pesticide producers, formulators, and distributors. Table 4.2 lists 2007 estimates of the number of exterminating and pest control firms and certified pesticide applicators. Table 4.3 lists 2007 estimates of farm land, acres harvested, and the number of farms using pesticides and fertilizers. Table 4.4 lists 2007 estimates of the number of households using pesticides.

Table 4.1
Number of U.S. Pesticide Producers, Formulators, and Distributors

Major Pesticide Producers	12
Other Pesticide Producers	100
Major Pesticide Formulators	120–150
Other Pesticide Formulators	1,550
Major Distributors and Establishments	150–250
Other Distributors and Establishments	13,250

Source: EPA estimates based on EPA proprietary data.

Table 4.2
Number of Exterminating and Pest Control Firms and Number of Certified Applicators

Exterminating and Pest Control Firms	25,600
Private[1] Certified Applicators	538,053
Commercial[2] Certified Applicators	399,044

Source: EPA estimates based on EPA proprietary data and 2007 EPA data on the number of certified private and commercial pesticide applicators.
1. Private certified applicators refers primarily to individual farmers.
2. Commercial certified applicators refers to professional pesticide applicators.

Table 4.3
Land in Farms, Land Harvested, Number of Farms, and Farms Using Pesticides

Land in Farms (acres)	922 million
Land Harvested (acres)	310 million
Total Number of Farms	2.204 million
Total Number of Farms with Cropland	1.685 million
Total Number of Farms with Harvested Cropland	1.328 million
Number of Farms Using Chemicals for:	
Insects on Crops/Hay	354,357
Nematodes	34,992
Diseases on Crops/Orchards	97,333
Weed/Grass/Brush	703,884
Defoliation/Fruit Thinning	44,638
Any or all of the above	918,604
Any or all of the above plus fertilizer	1,288,360

Source: 2007 USDA Census of Agriculture (www.agcensus.usda.gov).

Table 4.4
Number of U.S. Households Using Pesticides by Pesticide Type

Pesticide Type	Households
Insecticides	59 million
Fungicides	14 million
Herbicides	41 million
Repellents	53 million
Disinfectants	59 million
Any Pesticides	78 million

Note: In 2000 the U.S. Census Bureau estimated the U.S. population to be 281.4 million with 105.5 million households.
Source: EPA estimates based on the 1992 EPA National Home and Garden Survey and 2000 U.S. Census Bureau population estimates (www.quickfacts.census.gov/qfd/states).

5. Historical Data

5.1 Annual Expenditures on Pesticides in the United States: 1988–2007

Tables 5.1 through 5.4 and corresponding figures summarize annual user expenditures on pesticides since 1988. Table 5.1 summarizes user expenditures on pesticides in all markets combined, while Tables 5.2, 5.3, and 5.4 and corresponding figures summarize user expenditures in the agricultural, industry/commercial/ government, and home and garden markets, respectively. In each market, user expenditures on pesticides have increased in total and by type since 1988, although the total amount has fluctuated from year to year.

Table 5.1
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
All Market Sectors

Year	Expenditure (Millions of Dollars)				Year	Expenditure (Millions of Dollars)			
	Herbicides/ PGR	Insecticides	Fungicides and Other*	Total		Herbicides/ PGR	Insecticides	Fungicides and Other*	Total
1988	4,121	1,964	1,190	7,275	1998	6,853	2,872	1,691	11,416
1989	4,305	1,978	1,141	7,424	1999	6,368	3,046	1,741	11,155
1990	4,473	2,083	1,171	7,727	2000	6,365	3,129	1,671	11,165
1991	4,682	2,139	1,223	8,044	2001	6,410	3,124	1,556	11,090
1992	5,004	2,198	1,183	8,385	2002	6,250	3,355	1,566	11,171
1993	5,094	2,479	1,259	8,832	2003	6,240	3,515	1,670	11,425
1994	5,944	2,722	1,408	10,074	2004	6,166	3,874	1,865	11,905
1995	6,276	3,017	1,488	10,781	2005	5,979	4,014	1,984	11,977
1996	6,599	2,849	1,521	10,969	2006	5,673	4,091	2,020	11,784
1997	6,846	2,957	1,528	11,331	2007	5,856	4,337	2,261	12,454

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites. Data on pesticide expenditures are reported in nominal terms.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
* Includes fungicides, nematicides, fumigants, other miscellaneous conventional pesticides, and other chemicals used as pesticides (e.g., sulfur and petroleum oil). See Table 2.3.

Figure 5.1
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
All Market Sectors

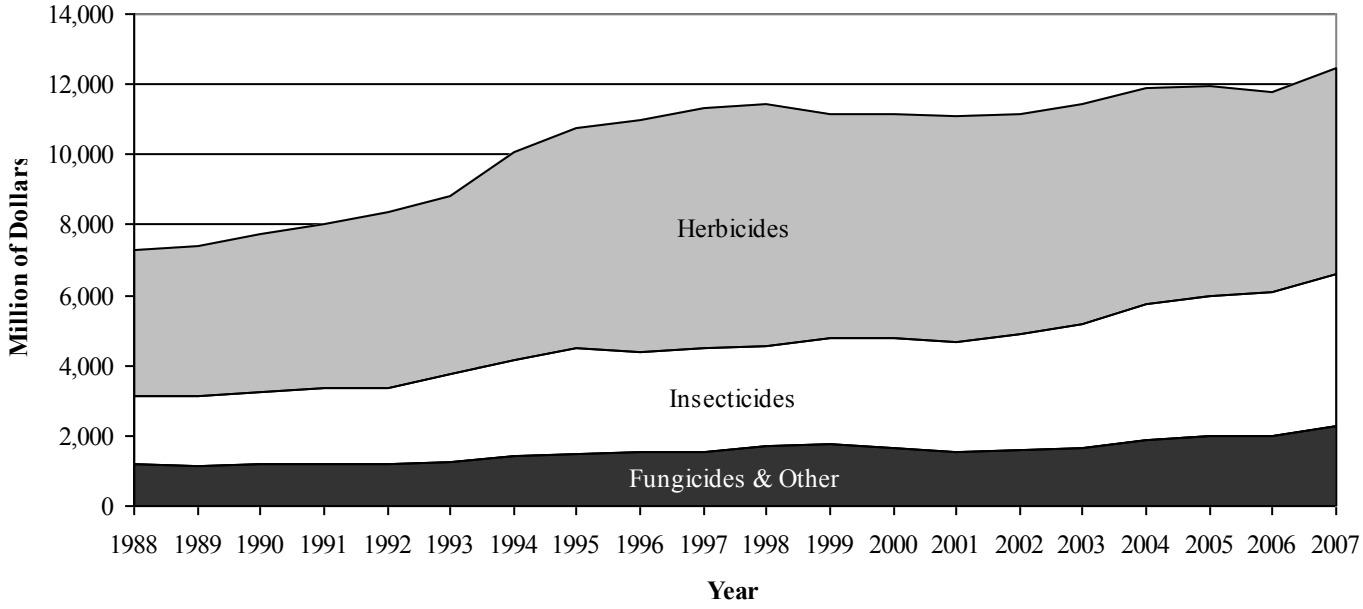


Table 5.2
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
Agricultural Market Sector

Year	Expenditure (Millions of Dollars)				Year	Expenditure (Millions of Dollars)			
	Herbicides/ PGR	Insecticides	Fungicides and Other*	Total		Herbicides/ PGR	Insecticides	Fungicides and Other*	Total
1988	3,080	1,010	775	4,865	1998	5,632	1,427	1,209	8,268
1989	3,255	978	800	5,033	1999	5,012	1,370	1,243	7,625
1990	3,463	1,067	842	5,372	2000	5,007	1,411	1,194	7,612
1991	3,644	687	884	5,215	2001	4,987	1,326	1,091	7,404
1992	3,915	1,058	829	5,802	2002	4,808	1,470	1,069	7,347
1993	3,987	1,123	895	6,005	2003	4,784	1,434	1,162	7,380
1994	4,808	1,293	1,036	7,137	2004	4,645	1,750	1,301	7,696
1995	5,112	1,607	1,107	7,826	2005	4,431	1,829	1,410	7,670
1996	5,399	1,480	1,128	8,007	2006	4,077	1,830	1,432	7,339
1997	5,610	1,551	1,124	8,285	2007	4,211	1,999	1,659	7,869

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites. Data on pesticide expenditures are reported in nominal terms. For the years 1988-1990 and 1995, USDA national estimates of farm expenditures on agricultural pesticides, which include pesticide application costs, are lower than EPA's estimates, which do not include pesticide application costs. Data are not available to reconcile these data inconsistencies.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
* Includes fungicides, nematicides, fumigants, other miscellaneous conventional pesticides, and other chemicals used as pesticides (e.g., sulfur and petroleum oil). See Table 2.3.

Figure 5.2
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
Agricultural Market Sector

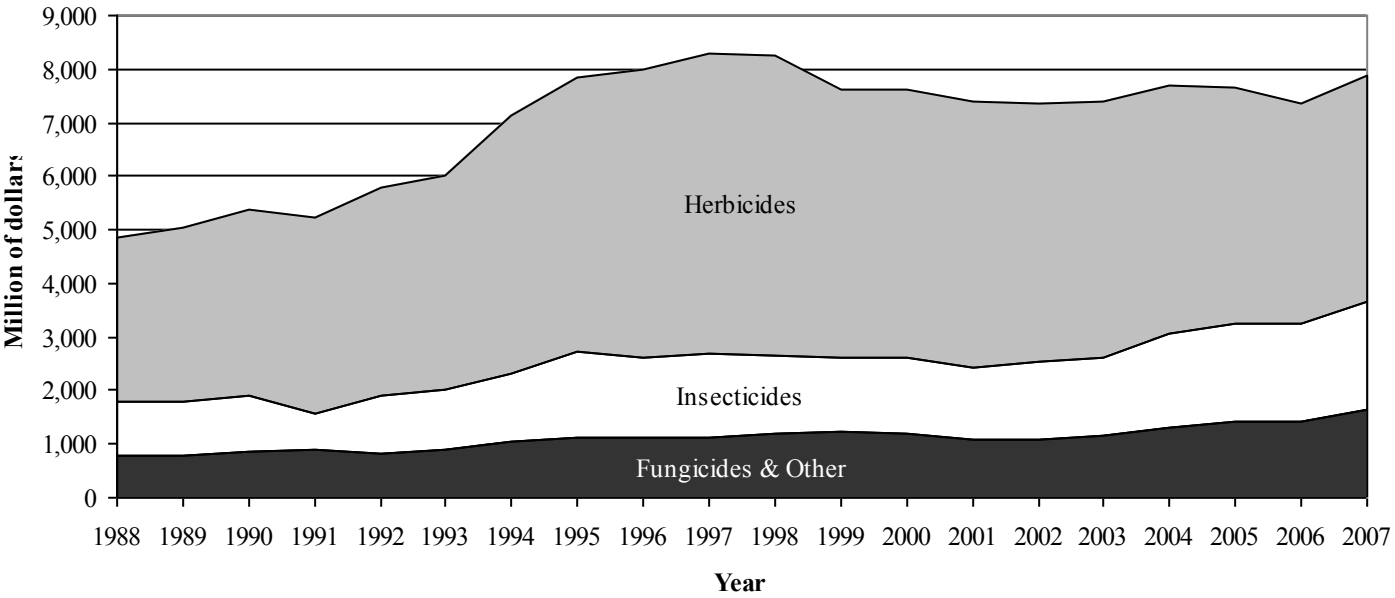


Table 5.3
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
Industry/Commercial/Government Market Sector

Year	Expenditure (Millions of Dollars)				Year	Expenditure (Millions of Dollars)			
	Herbicides/ PGR	Insecticides	Fungicides and Other*	Total		Herbicides/ PGR	Insecticides	Fungicides and Other*	Total
1988	600	394	240	1,234	1998	728	425	292	1,445
1989	630	317	180	1,127	1999	794	463	289	1,546
1990	593	307	169	1,069	2000	762	468	255	1,485
1991	616	328	176	1,120	2001	792	510	233	1,535
1992	648	378	186	1,212	2002	802	546	255	1,603
1993	660	406	191	1,257	2003	807	688	257	1,752
1994	679	533	197	1,409	2004	847	675	304	1,826
1995	700	527	202	1,429	2005	850	679	306	1,835
1996	721	458	208	1,387	2006	873	694	311	1,878
1997	743	386	214	1,343	2007	896	709	316	1,921

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites. Data on pesticide expenditures are reported in nominal terms.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
* Includes fungicides, nematicides, fumigants, other miscellaneous conventional pesticides, and other chemicals used as pesticides (e.g., sulfur and petroleum oil).
See Table 2.3.

Figure 5.3
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
Industry/Commercial/Government Market Sector

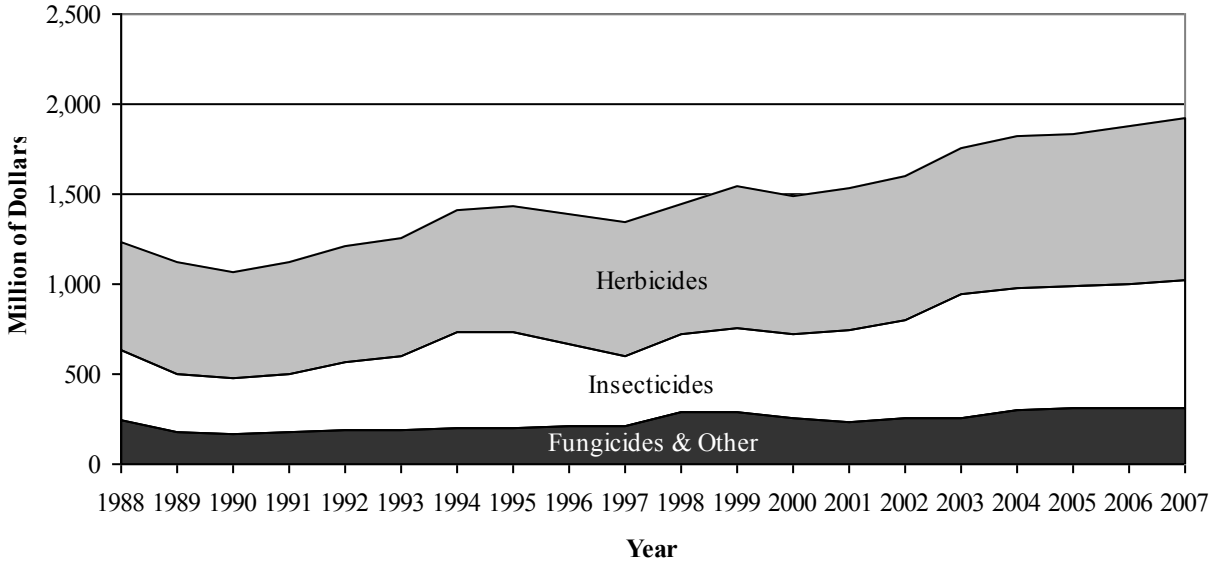
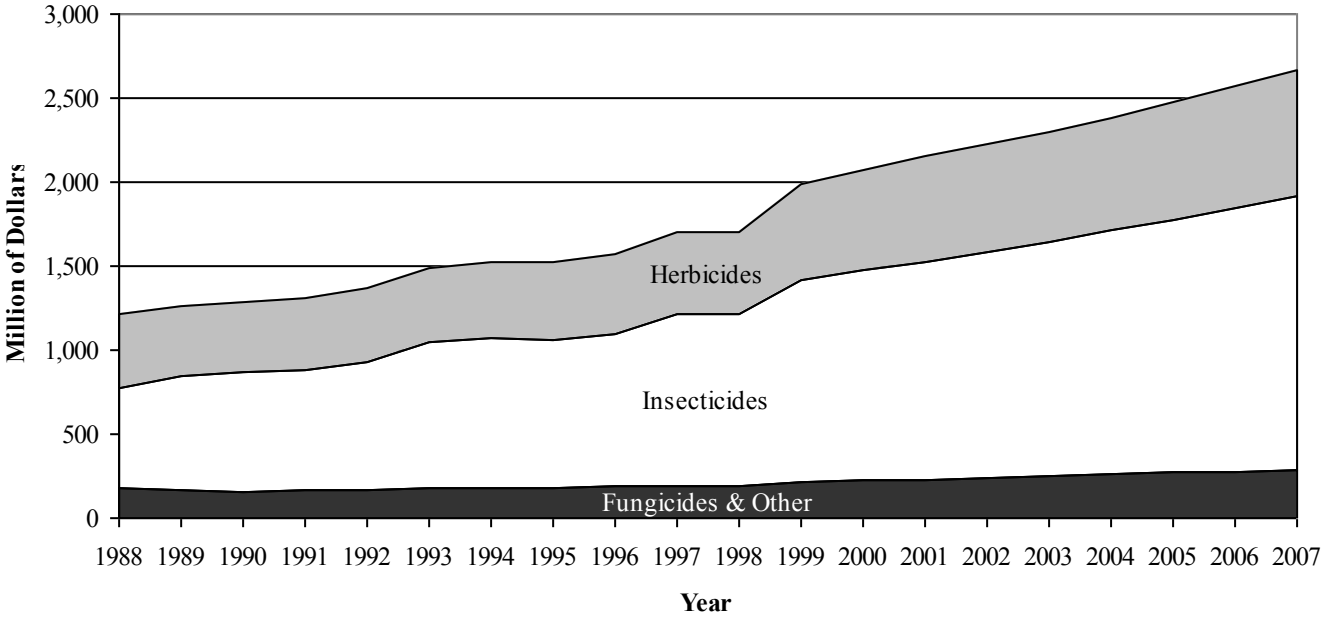


Table 5.4
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
Home and Garden Market Sector

Year	Expenditure (Millions of Dollars)				Year	Expenditure (Millions of Dollars)			
	Herbicides/ PGR	Insecticides	Fungicides and Other*	Total		Herbicides/ PGR	Insecticides	Fungicides and Other*	Total
1988	441	601	175	1,217	1998	493	1,020	190	1,703
1989	420	683	161	1,264	1999	562	1,213	209	1,984
1990	417	710	160	1,287	2000	596	1,250	222	2,068
1991	423	724	162	1,309	2001	631	1,288	232	2,151
1992	441	762	168	1,371	2002	640	1,339	242	2,221
1993	446	870	174	1,490	2003	649	1,393	251	2,293
1994	456	895	175	1,526	2004	674	1,449	260	2,383
1995	465	883	179	1,527	2005	698	1,506	268	2,472
1996	479	910	185	1,574	2006	723	1,567	277	2,567
1997	493	1,020	190	1,703	2007	749	1,629	286	2,664

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites. Data on pesticide expenditures are reported in nominal terms.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
* Includes fungicides, nematicides, fumigants, other miscellaneous conventional pesticides, and other chemicals used as pesticides (e.g., sulfur and petroleum oil).
See Table 2.3.

Figure 5.4
Annual User Expenditures on Pesticides in the United States by Pesticide Type, 1988–2007 Estimates
Home and Garden Market Sector



5.2 Annual Amount of Pesticides Used in the United States: 1988–2007

Tables 5.5 through 5.8 and corresponding figures summarize the annual amount of pesticides used since 1988. Table 5.5 summarizes the amount of pesticides used in all markets combined, while Tables 5.6, 5.7, and 5.8 and corresponding figures summarize the amount of pesticides used in the agricultural, industry/commercial/ government, and home and garden markets, respectively.

Table 5.5
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
All Market Sectors

Year	Million Pounds of Active Ingredient						Year	Million Pounds of Active Ingredient					
	Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total		Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total
1988	557	132	99	137	266	1,191	1998	555	103	86	168	294	1,206
1989	567	123	98	154	251	1,193	1999	534	126	79	173	332	1,244
1990	564	121	91	173	252	1,201	2000	542	122	74	188	308	1,234
1991	546	114	86	182	226	1,154	2001	553	105	73	157	315	1,203
1992	554	116	81	189	246	1,186	2002	527	130	71	157	321	1,206
1993	527	115	80	192	248	1,162	2003	527	115	76	150	335	1,203
1994	583	124	79	199	244	1,229	2004	521	114	75	175	325	1,210
1995	556	125	77	203	249	1,210	2005	513	104	78	149	308	1,152
1996	578	116	79	222	234	1,229	2006	498	99	73	151	306	1,127
1997	568	112	81	197	270	1,228	2007	531	93	70	163	276	1,133

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
1. Other conventional pesticides include nematicides, fumigants, and other miscellaneous conventional pesticides. See Table 3.4.
2. "Other" includes sulfur, petroleum, and other chemicals used as pesticides (e.g., sulfuric acid and insect repellents). See Table 3.11.

Figure 5.5
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
All Market Sectors

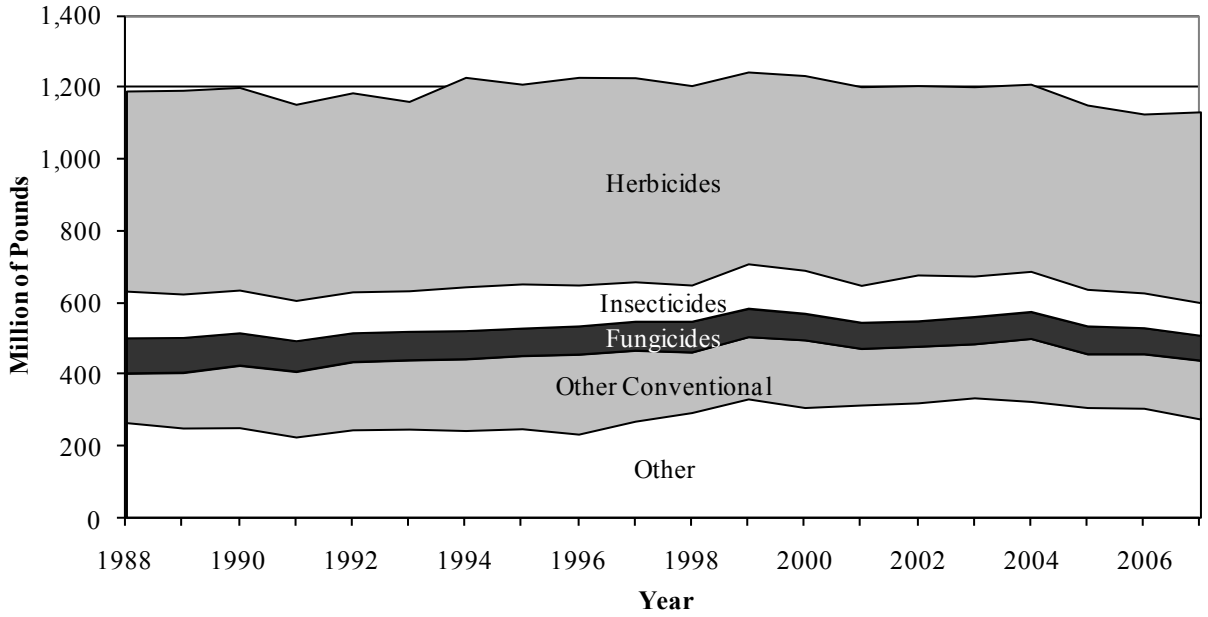


Table 5.6
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
Agricultural Market Sector

Year	Million Pounds of Active Ingredient						Year	Million Pounds of Active Ingredient					
	Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total		Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total
1988	450	91	54	95	177	867	1998	465	69	54	136	212	936
1989	460	85	54	113	161	873	1999	428	93	45	140	250	956
1990	455	82	50	133	164	884	2000	432	90	44	156	226	948
1991	440	77	47	144	140	848	2001	433	73	42	127	232	907
1992	450	78	45	150	161	884	2002	417	97	40	127	238	919
1993	425	72	47	154	166	864	2003	426	80	43	120	252	921
1994	485	80	48	163	163	939	2004	425	82	43	145	242	937
1995	461	85	49	170	168	933	2005	421	73	47	119	225	885
1996	481	81	51	190	152	955	2006	407	69	46	121	223	866
1997	470	79	53	165	188	955	2007	442	65	44	133	193	877

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
1. Other conventional pesticides include nematicides, fumigants, and other miscellaneous conventional pesticides. See Table 3.4.
2. "Other" includes sulfur, petroleum, and other chemicals used as pesticides (e.g., sulfuric acid and insect repellents). See Table 3.11.

Figure 5.6
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
Agricultural Market Sector

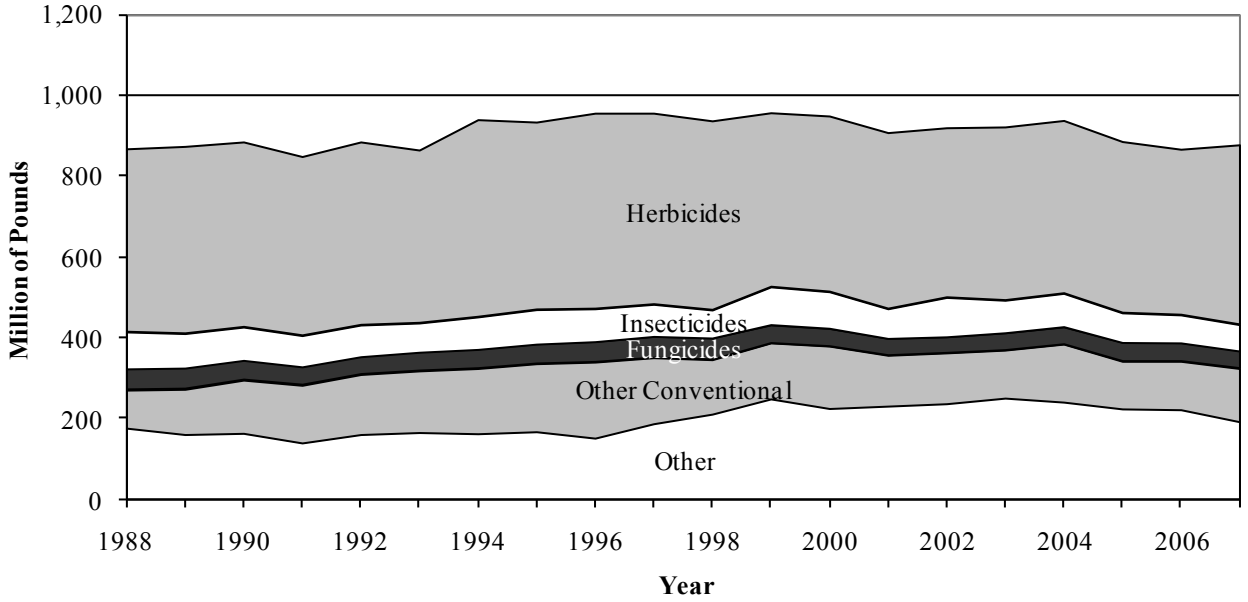


Table 5.7
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
Industry/Commercial/Government Market Sector

Year	Million Pounds of Active Ingredient						Year	Million Pounds of Active Ingredient					
	Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total		Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total
1988	64	27	32	39	22	184	1998	41	21	24	30	22	138
1989	63	27	31	38	22	181	1999	52	19	24	31	22	148
1990	63	27	31	38	22	181	2000	48	17	19	30	22	136
1991	60	26	30	37	21	174	2001	49	15	19	28	22	133
1992	58	27	28	36	21	170	2002	48	14	20	28	22	132
1993	56	30	25	36	20	167	2003	48	14	22	28	22	134
1994	52	30	23	34	20	159	2004	45	13	22	28	22	130
1995	48	28	20	31	22	149	2005	44	14	22	28	22	130
1996	49	24	20	30	22	145	2006	45	14	20	28	22	129
1997	49	20	20	30	22	141	2007	46	14	19	28	22	129

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
1. Other conventional pesticides include nematicides, fumigants, and other miscellaneous conventional pesticides. See Table 3.4.
2. "Other" includes sulfur, petroleum, and other chemicals used as pesticides (e.g., sulfuric acid and insect repellents). See Table 3.11.

Figure 5.7
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
Industry/Commercial/Government Market Sector

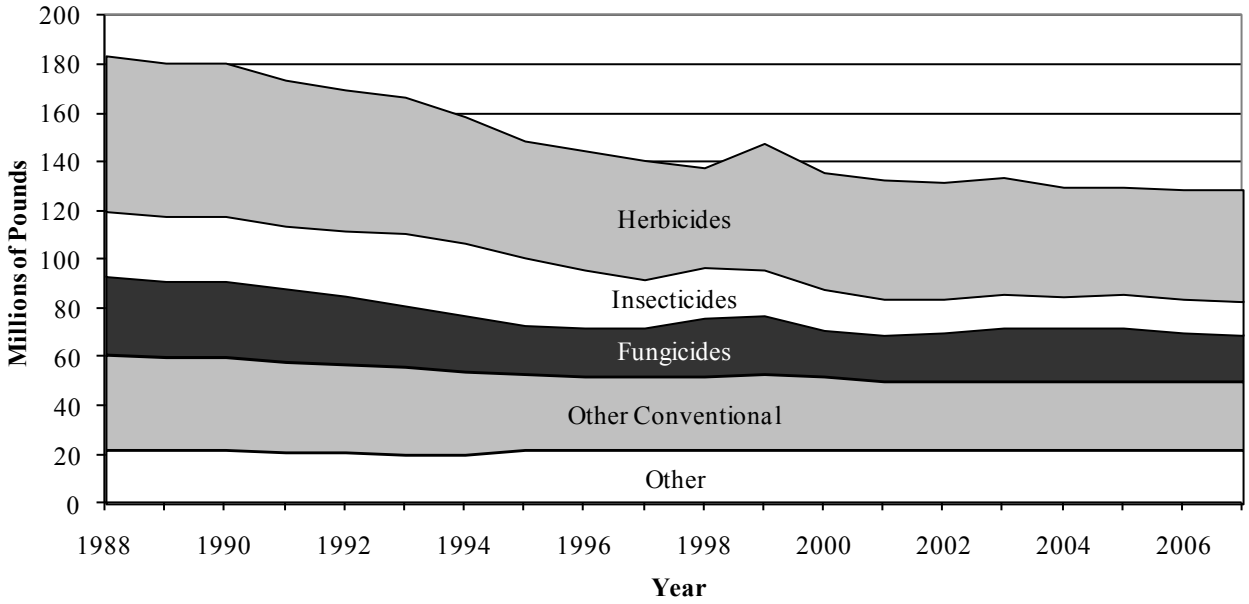


Table 5.8
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
Home and Garden Market Sector

Year	Million Pounds of Active Ingredient						Year	Million Pounds of Active Ingredient					
	Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total		Herbicides/ PGR	Insecticides	Fungicides	Other Conv[1]	Other[2]	Total
1988	43	13	13	3	67	139	1998	49	13	8	2	60	132
1989	44	12	13	2	68	139	1999	54	14	10	2	60	140
1990	46	12	10	2	66	136	2000	62	15	11	2	60	150
1991	46	12	9	2	65	134	2001[3]	62	17	12	2	61	154
1992	46	12	8	2	64	132	2002	62	19	11	2	61	155
1993	46	13	8	2	62	131	2003	53	21	11	2	61	148
1994	46	13	8	2	61	130	2004	51	19	10	2	61	143
1995	47	12	8	2	59	128	2005	48	17	9	2	61	137
1996	48	12	8	2	60	130	2006	46	16	7	2	61	132
1997	49	13	8	2	60	132	2007	43	14	7	2	61	127

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.
1. Other conventional pesticides include nematicides, fumigants, and other miscellaneous conventional pesticides. See Table 3.4.
2. "Other" includes sulfur, petroleum, and other chemicals used as pesticides (e.g., sulfuric acid and insect repellents). See Table 3.11.
3. The previous estimate of herbicide and PGR use for 2001 was revised in the current report to based on new data.

Figure 5.8
Annual Amount of Pesticide Active Ingredient Used in the United States by Pesticide Type, 1988–2007 Estimates
Home and Garden Market Sector

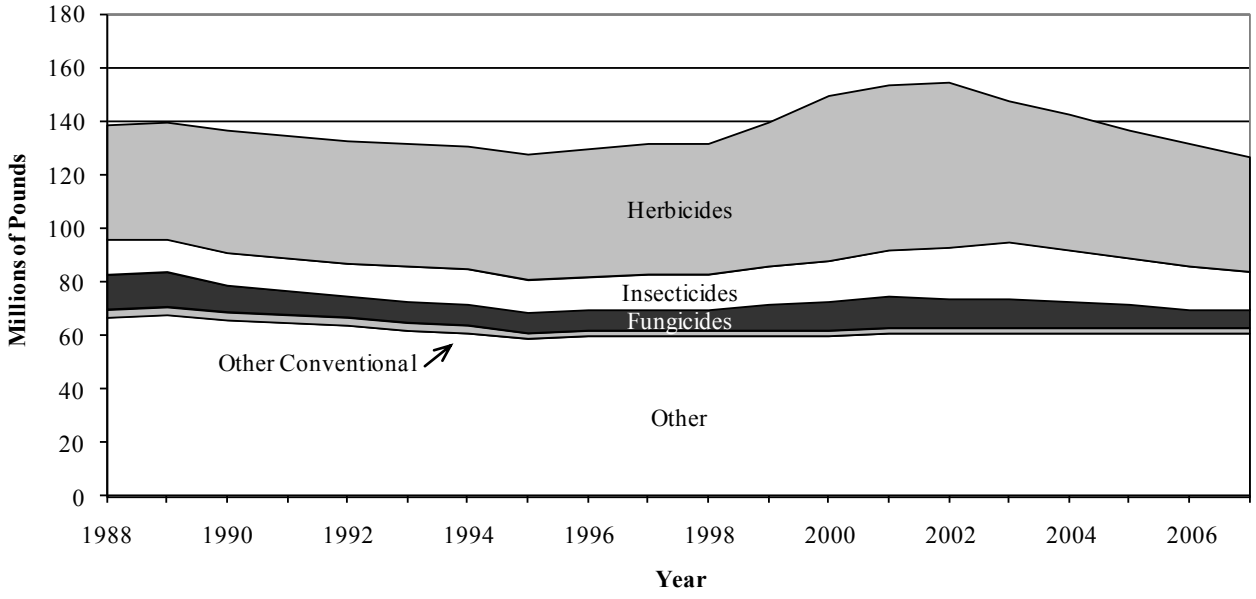


Table 5.9
Conventional Pesticide Active Ingredient Used in the United States
Agricultural and Non-Agricultural Market Sector Shares, 1970–2007

Year	Total U.S.	Agricultural Sector		Non-Agricultural Sector
	Million Pounds	Million Pounds	% of total	Million Pounds
1970	760	499	66	261
1971	793	528	67	265
1972	843	575	68	268
1973	882	607	69	275
1974	964	688	71	276
1975	1,013	729	72	284
1976	1,041	753	72	288
1977	1,084	794	73	290
1978	1,106	813	74	293
1979	1,144	843	74	301
1980	1,121	826	74	295
1981	1,118	831	74	287
1982	1,084	804	74	280
1983	1,021	745	73	276
1984	1,061	794	75	267
1985	1,020	767	75	253
1986	988	739	75	249
1987	906	666	74	240
1988	925	690	75	235
1989	942	712	76	230
1990	949	720	76	229
1991	928	708	76	220
1992	940	723	77	217
1993	914	698	76	216
1994	984	776	79	208
1995	961	765	80	196
1996	996	803	81	193
1997	958	767	80	191
1998	912	724	79	188
1999	912	706	77	206
2000	926	722	78	204
2001	888	675	76	213
2002	885	681	77	204
2003	868	669	77	199
2004	885	695	79	190
2005	844	660	78	184
2006	821	643	78	178
2007	857	684	80	173

Note: Conventional pesticides only, excluding sulfur, petroleum oil, and other chemicals used as pesticides (e.g., sulfuric acid and insect repellents), wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on USDA/NASS (www.nass.usda.gov) and EPA proprietary data.

6. Glossary

ACTIVE INGREDIENT (a.i.): The chemical or substance component of a pesticide product intended to kill, repel, attract, mitigate, or control a pest, or that acts as a plant growth regulator, desiccant, or nitrogen stabilizer. The remainder of a formulated pesticide product consists of one or more "inert ingredients" (e.g., water, solvents, emulsifiers, surfactants, clay, and propellants), which are there for reasons other than pesticidal activity.

AGRICULTURAL SECTOR (OR MARKET): Pesticides applied by owner/operators and custom/commercial applicators to farms and facilities involved in the production of raw agricultural commodities, principally food, fiber, and tobacco; includes non-crop and post-harvest use as well as crop and field applications.

CERTIFIED APPLICATOR: A person who is authorized to apply "restricted-use" pesticides as a result of meeting requirements for certification under FIFRA-mandated programs. Applicator certification programs are conducted by states, territories, and tribes in accordance with national standards set by EPA. "Restricted-use pesticides" may be used only by or under the direct supervision of specially trained and certified applicators.

COMMERCIAL APPLICATOR: A person applying pesticides as part of a business, applying pesticides for hire, or applying pesticides as part of his or her job with another (not for hire) type of business, organization, or agency. Commercial applicators often are certified, but need to be so only if they apply restricted-use pesticides.

CONVENTIONAL PESTICIDES: Pesticides that are chemicals or other substances developed and produced primarily or only for use as pesticides. An example is 2,4-D, which was developed and used almost exclusively as a pesticide. Conventional pesticides also include biological and biochemical pesticides, e.g., *Bacillus thuringiensis*.

ECONOMIC SECTORS (OR MARKETS): In this report, estimates of quantities used and user expenditures for pesticides are broken out separately for the three general economic user sectors (or markets) as follows: agriculture, industrial/commercial/governmental, and home and garden. These three sectors/markets are defined elsewhere in this glossary.

FDA: The U.S. Food and Drug Administration, a branch of the U.S. Department of Health and Human Services, is involved in regulation of pesticides in the United States, particularly in the enforcement of tolerances in food and feed products.

FFDCA: Federal Food, Drug, and Cosmetic Act, the law that controls pesticide residues in food and feed.

FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act, the law that generally controls pesticide sale and use.

FQPA: The Food Quality Protection Act (FQPA) of 1996 amended the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDCA).

HOME AND GARDEN SECTOR (OR MARKET): Involves pesticides applied by homeowners to homes and gardens, including lawns and single- and multiple-unit housing. Does not include pesticides for home and garden applications by professional applicators.

INDUSTRIAL/COMMERCIAL/GOVERNMENTAL USER SECTOR (OR MARKET): Involves pesticides applied by professional applicators (by owners/operators/employees and custom/commercial applicators) to industrial, commercial, and governmental facilities, buildings, sites, and land, plus custom/commercial applications to homes and gardens, including lawns. May also be referred to as the "professional market" for pesticides.

NON-AGRICULTURAL SECTORS: General term referring to a combination of the home and garden and industrial/commercial/governmental sectors.

OTHER PESTICIDES: Chemicals registered as pesticides but that are produced and marketed mostly for other purposes (i.e., multi-use chemicals). Notable examples are sulfur, petroleum products (e.g., kerosene, oils, and distillates), salt, and sulfuric acid.

PESTICIDE: May be used to refer to an active ingredient (as defined above) or formulated pesticide product registered under FIFRA.

PESTICIDE USAGE: Refers to actual applications of pesticides, generally in terms of quantity applied or units treated.

PRIVATE APPLICATOR: A category of applicator certification for farmers and/or employees, such that they can legally apply restricted-use pesticides or supervise others doing so who are not certified.

PRODUCER LEVEL: Data covering companies that manufacture and formulate pesticides.

PROFESSIONAL MARKET: Sales of pesticides for application to industrial/commercial/governmental sector and to homes and gardens, by certified/commercial applicators.

PROPRIETARY DATA: Pesticide industry marketing research data that EPA purchases from private data research companies. These data are for EPA use only and cannot be divulged without vendor consent. Companies include GfK Kynetec, and Kline & Company, Inc.

SPECIALTY BIOCIDES: This report provides estimates for end uses as follows: swimming pools, spas, and industrial water treatment (excluding chlorine/hypochlorites, which are reported separately); disinfectants and sanitizers (including industrial/institutional applications and household cleaning products); and other specialty biocides (including biocides for adhesives and sealants, leather, synthetic latex polymers, metalworking fluids, paints and coatings, petroleum products, plastics, mineral slurries, and textiles). These categories of end use are covered by FIFRA. Other end uses of specialty biocides (e.g., hospital/medical antiseptics, food/feed preservatives, cosmetics/toiletries) are regulated by the FDA under FFDCA and are not covered in this report.

TOLERANCE: The maximum amount of a pesticide allowable in a food or feed product before it is considered adulterated, usually specified in parts per million.

USDA/FAS: The U.S. Department of Agriculture, Foreign Agricultural Service. Publicly available data on U.S. agricultural imports and exports (www.fas.usda.gov).

USDA NASS: The U.S. Department of Agriculture, National Agricultural Statistics Service. Publicly available data on U.S. agricultural pesticide use (www.nass.usda.gov).

USER LEVEL: Data covering persons or businesses that purchase and apply pesticides, such as farmers, commercial pesticide applicators, and homeowners.

WOOD PRESERVATIVES: Pesticide active ingredients used in treatment of wood to protect it from insects, fungi, and other pests. This report presents total use of wood preservative chemicals in industrial plants, the bulk of which is for pressure treatment. The major categories of pesticide chemicals included in this report as wood preservatives are waterborne preservatives (mainly chromated copper arsenic), oilborne preservatives (e.g., copper naphthenate and pentachlorophenol), creosote, creosote-coal tar, and creosote petroleum.

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