Pesticides Industry Sales and Usage

1998 and 1999 Market Estimates

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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), EPA, in cooperation with the 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 available information on pesticide sales and usage. 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 to 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 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 proprietary 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 usage. The Pesticide Data Center in 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 market sector, which account for a majority of the use of conventional pesticides, and in non-agricultural market sectors. The Agency uses three national database services for the agricultural sector, including those from the USDA and a number of more specific data sources. Similar data sources cover the non-agricultural sector. EPA also uses proprietary data sources, with vendor permission, to estimate agricultural and non-agricultural market sectors. These proprietary data sources, produced by well-known organizations, also serve pesticide registrants and other private sector firms analyzing the U.S. pesticide market.

Overview of Contents/Scope of Report

This report profiles the U.S. pesticide industry for the years 1998 and 1999. Data, estimated using several different parameters (e.g., pesticide type, pesticide group, market sector), appear in table 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. The report includes graphic representations of the data where useful.

1. Introduction

Although most of the information covers the years 1998 and 1999, this report also includes an historical section. This section contains re-estimated values for the amount of insecticides used and dollar expenditures on insecticides and, therefore, total pesticide amount used and expenditures for each market sector dating back to 1980. The Agency made revisions to each market sector based on a reexamination of the data available. Care should be taken to use the new values for 1997 and earlier years, rather than values published in prior editions of the report.

Following this Introduction (Section 1), Section 2 summarizes U.S. and world pesticide user expenditures in 1998 and 1999, and Section 3 summarizes U.S. and world pesticide amount used in 1998 and 1999. Section 4 presents background information on pesticide market sectors. Finally, Section 5 presents historical data summarizing pesticide expenditures and amount used estimates since 1980.

Changes Since Last Report

This report includes significant changes in format from previously published EPA Pesticide Industry Sales and Usage reports. The majority of the information contained in the report is the same, but with reformatted content and additional pieces of information. Format changes include:

- brief discussions of tabular information appear throughout the document, replacing the Table Highlights section;
- the current year (1998 and 1999) pesticide expenditures and amount applied estimates are separated into two distinct sections;
- the historical data (pesticide sales, amount, and registration activities) appear in a separate section at the end of the document; and
- information from Table 7, which contained miscellaneous background information on the pesticide market sectors and pesticide registration and reregistration in previous reports, is distributed throughout the document and presented with other relevant data.

See Table 1.1 for links between data in the 1996 and 1997 and the 1998 and 1999 Pesticide Industry Sales and Usage reports. This year's publication includes Table 1.1 to assist report users in finding table data in the reorganized publication.

In addition to 1998 and 1999 updates to the sales and usage data, this report contains a discussion of the current and historical amount of organophosphate insecticides used. The Agency chose organophosphate insecticides because they have been the focus of recent pesticide reregistration activities. This addition marks the first time the report has included class-specific pesticide information. We hope to include additional information specific to class or type of pesticide in future reports.

The writing of the 2000/2001 pesticide industry sales and usage report is scheduled to begin once all of the supporting pesticide sales and usage data for 2001 are published (fall of 2002). If you have questions regarding this report or need further information, please contact the authors at the following address:

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Table 1.1
Key to Layout Changes in the 1998 and 1999 Pesticide Industry Sales and Usage Report

Old Tables	Old Table Titles	New Tables
Table 1.	U.S. and World Pesticide Sales at User Level, 1997 Estimates *(and corresponding charts)*	Table 2.1 and Table 3.1
Table 2.	User Expenditures for Pesticides in the U.S. by Class and Sector, 1996/1997 Estimates *(and corresponding chart)*	Table 2.3
Table 3.	Volume of Pesticide Active Ingredient Used in U.S. by Type, Class, and Sector, 1996/1997 Estimates *(and corresponding chart)*	Table 3.4 and Table 3.9
Table 4.	U.S. Usage of Conventional and Other Types of Pesticides, 1996/1997 Estimates	Table 3.3, Table 3.10a, and Table 3.10b
Table 5.	Importance of Pesticide Expenditures to U.S. Farmers, 1995-1997 Estimates	Table 2.4
Table 6.	U.S. Production, Imports, Exports, and Net Supply of Pesticides at Producer Level, 1996/1997 Estimates *(and corresponding chart)*	Table 2.2 and Table 3.2
Table 7.	U.S. Pesticide Production, Marketing and User Sectors; Profile of Numbers of Units Involved, 1996/1997 Estimates	Table 4.1a through Table 4.1d
Table 8.	Quantities of Most Commonly Used Conventional Pesticides in U.S. Agricultural Crop Production	Table 3.6
Table 9.	Quantities of Pesticides Most Commonly Used in Non-Agricultural Sectors of U.S.	Table 3.7a and Table 3.7b
Table 10.	U.S. Conventional Pesticide Usage, Total and Estimated Agricultural Sector Share, 1964-1997 *(and corresponding charts)*	Table 5.9
Table 11a.	Number of Active Ingredients Registered for First Time as Pesticides Under FIFRA, by Type, 1967-1997 *(and corresponding chart)*	No equivalent table
Table 11b.	Number of Active Ingredients Registered for First Time as Pesticides Under FIFRA, by Classification: Safer (Reduced-Risk) or Other Pesticides, 1990-1997	No equivalent table
Table 12.	Number of Certified Applicators in the U.S., 1997 (October 30) *(and corresponding charts)*	Table 4.1c
Table 13.	U.S. Annual Volume of Pesticide Usage, by Type, All Economic Sectors Combined, 1979-1997 *(and corresponding chart)*	Table 5.5
Table 14.	U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979-1997 *(and corresponding charts)*	Table 5.6 through Table 5.8
Table 15.	U.S. Annual User Expenditures on Pesticides, by Type, All Economic Sectors Combined, 1979-1997 *(and corresponding chart)*	Table 5.1
Table 16.	U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979-1997 *(and corresponding charts)*	Table 5.2 through Table 5.4

2.1 World and U.S. Pesticide Expenditures

World pesticide expenditures totaled more than $33.5 billion in 1998 and 1999 (see Table 2.1). Expenditures on herbicides accounted for the largest proportion of total expenditures (more than 40%), followed by expenditures on insecticides, fungicides, and other pesticides, respectively. Total expenditures were up slightly in 1999 due to increased spending on insecticides, fungicides, and other pesticides.

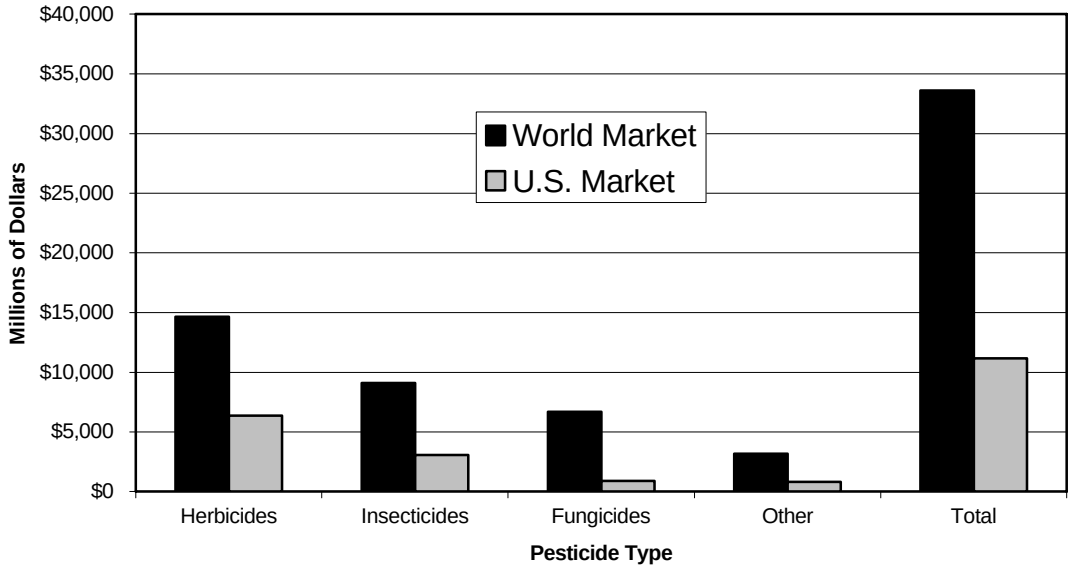
U.S. pesticide expenditures totaled more than $11 billion in 1998 and 1999, in proportions similar to that for world expenditures, with a relatively larger proportion of total U.S. expenditures on herbicides (see Figure 2.1). U.S. expenditures accounted for approximately 33% of total world expenditures on pesticides, more than 40% of world expenditures on herbicides, 33% of world expenditures on insecticides, and more than 10% and 25% of world expenditures on fungicides and other pesticides, respectively.[2] The Agency based its estimates of world and U.S. pesticide expenditures on the estimated pesticide expenditures and estimated changes in pesticide expenditures by type derived from public and proprietary EPA databases. See Section 2.3 for a more detailed look at U.S. expenditures on pesticides in 1998 and 1999.

Table 2.1
World and U.S. Pesticide Expenditures
User Level by Pesticide Type, 1998 and 1999 Estimates

Year	World Market		U.S. Market		U.S. Percent of
Type	Mil $	%	Mil $	%	World Market
1998					
Herbicides[1]	15,342	46	6,853	60	45
Insecticides	8,906	27	2,872	25	32
Fungicides	6,433	19	936	8	15
Other[2]	2,822	8	755	7	27
Total	33,503	100	11,416	100	34
1999					
Herbicides[1]	14,645	44	6,368	57	43
Insecticides	9,110	27	3,046	27	33
Fungicides	6,682	20	910	8	14
Other[2]	3,156	9	831	7	26
Total	33,593	100	11,155	100	33

Note: Totals may not add due to rounding. Table does not cover wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America (formerly the American Crop Protection Association (ACPA)) annual surveys and EPA proprietary data.
1. "Herbicides" include herbicides and plant growth regulators.
2. "Other" includes nematicides, fumigants, rodenticides, molluscicides, aquatic and fish/bird pesticides, other miscellaneous conventional pesticides, plus other chemicals used as pesticides, e.g., sulfur and petroleum.

Figure 2.1
World and U.S. Comparison of Pesticide Expenditures:
User Level by Pesticide Type, 1999 Estimates



2.2 Value of U.S. Pesticides: Producers

Table 2.2 summarizes the 1998 and 1999 average U.S. value of pesticides at the producer level, including production, import, export, and supply (total and net). Pesticide sales related to U.S. production and consumption of pesticides comprised $9.6 billion of domestic production, $1.0 billion of imports, $1.8 billion of exports, and $8.8 billion of net supply at the producer level.

Table 2.2
Value of U.S. Pesticide Production, Imports, Exports, and Supply of Pesticides[1] at Producer Level

Category	Sales Value (Billions of Dollars)
	Average of 1998 and 1999
Production	9.6
Imports	1.0
Total Supply	10.6
Exports	1.8
Net Supply	8.8

Note: Excludes industrial wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys, USDA Foreign Agricultural Trade of the U.S. (FATUS) databases (http://www.ers.usda.gov/db/fatus/), and EPA proprietary sources.
1. Includes conventional and other chemicals used as pesticides, e.g., sulfur and petroleum.

2.3 U.S. Pesticide Expenditures: Users

U.S. expenditures at the user level on conventional and other pesticides totaled more than $11 billion in both 1998 and 1999 (see Table 2.3). The conventional and other pesticides comprising the expenditure estimates include herbicides, insecticides, fungicides, nematicides, fumigants, sulfur, petroleum oil, and others. The estimates exclude expenditures on specialty biocides, wood preservatives, and chlorine/hypochlorites.

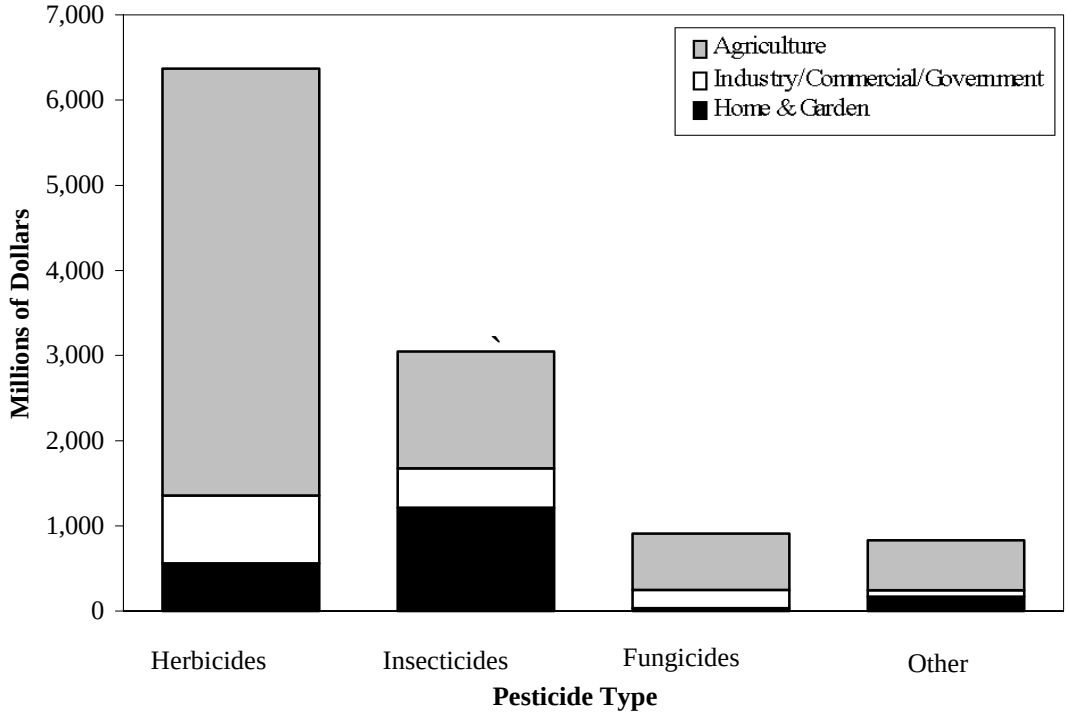
Reductions in spending in the agricultural sector on all pesticides, except other, more than offset increases in spending in the non-agricultural sectors in 1999, resulting in a decline in total 1999 expenditures. Expenditures in the agriculture sector accounted for more than two-thirds of total expenditures in both years. Herbicide expenditures dominated in all sectors except the home and garden sector, where insecticides comprise nearly 60% of all expenditures (see Figure 2.2). The estimated expenditures rely on the estimated changes in pesticide expenditures by sector and type provided in public and proprietary EPA databases.

Table 2.3
U.S. User Expenditures for Pesticides
by Pesticide Type and Market Sector, 1998 and 1999 Estimates

Year	Herbicides / Plant Growth Regulators		Insecticides / Miticides		Fungicides		Other[1]		Total	
Market Sector	Mil $	(%)	Mil $	(%)	Mil $	(%)	Mil $	(%)	Mil $	(%)
1998										
Agriculture	5,632	82	1,427	50	695	74	514	68	8,268	72
Ind/Comm/Gov	728	11	425	15	215	23	77	10	1,445	13
Home & Garden	493	7	1,020	36	26	3	164	22	1,703	15
Total	6,853	100	2,872	100	936	100	755	100	11,416	100
1999										
Agriculture	5,012	79	1,370	45	660	73	583	70	7,625	68
Ind/Comm/Gov	794	12	463	15	215	24	74	9	1,546	14
Home & Garden	562	9	1,213	40	35	4	174	21	1,984	18
Total	6,368	100	3,046	100	910	100	831	100	11,155	100

Note: Totals may not add due to rounding. Table does not cover industrial wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys and EPA proprietary data.
See Tables 5.1 to 5.4 for 1980-1999 estimates.
1. "Other" includes nematicides, fumigants, rodenticides, molluscicides, aquatic and fish/bird pesticides, other miscellaneous conventional pesticides, plus other chemicals used as pesticides, e.g., sulfur and petroleum.

Figure 2.2
U.S. User Expenditures for Pesticides
By Pesticide Type and Market Sector, 1999 Estimates



2.4 U.S. Pesticide and Farm Expenditures

Pesticides form an important component of total farm expenditures and are integral to farm budgeting and management. U.S. pesticide expenditures in 1998 and 1999 totaled 4.4% and 4.0% of total farm expenditures, respectively (see Table 2.4). Total farm expenditures increased slightly in 1999 while pesticide expenditures declined. Total farm expenditures are based on USDA estimates and pesticide expenditures from Table 2.3.

Table 2.4
U.S. Farm Production Expenditures (Billions $)

Year	1998	1999
Total	$188.6	$192.1
Pesticides	$8.3	$7.6
Pesticides as % of Total	4.4%	4.0%

Source: EPA Estimates (Table 2.3); USDA/ National Agricultural Statistics Service (NASS) (http://www.usda.gov/nass).

3.1 World and U.S. Pesticide Amount Used

World pesticide amount used exceeded 5.6 billion pounds in 1998 and 1999 (see Table 3.1). Herbicides accounted for the largest proportion of total usage, followed by other pesticide usage, insecticide usage, and fungicide usage. Total world pesticide amount used was up slightly in 1999, due mainly to an increase in the use of other pesticides.

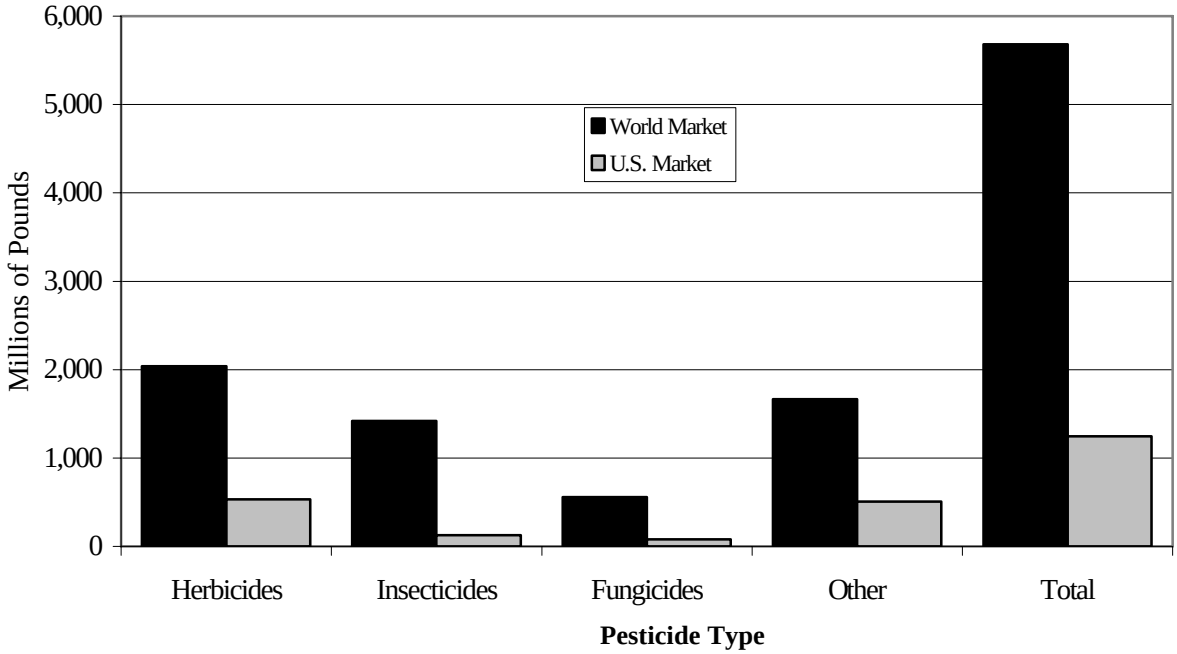
U.S. pesticide amount used in 1998 and 1999 exceeded 1.2 billion pounds, in proportions similar to that for world pesticide usage, with a larger proportion of total U.S. pesticide usage on herbicides and other pesticides (see Figure 3.1). U.S. pesticide amount used accounted for more than 20% of total world pesticide amount used, 26% of world herbicide amount used, less than 10% of world insecticide amount used, and approximately 15% and 30% of world fungicides and other pesticide amount used, respectively. The estimates of world and U.S. pesticide usage rely on estimated pesticide amount used and estimated changes in pesticide amount used by type derived from public and proprietary EPA databases. Subsequent sections provide a more detailed analysis of U.S. pesticide amount used in 1998 and 1999.

Table 3.1
World and U.S. Pounds of Pesticide Active Ingredient (A.I.) at User Level by Pesticide Type, 1998 and 1999 Estimates

Year	World Market		U.S. Market		U.S. Percent of
Class	Mil lbs of a.i.	%	Mil lbs of a.i.	%	World Market
1998					
Herbicides[1]	2,148	38	555	46	26
Insecticides	1,427	25	103	9	7
Fungicides	553	10	86	7	16
Other[2]	1,522	27	462	38	30
Total	5,650	100	1,206	100	21
1999					
Herbicides[1]	2,040	36	534	43	26
Insecticides	1,417	25	126	10	9
Fungicides	556	10	79	6	14
Other[2]	1,666	29	505	41	30
Total	5,679	100	1,244	100	22

Note: Totals may not add due to rounding. Table does not cover wood preservatives, specialty biocides, and chlorine/ hypochlorites.
Source: EPA estimates based on Croplife America annual surveys, USDA/NASS (http://www.usda.gov/nass), and EPA proprietary data.
1. "Herbicides" include herbicides and plant growth regulators.
2. "Other" includes nematicides, fumigants, rodenticides, molluscicides, aquatic and fish/bird pesticides, other miscellaneous conventional pesticides, plus other chemicals used as pesticides, e.g., sulfur and petroleum.

Figure 3.1
Comparison of World and U.S. Pesticide Pounds of Active Ingredient at User Level by Pesticide Type, 1999 Estimates



3.2 U.S. Pesticide Supply: Producer Level

Table 3.2 summarizes the 1998 and 1999 average U.S. distribution of pesticides at the producer level, including amount of production, amount of imports, amount of exports, and amount of supply (total and net). Pesticide amount related to U.S. pesticide production and consumption comprised 1.6 billion pounds of domestic production, 0.7 billion pounds of imports, 0.3 billion pounds of exports, and 1.2 billion pounds of net supply.

Table 3.2
U.S. Pesticide Production, Imports, Exports, and Supply of Pesticides[1] in Pounds Produced at the Producer Level

Category	Active Ingredient (Billions of Pounds)
	Average of 1998 and 1999
Production	1.6
Imports	0.3
Total Supply	1.9
Exports	0.7
Net Supply	1.2

Note: Excludes industrial wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys, USDA Foreign Agricultural Trade of the U.S. (FATUS) databases (http://www.ers.usda.gov/db/fatus/), and EPA proprietary data.
1. Includes conventional and other chemicals used as pesticides, e.g., sulfur and petroleum.

3.3 U.S. Pesticide Amount Used: Total

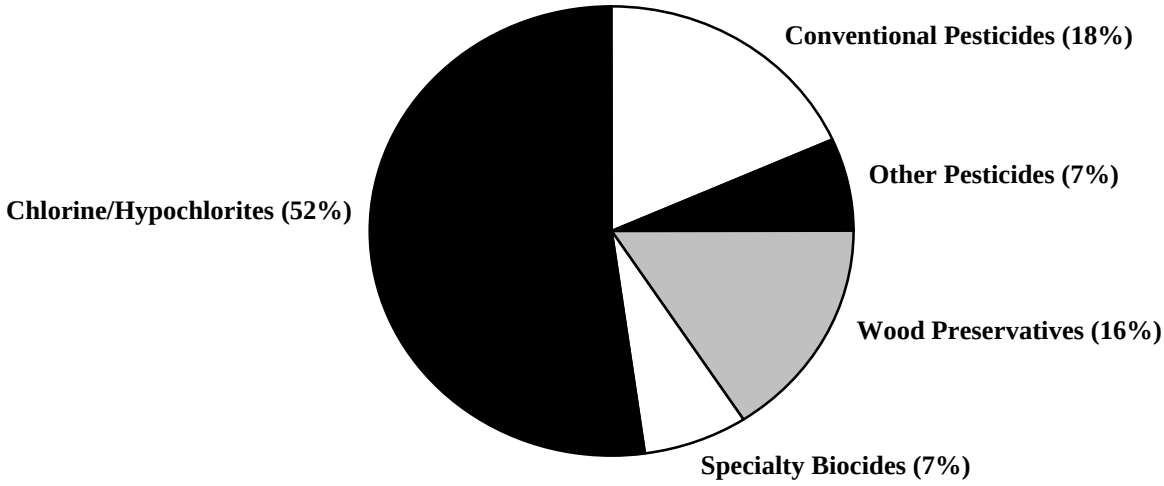
Total pesticide amount used in the U.S. approximated 5 billion pounds in 1998 and 1999 (see Table 3.3). This estimate included the conventional, other, wood preservatives, specialty biocides, and chlorine/ hypochlorites pesticide groups. At more than 2.5 billion pounds used, usage of chlorine/hypochlorites exceeded all other pesticide groups combined (see Figure 3.2). The estimates of usage 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 1998 and 1999 appears in subsequent sections (see footnotes to Table 3.3 for location).

Table 3.3
Amount of U.S. Pesticide Usage
by Pesticide Group, 1998 and 1999 Estimates

Pesticide	Total (Mil lbs)	
Group	1998	1999
Conventional Pesticides[1]	912	912
Other Pesticides[2]	294	332
Specialty Biocides[3]	309	343
Chlorine/Hypochlorites[4]	2,532	2,609
Wood Preservatives[5]	820	801
Total	4,867	4,997

1. See Table 3.4 (conventional pesticides) for additional details and specific source information.
2. See Table 3.9 (other pesticides) for additional details and specific source information.
3. See Table 3.10a (specialty biocides) for additional details and specific source information.
4. See Table 3.10b (chlorine/hypochlorites) for additional details and specific source information.
5. Source: American Wood Preservatives Institute (AWPI) and EPA proprietary data. "Wood Preservatives" include creosote, pentachlorophenol, and chromated copper arsenate (CCA).

Figure 3.2
Amount of U.S. Pesticide Usage
by Pesticide Group, 1999 Estimates



3.4 U.S. Pesticide Amount Used: Conventional

Table 3.3 shows that conventional pesticide amount used in 1998 and 1999 totaled 912 million pounds. This category was second highest among all pesticide groups in the U.S. after chlorine/hypochlorites. Table 3.4 shows the breakout of this usage by pesticide type and market sector. Pesticide types in this group include herbicides, plant growth regulators, insecticides, miticides, fungicides, nematicides, fumigants, and others.[1] Although total usage estimates were the same in 1998 and 1999, usage by sector and type varied between the two years. The amount used in the agricultural sector accounted for the majority of the total amount used in both years, with the two non-agricultural sectors (industry/commercial/government and home & garden) cumulatively accounting for less than 25% of the total usage in each year (see Table 3.4). The amount used in the agriculture sector accounted for the majority of the total amount used by pesticide type in both years as well - more than 60% of the total amount used of each type, except for fungicides in 1999 (57%). Figure 3.3 graphs the distribution of usage by type and sector. The estimated usage relies on the estimated amount used and changes in amount used of conventional pesticides by sector and type derived from public and proprietary EPA databases.

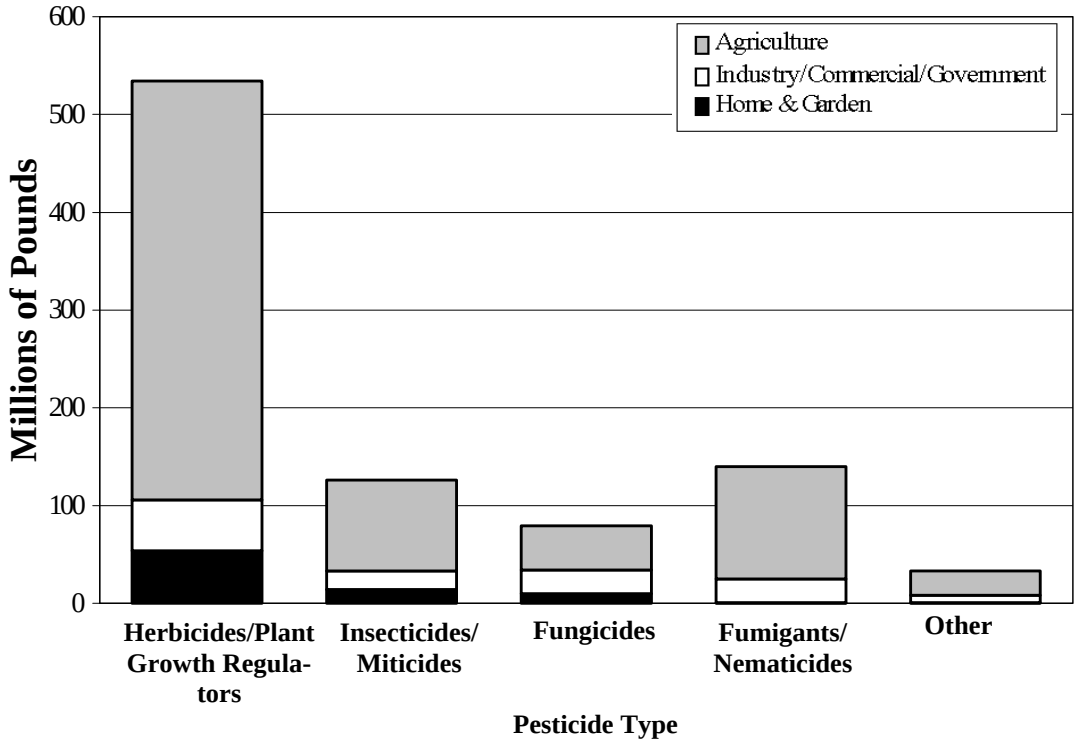
A notable (35%) increase in insecticide amount used in agriculture occurred in 1999. This increase is due in large part to an increase in the amount of malathion used on cotton as part of the USDA-sponsored Boll Weevil Eradication Program. Additional information on this program, including the history and the states participating, can be found at the Web site: *http://www.aphis.usda.gov/ppq/weevil/.*

Table 3.4
U.S. Pounds of Conventional Pesticide Active Ingredient by Pesticide Type and Market Sector, 1998 and 1999 Estimates

Year	Herbicides / Plant Growth Regulators		Insecticides / Miticides		Fungicides		Nematicide / Fumigant		Other Conventional[1]		Total	
Sector	Mil lbs of a.i.	%	Mil lbs of a.i.	%	Mil lbs of a.i.	%	Mil lbs of a.i.	%	Mil lbs of a.i.	%	Mil lbs of a.i.	%
1998												
Agriculture	465	84	69	67	54	63	111	82	25	78	724	79
Ind/Comm/Gov	41	7	21	20	24	28	24	18	6	19	116	13
Home & Garden	49	9	13	13	8	9	1	1	1	3	72	8
Total	555	100	103	100	86	100	136	100	32	100	912	100
1999												
Agriculture	428	80	93	74	45	57	115	82	25	76	706	77
Ind/Comm/Gov	52	10	19	15	24	30	24	17	7	21	126	14
Home & Garden	54	10	14	11	10	13	1	1	1	3	80	9
Total	534	100	126	100	79	100	140	100	33	100	912	100

Note: Totals may not add due to rounding. Table does not cover industrial wood preservatives, specialty biocides, chlorine/hypochlorites, and other chemicals used as pesticides, e.g., sulfur and petroleum.
Source: EPA estimates based on Croplife America annual surveys, USDA/NASS (http://www.usda.gov/nass/), and EPA proprietary data.
See Tables 5.5 to 5.8 for 1980-1999 estimates.
1. "Other Conventional" pesticides include rodenticides, molluscicides, aquatic and fish/bird pesticides, and other miscellaneous conventional pesticides.

Figure 3.3
U.S. Pounds of Conventional Pesticide Active Ingredient by Pesticide Type and Market Sector, 1999 Estimates



3.5 Share of U.S. Pounds 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 1998 and 1999. The agricultural sector accounts for more than 75% of the total amount of conventional pesticides used in both years. See Table 5.9 in the Historical Data section of this report for data covering the years 1964 through 1999.

Table 3.5
Share of U.S. Pounds of Conventional Pesticide Active Ingredient: Agricultural and Non-Agricultural Market Sector Shares, 1998 and 1999

Year	U.S.	Agricultural Market Sector		Non-Agricultural Market Sector	
	Mil lbs	Mil lbs	% of U.S.	Mil lbs	% of U.S
1998	912	724	79	188	21
1999	912	706	77	206	23

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.
See Table 5.9 for 1964 - 1999.
Source: EPA estimates based on Croplife America annual surveys, USDA/NASS (http://www.usda.gov/nass), and EPA proprietary data.

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

Table 3.6 shows the 25 most commonly used conventional pesticide active ingredients in the agricultural sector in 1999 and selected earlier years. Atrazine was the most used active ingredient in 1999 (between 74 and 80 million pounds). Fourteen of the top 25 active ingredients used are herbicides; three are fungicides; three are insecticides; four are fumigants; and one is a plant growth regulator. The rankings rely on the estimated volume of conventional pesticides used in the agricultural sector, taken from public and proprietary EPA databases.

Table 3.6
Most Commonly Used Conventional Pesticide Active Ingredients
Agricultural Market Sector, 1999, 1997, 1993, and 1987 Estimates
(Ranked by Range in Millions of Pounds of Active Ingredient)

1999				1997		1993		1987	
Rank	Active Ingredient	Type	Range	Rank	Range	Rank	Range	Rank	Range
1	Atrazine	H	74-80	1	75-82	1	70-75	1	71-76
2	Glyphosate	H	67-73	5	34-38	11	15-20	17	6-8
3	Metam Sodium	Fum	60-64	3	53-58	8	25-30	15	5-8
4	Acetochlor	H	30-35	7	31-36	NA	NA	NA	NA
5	Methyl Bromide	Fum	28-33	4	38-45	3	49-57	NA	NA
6	2,4-D	H	28-33	8	29-33	7	25-30	5	29-33
7	Malathion	I	28-32	NA	NA	NA	NA	NA	NA
8	Metolachlor	H	26-30	2	63-69	2	60-65	3	45-50
9	Trifluralin	H	18-23	10	21-25	9	20-25	6	25-30
10	Pendimethalin	H	17-22	9	24-28	10	20-25	10	10-13
11	Dichloropropene	Fum	17-20	6	32-37	6	30-35	4	30-35
12	Metolachlor-s	H	16-19	NA	NA	NA	NA	NA	NA
13	Chlorothalonil	F	9-11	15	7-10	14	10-15	19	5-7
14	Chloropicrin	Fum	8-10	25	5-6	NA	NA	NA	NA
15	Copper Hydroxide	F	8-10	13	10-13	14	10-15	19	5-7
16	Chlorpyrifos	I	8-10	14	9-13	13	10-15	14	6-9
17	Alachlor	H	7-10	12	13-16	4	45-50	2	55-60
18	Propanil	H	7-10	22	6-8	15	7-12	13	7-10
19	EPTC	H	7-9	18	7-10	12	10-15	8	17-21
20	Dimethenamid	H	6-8	20	6-9	NA	NA	NA	NA
21	Mancozeb	F	6-8	17	7-10	19	4-7	21	4-6
22	Dicamba	H	6-8	16	7-10	16	6-10	23	4-6
23	Terbufos	I	5-7	19	6-9	17	5-8	11	8-10
24	Ethephon	PGR	5-6	NA	NA	NA	NA	NA	NA
25	Cyanazine	H	4-8	11	18-22	5	30-35	7	21-25

Note: List is limited to conventional pesticides and does not include sulfur and petroleum oil usage (see Table 3.9 for estimates).
H, indicates herbicide; I, insecticide; Fum fumigant; F, fungicide; and PGR, plant growth regulator. NA indicates that an estimate is not available.
Source: EPA estimates based on USDA/NASS (http://www.usda.gov/nass) and EPA proprietary data.

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

Tables 3.7a and 3.7b show the ten most commonly used conventional pesticide active ingredients in the two non-agricultural sectors (home & garden and industry/commercial/ government) in 1999 and 1997. In both sectors, 2,4-D was the most used active ingredient, with between seven and nine million pounds used in the home and garden sector (see Table 3.7a), and between 17 and 20 million pounds used in the industry/commercial/government sector (see Table 3.7b). Six of the top ten in the home and garden sector are herbicides and four are insecticides. Six of the top ten in the industry/ commercial/government sector are herbicides, two are fungicides, and two are insecticides. As indicated in the note to Table 3.7b, due to the fact that some applicators apply pesticide in both markets, there may be some usage reported in one market that may have occurred in the other. The rankings rely on the estimated amount used of conventional pesticides in the non-agricultural sector taken from proprietary EPA databases.

Table 3.7a
Most Commonly Used Conventional Pesticide Active Ingredients
Home and Garden Market Sector, 1999 and 1997
(Ranked by Range in Millions of Pounds of Active Ingredient)

1999				1997	
Rank	Active Ingredient	Type	Range	Rank	Range
1	2,4-D	H	7-9	1	7-9
2	Glyphosate	H	5-8	2	5-7
3	MCPP	H	3-5	4	3-5
4	Dicamba	H	3-5	3	3-5
5	Diazinon	I	2-4	5	2-4
6	Chlorpyrifos	I	2-4	6	2-4
7	Carbaryl	I	2-4	7	1-3
8	Benefin	H	1-3	8	1-3
9	Malathion	I	1-3	NA	NA
10	DCPA	H	1-3	9	1-3

Note: Does not include moth controls: Paradiclorobenzene (30 - 35 million pounds per year) and naphthaline (2 - 4 million pounds per year). Also does not include insect repellent N,N-diethyl-meta-toluamide (5 - 7 millions pounds per year).
H indicates herbicide and I, insecticide.
Source: EPA proprietary data.

Table 3.7b
Most Commonly Used Conventional Pesticide Active Ingredients
Industry/Commercial/Government Market Sector, 1999 and 1997
(Ranked by Range in Millions of Pounds of Active Ingredient)

1999				1997	
Rank	Active Ingredient	Type	Range	Rank	Range
1	2,4-D	H	17-20	1	16-18
2	Glyphosate	H	11-14	2	9-12
3	Copper Sulfate	F	5-7	3	5-7
4	Pendimethalin	H	3-5	7	2-4
5	Chlorpyrifos	I	3-5	4	4-7
6	MSMA	H	2-4	5	4-5
7	Chlorothalanil	F	2-4	8	2-4
8	Diuron	H	2-4	NA	NA
9	Malathion	I	1-3	9	2-3
10	Triclopyr	H	1-3	NA	NA

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.
Source: EPA proprietary data.

3.8 U.S. Organophosphate Insecticide Amount Used

Table 3.8a shows the total amount of organophosphate insecticide used in 1980, 1985, and annually since 1990. The top ten active ingredients in this pesticide class include malathion, chlorpyrifos, terbufos, diazinon, methyl-parathion, phorate, acephate, azinphos-methyl, phosmet, and dimethoate (see Table 3.8b). 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 activities. For more information on the active ingredients included in this pesticide class and their reregistration and registration status, go to the Office of Pesticide Programs Web site at *http://www.epa.gov/pesticides/op/*.

The amount of organophosphate insecticides used has declined 30% since 1980, from an estimated 131 million pounds in 1980 to 91 million pounds in 1999. Since 1980, however, organophosphate usage as a percent of total insecticide usage has increased, from 58% in 1980 to 72% in 1999. The increase in usage in 1999 was due mainly to the increased amount of malathion used as part of the USDA-sponsored Boll Weevil Eradication Program. Malathion's use in this program has increased substantially over the past few years as the program has expanded to include most of the major cotton producing areas of the U.S. Additional information on this USDA program can be found on the USDA Web site *http://www.aphis.usda.gov/ppq/weevil/*. The estimates of organophosphate insecticide usage rely on the estimated amount used and changes in the amount used of organophosphates from public and proprietary EPA databases.

Table 3.8a
U.S. Pounds of Organophosphate Insecticide Active Ingredients, All Market Sectors, 1980 - 1999

Year	All Insecticides	Organophosphates	
	Mil lbs of a.i.	Mil lbs of a.i.	% of All Insecticides
1980	228	131	58
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

Source: EPA estimates based on Croplife America annual surveys, USDA/NASS (http://www.usda.gov/nass/), and EPA proprietary data.

Figure 3.4
Total U.S. Pounds of Insecticide Active Ingredients for Organophosphate and All Other Insecticides, All Market Sectors, 1980 - 1999

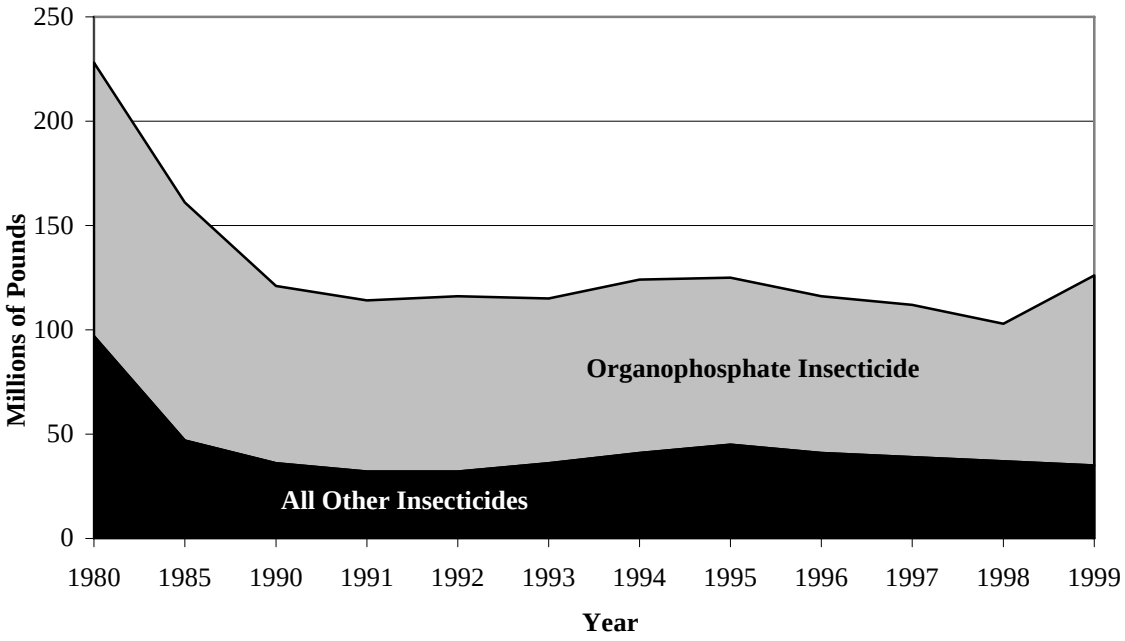


Table 3.8b
Most Commonly Used Organophosphate Insecticide Active Ingredients, All Market Sectors, 1999 Estimates
(Ranked by Range in Millions of Pounds of Active Ingredient)

1999		
Rank	Active Ingredient	Range
1	Malathion	30-38
2	Chlorpyrifos	13-19
3	Terbufos	5-7
4	Diazinon	4-7
5	Methyl Parathion	2-4
6	Phorate	2-3
7	Acephate	2-3
8	Azinphos-Methyl	1-2
9	Phosmet	1-2
10	Dimethoate	1-2

Source: EPA estimates based on Croplife America annual surveys, USDA/ NASS (http://www.usda.gov/nass/), and EPA proprietary data.

3.9 U.S. Pesticide Amount Used: Other

Total amount of other pesticides used in the U.S. was slightly less than 300 million pounds in 1998, and more than 330 million pounds in 1999 (see Table 3.9). The pesticides in this group include sulfur and petroleum oil, and other chemicals used as pesticides, such as sulfuric acid, insect repellants (e.g., DEET), moth control products (e.g., paradichlorobenzene), and others.[1] Nearly all of the sulfur and oil usage (85%) is in the agricultural sector, while the usage of the other pesticides in this group is mainly in the agricultural and home and garden sectors (93%). The increase in the amount used in 1999 resulted mainly from an increase in the usage of sulfur and petroleum oil in the agricultural sector. The amount of sulfur and petroleum oil and of the other pesticides in this group in the non-agricultural sectors did not change significantly between 1998 and 1999. Nearly three-fourths of the total amount of sulfur, oil and other pesticides used was in the agricultural sector. The estimated usage relies 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 3.9
U.S. Pounds of Other Pesticides
by Pesticide Type and Market Sector, 1998 and 1999 Estimates

Year	Sulfur & Oil		Other[1]		Total	
Sector	Mil lbs of a.i.	%	Mil lbs of a.i.	%	Mil lbs of a.i.	%
1998						
Agriculture	160	85	52	50	212	72
Ind/Comm/Gov	14	7	8	8	22	7
Home & Garden	15	8	45	43	60	20
Total	189	100	105	100	294	100
1999						
Agriculture	190	87	60	53	250	75
Ind/Comm/Gov	14	6	8	7	22	7
Home & Garden	15	7	45	40	60	18
Total	219	100	113	100	332	100

Note: Totals may not add due to rounding. Table estimates do not include industrial wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys, USDA/NASS (http://www.usda.gov/nass), and EPA proprietary data.
See Tables 5.5 to 5.8 for 1980-1999 estimates.
1. "Other" includes sulfuric acid, insect repellents, zinc sulfate, moth control chemicals (e.g., paradichlorobenzene and napthaline), and other miscellaneous chemicals produced largely for nonpesticidal purposes.

3.10 U.S. Pesticide Amount Used: Specialty Biocides and Chlorine/Hypochlorites

Tables 3.10a and 3.10b show the total amount of specialty biocides and chlorine/hypochlorites by end-use market in the U.S. in 1998 and 1999, respectively. Specialty biocides include water treatment chemicals, disinfectants and sanitizers, and products for other uses, such as in adhesives and sealants, leather, etc. More than two-thirds of the total amount of specialty biocides comprised water treatment chemicals. Chlorine/hypochlorites serve as water disinfectants, with 60% of their amount used in potable and waste water and 40% in recreational water. The estimates of the amount used rely on EPA proprietary databases and industry projections.

Table 3.10a
U.S. Pounds of Specialty Biocides
by End Use Market, 1998 and 1999 Estimates

Year	Total	
End Use	Mil lbs	%
1998		
Recreational and Industrial Water Treatment[1]	210	68
Disinfectants and Sanitizers[2]	48	16
Other Specialty Biocides[3]	51	17
Total	309	100
1999		
Recreational and Industrial Water Treatment[1]	230	67
Disinfectants and Sanitizers[2]	62	18
Other Specialty Biocides[3]	51	15
Total	343	100

Source: EPA estimates based on EPA proprietary data.
1. "Recreational and Industrial Water Treatment" does not include hypochlorite or chlorine consumption, which is reported separately.
2. "Disinfectants and Sanitizers" includes industrial/institutional applications and household cleaning products. Specialty biocides only. Does not include hypochlorite or chlorine consumption, which is reported separately.
3. "Other Specialty Biocides" includes biocides for adhesives and sealants, leather, synthetic latex polymers, metalworking fluids, paints and coatings, petroleum products, plastics, and mineral slurries.

Table 3.10b
U.S. Pounds of Chlorine/Hypochlorites
by End Use Market, 1998 and 1999 Estimates

Year	Total	
End Use	Mil lbs	%
1998		
Disinfectant of Potable and Waste Water	1,520	60
Disinfectant for Recreational Water	1,012	40
Total	2,532	100
1999		
Disinfectant of Potable and Waste Water	1,566	60
Disinfectant for Recreational Water	1,043	40
Total	2,609	100

Source: EPA estimates based on EPA proprietary data.

4.1 Pesticide Producers and Users

Table 4.1a lists estimates of the number of firms that are pesticide producers, formulators, and distributors. Table 4.1b lists estimates of farm land, acres harvested, and the number of farms using pesticides and fertilizers. Table 4.1c lists estimates of the number of pest control firms and certified pesticide applicators. Table 4.1d lists estimates of the number of households using pesticides.

Table 4.1a
The Number of Pesticide Producers, Formulators, and Distributors

1. A. Major Basic Producers	18
B. Other Producers	100
2. A. Major National Formulators	150 - 200
B. Other Formulators	2,000
3. A. Major National Distributors and Establishments	250 - 350
B. Other Distributors and Establishments	16,900

Source: EPA estimates based on EPA proprietary data.

Table 4.1b
Land in Farms, Farm Acres Harvested, the Number of Farms, and the Number of Farms Using Pesticides

1. Land in Farms	932M
2. Land Harvested	309M
3. Total Number of Farms	1.912M
4. Total Number of Farms with Cropland	1.661M
5. Total Number of Farms with Harvested Cropland	1.411M
6. Number of Farms Using Chemicals for:	
A. Insects on Hay/Crops	366,000
B. Nematodes	43,000
C. Diseases on Crops/Orchards	112,000
D. Weed/Grass/Brush	685,000
E. Defoliation/Fruit Thinning	51,000
F. Any or all of the above	941,000
G. Any or all of the above plus fertilizer	1,325,000

Source: 1997 Census of Agriculture (http://www.nass/usda.gov/Census).

Table 4.1c
The Number of Commercial Pest Control Firms and Number of Certified Applicators

1. Commercial Pest Control Firms	33,100
2. Private[1] Certified Applicators	803,423
3. Commercial[2] Certified Applicators	384,092

Source: Estimates based on 1992 EPA National Home and Garden Pesticide Use Survey and 1999 EPA estimates of 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 4.1d
The Number of Households Using Pesticides

1. Number of U.S. Households Using:	
A. Insecticides	58 Million
B. Fungicides	14 Million
C. Herbicides	40 Million
D. Repellents	52 Million
E. Disinfectants	58 Million
F. Any Pesticides	77 Million

Note: In 1999 the U.S. Census Bureau estimated the U.S. population to be 272.7 million and 103.9 million households.
Source: EPA estimates based on 1992 EPA National Home and Garden Survey and 1999 U.S. Census Bureau population estimates.

5.1 Annual U.S. Expenditures on Pesticides: 1980 - 1999

The following four tables (Tables 5.1a - 5.1d) summarize annual user expenditures on pesticides since 1980. Table 5.1a summarizes user expenditures on pesticides in all markets combined, while Table 5.1b, Table 5.1c and Table 5.1d summarize user expenditures in the agricultural, industry/commerical/government, and home and garden markets, respectively. In each market, user expenditures on pesticides have increased in total and by type since 1980, although the total amount has fluctuated from year to year.

Table 5.1a
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, All Market Sectors

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Dollars																			
Herbicides/PGR	3,310	3,738	3,772	3,870	4,488	3,920	3,858	3,973	4,121	4,305	4,473	4,682	5,004	5,094	5,944	6,276	6,599	6,846	6,853	6,368
Insecticides	2,037	2,077	2,014	2,074	1,809	1,823	1,759	2,008	1,964	1,978	2,083	2,139	2,198	2,479	2,722	3,017	2,849	2,957	2,872	3,046
Fung & Other	459	536	540	731	708	963	967	1,049	1,190	1,141	1,171	1,223	1,183	1,259	1,408	1,488	1,521	1,528	1,691	1,741
Total	5,806	6,351	6,326	6,675	7,005	6,706	6,584	7,030	7,275	7,424	7,727	8,044	8,385	8,832	10,074	10,781	10,969	11,331	11,416	11,155

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys and EPA proprietary data.

Figure 5.1a
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, All Market Sectors

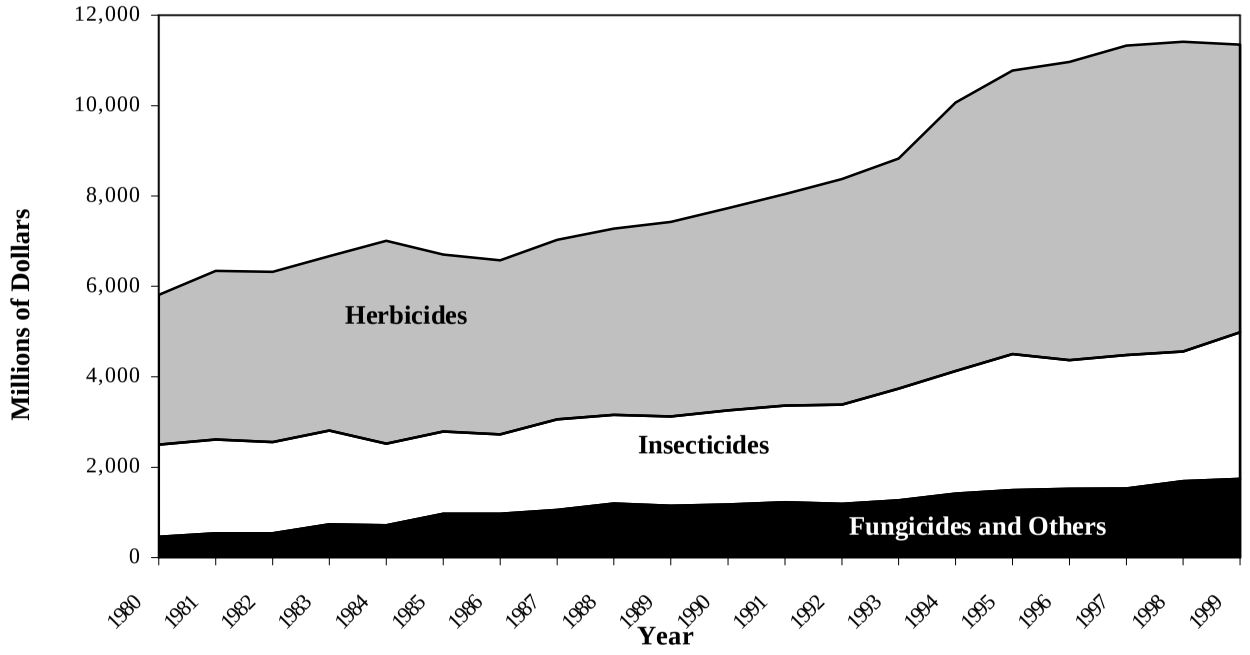


Table 5.1b
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, Agricultural Market Sector

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Dollars																			
Herbicides/PGR	2,300	2,590	2,465	2,800	3,390	2,900	2,775	2,935	3,080	3,255	3,463	3,644	3,915	3,987	4,808	5,112	5,399	5,610	5,632	5,012
Insecticides	1,095	1,139	1,109	1,261	903	990	914	1,145	1,010	978	1,067	687	1,058	1,123	1,293	1,607	1,480	1,551	1,427	1,370
Fung & Other	205	272	268	450	418	615	600	650	775	800	842	884	829	895	1,036	1,107	1,128	1,124	1,209	1,243
Total	3,600	4,001	3,842	4,511	4,711	4,505	4,289	4,730	4,865	5,033	5,372	5,215	5,802	6,005	7,137	7,826	8,007	8,285	8,268	7,625

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys and EPA proprietary data.

Figure 5.1b
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, Agricultural Market Sector

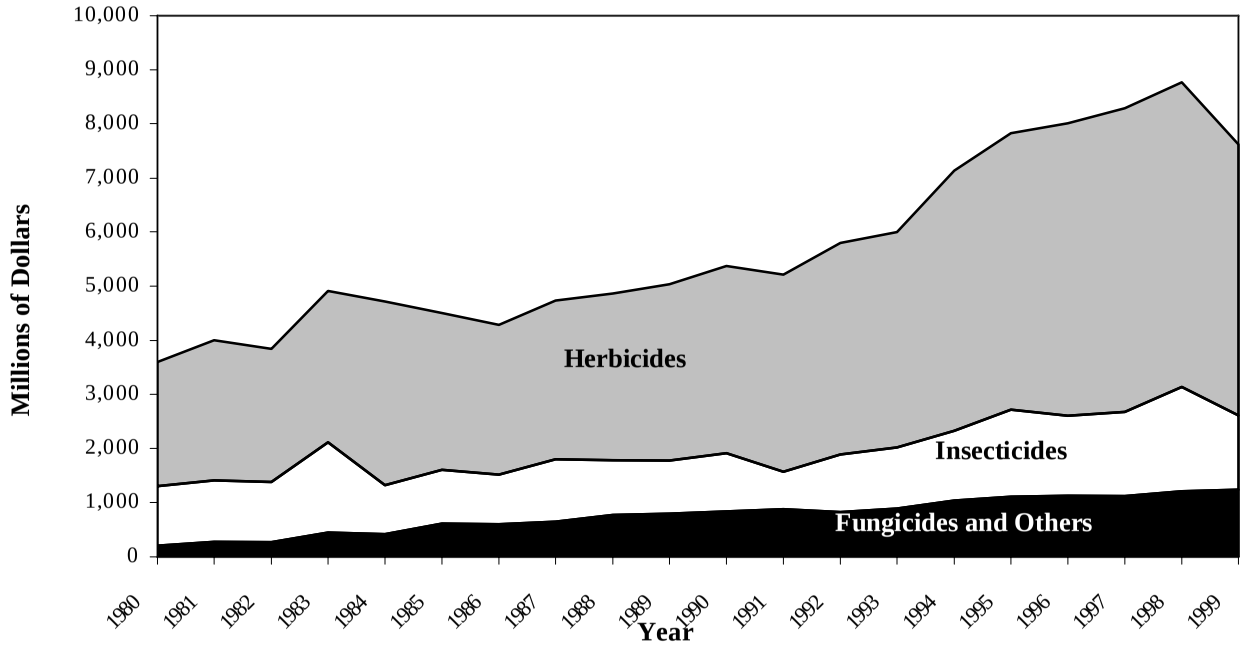


Table 5.1c
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, Industry/Commercial/Government Market Sector

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Dollars																			
Herbicides/PGR	660	756	852	720	720	600	642	576	600	630	593	616	648	660	679	700	721	743	728	794
Insecticides	312	319	305	288	365	315	316	330	394	317	307	328	378	406	533	527	458	386	425	463
Fung & Other	132	138	142	144	150	180	192	210	240	180	169	176	186	191	197	202	208	214	292	289
Total	1,104	1,213	1,299	1,152	1,235	1,095	1,150	1,116	1,234	1,127	1,069	1,120	1,212	1,257	1,409	1,429	1,387	1,343	1,445	1,546

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys and EPA proprietary data.

Figure 5.1c
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, Industry/Commercial/Government Market Sector

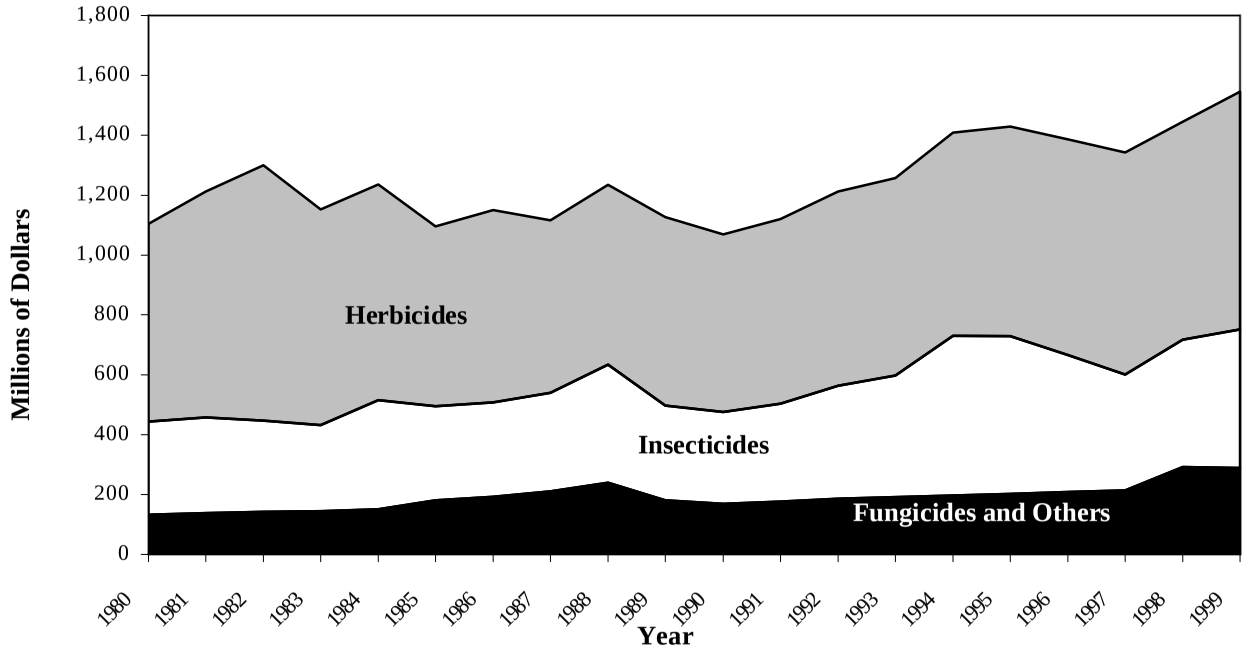
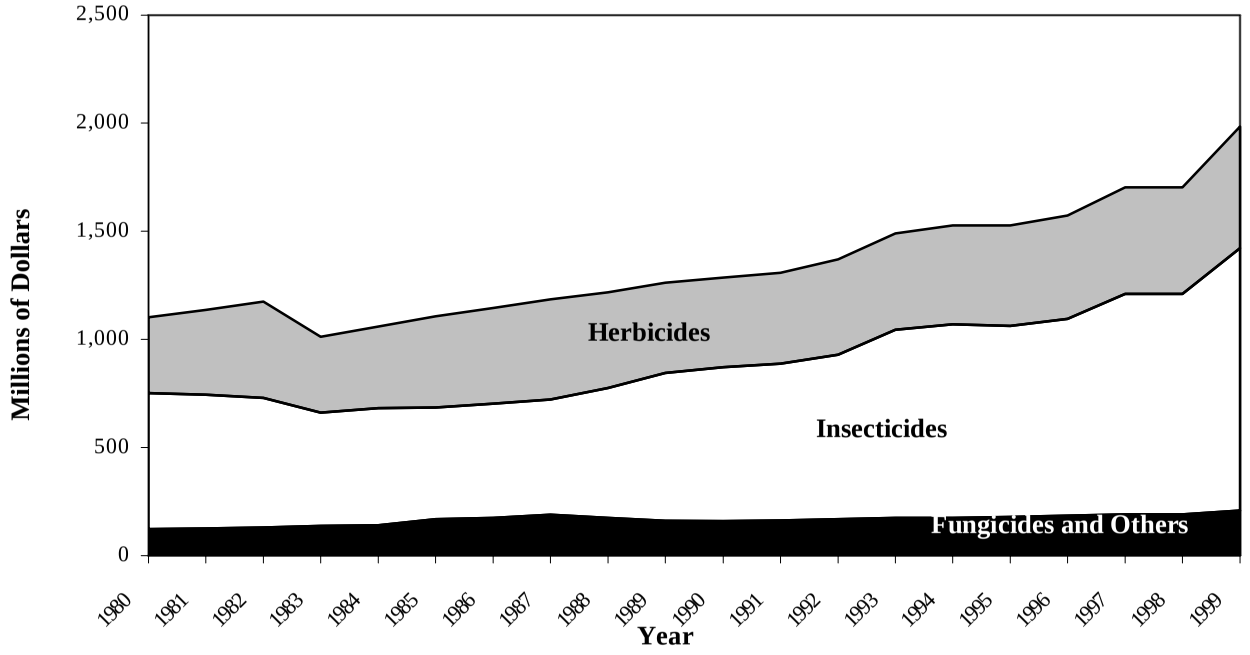


Table 5.1d
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, Home and Garden Market Sector

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Dollars																			
Herbicides/PGR	350	392	445	350	378	420	441	462	441	420	417	423	441	446	456	465	479	493	493	562
Insecticides	630	618	600	525	542	518	529	534	601	683	710	724	762	870	895	883	910	1,020	1,020	1,213
Fung & Other	122	126	130	137	140	168	175	189	175	161	160	162	168	174	175	179	185	190	190	209
Total	1,102	1,136	1,175	1,012	1,060	1,106	1,145	1,185	1,217	1,264	1,287	1,309	1,371	1,490	1,526	1,527	1,574	1,703	1,703	1,984

Note: Excludes wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys and EPA proprietary data.

Figure 5.1d
U.S. Annual User Expenditures on Pesticides, by Pesticide Type, 1980 - 1999, Home and Garden Market Sector



5.2 Annual Amount of Pesticides Used: 1980 - 1999

The following four tables (Tables 5.2a - 5.2d) summarize annual pounds of pesticides used since 1980. Table 5.2a summarizes the amount of pesticides used in all markets combined, while Table 5.2b, Table 5.2c and Table 5.2d summarize the amount of pesticides used in the agricultural, industry/commercial/government, and home and garden markets, respectively. In each market, the amount of pesticides used has decreased in total since 1980, although the total amount has fluctuated from year to year.

Table 5.2a
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999, All Market Sectors

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Pounds of Active Ingredient																			
Herbicides/PGR	622	631	620	573	634	611	590	532	557	567	564	546	554	527	583	556	578	568	555	534
Insecticides	228	213	198	185	173	161	150	140	131	123	121	115	116	115	123	125	117	112	103	126
Fungicides	122	122	117	115	109	110	109	100	99	98	91	86	81	80	79	77	79	81	86	79
Other Conv.[1]	149	153	149	148	145	138	138	133	137	154	173	183	189	192	199	203	222	197	168	173
Other[2]	321	307	298	287	284	284	278	269	266	251	252	226	246	248	244	249	234	270	294	332
Total	1,442	1,426	1,382	1,308	1,345	1,304	1,265	1,174	1,190	1,193	1,201	1,156	1,186	1,162	1,228	1,210	1,230	1,228	1,206	1,244

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

Figure 5.2a
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999, All Market Sectors

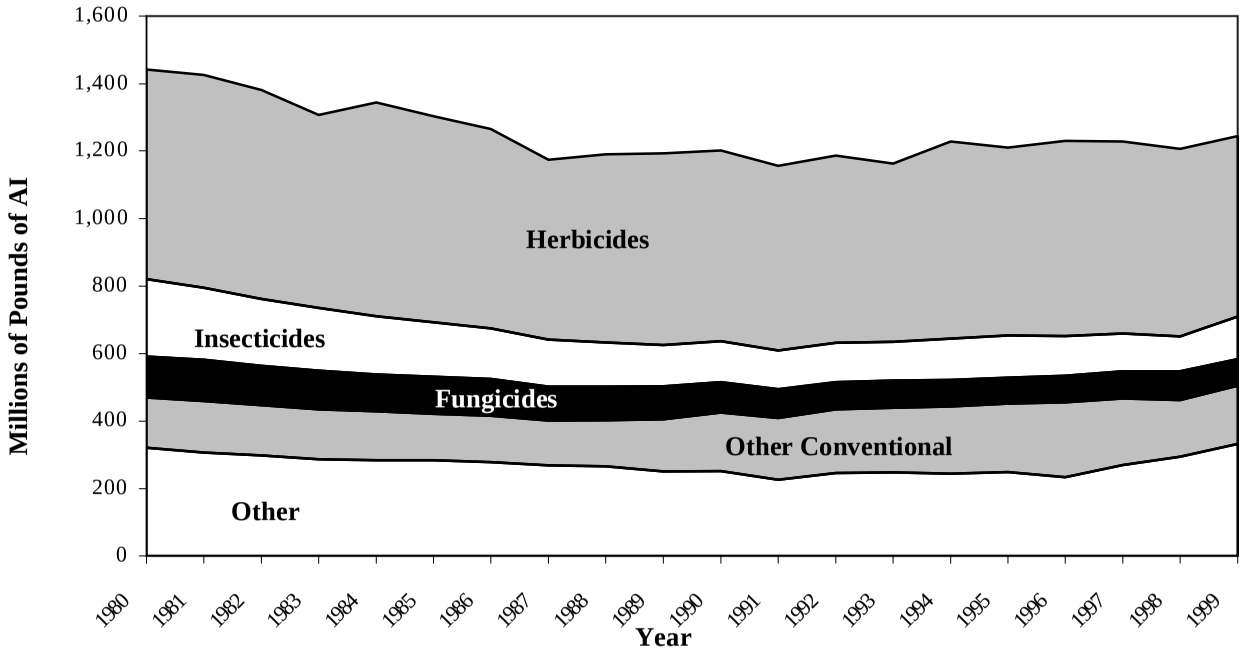


Table 5.2b
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999, Agricultural Market Sector

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Pounds of Active Ingredient																			
Herbicides/PGR	504	513	503	455	516	501	481	425	450	460	455	440	450	425	485	461	481	470	465	428
Insecticides	163	152	141	131	122	113	105	98	91	85	82	77	78	72	80	85	81	79	69	93
Fungicides	59	62	59	59	56	59	59	52	54	54	50	47	45	47	48	49	51	53	54	45
Other Conv.[1]	100	104	101	100	100	94	94	91	95	113	133	144	150	154	163	170	190	165	136	140
Other[2]	227	215	207	196	194	194	188	180	177	161	164	140	161	166	163	168	152	188	212	250
Total	1,053	1,046	1,011	941	988	961	927	846	867	873	884	848	884	864	939	933	955	955	936	956

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

Figure 5.2b
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999, Agricultural Market Sector

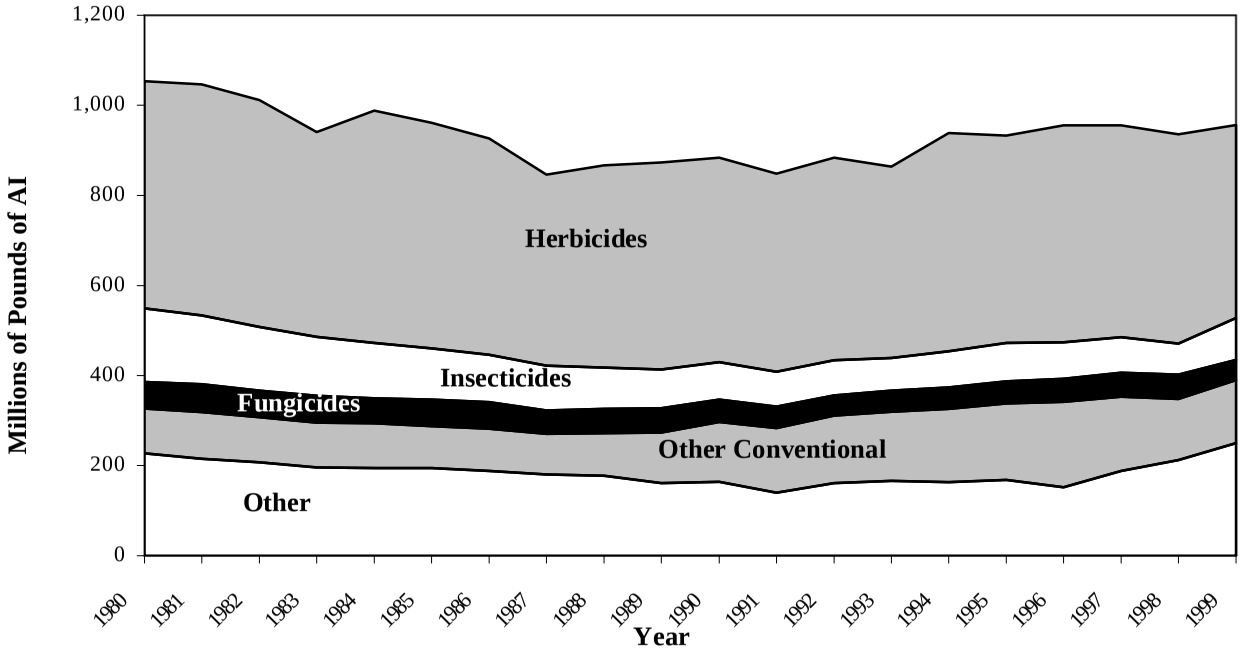


Table 5.2c
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999, Industry/Commercial/Government Market Sector

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Pounds of Active Ingredient																			
Herbicides/PGR	83	82	80	80	78	70	68	65	64	63	63	60	58	56	52	48	49	49	41	52
Insecticides	35	34	33	32	31	30	29	28	27	27	27	26	27	30	30	28	24	20	21	19
Fungicides	45	43	41	40	38	37	36	34	32	31	31	30	28	25	23	20	20	20	24	24
Other Conv.[1]	46	46	45	45	41	41	41	39	39	38	38	37	36	36	34	31	30	30	30	31
Other[2]	25	24	24	24	24	23	23	22	22	22	22	21	21	20	20	22	22	22	22	22
Total	234	229	223	221	212	201	197	188	184	181	181	174	170	167	159	149	145	141	138	148

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

Figure 5.2c
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999,

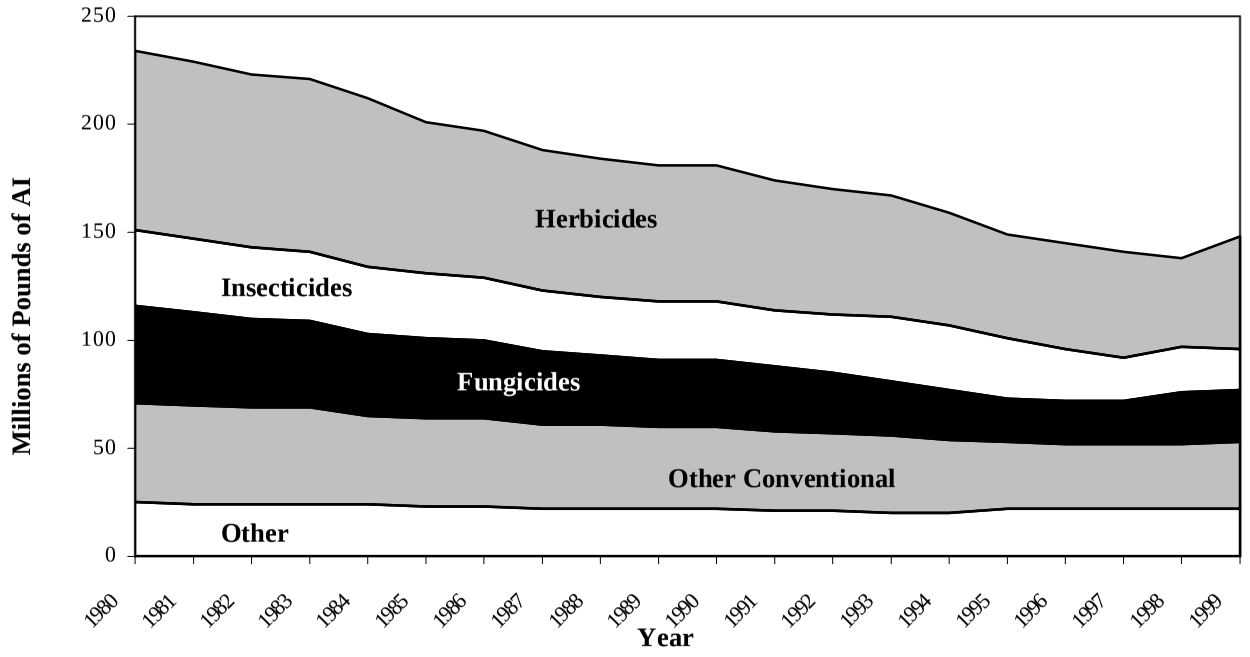


Table 5.2d
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999, Home and Garden Market Sector

Pesticide Type	Year																			
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Millions of Pounds of Active Ingredient																			
Herbicides/PGR	35	36	37	38	40	40	41	42	43	44	46	46	46	46	46	47	48	49	49	54
Insecticides	30	27	24	22	20	18	16	14	13	12	12	12	12	13	13	12	12	13	13	14
Fungicides	18	17	17	16	15	14	14	14	13	13	10	9	8	8	8	8	8	8	8	10
Other Conv.[1]	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2
Other[2]	69	68	67	67	67	67	67	67	67	68	66	65	64	62	61	59	60	60	60	60
Total	155	151	148	146	145	142	141	140	139	139	136	134	132	131	130	128	130	132	132	140

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

Figure 5.2d
U.S. Annual Pounds of Pesticide Active Ingredient, by Pesticide Type, 1980 - 1999, Home and Garden Market Sector

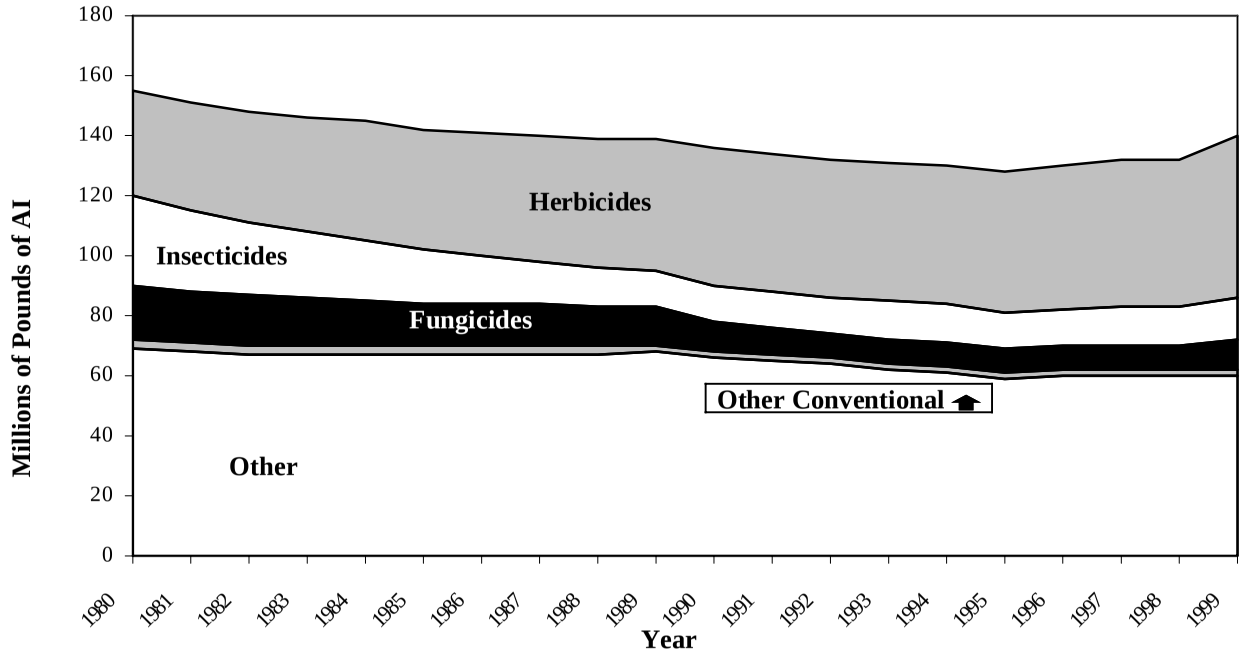


Table 5.3
U.S. Pounds of Conventional Pesticide Active Ingredient,
Agricultural and Non-Agricultural Market Sector Shares, 1964 - 1999

Year	Total U.S.	Agricultural Sector		Non- Agricultural Sector
	Million Pounds of Active Ingredient	Million Pounds of Active Ingredient	% of total U.S.	Million Pounds of Active Ingredient
1964	617	366	59	251
1965	658	396	60	262
1966	682	414	61	268
1967	712	429	60	283
1968	742	457	62	285
1969	763	491	64	272
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	1013	729	72	284
1976	1041	753	72	288
1977	1084	794	73	290
1978	1106	813	74	293
1979	1144	843	74	301
1980	1121	826	74	295
1981	1118	831	74	287
1982	1084	804	74	280
1983	1021	745	73	276
1984	1061	794	75	267
1985	1020	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

Note: Conventional pesticides only, excluding sulfur, petroleum oil and other chemicals used as pesticides (e.g., sulfuric acid and insect repellants), wood preservatives, specialty biocides, and chlorine/hypochlorites.
Source: EPA estimates based on Croplife America annual surveys, USDA/NASS (http://www.usda.gov/nass), and EPA proprietary data.
See Table 3.5 for 1998 and 1999.

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 USER 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 a person 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 use restricted-use pesticides.

CROPLIFE AMERICA: Formerly the American Crop Protection Association (ACPA), which publishes annual pesticide industry profile (ACPA Industry Profile). The profile is a survey of pesticide sales provided by participating ACPA members.

CONVENTIONAL PESTICIDES: Pesticides that are chemicals or other substances developed and produced primarily or only for use as pesticides. The term is generally used in reference to active ingredients. An example is DDT, which was developed and used almost exclusively as a pesticide.

ECONOMIC USER 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/garden. These three sectors/markets are defined elsewhere in this glossary.

FDA: U.S. Food and Drug Administration, which is involved in regulation of pesticides in the U.S., particularly 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 USER 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/garden applications by professional applicators.

INDUSTRIAL/COMMERCIAL/GOVERNMENTAL USER SECTOR (OR MARKET): Involves pesticides applied by professional applicators (by owner/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 "professional market" for pesticides.

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

6. Glossary

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 USER EXPENDITURES: Dollar value of purchases by persons or businesses applying pesticides, such as farmers, commercial pesticide applicators, and homeowners. Reported numbers are nominal values for the years indicated, i.e., not adjusted or indexed for inflation.

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.

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

PROPRIETARY DATA: Pesticide industry market 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 Doane Marketing Research, Inc.; Kline and Company, Inc.; SRI, Inc.; Wood Mackenzie; and Mike Bukley, Inc.

SAFER PESTICIDES: Pesticides designated as “safer” (or “reduced risk”) by EPA exhibit favorable characteristics affecting health or environmental risks, resistance management, and integrated pest management. Reduced-risk pesticides may be conventional pesticides posing less risk, or biopesticides with unique modes of action, low use volume, lower toxicity, target species specificity, or natural occurrence.

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, metal-working fluids, paints and coatings, petroleum products, plastics, and textiles). These categories of end usage are covered by FIFRA. Other end uses of specialty biocides (e.g., hospital/medical antiseptics, food/feed preservatives, cosmetics/toiletries) are regulated 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/FATUS: The U.S. Department of Agriculture, Foreign Agricultural Trade of U.S. Publicly available data on U.S. agricultural imports and exports (http://www.ers.usda.gov/db/fatus).

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

WOOD PRESERVATIVES: Pesticide active ingredients used in treatment of wood to protect it from insects, fungi, and other pests. This report presents total usage 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 industrial wood preservatives are water-borne preservatives (mainly CCA), oil-borne preservatives (e.g., copper naphthenate and pentachlorophenol), creosote, creosote-coal tar, and creosote petroleum.

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