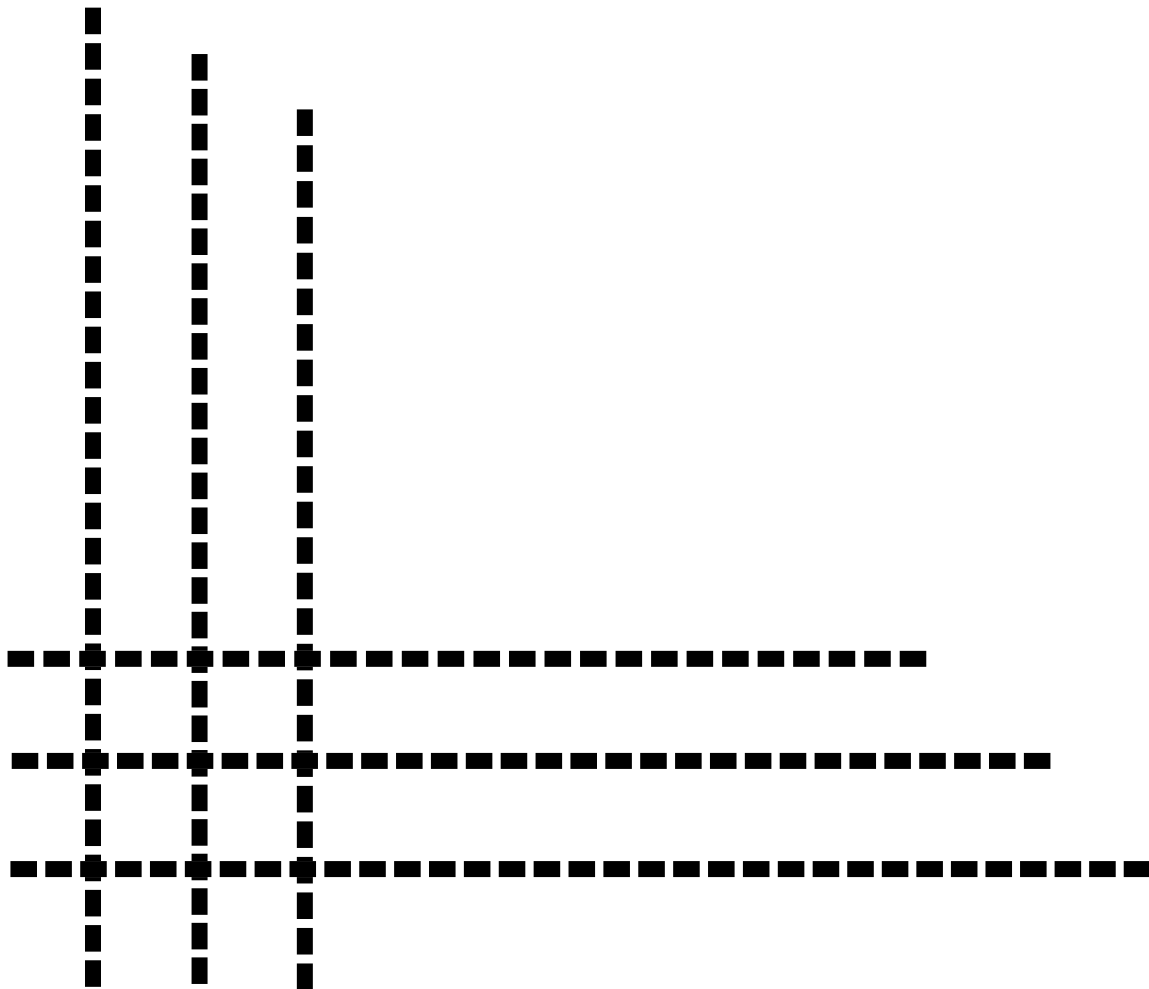




# Pesticides Industry Sales and Usage

1996 and 1997

Market Estimates



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# **Pesticides Industry Sales and Usage**

**1996 and 1997 Market Estimates**

**by**

**Arnold L. Aspelin, Ph.D.**

**and**

**Arthur H. Grube, Ph.D.**

Biological and Economic Analysis Division  
Office of Pesticide Programs  
Office of Prevention, Pesticides, and Toxic Substances  
U.S. Environmental Protection Agency  
Washington, DC 20460

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## **NOTE TO READERS:**

The Environmental Protection Agency Office of Pesticide Programs is pleased to present this summary of information about pesticide use and report on the pesticide market for the years 1996 and 1997. This publication reports figures derived for pesticide usage and sales values, based on available information from Agency records of registrations, USDA reports of pesticide use, and other public and proprietary sources. This type of report has been issued annually from 1979 through 1989 and at two-year intervals since then. These reports are devoted to economic aspects of the pesticide industry rather than health and environmental aspects which are covered by other activities of the Office of Pesticide Programs.

Pesticide usage during 1996 and 1997 was not greatly different from recent prior years. It is too early to see the extent to which the Food Quality Protection Act of 1996 and efforts under the Pesticide Environmental Stewardship Program (PESP) result in changes in use patterns. For future reports, we will be looking at such changes in use patterns. For example, we plan to report on the extent to which pesticides classified as “safer,” (e.g., biologicals) are being used.

Overall U.S. use, in pounds of active ingredient (conventional pesticides plus other chemicals such as sulfur and petroleum), went up a little under 2 percent in 1996 (over the previous year) and was back down about 1 percent in 1997, apparently due largely to changes in acreages grown of major crops such as corn. Agriculture, which accounts for slightly more than three-fourths of the total, can vary considerably from year to year due to factors such as weather, pest outbreaks, crop areages grown and economic factors, such as crop prices. The remaining nearly one-quarter of usage is in non-agricultural sectors, split about evenly between applications by homeowners and professionals. The use of herbicides and plant growth regulators declined in 1997 by 10 million pounds; nematicides and fumigant use declined by 15 million pounds; and sulfur and oil use increased by 14 million pounds during the same period.

This report is being made available on the Internet through the Agency’s home page at: **<http://www.epa.gov/oppbead1/pestsales/>** as well as in hard copy. Hard copy may be requested from U.S. EPA, NCEPI, P.O. Box 42419, Cincinnati, Ohio 45242-2419 (phone 513 489-8190).

Marcia E. Mulkey, Director  
Office of Pesticide Programs  
Environmental Protection Agency

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# Contents

	<u>Page</u>
<b>List of Tables and Charts .....</b>	<b>ii</b>
<b>Introduction .....</b>	<b>1</b>
<b>Overview .....</b>	<b>2</b>
<b>Table Highlights .....</b>	<b>5</b>
<b>EPA and USDA Survey Activities .....</b>	<b>6</b>
<b>About this Report .....</b>	<b>7</b>
<b>Pesticide Market Estimate Tables and Charts, 1997 and Earlier Years .....</b>	<b>9-37</b>
<b>Glossary .....</b>	<b>38-39</b>

## List of Tables and Charts

		PAGE
<b>Table 1.</b>	U.S. and World Pesticide Sales at User Level 1997 Estimates <i>(and corresponding charts)</i> .....	10
<b>Table 2.</b>	User Expenditures for Pesticides in the U.S. by Class and Sector, 1996/1997 Estimates <i>(and corresponding chart)</i> .....	12
<b>Table 3.</b>	Volume of Pesticide Active Ingredient Used in U.S. by Type, Class, and Sector, 1996/1997 Estimates <i>(and corresponding chart)</i> .....	14
<b>Table 4.</b>	U.S. Usage of Conventional and Other Types of Pesticides, 1996/1997 Estimates .....	16
<b>Table 5.</b>	Importance of Pesticide Expenditures to U.S. Farmers, 1995–1997 Estimates .....	17
<b>Table 6.</b>	U.S. Production, Imports, Exports, and Net Supply of Pesticides at Producer Level, 1996/1997 Estimates <i>(and corresponding chart)</i> .....	18
<b>Table 7.</b>	U.S. Pesticide Production, Marketing and User Sectors; Profile of Numbers of Units Involved, 1996/1997 Estimates .....	20
<b>Table 8.</b>	Quantities of Most Commonly Used Conventional Pesticides in U.S. Agricultural Crop Production .....	21
<b>Table 9.</b>	Quantities of Pesticides Most Commonly Used in Non-Agricultural Sectors of U.S. ....	22
<b>Table 10.</b>	U.S. Conventional Pesticide Usage, Total and Estimated Agricultural Sector Share, 1964–1997 <i>(and corresponding charts)</i> . ....	24
<b>Table 11a.</b>	Number of Active Ingredients Registered for First Time as Pesticides Under FIFRA, by Type, 1967–1997 <i>(and corresponding chart)</i> .....	26
<b>Table 11b.</b>	Number of Active Ingredients Registered for First Time as Pesticides Under FIFRA, by Classification: Safer (Reduced-Risk) or Other Pesticides, 1990–1997 .....	27
<b>Table 12.</b>	Number of Certified Applicators in the U.S., 1997 (October 30) <i>(and corresponding charts)</i> .....	28
<b>Table 13.</b>	U.S. Annual Volume of Pesticide Usage, by Type, All Economic Sectors Combined, 1979–1997 <i>(and corresponding chart)</i> .....	30
<b>Table 14.</b>	U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979–1997 <i>(and corresponding charts)</i> .....	31
<b>Table 15.</b>	U.S. Annual User Expenditures on Pesticides, by Type, All Economic Sectors Combined, 1979–1997 <i>(and corresponding chart)</i> .....	34
<b>Table 16.</b>	U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979–1997 <i>(and corresponding charts)</i> .....	35

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# Pesticides Industry Sales and Usage:

1996 and 1997 Market Estimates

## Introduction

This report provides a profile of the U.S. pesticide sales and usage for 1996 and 1997. It contains tables with estimates of the U.S. market for those two years. The tables contain information on quantities used and user expenditures (by economic sector and pesticide class), imports, exports, numbers of firms, and individuals involved in production and use of pesticides, number of pesticides, certified applicators, and on a number of other topics. Graphic representations of the data are included along with a number of tables.

Much of the tabular information in this report is for the years 1996 and 1997, but historical data are also presented. This report and the edition for 1994 and 1995 contain a number of reestimated historical values for volume used and dollar expenditures which are presented in tables 13 through 16. Care should be taken to use the new values for 1993 and earlier years rather than those from prior editions.

Following this **Introduction**, there is an **Overview** of total pesticide usage in the U.S. and **Highlights** of the tables which comprise a majority of the report. Also, some background is presented on EPA and USDA pesticide usage data collection activities. A **Glossary** is included at the end of the report to help the reader with key terms used in the report.

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 or reach conclusions about implications of the data. Nor does it include details such as by chemical grouping, family, geographic area, crop, use site, etc. Detailed analysis of causal factors or implications, such as potential impacts on human health, the environment, or the economy are beyond the scope of this project. If you have questions regarding this report or need further information, please contact the authors at the following address: BEAD/OPP/EPA (7503C), 401 M Street, SW, Washington, DC 20460; email: GRUBE.ARTHUR@EPA.GOV (telephone 703 308-8095 or 308-8094).

### *Acknowledgments*

The authors of this report would like to acknowledge the valuable assistance provided by the following outside sources:

- ◆ John Wilkin, Greg Malcom, and J. Ahlgrim, *Doane Marketing Research, St. Louis, MO*, (agricultural usage and markets),
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- ◆ John McDougall, *Wood Mackenzie, Edinburgh, Scotland; more recently Phillips McDougall, Saughland, UK* (world market).

Also, recognition is made of the efforts of peer reviewers of this report:

- ◆ Merritt Padgitt, Doug Kleweno, Norman Bennett, Jim Smith, and Al Jennings of *USDA*; Roger Holtorf, Bob Torla, Steve Nako, *EPA*; Steve Wanser, *USITC/DOC*; Ed Johnson, *Technical Services Group, Washington D.C.*, Leonard Gianessi, *National Center for Food and Agricultural Policy*.

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## Overview

Pesticides of various types are used in most sectors of the U.S. Economy. In general terms, a pesticide is any agent used to kill or control undesired insects, weeds, rodents, fungi, bacteria or other organisms. Thus, the term “pesticide” includes insecticides, herbicides, rodenticides, fungicides, nematicides, and acaricides as well as disinfectants, fumigants, wood preservatives and plant growth regulators.

Pesticides play a vital role in controlling agricultural, industrial, home/garden, and public health pests. Many crops, commodities, and services in the U.S. could not be supplied in an economic fashion without control of pests, with chemicals or by other means. As a result, goods and services can be supplied at lower costs and/or with better quality. These economic benefits from pesticide use are not achieved without potential risks to human health and the environment due to the toxicity of pesticide chemicals. For this reason, the chemicals are regulated under the pesticide laws to avoid unacceptable risks.

### Pesticide Types

A total of about 890 active ingredients (a.i.) are registered as pesticides. A majority of these are “conventional” pesticides, i.e., ones developed and produced exclusively or primarily for use as pesticides. The other chemicals registered as pesticides are ones produced mostly for other purposes. Notable examples are sulfur and petroleum, which are produced mainly for other purposes, but are also used as pesticides. Also, there are industrial wood preservatives and biocides, which are not generally included as conventional pesticides. All of these types of pesticides are regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDCA). FIFRA requires the registration (and periodic reregistration) of pesticides for sale or use in the United States. Under FFDCA, pesticides used on food or feed products must have an approved tolerance, or maximum residue level. EPA is responsible for regulating pesticides in cooperation with other Federal Agencies (such as the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA)) and the States.

### Overall Quantities of Pesticides Used

In the U.S. in a typical year, about 4.5 billion pounds of chemicals are used as pesticides (measured on the basis of active ingredient). For 1997, the quantities used are estimated, by type of pesticide, as follows:

Type	Billions of Pounds	Percent
Conventional pesticides	.97	21
Other pesticide chemicals (sulfur, petroleum, etc.)	.26	6
<i>Subtotal</i>	<i>1.23</i>	<i>27</i>
Wood preservatives	.66	14
Specialty biocides	.27	6
Chlorine/hypochlorites	2.46	53
<b>Total</b>	<b>4.63</b>	<b>100</b>

(See Table 4 for more detail.)



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Conventional pesticides and “other pesticide chemicals” (e.g., sulfur, petroleum, etc.) account for about one-fourth of the total pesticide active ingredient used in the U.S. (1.23 billion pounds or 27 percent of the total). A majority of these pesticides are used in agriculture to produce food and fiber (77 percent or 944 million pounds of active ingredient in 1997), with the remainder used in industry/government applications and by homeowners. With usage of 1.23 billion pounds (for conventional pesticides plus other pesticide chemicals), the U.S. accounts for about one-fourth of such usage world wide. Chlorine/hypochlorites are the leading type of pesticides in the U.S., with half of the U.S. total usage. Wood preservatives and specialty biocides make up the remainder of the U.S. total of 4.63 billion pounds in 1997. The above quantities equal 4.6 pounds per capita in the U.S. for conventional pesticides plus sulfur, etc., and 17.0 pounds per capita for the total of all types. *(Based on Tables 1, 3, 4, and 7.)*

## Expenditures for Pesticides

The pesticide industry is quite significant in dollar terms. Annual expenditures by users of pesticides totaled \$11.9 billion in 1997 (conventional pesticides plus sulfur, etc.). Of this, 70 percent was for use in agriculture (a total of \$8.3 billion — an average of nearly \$4,400 per farm in the U.S. — 1.9 million farms). The U.S. total of \$11.9 billion equals \$44 per capita. The average U.S. household spent about \$20 for pesticides applied by the homeowner. (This does not include expenditures for pesticides applied to homes and gardens by others for hire.) The U.S. accounts for nearly one-third of pesticide user expenditures world wide. *(Based on Tables 1, 2 and 7.)*

## Numbers of Pesticide Producers and Users

The U.S. pesticide sector includes the following numbers of firms and individuals (approximate numbers): major pesticide manufacturers (18); other manufacturers (100); formulators (2,200); distributors/establishments (17,000); farms using pesticides (0.94 million, compared with 1.66 million farms with cropland, and 1.91 million total farms - 1997 Census); commercial pest control firms (35-40,000); certified commercial applicators (375,000); and households using pesticides (74 million out of 100 million total). *(Based on Table 7.)*

## Trends in Conventional Pesticide Usage

**Agriculture:** Usage of conventional pesticides on farms increased from about 400 million pounds in the mid-1960s to a peak of nearly 850 million pounds around 1980, primarily due to the widespread adoption of herbicides in crop production. Since that time, usage has been somewhat lower and has ranged from a low of 658 million pounds in 1987 to a high of 806 million pounds in 1996 (active ingredient). Pesticide usage in agriculture can vary considerably from year to year depending on weather, pest outbreaks, crop acreage, and economic factors such as crop prices.

Crop acreage is a major and direct factor affecting quantities of pesticides used in agriculture. For example, conventional pesticide usage in agriculture increased by 35 million pounds in 1996 (to 806 million pounds, 4.5 percent over 1995) as the acreage of major crops grown (corn, sorghum, soybeans, and cereal grains) increased by more than 20 million acres (or about 10 percent). There were no compensating reductions in acreage of other crops or other factors. The level of agricultural usage in 1996 (806 million pounds active ingredient) was somewhat above the recent high of 786 million pounds which occurred in 1994 (due largely to impacts of flooding and unseasonable weather during the 1993/94 period). *(Based on Tables 10 and 14.)*

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**Other Sectors:** In the non-agricultural sectors, conventional pesticide usage reached a peak of about 300 million pounds in 1979 and since has declined rather consistently to a level of just over 200 million pounds in recent years. Most of this decline is due to less usage in the industrial/commercial/governmental sector (referred to as the professional market) which totaled 129 million pounds in 1997. Usage of conventional pesticides by homeowners is estimated at 76 million pounds for 1997. *(Based on Tables 10 and 14.)*

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## Table Highlights

### All Pesticide Types:

- ◆ Total U.S. pesticide usage in 1997 was about 4.6 billion pounds of active ingredient. This figure includes conventional pesticides (1.0 billion pounds) plus industrial wood preservatives, biocides, and certain other chemicals used as pesticides. (*Table 4*). This usage involves about 20,700 pesticide products and 890 active ingredients registered under FIFRA (*Table 7*).
- ◆ Twenty-eight new active ingredients were registered as pesticides under FIFRA in 1997 (24 in 1996) (*Table 11 a*). Of these new active ingredients, two-thirds were “safer” pesticides (biological or other reduced risk) (*Table 11b*).
- ◆ There are about 1.25 million certified pesticide applicators in the U.S. (*Table 12*). Of these, most are for agricultural applications (874,000) and the remainder (375,000) are certified commercial applicators (*Table 12*).

### Conventional/Other Pesticide Chemicals Only: (excludes industrial wood preservatives and biocides)

- ◆ U.S. pesticide user purchases account for nearly one-third of the world market in dollar terms and about one-fifth of the active ingredient used, measured in pounds (*Table 1*).
- ◆ Annual U.S. pesticide user expenditures totaled approximately \$11.9 billion in 1997 (\$11.6 billion in 1996) (*Table 2*).
- ◆ Agriculture accounts for more than two-thirds of pesticide user expenditures and three-fourths of the volume used annually (*Tables 2 and 3*).
- ◆ Herbicides are the leading type of pesticides, in terms of both user expenditures and volume used (*Tables 2 and 3*).
- ◆ Farmers’ expenditures on pesticides were equal to 4.5% of total farm production expenditures in 1997, down slightly from the previous two years (*Table 5*).
- ◆ Net usage of conventional pesticides of about 1.0 billion pounds derives from U.S. production of 1.3 billion, imports of 0.2 billion, and exports of 0.5 billion (pounds of active ingredient of conventional pesticides) (*Table 6*).
- ◆ Pesticides are used on nearly one million of the nation’s farms (0.94 million farms in 1997, reported by the Census of Agriculture). These 0.94 million farms using pesticides represent more than one-half of U.S. farms with cropland (1.66 million farms in 1997) and about two-third’s of U.S. farms with **harvested** cropland (1.41 million farms in 1997). Most large-scale farms use at least some pesticides in crop production. Pesticides are used by homeowners at about three-fourths of U.S. households (74 million out of 100 million) (*Table 7*).
- ◆ The most widely used pesticide in U.S. agricultural crop production by volume is the herbicide atrazine (*Table 8*). The herbicide 2,4-D has the largest volume of usage in the nonagricultural sectors (*Table 9*).
- ◆ In 1996, conventional pesticide usage in agriculture increased to 806 million pounds from 771 million in 1995, or by about 4.5 percent (*Table 10*). This increase in agricultural pesticide usage was due largely to acreage increases for corn and other major field crops. In 1997, agricultural usage declined to about the level of 1995, i.e., 770 million pounds. For the non-agricultural sectors, conventional pesticide usage increased slightly in 1996 and 1997 (*Table 10*).

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## **EPA and USDA Survey Activities**

In recent years, through a series of coordinated initiatives, EPA and USDA have been improving the information available on pesticide usage. This has been accomplished with EPA focusing on non-agricultural usage sites and USDA focusing on agricultural usage sites. EPA conducted a survey of pesticide usage by homeowners in 1990 and another survey of usage by commercial applicators in 1993. For further information about EPA pesticide survey and data activities, contact Steve Nako, BEAD/OPP/EPA (7503C), 401 M Street, SW, Washington, DC 20460—telephone (703) 308-8092 or e-mail at [NAKO.STEVE@EPA.GOV](mailto:NAKO.STEVE@EPA.GOV)

Since 1990, USDA's National Agricultural Statistics Service (NASS) and Economic Research Service (ERS) have been collecting more extensive and frequent data on agricultural pesticide usage. USDA's data collection and reporting activities on agricultural pesticide usage include annual surveys of usage on field crops and alternate-year surveys for selected vegetables and fruits. Pesticide data on nut crops were collected for the 1991 crop year only, but are being collected again for 1999. The pesticide usage surveys cover the most significant field crops, vegetables, and fruits. For each crop, major producing states are surveyed, usually accounting for 70% to 90% of the acreage grown. Results are reported for individual states and in aggregate for "major states." For more information about USDA pesticide usage surveys, contact Doug Kleweno, USDA/NASS, 14th & Independence Ave. S.W., Room 4162 S. Agriculture Building, Washington, DC 20250—telephone (202) 720-2248 or e-mail at [dgkleweno@NASS.USDA.GOV](mailto:dgkleweno@NASS.USDA.GOV).

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## About This Report

EPA, along with the States and other agencies such as FDA and USDA, is responsible for regulation of the production and use of pesticides in the U.S. under the Federal Insecticide, Fungicide, and Rodenticide Act and the Federal Food, Drug, and Cosmetic Act. This report is designed to provide contemporary and historical economic information on the U.S. pesticide producing and using sectors covered by state and federal regulatory programs. Economic profile information is provided on a variety of topics, particularly the pesticide market in terms of dollar values and quantities of active ingredient. Reports have been issued on this topic by the EPA Pesticide Program covering the years since 1979.

In this report, quantities and dollar values for pesticide usage are reported with separate break-outs for agriculture, home/garden (homeowner applications), and industrial/commercial/governmental (professional market). They are also reported by commonly used pesticide class categories, e.g., herbicides/plant growth regulators and insecticides/miticides. The definitions for economic sectors and pesticide classes are presented in notes below Tables 2 and 3. They are also included in a **Glossary** of terms presented at end of this report.

There is no program at EPA, nor at any other agency, devoted specifically to estimation of the overall pesticide market in quantitative and dollar terms each year. Accordingly, this report is prepared based on the best available information from the public domain and proprietary sources. The numbers presented in the report should be considered approximate rather than precise values with known statistical properties.

The Agency has available a wide variety of published and proprietary information upon which to base estimates. Extensive files and library materials on pesticide usage are maintained at the Pesticide Data Center in the Biological and Economic Analysis Division, Office of Pesticide Programs, EPA. For the agricultural sector, which accounts for a majority of use of conventional pesticides, the Agency has available five national data bases/services including those from the U.S. Department of Agriculture plus a number of more specific and limited data sources. For the non-agricultural sector, there is a similar number of sources of information. For both the agricultural and non-agricultural estimates, use is made of proprietary data sources, with the permission of vendors. The proprietary sources used by EPA are well known organizations, which are also utilized by registrants and other private sector firms.

The methods used by the various sources of information to make estimates vary from large statistically based grower/user samples or panels (e.g., 15,000-20,000 respondents annually) to use of more limited interview/survey approaches of growers, applicators, pesticide suppliers, and pest management consultants. Each source (and its method) must be considered on its merits in judging the usefulness and relevance to making annual market estimates. Corroboration and cross checking are done where possible.

**Throughout this report, the abbreviation “a.i.” is used in lieu of the words “active ingredient” in order to save space.**

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**Pesticide Market Estimate  
Tables and Charts,  
1997 and Earlier Years**

**Table 1****U.S. and World Pesticide Sales at User Level  
1997 Estimates**

Pesticide Class <sup>1</sup>	U.S. Market		World Market		U.S. % of World Market
	(Million)	(%)	(Million)	(%)	
<b>User Expenditures (Millions of Dollars)</b>					
Herbicides	\$6,846	58%	\$16,886	46%	41%
Insecticides	3,553	30%	11,592	31%	31%
Fungicides	802	7%	6,037	16%	13%
Other <sup>2</sup>	696	6%	2,533	7%	27%
<b>Total</b>	<b>\$11,897</b>	<b>100%</b>	<b>\$37,048</b>	<b>100%</b>	<b>32%</b>
<b>Volume of Active Ingredient (Millions of Pounds)</b>					
Herbicides	568	46%	2,254	40%	25%
Insecticides	129	10%	1,470	26%	9%
Fungicides	81	7%	539	9%	15%
Other <sup>2</sup>	453	37%	1,421	25%	32%
<b>Total</b>	<b>1,231</b>	<b>100%</b>	<b>5,684</b>	<b>100%</b>	<b>22%</b>

NOTE: Totals may not add due to rounding.

SOURCE: EPA estimates of world market based on Wood Mackenzie staff input, SRI Consulting staff input, American Crop Protection Association (ACPA) annual surveys. Estimates of U.S. market are from Tables 2 and 3.

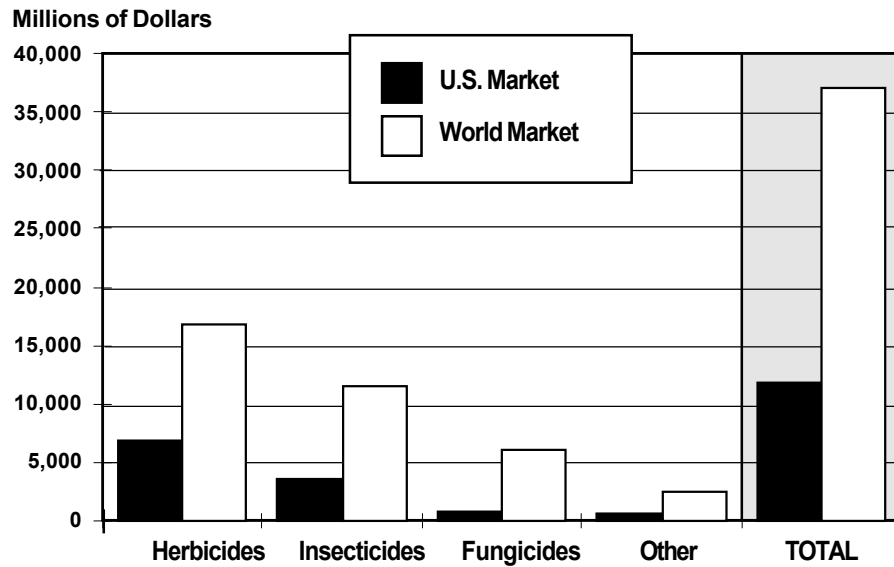
FOOTNOTES:

1 See definitions of pesticide classes below Tables 2.

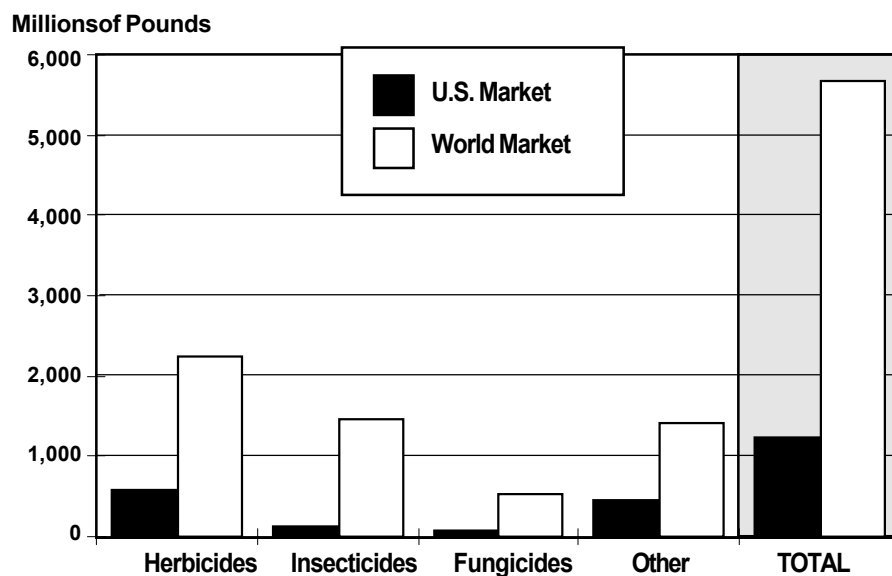
2 Includes sulfur and petroleum/other chemicals but does not cover industrial wood preservatives, specialty biocides and chlorine/hypochlorites.



## U.S. vs. World Pesticide Sales – User Expenditures, 1997



## U.S. vs. World Pesticide Sales – Volume of Active Ingredient, 1997



**Table 2****User Expenditures for Pesticides in the U.S. by Class and Sector  
1996/1997 Estimates**

Year and Sector <sup>2</sup>	Herbicides/Plant Growth Regulators		Insecticides/Miticides		Fungicides		Other <sup>1</sup>		TOTAL	
	(\$M)	(%)	(\$M)	(%)	(\$M)	(%)	(\$M)	(%)	(\$M)	(%)
<b>1996</b>										
Agriculture	\$5,399	82%	\$1,542	45%	\$658	80%	\$470	67%	\$8,069	70%
Ind./Comm./Govt.	721	11%	559	16%	140	17%	68	10%	1,488	13%
Home & Garden	479	7%	1,338	39%	25	4%	160	23%	2,002	17%
<b>Total</b>	<b>\$6,599</b>	<b>100%</b>	<b>\$3,439</b>	<b>100%</b>	<b>\$823</b>	<b>100%</b>	<b>\$698</b>	<b>100%</b>	<b>\$11,559</b>	<b>100%</b>
<b>1997</b>										
Agriculture	\$5,610	82%	\$1,599	45%	\$632	79%	\$462	66%	\$8,303	70%
Ind./Comm./Govt.	743	11%	576	16%	144	18%	70	10%	1,533	13%
Home & Garden	493	7%	1,378	39%	26	3%	164	24%	2,061	17%
<b>Total</b>	<b>\$6,846</b>	<b>100%</b>	<b>\$3,553</b>	<b>100%</b>	<b>\$802</b>	<b>100%</b>	<b>\$696</b>	<b>100%</b>	<b>\$11,897</b>	<b>100%</b>

NOTES: Totals may not add due to rounding.

Table does not cover industrial wood preservatives, specialty biocides, and chlorine/hypochlorites.

SOURCE: EPA estimates based on American Crop Protection Association (ACPA) annual surveys, USDA/ERS data series and input from Doane, Kline, and SRI Consulting.

FOOTNOTES:

1 Includes nematicides, fumigants, rodenticides, molluscicides, aquatic, fish/bird pesticides, other miscellaneous conventional pesticides plus other chemicals used as pesticides, e.g., sulfur and petroleum. (See Table 3 for more detail.)

2 Sector Definitions:

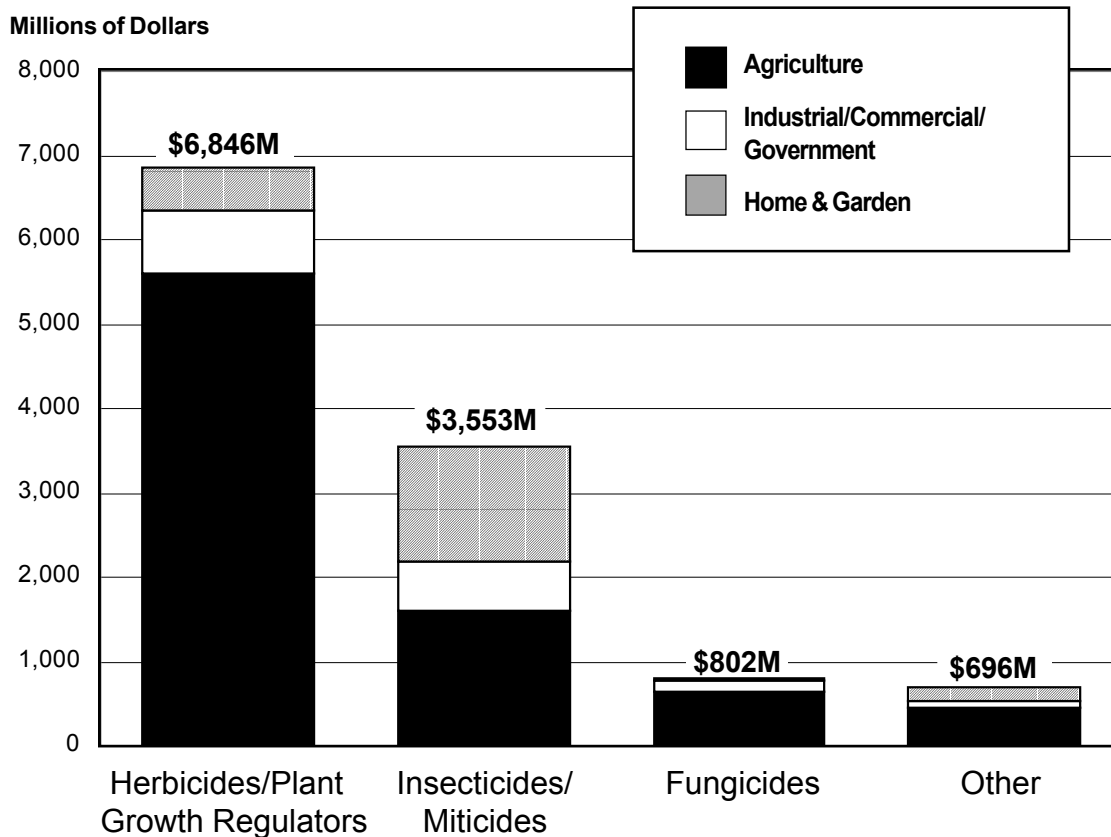
Expenditures for pesticides in the U.S. are divided among economic sectors as follows:

Agriculture: applications by owner/operators and custom/commercial applicators to farms and facilities involved in production of raw agricultural commodities, principally food, fiber and tobacco; includes non-crop and post harvest usage as well as crop/field applications;

Ind./Comm./Govt: applications by owner/operators and custom/commercial applicators to industry, commercial and governmental facilities, buildings, sites, and land; plus: custom/commercial applications to homes and gardens, including lawns;

Home & Garden: homeowner applications to homes and gardens, including lawns; single and multiple unit housing.

## U.S. User Expenditures for Conventional Pesticides, 1997 Estimates



**Table 3****Volume of Pesticide Active Ingredient Used in the U.S.  
by Type, Class, and Sector, 1996/1997 Estimates**

Year and Sector <sup>3</sup>	Conventional Pesticides										Other Pesticides						Total			
	Herbicides/ Plant Growth Regulators		Insecticides/ Miticides		Fungicides		Fumigants/ Nematicides		Other <sup>1</sup>		Total		Sulfur/ Oil		Other <sup>2</sup>		Total			
	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)		
<b>1996</b>																				
Agriculture	481	83%	84	65%	51	65%	165	87%	25	78%	806	80%	124	81%	28	35%	152	65%	958	77%
Ind./Comm./Govt.	49	8%	29	22%	20	25%	24	13%	8	19%	128	13%	14	9%	8	10%	22	9%	150	12%
Home & Garden	48	8%	17	13%	8	10%	1	1%	1	3%	75	7%	15	10%	45	56%	60	28%	135	11%
<b>Total</b>	<b>578</b>	<b>100%</b>	<b>130</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>180</b>	<b>100%</b>	<b>32</b>	<b>100%</b>	<b>1,009</b>	<b>100%</b>	<b>159</b>	<b>100%</b>	<b>83</b>	<b>100%</b>	<b>234</b>	<b>100%</b>	<b>1,243</b>	<b>100%</b>
<b>1997</b>																				
Agriculture	470	83%	82	64%	53	65%	140	85%	25	78%	770	79%	144	83%	30	36%	174	68%	944	77%
Ind./Comm./Govt.	49	9%	30	23%	20	25%	24	15%	6	19%	129	13%	14	8%	8	10%	22	9%	151	12%
Home & Garden	49	9%	17	13%	8	10%	1	1%	1	3%	76	8%	15	9%	45	54%	60	23%	136	11%
<b>Total</b>	<b>568</b>	<b>100%</b>	<b>128</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>165</b>	<b>100%</b>	<b>32</b>	<b>100%</b>	<b>975</b>	<b>100%</b>	<b>173</b>	<b>100%</b>	<b>83</b>	<b>100%</b>	<b>256</b>	<b>100%</b>	<b>1,231</b>	<b>100%</b>

NOTES: Totals may not add due to rounding.

Table does not cover industrial wood preservatives, specialty biocides, and chlorine/hypochlorites.

SOURCE: EPA estimates based on: American Crop Protection Association (ACPA) annual surveys; USDA/NASS Survey Reports (1996/98); inputs from Kline, Doane and SRI Consulting; and USDA/ERS estimates (Ag. Handbook 712 and preliminary values for 1996/97).

FOOTNOTES:

1 Includes fumigants, nematicides, rodenticides, molluscicides, aquatic, fish/bird pesticides, insect regulators, and other miscellaneous pesticides.

2 Includes sulfuric acid, insect repellents, zinc sulfate and other miscellaneous chemicals produced largely for non-pesticidal purposes. Moth control chemicals (e.g., paradichlorobenzene and naphthaline are included in totals presented).

3 Sector Definitions:

Quantities and expenditures for pesticides in the U.S. are divided among economic sectors as follows:

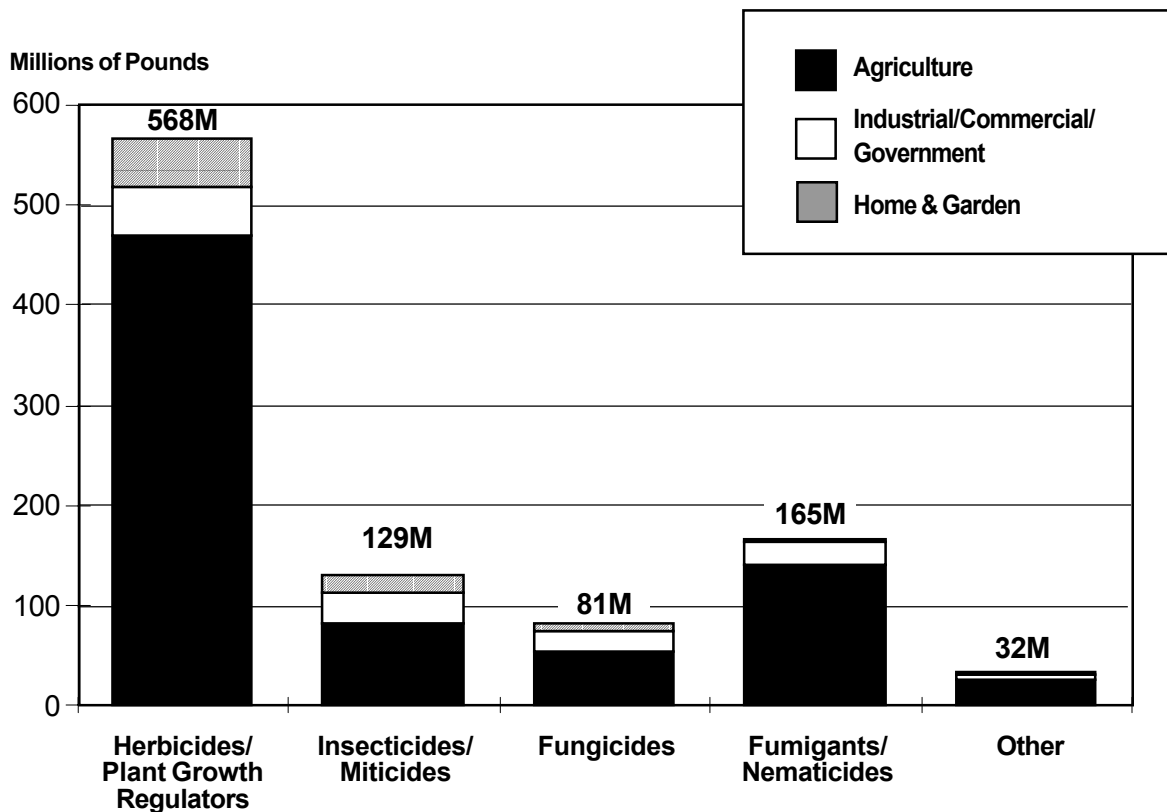
Agriculture: applications by owner/operators and custom/commercial applicators to farms and facilities involved in production of raw agricultural commodities, principally food, fiber, and tobacco; includes non-crop and post harvest usage as well as crop/field applications;

Ind./Comm./Govt: applications by owner/operators and custom/commercial applicators to industry, commercial and governmental facilities, buildings, sites, and land; plus: custom/commercial applications to homes and gardens, including lawns;

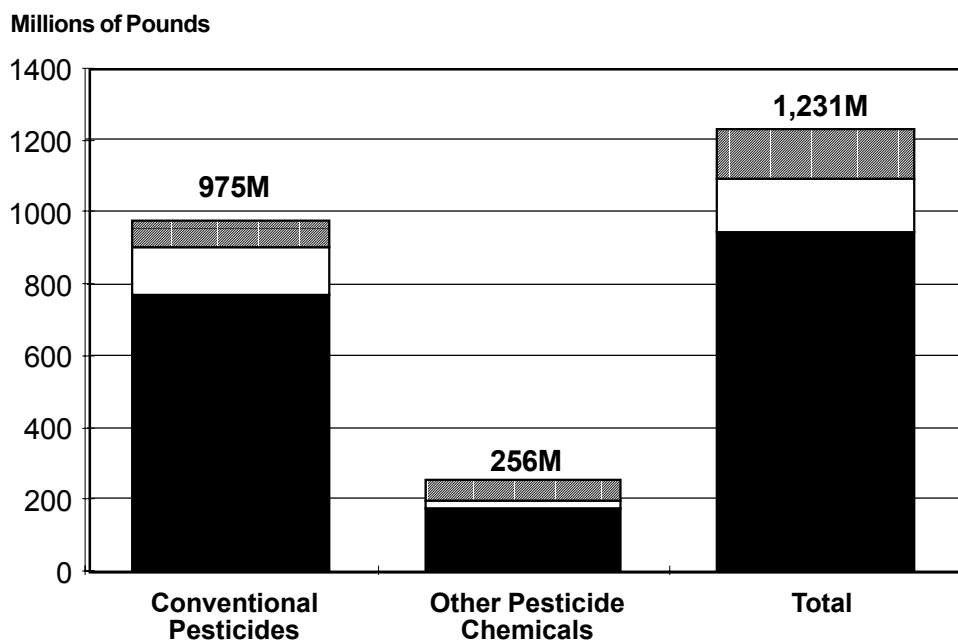
Home & Garden: homeowner applications to homes and gardens, including lawns; single and multiple unit housing.

## U.S. Volume of Pesticide Usage, 1997 Estimates

### ----- CONVENTIONAL PESTICIDES -----



### ----- CONVENTIONAL AND OTHER PESTICIDE CHEMICALS -----



**Table 4****U.S. Usage of Conventional and Other Types of Pesticides  
1996/1997 Estimates**

Type	Million Pounds active ingredient (a.i.)	
	1996	1997
Conventional Pesticides	1,009	975
Sulfur, petroleum (oil, distillates, etc.), sulfuric acid, and other misc. chemicals used as pesticides	234	256
Wood Preservatives <sup>1</sup>	668	665
Specialty Biocides by End Use		
— Swim pools, spas, industrial water treatment <sup>2</sup>	181	186
— Disinfectants and sanitizers <sup>3</sup>	34	35
— Other <sup>4</sup>	48	51
Subtotal <sup>5</sup>	263	272
Chlorine/hypochlorites		
— Disinfection of potable and waste water	1,433	1,476
— Disinfectant and pools	955	983
Subtotal	2,388	2,459
<b>Total</b>	<b>4,562</b>	<b>4,627</b>

SOURCES: Wood Preservatives— American Wood Preservers Institute (AWPI) report for 1996. EPA estimate for 1997.

Biocides — Kline & Co. staff input.

Chlorine/Hypochlorites — Report for Chlorine Institute by Charles River Assoc., April 1993.

## FOOTNOTES:

- 1 Includes water and oil borne preservatives, and creosote/coal tar/petroleum preservatives.
- 2 Specialty biocides only. Does not include hypochlorite or chlorine consumption, which is reported separately.
- 3 Includes industrial/institutional applications and household cleaning products. Specialty biocides only. Does not include hypochlorite or chlorine consumption, which is reported separately.
- 4 Includes biocides for adhesives and sealants, leather, synthetic latex polymers, metalworking fluids, paints and coatings, petroleum products, plastics, and textiles.
- 5 Does not include: hospital and medical antiseptics, food and feed preservatives, and cosmetics/toiletries, as they are regulated largely by FDA under U.S. Food, Drug, and Cosmetic Act, rather than FIFRA. FDA and EPA share regulatory responsibilities over some of the speciality biocide usage reported in the table.

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**Table 5****Importance of Pesticide Expenditures to U.S. Farmers  
1995–1997 Estimates**

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	1995		1996		1997	
	\$Billion	%	\$Billion	%	\$Billion	%
Farm Pesticides Expenditures <sup>1</sup>	7.90	4.7%	8.07	4.6%	8.30	4.5%
<b>Total Farm Production Expenses<sup>2</sup></b>	<b>169.3</b>	<b>100%</b>	<b>177.2</b>	<b>100%</b>	<b>182.9</b>	<b>100%</b>

---

## FOOTNOTES:

- 1 EPA Estimates (Tables 2 and 16).
- 2 USDA/ERS, McGath, July 1998.

**Table 6****U.S. Production, Imports, Exports, and Net Supply of Pesticides at  
Producer Level, 1996/1997 Estimates**

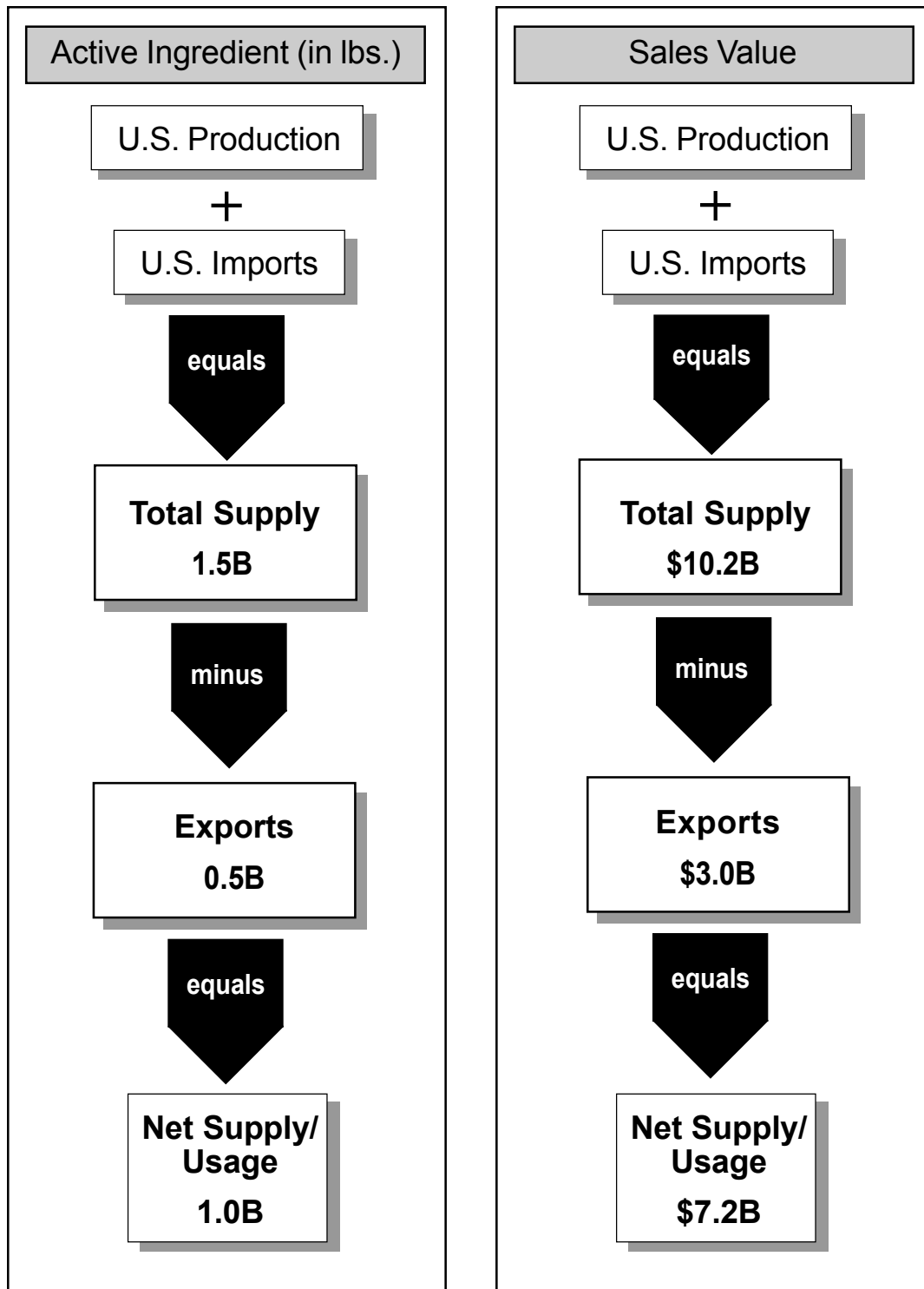
<b>Category</b>	<b>Active Ingredient (in billions of pounds)</b>	<b>Sales Value (in billions of dollars)</b>
	<b>1996/1997</b>	<b>1996/1997</b>
U.S. Production	1.3	7.9
U.S. Imports	0.2	2.3
<b>Total Supply</b>	<b>1.5</b>	<b>10.2</b>
U.S. Exports	0.5	3.0
<b>Net Supply/Usage</b>	<b>1.0</b>	<b>7.2</b>

NOTE: Excludes industrial wood preservatives and biocides.

SOURCE: EPA estimates based on ACPA Surveys, Department of Commerce Publications, SRI Consulting staff report, and other sources.



**U.S. Production, Imports, Exports, and Net Supply  
of Pesticides, 1996/1997 Estimates**



NOTE: B = billion

**Table 7**

**U.S. Pesticide Production, Marketing, and User Sectors; Profile of Numbers of Units Involved, 1996/97 Estimates Unless Otherwise Indicated**  
(Approximate Values)

PRODUCTION AND DISTRIBUTION		USER LEVEL	
<b>Basic Production</b>		<b>Agricultural Sector</b>	
1. Major Basic Producers	18	1. Land in Farms	932M acres
2. Other Producers	100	2. Harvested	309M acres
3. Active Ingredients with Active Registrations (FIFRA sec. 3 - federal or sec. 24(c) - state)	891	3. Total No. Farms	1.912M
4. Active Ingredients with Food/Feed Tolerances (FFDCA)(9/98)	523	4. Total No. Farms with Cropland	1.661M
5. Number of Commodities with one or more Tolerances (9/98)	684	5. No. Farms with Harvested Cropland	1.411M
-Raw ag. commodity	607	6. No. Farms Using Chemicals for:	
-Raw animal product	77	-Insects on hay/crops	366,000
6. Number of Tolerances in Place (9/98)	9,783	-Nematodes	43,000
-Raw ag. commodity	9,545	-Diseases on crops/orchards	112,000
-Food Additive	138	-Weed/grass/brush	685,000
-Feed Additive	100	-Defoliation/fruit thinning	51,000
7. Chemical Cases for Reregistration		-Any or all of the above	941,000
-Pre-FIFRA '88	612	-Any or all above pesticide chemicals plus fertilizer	1,325,000
-Post-FIFRA '88	405	<i>(Items 1-6 above are 1997 census no.s)</i>	
8. Active Ingredients for Reregistration		7. No. Private Pesticide Applicators Registered (Table 12)	874,253
-Pre-FIFRA '88	1,138		
-Post-FIFRA '88	590		
9. Reregistrations Completed by 9/30/97			
-Reregistration Eligibility Docs. (RED) Issued	171		
-Active Ingredients	265		
-Products	6,194		
-Tolerances reassessed	1,569		
<i>(For the total of 612 Pre-FIFRA '88 cases, as of 9/30/97, RED's were issued for 171 and 231 were cancelled, leaving 210 to be completed by about 2002.)</i>			
10. New Active Ingredients Registered (Table 11a)			
-1996	24		
-1997	28		
<i>(Items 1-10 based on EPA registration data bases and files.)</i>			
<b>Distribution and Marketing</b>		<b>Ind./Comm./Gov't Sector</b>	
1. Formulators		1. No. Commercial Pest Control Firms	
-Major national	150-200	<i>(turf/ornamental/ROW/aquatic/industrial/instit./ structural/ health related only) (EPA Survey, 1993)</i>	33,100
-Other	2,000	2. No. Certified Commercial Applicators, 10/97 (Table 12)	374,888
2. Distributors and Establishments			
-Major national	250-350		
-Other	16,900		
3. Formulated Products with Registrations (6/98)	20,726		
-Federal level	17,713		
-State/24(c)	3,013		
		<b>Home &amp; Garden Sector</b>	
		1. Total U.S. Households ('96)	100M
		<i>(EPA Survey, 1990, extrapolated)</i>	
		2. No. Households Using; ('96)	
		-Insecticides	56M
		-Fungicides	38M
		-Herbicides	14M
		-Repellents	17M
		-Disinfectants	42M
		-Any pesticides	74M
		3. U.S. Population ('96 est.)	266M
		<i>(Census estimate)</i>	

SOURCE: EPA estimates based on Agency file information and various other sources, including 1997 Census of Agriculture.

**Table 8**

**Quantities of Most Commonly Used Conventional Pesticides  
in U.S. Agricultural Crop Production  
(Approximate Quantities in 1997, 1995, 1993, and 1987)**

	1997 Mil. lbs. AI	Earlier Years					
		1995		1993		1987	
		Rank	Mil. lbs. AI	Rank	Mil. lbs. AI	Rank	Mil. lbs. AI
1. Atrazine	75-82	1	68-73	1	70-75	1	71-76
2. Metolachlor	63-69	2	59-64	2	60-65	3	45-50
3. Metam Sodium	53-58	3	49-54	8	25-30	15	5-8
4. Methyl Bromide	38-45	4	39-46	3	49-57	—	NA
5. Glyphosate	34-38	7	25-30	11	15-20	17	6-8
6. Dichloropropene	32-37	5	38-43	6	30-35	4	30-35
7. Acetochlor	31-36	11	22-27	—	0	—	0
8. 2,4-D	29-33	6	31-36	7	25-30	5	29-33
9. Pendimethalin	24-28	9	23-28	10	20-25	10	10-13
10. Trifluralin	21-25	10	23-28	9	20-25	6	25-30
11. Cyanazine	18-22	8	24-29	5	30-35	7	21-25
12. Alachlor	13-16	12	19-24	4	45-50	2	55-60
13. Copper Hydroxide	10-13	16	7-11	20	4-7	40	1-2
14. Chlorpyrifos	9-13	14	9-13	13	10-15	14	6-9
15. Chlorothalonil	7-10	13	8-12	14	10-15	19	5-7
16. Dicamba	7-10	18	6-10	16	6-10	23	4-6
17. Mancozeb	7-10	13	6-9	19	4-7	21	4-6
18. EPTC	7-10	13	9-13	12	10-15	8	17-21
19. Terbufos	6-9	19	6-9	17	5-8	11	8-10
20. Dimethenamid	6-9	40	2-4	—	NA	—	NA
21. Bentazone	6-8	23	4-8	18	4-7	15	6-9
22. Propanil	6-8	17	6-10	15	7-12	13	7-10
23. Simazine	5-7	29	3-5	23	3-8	28	3-4
24. MCPA	5-6	28	4-5	22	4-5	25	4-5
25. Chloropicrin	5-6	33	3-4	39	2-4	—	NA

SOURCE: EPA estimates based on proprietary data.

NOTE: List is limited to conventional pesticides. Does not include sulfur usage (50-75 mil. lbs. in 1997) and petroleum oil/distillates usage (65-75 mil. lbs. in 1997).

**Table 9****Quantities of Pesticides Most Commonly Used in  
Non-Agricultural Sectors of U.S.***(Approximate Quantities, 1995/96)***Home and Garden Market***(Homeowner Applications)*

<b>Pesticide</b>	<b>Millions of Pounds</b>
1. 2,4-D	7 – 9
2. Glyphosate	5 – 7
3. Dicamba	3 – 5
4. MCPP	3 – 5
5. Diazinon	2 – 4
6. Chlorpyrifos	2 – 4
7. Carbaryl	1 – 3
8. Benefin	1 – 3
9. Dacthal	1 – 3

NOTE: Does not include moth controls: Paradichlorobenzene (30-35 mil. lbs./yr.) and naphthaline (2-4 mil. lbs./yr.). Also does not include insect repellent: N,N-diethyl-meta-toluamide (5-7 mil. lbs./yr.)

**Industry/Commercial/Government***(Owner and Hired Professional)*

<b>Pesticide</b>	<b>Millions of Pounds</b>
1. 2,4-D	16 – 18
2. Glyphosate	9 – 12
3. Copper Sulfate	5 – 7
4. Chlorpyrifos	4 – 7
5. MSMA	4 – 5
6. Methyl Bromide	3 – 6
7. Pendimethalin	2 – 4
8. Chlorothalanil	2 – 4
9. Malathion	2 – 3

NOTE: Does not include usage of sulfur and petroleum/oils.  
Includes applications to homes and gardens by professional applicators.

SOURCE: EPA estimates based on a variety of sources.

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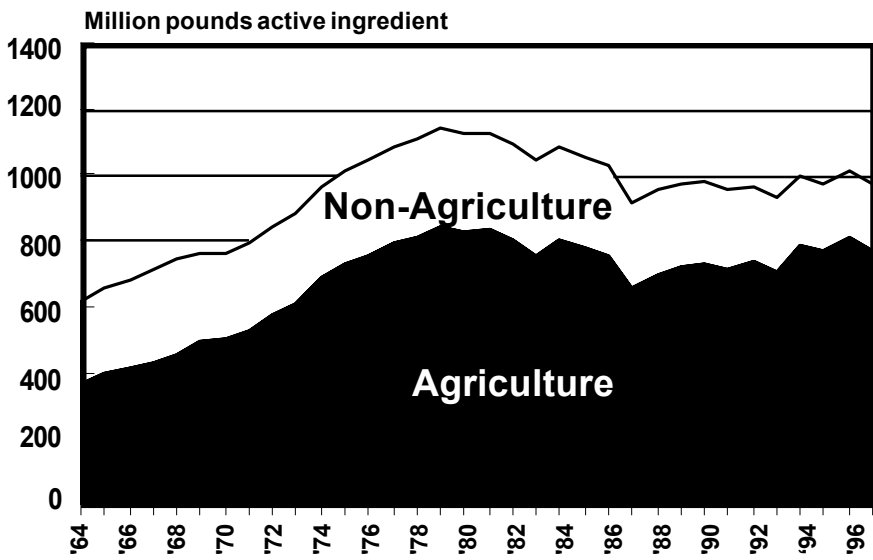
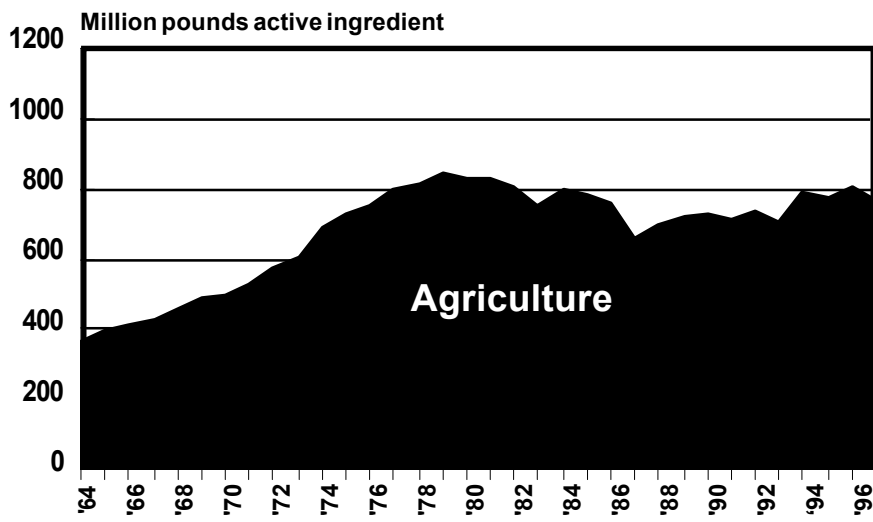
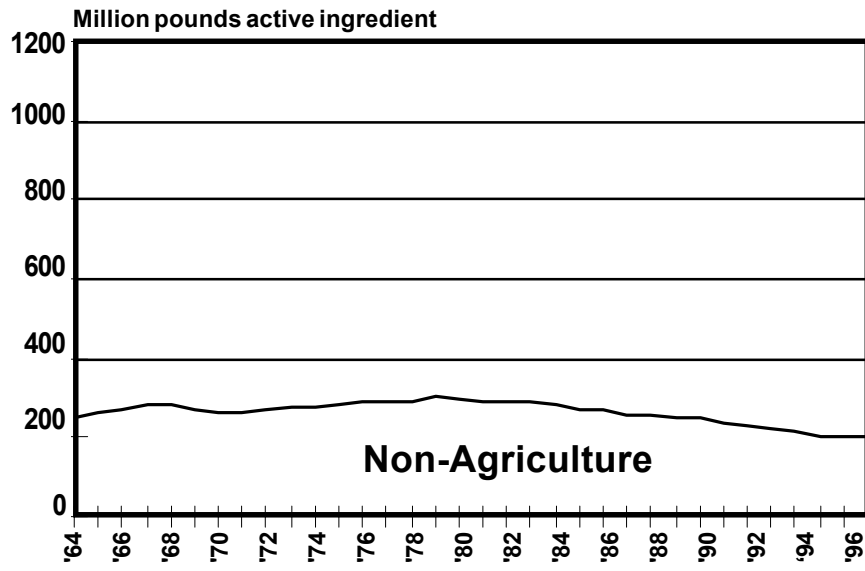
**Table 10****U.S. Conventional Pesticide Usage, Total and Estimated  
Agricultural Sector Share, 1964–1997**

Year	Total U.S.		Agricultural Sector			Non-Ag. Sectors	
	Million pounds active ingredient	% Change	Million pounds active ingredient	% of Total U.S.	% Change	Million pounds active ingredient	% Change
1964	617	—	366	59%	—	251	
1965	658	6.6%	396	60%	8.2%	262	4.4%
1966	682	3.6%	414	61%	4.5%	268	2.3%
1967	712	4.4%	429	60%	3.6%	283	5.6%
1968	742	4.2%	457	62%	6.5%	285	0.7%
1969	763	2.8%	491	64%	7.4%	272	-4.6%
1970	760	-0.4%	499	66%	1.6%	261	-4.0%
1971	793	4.3%	528	67%	5.8%	265	1.5%
1972	843	6.3%	575	68%	8.9%	268	1.1%
1973	882	4.6%	607	69%	5.6%	275	2.6%
1974	964	9.3%	688	71%	13.3%	276	0.4%
1975	1013	5.1%	729	72%	6.0%	284	2.9%
1976	1041	2.8%	753	72%	3.3%	288	1.4%
1977	1084	4.1%	794	73%	5.4%	290	0.7%
1978	1106	2.0%	813	74%	2.4%	293	1.0%
1979	1144	3.4%	843	74%	3.7%	301	2.7%
1980	1121	-2.0%	826	74%	-2.0%	295	-2.0%
1981	1123	0.2%	831	74%	0.6%	292	-1.0%
1982	1096	-2.4%	805	73%	-3.1%	291	-0.3%
1983	1040	-5.1%	749	72%	-7.0%	291	0.0%
1984	1085	4.3%	801	74%	6.9%	284	-2.4%
1985	1052	-3.0%	780	74%	-2.6%	272	-4.2%
1986	1025	-2.6%	755	74%	-3.2%	270	-0.7%
1987	917	-10.5%	658	72%	-12.8%	259	-4.1%
1988	954	4.0%	699	73%	6.2%	255	-1.5%
1989	973	2.0%	722	74%	3.3%	251	-1.6%
1990	976	0.3%	728	75%	0.8%	248	-1.2%
1991	955	-2.2%	716	75%	-1.6%	239	-3.6%
1992	967	1.3%	735	76%	2.7%	232	-2.9%
1993	929	-3.9%	706	76%	-3.9%	223	-3.9%
1994	999	7.5%	786	79%	11.3%	213	-4.5%
1995	973	-2.6%	771	79%	-1.9%	202	-5.2%
1996	1009	3.7%	806	80%	4.5%	203	0.5%
1997	975	-3.4%	770	79%	-4.5%	205	1.0%

NOTE: Conventional pesticides only, excluding sulfur, petroleum oil, wood preservatives, biocides, etc.

SOURCE: EPA estimates.

## U.S. Conventional Pesticide Usage: Agricultural and Non-Agricultural Sectors Share, 1964–1997



**Table 11a**

**Number of Active Ingredients Registered for First Time as Pesticides  
Under FIFRA, by Type, 1967–1997**

Year	TYPE							Total Uses Registered	Total Chemicals Registered
	Insecticide	Herbicide	Fungicide	Bactericide/ Slimicide	Nematicide	Rodenticide	Other		
1967	4	2	2	5	0	2	1	16	16
1968	6	2	5	4	0	0	1	18	18
1969	7	4	0	2	0	0	1	14	14
1970	1	2	2	3	0	0	2	10	10
1971	0	1	1	1	0	1	1	5	4
1972	4	5	6	5	0	0	1	21	17
1973	5	3	4	2	1	0	0	15	13
1974	6	8	6	0	1	1	0	22	22
1975	8	11	5	11	0	0	1	36	35
1976	2	3	2	4	0	0	1	12	12
1977	1	1	0	1	0	0	0	3	3
1978	2	2	0	0	0	0	1	5	5
1979	8	2	4	0	0	1	2	17	17
1980	4	3	1	0	0	2	1	11	11
1981	4	3	2	1	0	0	6	16	16
1982	5	5	1	1	0	2	3	17	17
1983	5	5	3	1	0	0	0	14	14
1984	6	1	2	2	0	1	2	14	13
1985	8	1	1	1	0	0	2	13	10
1986	2	7	0	0	1	0	2	12	11
1987	3	5	0	1	1	0	2	12	11
1988	2	5	1	0	1	0	2	11	11
1989	5	5	3	0	0	0	2	15	15
1990	1	3	2	0	0	1	1	8	8
1991	4	2	4	1	0	0	1	12	12
1992	3	4	4	0	1	0	0	12	11
1993	4	5	7	0	0	0	5	21	20
1994	14	4	8	1	0	0	3	30	30
1995	15	3	6	3	0	2	2	31	31
1996	16	2	3	3	1	0	3	28	24
1997	11	9	5	2	0	0	1	28	28

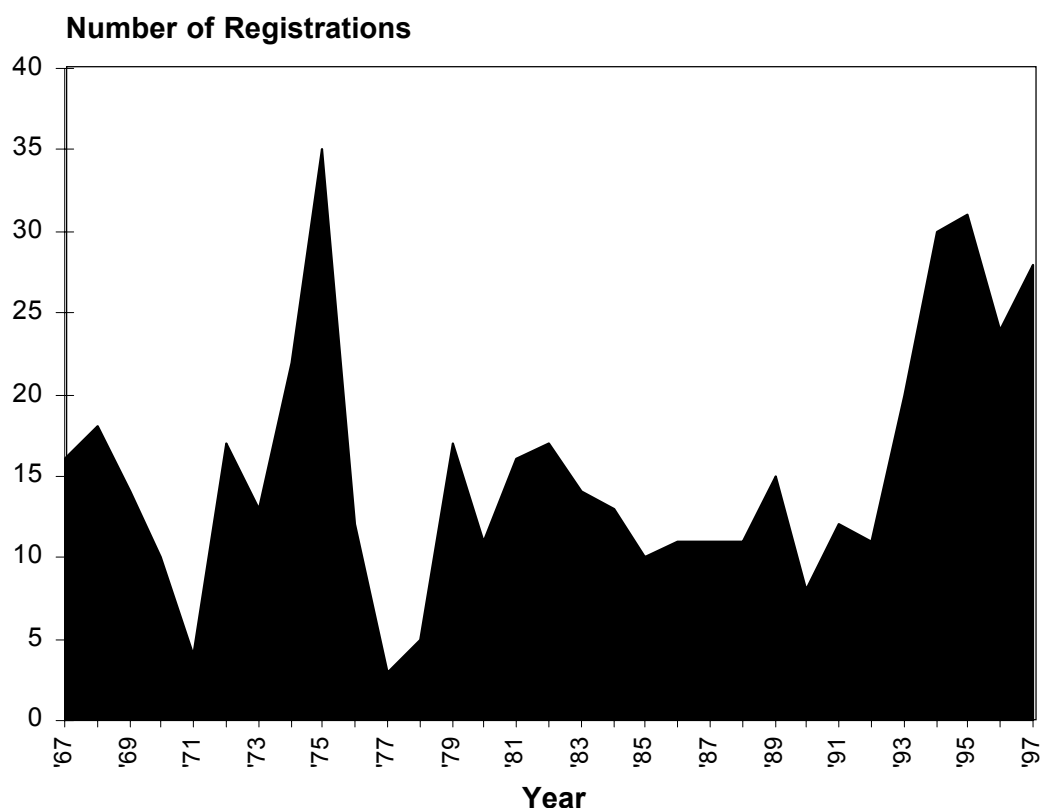
NOTE: Total number of uses exceeds number of chemicals when a chemical has more than one use type. Data for 1996 and 1997 are fiscal year basis, ending Sept. 30.

SOURCE: EPA registration files and OPP Annual Reports for 1996 and 1997.



## New Active Ingredient Pesticide Registrations

First-time Registrations, 1967–1997



**Table 11b**

**Number of Active Ingredients Registered for First Time as Pesticides Under FIFRA, by Classification Safer (Reduced-Risk) or Other Pesticides, 1990–1997**

<b>Year</b>	<b>Safer (Reduced-Risk)</b>	<b>Other</b>	<b>Total</b>
1990	3	5	8
1991	7	5	12
1992	6	5	11
1993	5	15	20
1994	16	14	30
1995	19	12	31
1996	15	9	24
1997	19	9	28

SOURCE: EPA registration files.

NOTE: “Safer (reduced-risk)” pesticides is a term EPA applies to pesticides with lower potential for health or environmental risks due to their mode of action, being naturally occurring, biologicals, etc.

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**Table 12****Number of Certified Applicators in the U.S.  
October 30, 1997**

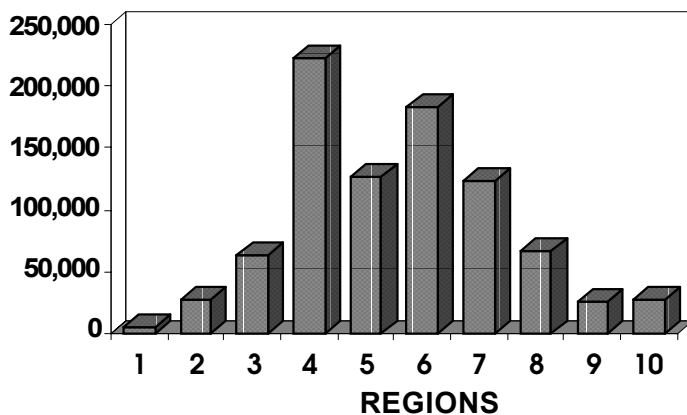
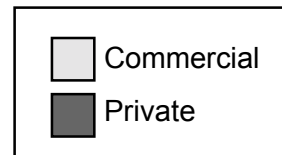
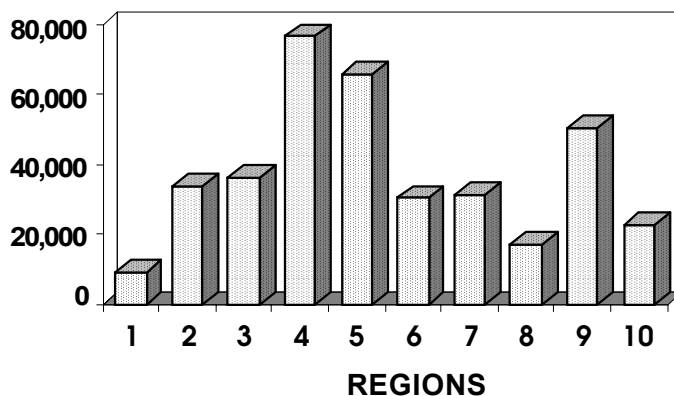
<b>EPA Region<sup>1</sup></b>	<b>Private<sup>2</sup></b>	<b>Commercial<sup>3</sup></b>
1	6,471	9,454
2	27,246	33,989
3	63,025	36,306
4	222,326	76,518
5	126,251	65,719
6	183,549	30,449
7	123,524	31,572
8	67,330	17,360
9	25,966	50,623
10	28,565	22,898
<b>U.S. Total<sup>4</sup></b>	<b>874,253</b>	<b>374,888</b>

SOURCE: EPA 5700-33H form that states submit to EPA Regions each year.

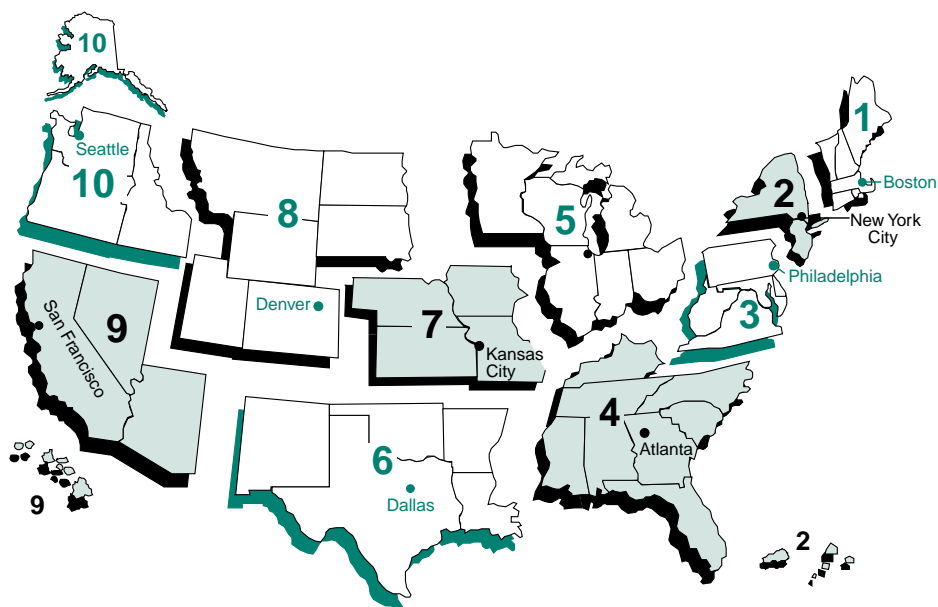
## FOOTNOTES:

- 1 See following page for map of EPA Regions.
- 2 The term "private applicators" refers primarily to individual farmers.
- 3 Commercial refers to professional pesticide applicators.
- 4 The U.S. totals do not add because some applicators are certified in more than one Region.

## Certified Pesticide Applicators, 1997



## U.S. EPA Regional Map



**Table 13**

**U.S. Annual Volume of Pesticide Usage, by Type,  
All Economic Sectors Combined, 1979–1997**

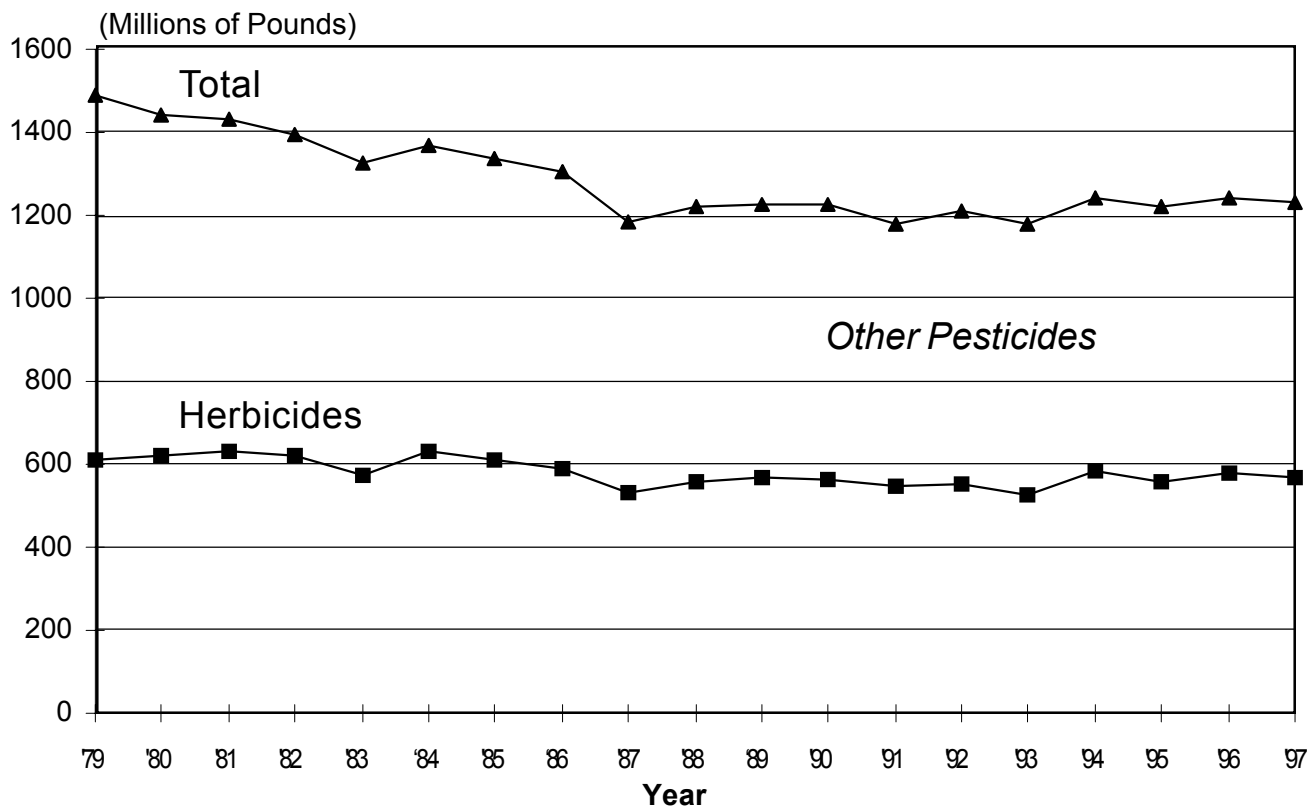
Pesticide	Year																			
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	
	Millions of Pounds active ingredient																			
Herbicides	610	622	631	620	573	634	611	590	532	557	567	564	546	554	527	583	556	578	568	
Insecticides	255	228	218	210	204	197	193	188	152	161	154	148	141	143	130	138	137	130	129	
Fungicides	124	122	122	117	115	109	110	109	100	99	98	91	86	81	80	79	77	79	81	
Other Conv.	155	149	152	149	148	145	138	138	133	137	154	173	182	189	192	199	203	222	197	
Other Chems.	343	321	307	298	287	284	284	278	269	266	251	252	226	246	248	244	249	234	256	
<b>Total</b>	<b>1487</b>	<b>1442</b>	<b>1430</b>	<b>1394</b>	<b>1327</b>	<b>1369</b>	<b>1336</b>	<b>1303</b>	<b>1186</b>	<b>1220</b>	<b>1224</b>	<b>1228</b>	<b>1181</b>	<b>1213</b>	<b>1177</b>	<b>1243</b>	<b>1222</b>	<b>1243</b>	<b>1231</b>	

NOTE: Excludes wood preservatives and biocides.

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 3 for 1996/1997.

**Annual Volume of Pesticide Usage**

(Total U.S. Volume, by Type 1979–1997)



**Table 14**

**U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979–1997**

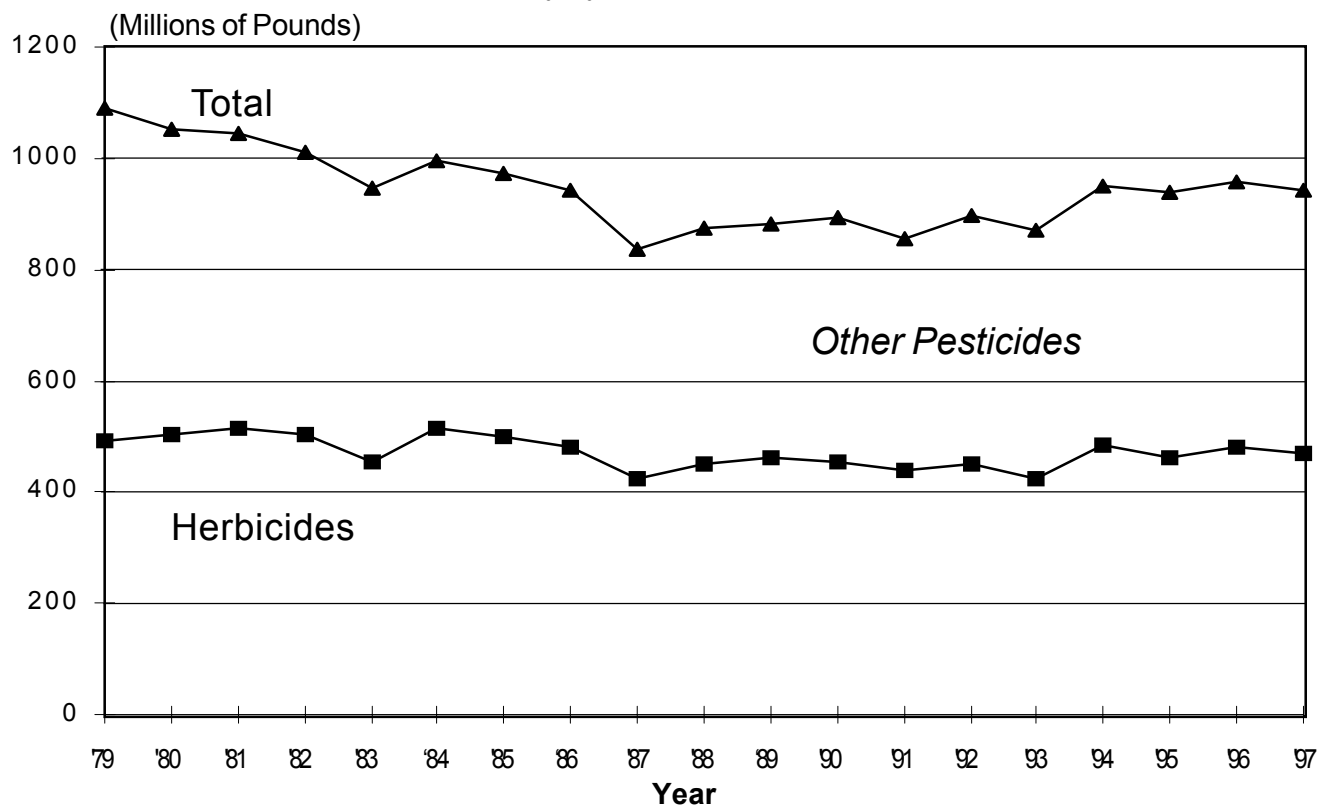
----- **AGRICULTURE** -----

Pesticide	Year																			
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	
	Millions of Pounds active ingredient																			
Herbicides	492	504	513	503	455	516	501	481	425	450	460	455	440	450	425	485	461	481	470	
Insecticides	188	163	152	142	135	129	126	121	90	100	95	90	85	90	80	90	91	84	82	
Fungicides	57	59	62	59	59	56	59	59	52	54	54	50	47	45	47	48	49	51	53	
Other Conv.	106	100	104	101	100	100	94	94	91	95	113	133	144	150	154	163	170	190	165	
Other Chems.	246	227	215	207	196	194	194	188	180	177	161	164	140	161	166	163	168	152	174	
<b>Total</b>	<b>1089</b>	<b>1053</b>	<b>1046</b>	<b>1012</b>	<b>945</b>	<b>995</b>	<b>974</b>	<b>943</b>	<b>838</b>	<b>876</b>	<b>883</b>	<b>892</b>	<b>856</b>	<b>896</b>	<b>872</b>	<b>949</b>	<b>939</b>	<b>958</b>	<b>944</b>	

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 3 for 1996/1997.

**U.S. Annual Volume of Pesticide Usage in Agriculture**

(by Type 1979–1997)



**Table 14 (continued)**

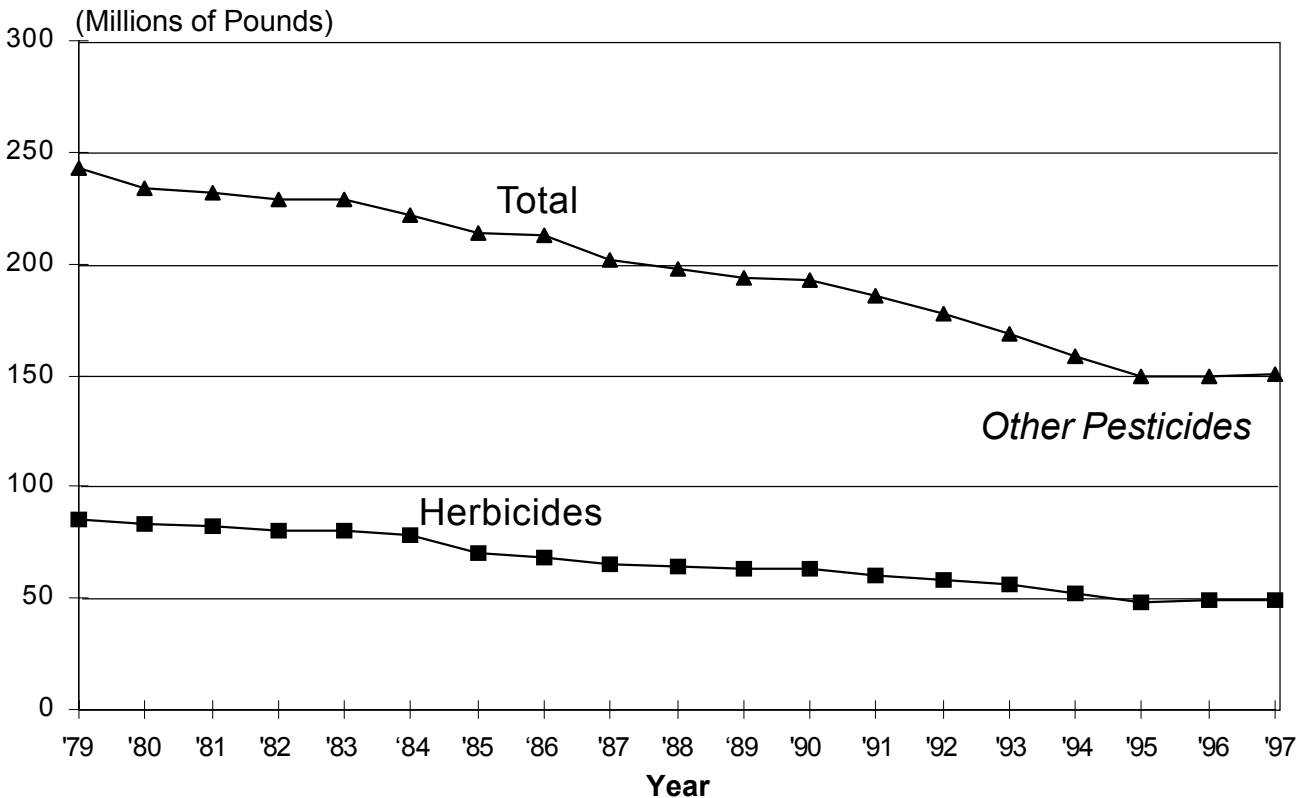
**U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979–1997**

----- **INDUSTRY/COMMERCIAL/GOVERNMENT** -----

Pesticide	Year																		
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Millions of Pounds active ingredient																		
Herbicides	85	83	82	80	80	78	70	68	65	64	63	63	60	58	56	52	48	49	49
Insecticides	35	35	37	39	40	41	43	45	42	41	40	39	38	35	32	30	29	29	30
Fungicides	50	45	43	41	40	38	37	36	34	32	31	31	30	28	25	23	20	20	20
Other Conv.	46	46	46	45	45	41	41	41	39	39	38	38	37	36	36	34	31	30	30
Other Chems.	27	25	24	24	24	24	23	23	22	22	22	22	21	21	20	20	22	22	22
<b>Total</b>	<b>243</b>	<b>234</b>	<b>232</b>	<b>229</b>	<b>229</b>	<b>222</b>	<b>214</b>	<b>213</b>	<b>202</b>	<b>198</b>	<b>194</b>	<b>193</b>	<b>186</b>	<b>178</b>	<b>169</b>	<b>159</b>	<b>150</b>	<b>150</b>	<b>151</b>

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 3 for 1996/1997.

**U.S. Annual Volume of Pesticide Usage in Industry, Commercial, and Government**  
(by Type 1979–1997)



**Table 14 (continued)**

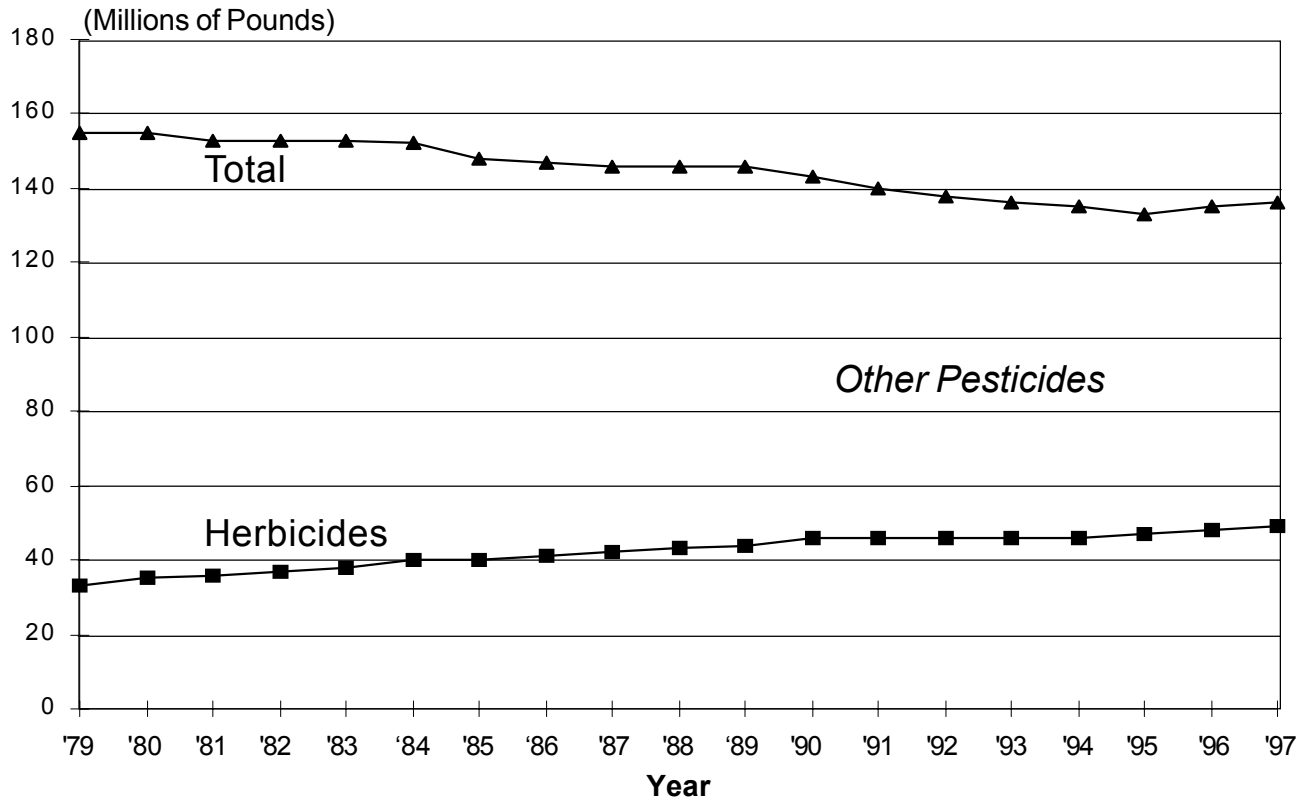
**U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979–1997**

**HOME AND GARDEN**

Pesticide	Year																			
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	
	Millions of Pounds active ingredient																			
Herbicides	33	35	36	37	38	40	40	41	42	43	44	46	46	46	46	46	47	48	49	
Insecticides	32	30	29	29	29	27	24	22	20	20	19	19	18	18	18	18	17	17	17	
Fungicides	17	18	17	17	16	15	14	14	14	13	13	10	9	8	8	8	8	8	8	
Other Conv.	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	
Other Chems.	70	69	68	67	67	67	67	67	67	67	68	66	65	64	62	61	59	60	60	
<b>Total</b>	<b>155</b>	<b>155</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>152</b>	<b>148</b>	<b>147</b>	<b>146</b>	<b>146</b>	<b>146</b>	<b>143</b>	<b>140</b>	<b>138</b>	<b>136</b>	<b>135</b>	<b>133</b>	<b>135</b>	<b>136</b>	

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 3 for 1996/1997.

**U.S. Annual Volume of Pesticide Usage in Home and Garden**  
(by Type 1979–1997)



**Table 15**

**U.S. Annual User Expenditures on Pesticides, by Type,  
All Economic Sectors Combined, 1979–1997**

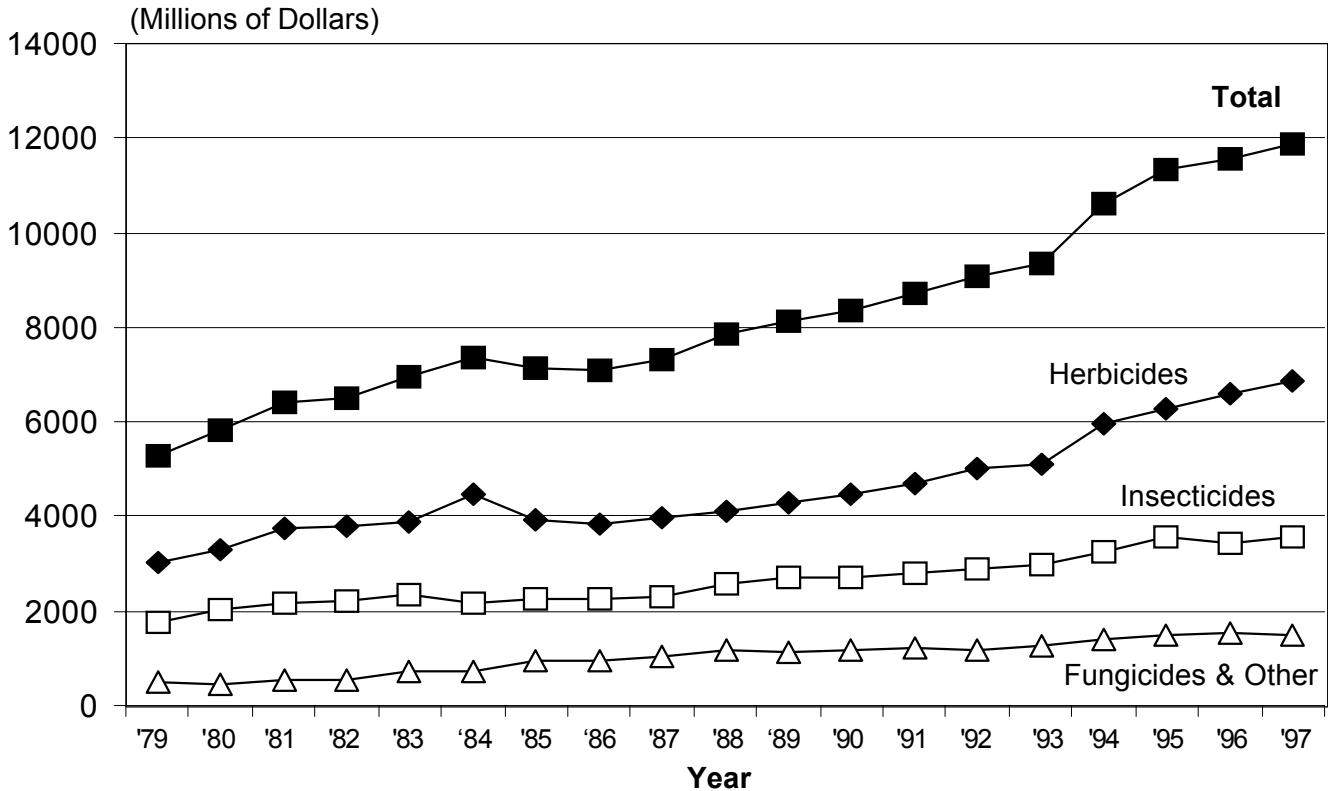
Pesticide	Year																		
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Millions of Dollars																		
Herbicides	3026	3310	3738	3772	3870	4488	3920	3858	3973	4121	4305	4473	4682	5004	5094	5944	6276	6599	6846
Insecticides	1783	2037	2151	2193	2360	2172	2250	2271	2284	2562	2699	2732	2808	2904	2985	3242	3552	3439	3553
Fung. & Other	489	459	536	540	731	708	963	967	1049	1190	1141	1171	1223	1183	1259	1408	1488	1521	1498
<b>Total</b>	<b>5298</b>	<b>5806</b>	<b>6425</b>	<b>6505</b>	<b>6961</b>	<b>7368</b>	<b>7133</b>	<b>7096</b>	<b>7306</b>	<b>7873</b>	<b>8145</b>	<b>8376</b>	<b>8713</b>	<b>9091</b>	<b>9338</b>	<b>10594</b>	<b>11316</b>	<b>11559</b>	<b>11897</b>

NOTE: Excludes wood preservatives and biocides.

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 2 for 1996/1997.

**Annual User Expenditures on Pesticides**

(Total U.S. Expenditures, by Type, 1979–1997)





**Table 16**

**U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979–1997**

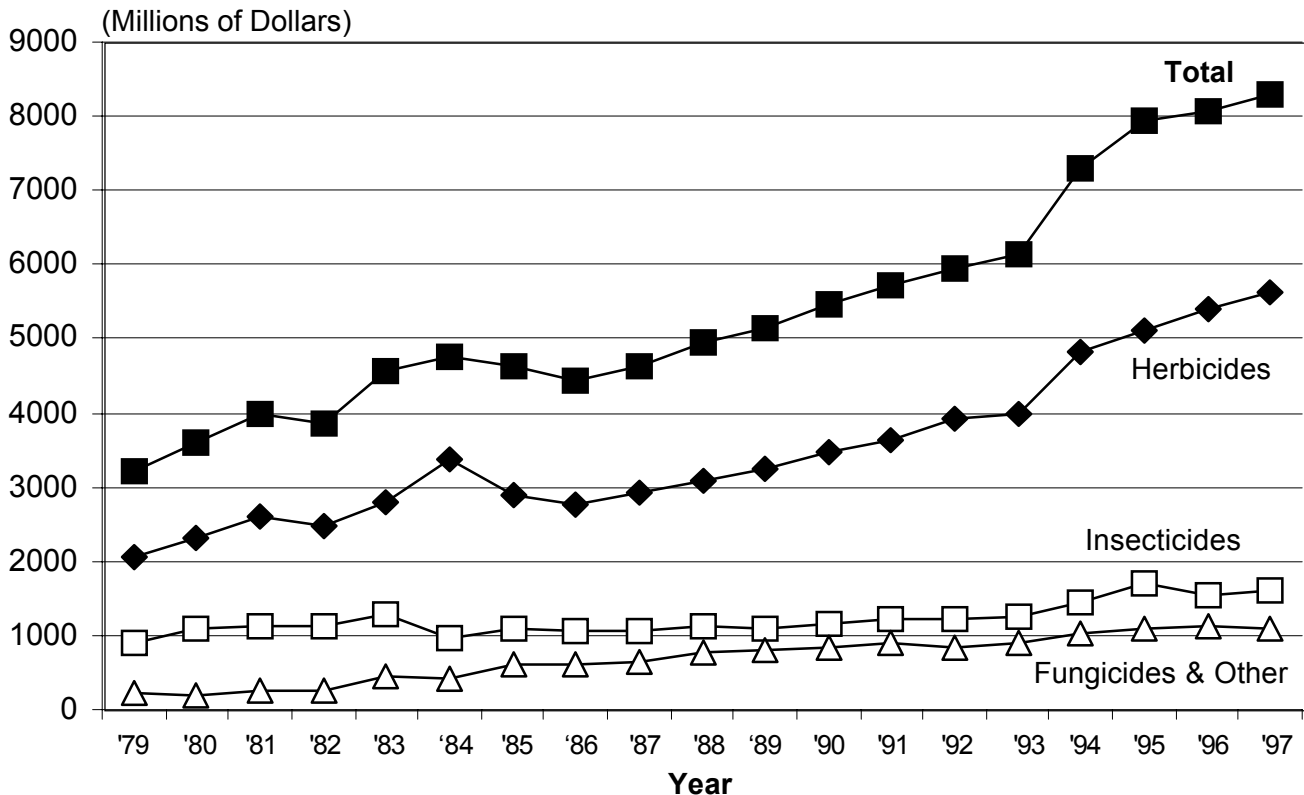
----- **AGRICULTURE** -----

Pesticide	Year																		
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Millions of Dollars																		
Herbicides	2060	2300	2590	2465	2800	3390	2900	2775	2935	3080	3255	3463	3644	3915	3987	4808	5112	5399	5610
Insecticides	900	1095	1139	1120	1300	950	1100	1050	1050	1110	1099	1172	1208	1216	1248	1453	1710	1542	1599
Fung.&Other	240	205	272	268	450	418	615	600	650	775	800	842	884	829	895	1036	1107	1128	1094
<b>Total</b>	<b>3200</b>	<b>3600</b>	<b>4001</b>	<b>3853</b>	<b>4550</b>	<b>4758</b>	<b>4615</b>	<b>4425</b>	<b>4635</b>	<b>4965</b>	<b>5154</b>	<b>5477</b>	<b>5736</b>	<b>5960</b>	<b>6130</b>	<b>7297</b>	<b>7929</b>	<b>8069</b>	<b>8303</b>

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 2 for 1996/1997.

**U.S. Annual User Expenditures on Pesticides for Agriculture**

(by Type 1979–1997)



**Table 16 (continued)**

**U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979–1997**

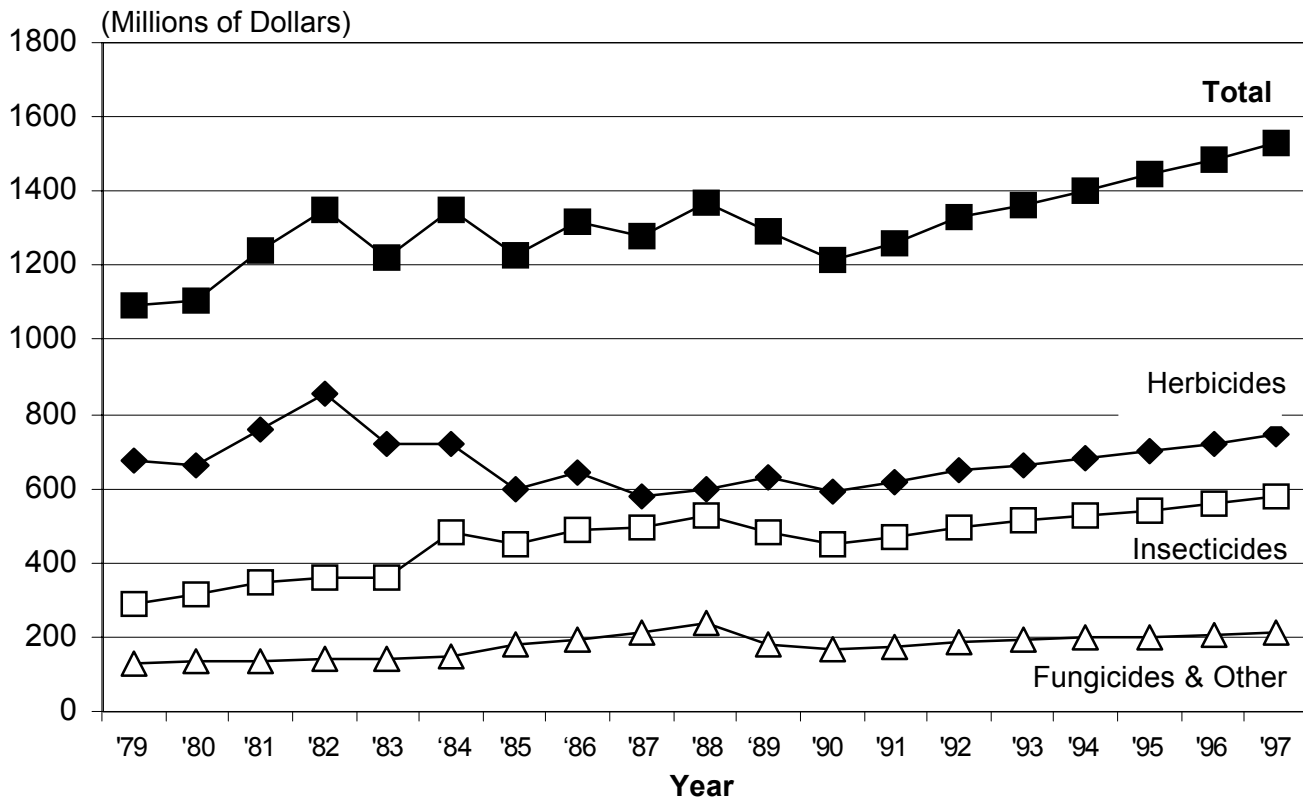
----- INDUSTRY/COMMERCIAL/GOVERNMENT -----

Pesticide	Year																		
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Millions of Dollars																		
Herbicides	672	660	756	852	720	720	600	642	576	600	630	593	616	648	660	679	700	721	743
Insecticides	288	312	347	359	360	480	450	486	492	528	480	451	469	498	512	528	543	559	576
Fung.&Other	130	132	138	142	144	150	180	192	210	240	180	169	176	186	191	197	202	208	214
<b>Total</b>	<b>1090</b>	<b>1104</b>	<b>1241</b>	<b>1353</b>	<b>1224</b>	<b>1350</b>	<b>1230</b>	<b>1320</b>	<b>1278</b>	<b>1368</b>	<b>1290</b>	<b>1213</b>	<b>1261</b>	<b>1332</b>	<b>1363</b>	<b>1404</b>	<b>1445</b>	<b>1488</b>	<b>1533</b>

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 2 for 1996/1997.

**U.S. Annual User Expenditures on Pesticide for Industry, Commercial and Government**

(by Type 1979–1997)



**Table 16 (continued)**

**U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979–1997**

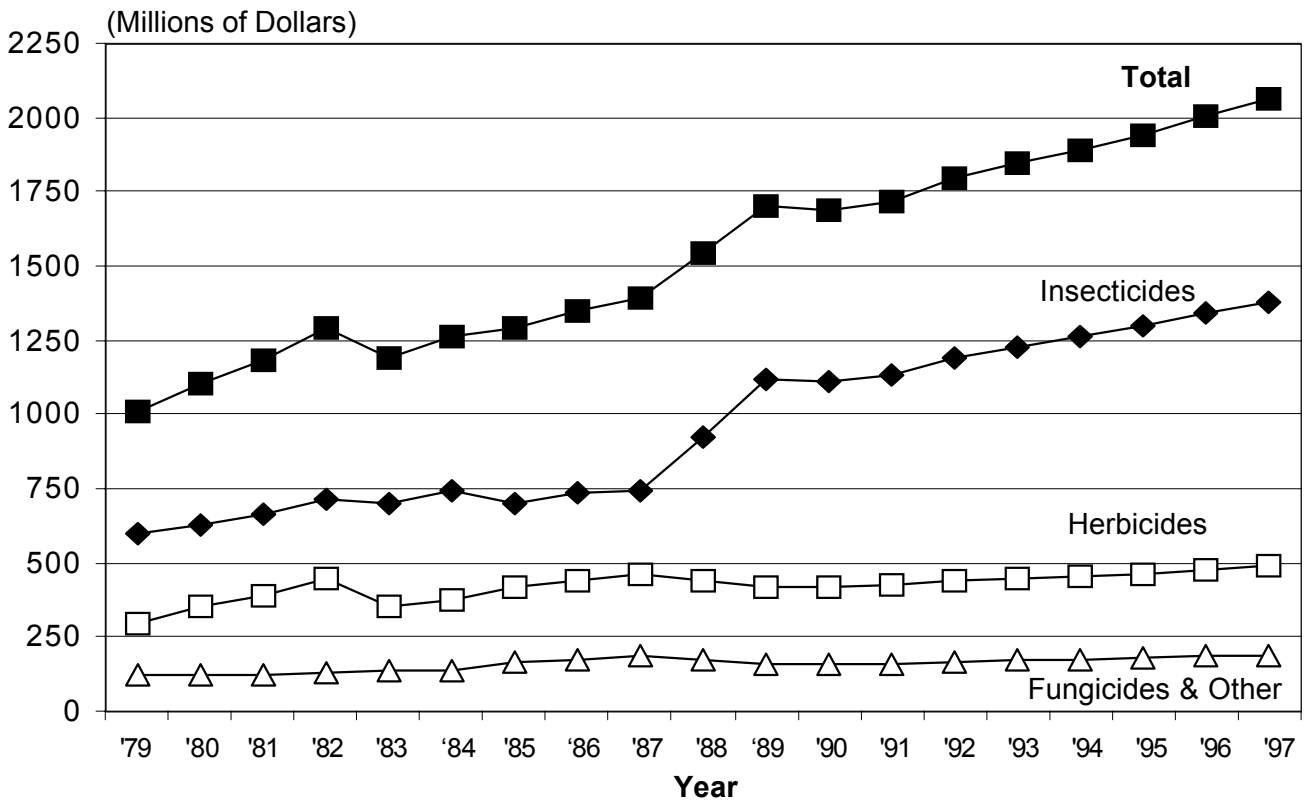
**HOME AND GARDEN**

Pesticide	Year																		
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Millions of Dollars																		
Herbicides	294	350	392	445	350	378	420	441	462	441	420	417	423	441	446	456	465	479	493
Insecticides	595	630	665	714	700	742	700	735	742	924	1120	1109	1131	1190	1225	1261	1299	1338	1378
Fung.&Other	119	122	126	130	137	140	168	175	189	175	161	160	162	168	174	175	179	185	190
<b>Total</b>	<b>1008</b>	<b>1102</b>	<b>1183</b>	<b>1289</b>	<b>1187</b>	<b>1260</b>	<b>1288</b>	<b>1351</b>	<b>1393</b>	<b>1540</b>	<b>1701</b>	<b>1686</b>	<b>1716</b>	<b>1799</b>	<b>1845</b>	<b>1892</b>	<b>1943</b>	<b>2002</b>	<b>2061</b>

SOURCE: EPA/OPP/BEAD estimates, updated 3/97 for 1979-95 (previous estimates obsolete); Table 2 for 1996/1997.

**U.S. Annual User Expenditures on Pesticide  
for Home and Garden**

(by Type 1979–1997)



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## Glossary

**ACTIVE INGREDIENT (A.I.):** The chemical or substance component of a pesticide product that can 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” (such as 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 production of raw agricultural commodities, principally food, fiber, and tobacco; includes non-crop and post-harvest use as well as crop/field applications.

**CERTIFIED APPLICATOR:** A person who is authorized to apply “restricted-use” pesticides as 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.

**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 is the law which controls pesticide residues in food and feed, along with FIFRA.

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

**HOME AND GARDEN USER SECTOR (OR MARKET):** Involves pesticides applied by homeowners to homes and gardens, including lawns; 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.

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

**OTHER PESTICIDE CHEMICALS:** Chemicals registered as pesticides but which 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, homes and gardens by certified/commercial applicators.

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

**SPECIALTY BIOCIDES:** In this report, estimates are provided for end uses as follows: swimming pools, spas and industrial water treatment (excludes 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 are categories of end usage which are covered by FIFRA. There are other end uses of specialty biocides which are regulated under FFDC A and are not covered in this report. (such as hospital/medical antiseptics, food/feed preservatives and for cosmetics/toiletries).

**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:** U.S. Department of Agriculture

**WOOD PRESERVATIVES:** Pesticide active ingredients used in treatment of wood to protect it from insects, fungi and other pests. In this report, a total is presented for 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 (primarily arsenicals), oil borne preservatives (such as copper naphthenate and pentachlorophenol), creosote, creosote-coal tar and creosote petroleum.



United States

Environmental Protection Agency

(7503C)

Washington, DC 20460

Official Business

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