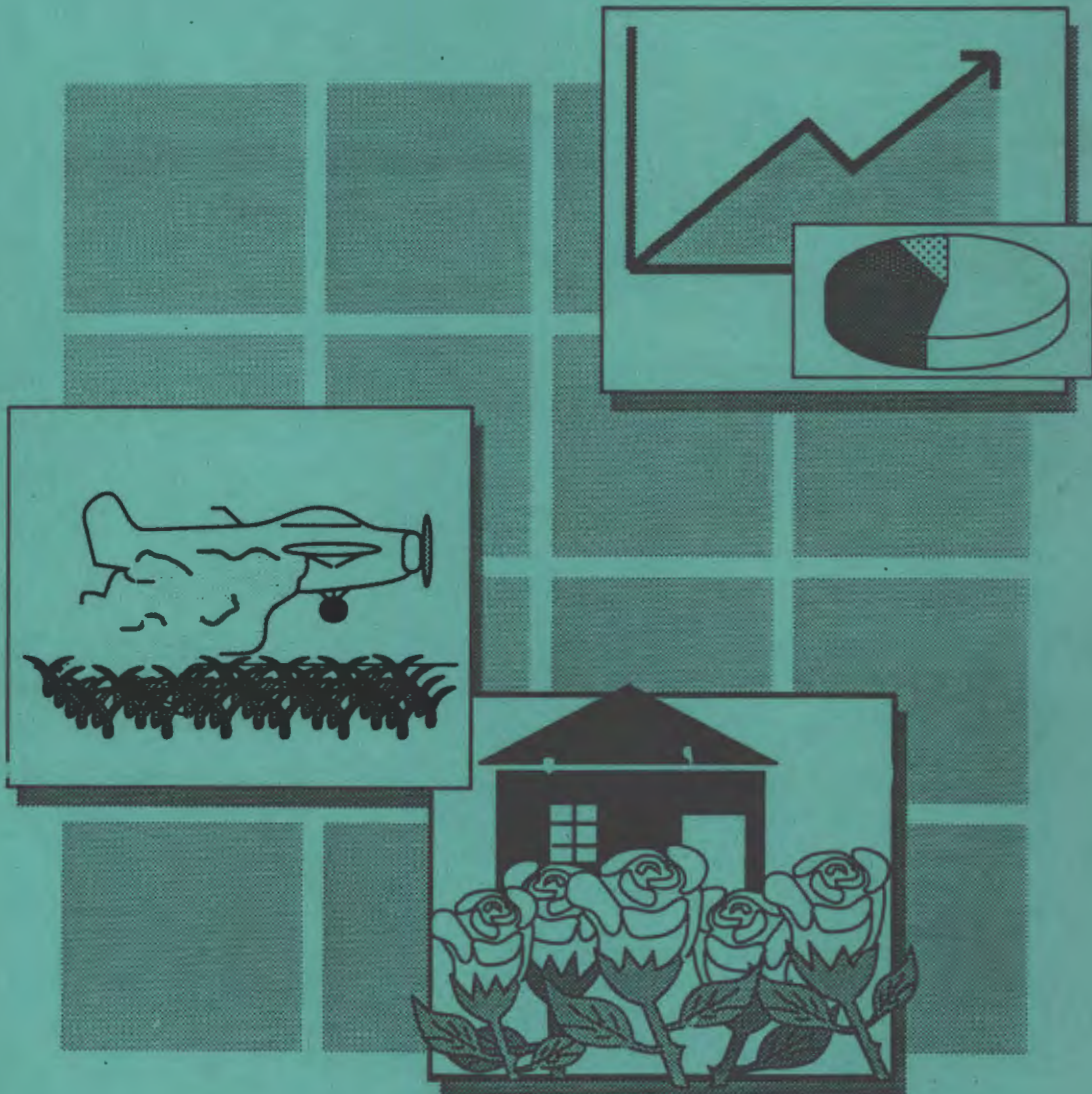




Pesticides Industry Sales And Usage

1990 and 1991 Market Estimates



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by

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Fall 1992

Introduction

This report provides an overview of the pesticide industry for 1990 and 1991. It contains a series of tables with estimates of U.S. and world pesticide markets 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/individuals involved in production/use of pesticides, number of pesticides, certified applicators and on a number of other topics. Most of the tabular information is for the years 1990 and 1991, but some historical data are also presented. Graphic versions of the data are included along with a number of the tables. The following page presents a number of highlights of this year's report and page 5 is a listing of the tables in the report.

Overview

Pesticide usage in the U.S. has been relatively stable at about 1.1 billion pounds of active ingredient during recent years. The agricultural share of pesticide usage (see Table 10) appears to have stabilized at about three-fourths of the total after increasing steadily throughout the 1960s and 1970s, primarily due to the expanded use of herbicides in crop production. Growth in the use of pesticides has been slowed by: lower application rates due to the introduction of more potent pesticides, more efficient use of pesticides, and lower farm commodity prices.

The volume of pesticides used for non-agricultural purposes in the U.S. has been quite stable in recent years at about 275 million pounds of active ingredient (A.I.). This equals about 1.1 pounds per capita in the U.S. (average for 250 million people). Considering all usage, including agricultural, U.S. pesticide usage equals somewhat more than 4 pounds per capita (4.3 pounds in 1991).

The Office of Pesticide Programs, EPA, has completed a national survey of home and garden usage of pesticides. The survey field enumeration was conducted in late 1990 and a brief summary of the survey results is presented in this report. The complete results are available from the EPA's Office of Pesticide Programs.

If you have questions regarding this report or need further information, please contact Arnold Aspelin, Chief, Economic Analysis Branch, at (703) 308-8136.

Highlights of Report

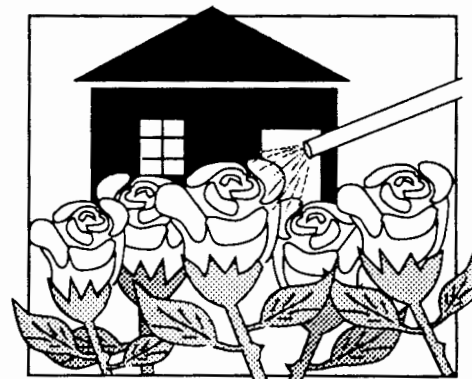
- U.S. pesticide user purchases account for one-third of the world market (*Table 1*).
- Annual U.S. pesticide user expenditures totalled approximately \$8.3 billion in 1991 (*Table 2*). (\$8.0 billion in 1990)
- Agriculture accounts for over two-thirds of pesticide user expenditures and three-fourths of the quantity used annually (*Tables 2 & 3*).
- Herbicides are the leading type of pesticides, in terms of both user expenditures and volumes used (*Tables 2 & 3*).
- About 1.1 billion pounds of active ingredient of conventional pesticides are used annually in the U.S. (*Table 4*). This usage involves about 20,000 pesticide products registered under the Federal Pesticide Law.
- Total U.S. pesticide usage in 1991 was about 2.2 billion pounds of active ingredient. (This figure includes wood preservatives, disinfectants, and sulfur.) (*Table 4*)
- Farmers' expenditures on pesticides equal about 4.7% of total farm production expenditures (*Table 5*).
- Total pesticide R&D expenditures represent roughly 16% of pesticide expenditures by user community (*Table 6*).
- Net usage of conventional pesticides of about 1.1 billion pounds derives from U.S. production of 1.3 billion, imports of 0.2 billion, and exports of 0.4 billion (pounds of active ingredient of conventional pesticides) (*Table 7*).
- Significant numbers of firms/individuals are involved in the production/distribution of pesticides:
 - 120 leading producers
 - 2,200 formulators
 - 7,300 producing establishments
 - 17,200 distributors (*Table 8*)
- The use of pesticides occurs on more than 900,000 farms and in about 69 million households (*Table 8*).
- The two most widely used pesticides by volume are the herbicides atrazine and alachlor (*Table 9*).
- There were 12 new active ingredients registered as pesticides under FIFRA in calendar year 1991 (*Table 11*) (up from eight in 1990).
- There are about 1.3 million certified pesticide applicators in the U.S. (*Table 12*). Of these, most are for agricultural applications (nearly 1.0 million) and the remainder (0.3 million) are certified commercial applicators (*Table 12*). EPA is conducting a survey of the usage of pesticides by certified/commercial application in 1993 as mandated by Congress in 1988. Results of that survey will be available in late 1993, based on current plans.
- The results of the EPA National Home and Garden Use Survey showed that 85% of all households have at least one pesticide in storage in or around the home. (*See following section*)

Results of EPA National Home and Garden Use Survey

EPA has released the findings of its National Home and Garden Pesticide Use Survey, a one-time snapshot of the non-agricultural use of pesticides in and around urban and rural homes in the United States. The survey included on-site visits to over 2,000 households in 29 states. EPA will use the survey data to improve its risk and benefit assessments of household pesticides, to support future regulatory developments and as a basis for public education programs on pesticide safety.

Some of the findings are:

- In households without children under five years old, about 75 percent had at least one pesticide stored less than four feet off the ground and not locked in a cabinet (i.e., within reach of children). In households with children under five years old, about 47 percent stored at least one pesticide within reach of children. (An estimated 13 percent of poisoning incidents among children take place outside the child's own home.)
- An estimated 85 percent of all households have at least one pesticide in storage in and around the home; most families have between one and five pesticide products stored; and slightly over 27 percent of single family households have more than six products stored.
- About 76 percent of all households treated their homes themselves for insects and related pests, while about 20 percent of all households hired a commercial applicator to treat for pests such as fleas, roaches, or ants. (Note: termites were not included in these estimates.) Of the households that utilized a commercial applicator, less than 25 percent could recall receiving written notification about the pesticides used in their home or any safety precautions to follow.
- About 15 percent of the households with lawns had pesticides applied by someone outside of the household, usually a commercial lawn care company. About half of the households utilizing commercial lawn care companies recall receiving written information regarding the pesticides used and safety precautions to be followed.
- Of the households that dispose of concentrated pesticides, 67 percent use the regular trash, 16 percent use special collections, and 17 percent gave it away, poured it down the sink or toilet, on the street, in the gutter or sewer and on the ground. Of the households that dispose of leftover diluted pesticides mixed from concentrates, 36 percent pour this mixture down the sink or toilet, 29 percent use the regular trash, and 35 percent either burned it, gave it away, poured it on the ground, in the gutter, in the sewer, or sprayed it elsewhere. Between 86-95 percent of households that dispose of pesticide containers (including ready to use containers, full or empty) use the regular trash.
- About 44 percent of all households identified at least one insect that was considered a major problem. About one-fourth of all households have treated for cockroaches in the last year. Cockroaches are the most common pest problem for households living in multi-family dwellings. Ants are the most common problem for households living in single family dwellings. Fleas were identified as the most difficult to control.



Results of EPA National Home and Garden Use Survey *(continued)*

The survey results were collected in August and September of 1990. Households were selected by scientific random sampling. The survey had a response rate of 85 percent.

About 8,000 pesticide products were observed to be in storage at the time of the survey. For each product in storage, questions were asked regarding the target pest, storage location, condition of packaging, safety precautions taken, application methods used, frequency of use, difficulty in opening or closing containers, and product satisfaction. Pesticide products excluded from the survey were products used exclusively for agriculture, pool chemicals, plant growth regulators, and anti-fouling paints.

Executive summaries of the 400-page National Home and Garden Pesticide Use Survey are available and can be obtained by contacting the Communications Branch of EPA's Pesticide Programs, (703) 305-5017. Limited copies of the full report are also available. Included in this report (concluding section) is a series of questions and answers which further highlight the results of the survey.

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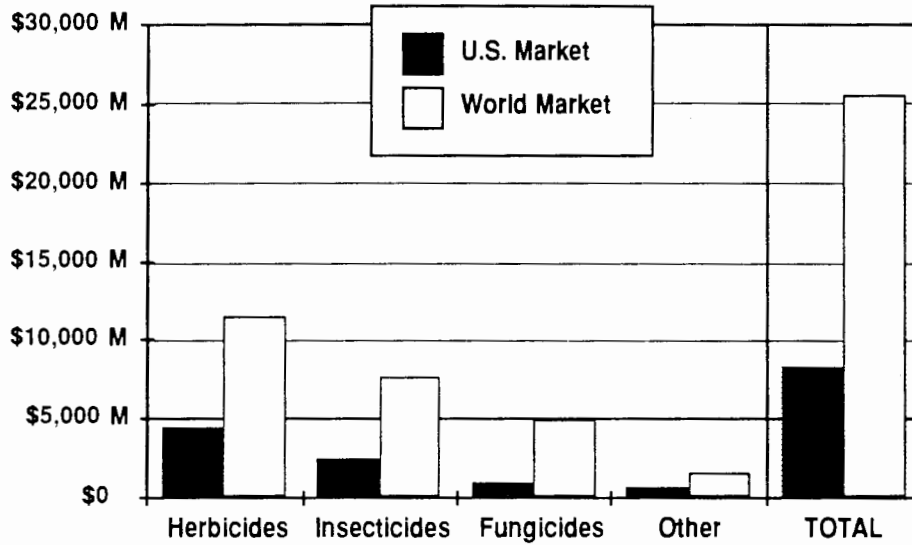
Table 1.**U.S. and World Conventional Pesticide Sales at User Level, 1991 Estimates.**

Pesticide Class	U.S. Market		World Market		U.S. % of World Market
	(Million)	(%)	(Million)	(%)	
User Expenditures (Millions of \$)					
Herbicides	\$4,359	53%	\$11,503	45%	38%
Insecticides	2,407	29%	7,669	30%	31%
Fungicides	910	11%	4,857	19%	19%
Other	584	7%	1,534	6%	38%
Total	\$8,260	100%	\$25,563	100%	32%
Volume of Active Ingredient (Millions of lbs.)					
Herbicides	628	58%	2,070	46%	30%
Insecticides	249	23%	1,575	35%	16%
Fungicides	120	11%	630	14%	19%
Other	80	7%	225	5%	36%
Total	1,077	100%	4,500	100%	24%

NOTE: Totals may not add due to rounding.

SOURCE: EPA estimates based on NACA annual surveys and other sources.

U.S. vs. World Conventional Pesticide Sales User Expenditures, 1991



U.S. vs. World Conventional Pesticide Sales Volume of Active Ingredient, 1991

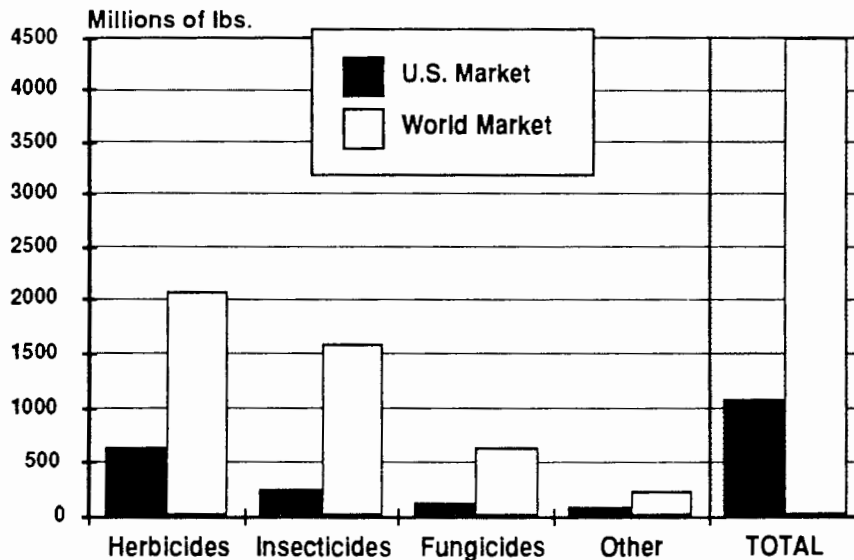


Table 2.**User Expenditures for Conventional Pesticides in the U.S. by Class and Sector, 1990 and 1991 Estimates.**

Sector	Herbicides ¹		Insecticides ²		Fungicides ³		Other ⁴		TOTAL	
	(\$M)	(%)	(\$M)	(%)	(\$M)	(%)	(\$M)	(%)	(\$M)	(%)
1990										
Agriculture	\$3,463	83%	\$1,172	50%	\$802	88%	\$416	74%	\$5,853	73%
Ind./Comm./Govt.	494	12%	376	16%	94	10%	47	8%	1,011	13%
Home & Garden	198	5%	792	34%	15	2%	99	18%	1,104	14%
Total	\$4,155	100%	\$2,340	100%	\$911	100%	\$562	100%	\$7,968	100%
1991										
Agriculture	\$3,644	84%	\$1,208	50%	\$797	88%	\$434	74%	\$6,083	74%
Ind./Comm./Govt.	513	12%	391	16%	98	11%	49	8%	1,051	13%
Home & Garden	202	5%	808	34%	15	2%	101	17%	1,126	14%
Total	\$4,359	100%	\$2,407	100%	\$910	100%	\$584	100%	\$8,260	100%

NOTE: Totals may not add due to rounding.

SOURCE: EPA estimates based on NACA annual surveys and other sources.

FOOTNOTES:

- 1 Includes plant growth regulators.
- 2 Includes miticides and contact nematicides.
- 3 Does not include wood preservatives.
- 4 Includes rodenticides, fumigants, and molluscicides, but does not include wood preservatives, disinfectants, or sulfur.

U.S. User Expenditures for Conventional Pesticides, 1991 Estimates

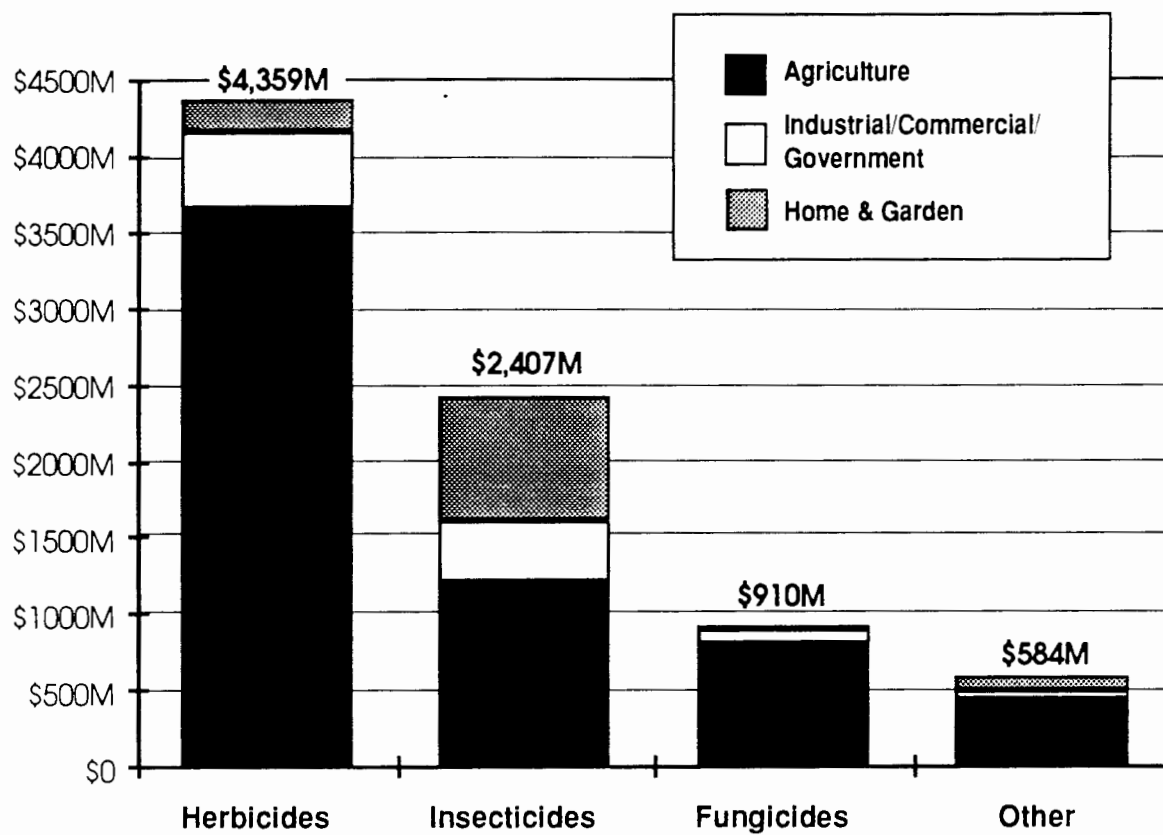


Table 3.**Volume of Conventional Pesticide Active Ingredient Used in the U.S. by Class and Sector, 1990 and 1991 Estimates.**

Sector	Herbicides ¹		Insecticides ²		Fungicides ³		Other ⁴		TOTAL	
	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)	(M lb.)	(%)
1990										
Agriculture	516	80%	173	71%	72	62%	73	90%	834	77%
Ind./Comm./Govt.	103	16%	42	17%	33	28%	5	6%	183	17%
Home & Garden	25	4%	30	12%	11	9%	3	4%	69	6%
Total	644	100%	245	100%	116	100%	81	100%	1,086	100%
1991										
Agriculture	495	79%	175	70%	75	63%	72	90%	817	76%
Ind./Comm./Govt.	108	17%	44	18%	34	28%	5	6%	191	18%
Home & Garden	25	4%	30	12%	11	9%	3	4%	69	6%
Total	628	100%	249	100%	120	100%	80	100%	1,077	100%

NOTE: Totals may not add due to rounding.

SOURCE: EPA estimates based on NACA annual surveys and other sources.

FOOTNOTES:

- 1 Includes plant growth regulators.
- 2 Includes miticides and contact nematicides.
- 3 Does not include wood preservatives.
- 4 Includes rodenticides, fumigants, and molluscicides, but does not include wood preservatives, disinfectants, or sulfur.

U.S. Volume for Conventional Pesticides, 1991 Estimates

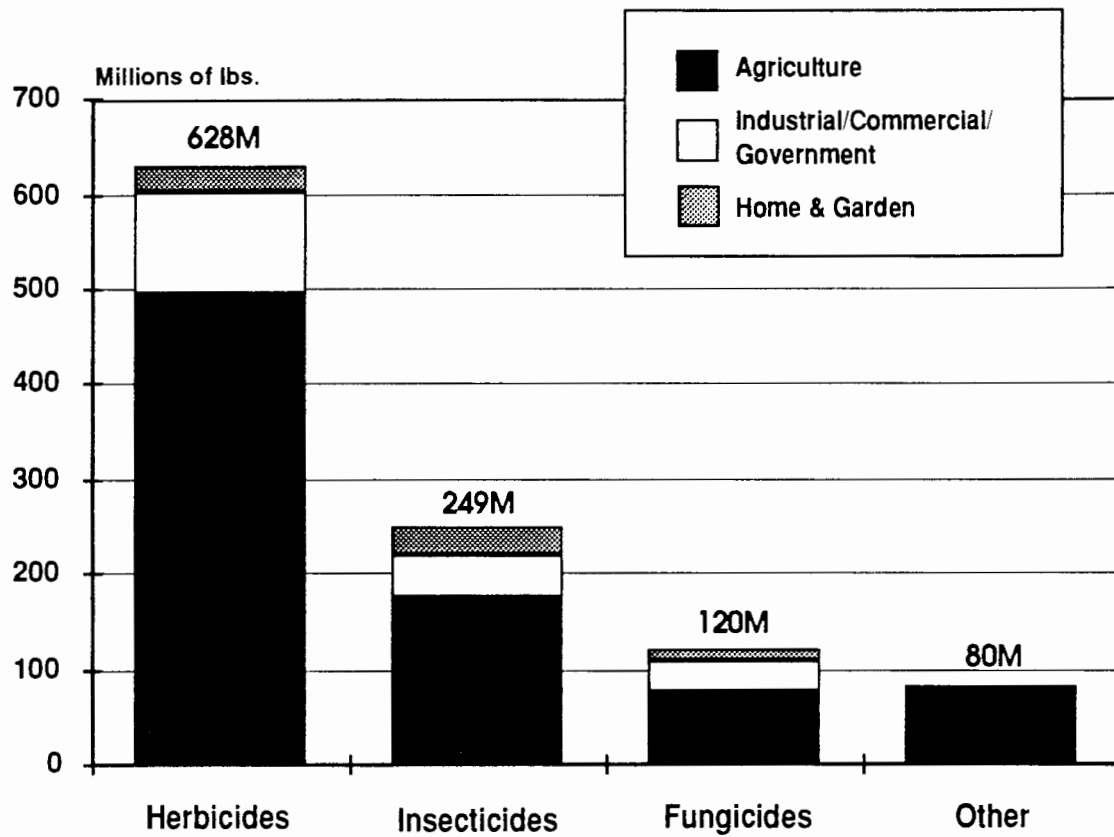


Table 4.**U.S. Usage of Conventional Pesticides and Other Types, 1990 and 1991 Estimates.**

Type	Billion Pounds A.I.	
	1990	1991
Conventional Pesticides	1.09	1.08
Wood Preservatives	.77	.80
Disinfectants ¹	.29	.30
Sulfur	.04	.04
Total	2.19	2.22

SOURCE: EPA estimates.

FOOTNOTES:

- 1 This estimate is for disinfectants but not other antimicrobials. It includes food industries, swimming pools/spas, cooling towers, and household and commercial/industrial uses. It does not include chlorine products registered with EPA for disinfectant or drinking water treatment uses.

Table 5.**Importance of Conventional Pesticide Expenditures to U.S. Farmers, 1990 and 1991 Estimates.**

	1990		1991	
	\$Billion	Percent	\$Billion	Percent
Farm Pesticides Expenditures ¹	5.85	4.45%	6.08	4.68%
Total Farm Production Expenditures²	131.55	100%	129.79	100%

SOURCE: USDA and EPA estimates.

FOOTNOTES:

- 1 Excludes wood preservatives, disinfectants, and sulfur.
- 2 USDA, 1990.

Table 6.**Comparison and Cost of R&D Expenditures to Meet EPA Data Requirements Relative to Total Conventional Pesticide R&D Expenditures in U.S., 1990 and 1991 Estimates.**

	1990		1991	
	\$Million	Percent	\$Million	Percent
Pesticide User Expenditures	7,968	100%	8,260	100%
Total Pesticides R&D Expenditures ¹	1,217	15.3%	1,317	15.9%
EPA Registration-Related R&D Expenditures ¹	304	3.8%	329	4%

SOURCE: EPA estimates, based on the NACA survey (1990 & 1991), and as noted below.

FOOTNOTES:

- 1 Re-estimated for 1990 and 1991 based on data from NACA member firms only. Total R&D expenditures for U.S. market are global R&D expenditures of NACA firms reduced by the percent share of sales abroad (27.6 and 25.2 percent respectively for 1990 and 1991). EPA registration-related expenditures are estimated to be 25 percent of total R&D expenditures, based upon NACA data for 1987, the latest year with such a break-out in the NACA annual survey report.

Table 7.**U.S. Production, Imports, Exports, and Net Supply of Conventional Pesticides at Producer Level, 1990 and 1991 Estimates.**

Category	Active Ingredient (in lbs.)		Sales Value	
	1990	1991	1990	1991
U.S. Production	1.30B	1.28B	\$7.60B	\$7.78B
U.S. Imports	0.18B	0.20B	\$1.61B	\$1.76B
Total Supply	1.48B	1.48B	\$9.21B	\$9.54B
U.S. Exports	0.39B	0.40B	\$2.49B	\$2.36B
Net Supply/Usage	1.09B	1.08B	\$6.72B	\$7.18B

SOURCE: EPA estimates based on NACA Surveys, Department of Commerce Publications, and other sources.

**U.S. Production, Net Supply and Exports of Conventional Pesticides,
1991 Estimates**

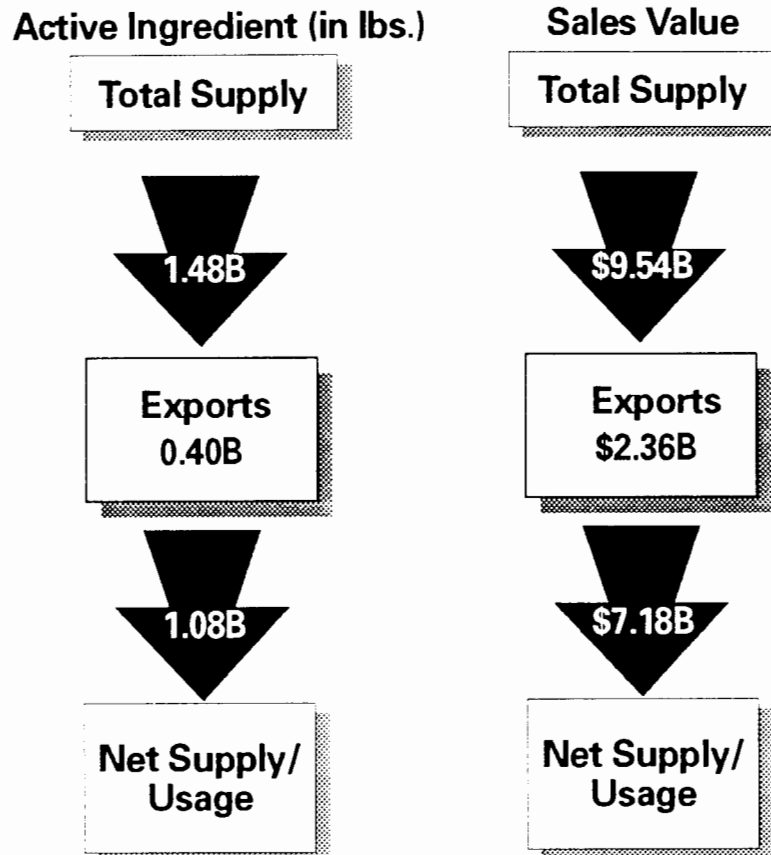


Table 8.

**U.S. Pesticides Production, Marketing and User Sectors;
Profile of Numbers of Units Involved, 1990 and 1991 Estimates. (Approximate Values)**

PRODUCTION AND DISTRIBUTION			
Basic Production		Distribution and Marketing	
1. Major Basic Producers	20	1. Formulators	
2. Other Producers	100	–Major national	150-200
3. Active Ingredients Registered	900	–Other	2,000
4. Chemical Cases for Re-registration (pre- and post-'84)	500	2. Distributors and Establishments	
5. Active Ingredients with food/feed tolerances	350	–Major national	250-350
6. New Active Ingredients/Year	8-12	–Other	16,900
7. Total Employment	10,000	3. Formulated Products	
8. Producing Establishments	7,300	Registered	
		–Federal level	20,100
		–State/4(c)	3,300
		Total	23,400
USER LEVEL			
Agricultural Sector		Ind./Comm./Gov't Sector	
1. Land in Farms	991M acres	1. No. Comm. Pest Control Firms	40,000
2. Harvested	289M acres	2. No. Certified Commercial Applicators	325,336
3. Total No. Farms	2.1M		
4. No. Farms Using Chemicals for:		Home & Garden Sector	
–Insect on hay/crops	554,000	1. Total U.S. Households	94M
–Nematodes	66,000	2. No. Households Using; -('90)	
–Diseases on crops/orchards	129,000	–Insecticides	52M
–Weed/grass/bush	913,000	–Fungicides	36M
–Defoliation/fruit thinning (above are '87 census no.s)	75,000	–Herbicides	14M
5. No. Private Pesticide Applicators Registered	975,473	–Repellents	17M
		–Disinfectants	40M
		–Any pesticides	69M

SOURCE: EPA estimates.

Table 9.**Annual Usage Estimates of the Largest Conventional Pesticides in U.S.**
(Approximate Values, 1990/1991)

Pesticide	Usage in Million Pounds Active Ingredient
Atrazine	70 – 80
Alachlor	55 – 70
Metolachlor	50 – 65
1,3-D (Telone)	45 – 65
2,4-D	40 – 65
Methyl-bromide	25 – 45
Trifluralin	25 – 35
Cyanazine	20 – 30
EPTC	20 – 30
Metam-sodium	20 – 30
Glyphosate	15 – 20
Chlorpyrifos	10 – 20
Chlorothalonil	10 – 20
Carbaryl	10 – 15
Malathion	10 – 15
Terbufos	9 – 11
Maneb/Mancozeb	6 – 10
Butylate	5 – 10

SOURCE: EPA estimates based on a variety of sources.

FOOTNOTE:

- 1 The estimates represent all usage of the active ingredient including noncrop usage. The estimates do not include 30–40 mil/lbs. Oil.

Table 10.**United States Conventional Pesticide Usage Total and Estimated Agricultural Sector Share, 1964-1991.**

Year	Total U.S.	Agricultural Sector	
		Million lbs. A.I.	
1964	540	320	59%
1965	610	335	55%
1966	680	350	51%
1967	735	380	52%
1968	835	470	56%
1969	775	430	55%
1970	740	430	58%
1971	835	495	59%
1972	875	525	60%
1973	910	560	62%
1974	950	590	62%
1975	990	625	63%
1976	1,030	660	64%
1977	1,075	720	67%
1978	1,110	780	70%
1979	1,058	840	79%
1980	1,075	846	79%
1981	1,101	860	78%
1982	1,056	815	77%
1983	963	733	76%
1984	1,080	850	79%
1985	1,112	861	77%
1986	1,096	820	75%
1987	1,087	814	75%
1988	1,130	845	75%
1989	1,070	806	75%
1990	1,086	834	77%
1991	1,077	817	76%

NOTE: Excludes wood preservatives, disinfectants, and sulfur.

SOURCE: EPA estimates.

U.S. Conventional Pesticide Usage and Agricultural Sector Share, 1964-1991

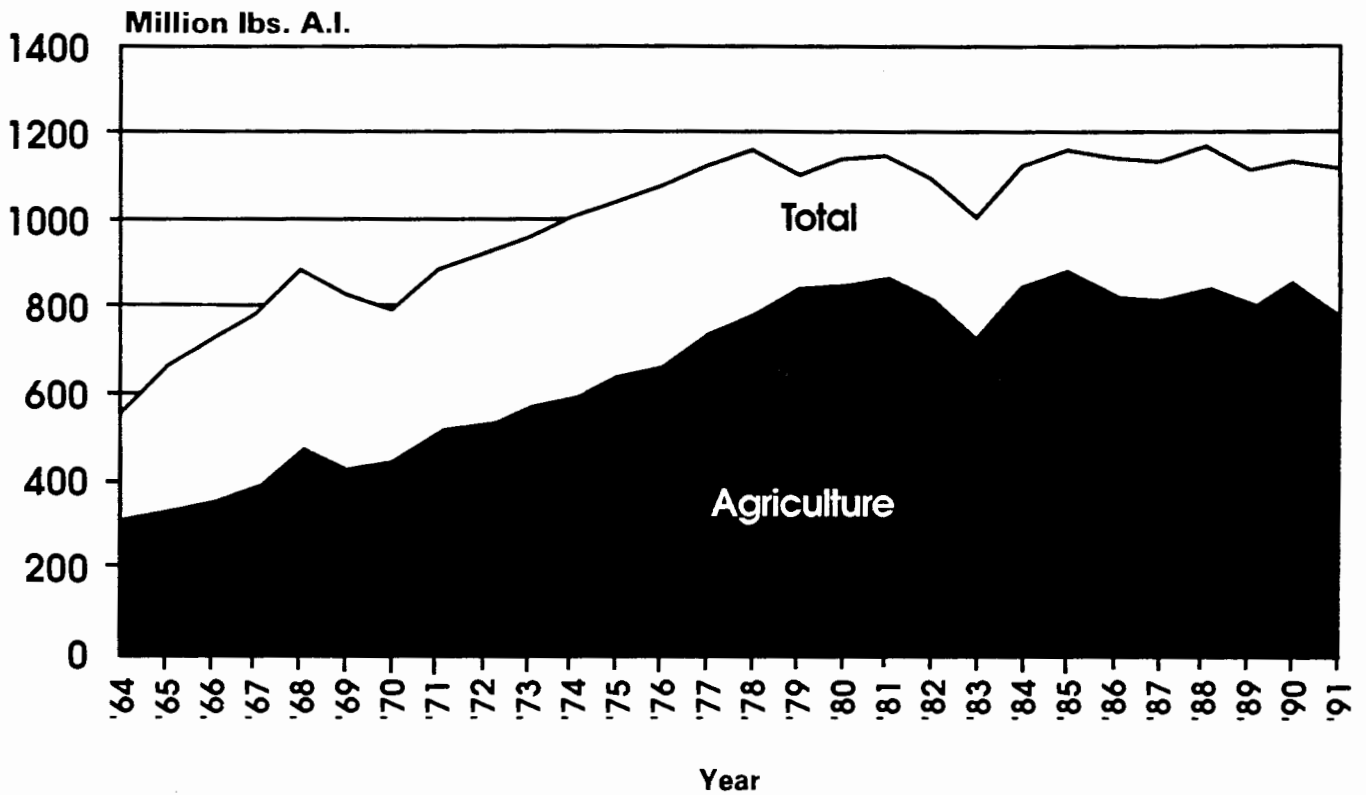


Table 11.**Number of Chemicals Registered for First Time as Pesticides Under FIFRA, by Type, Calendar Years 1967-1991.**

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

SOURCE: EPA registration files.

Total New Chemical Pesticide Registrations

First-time Registrations, 1967-1991

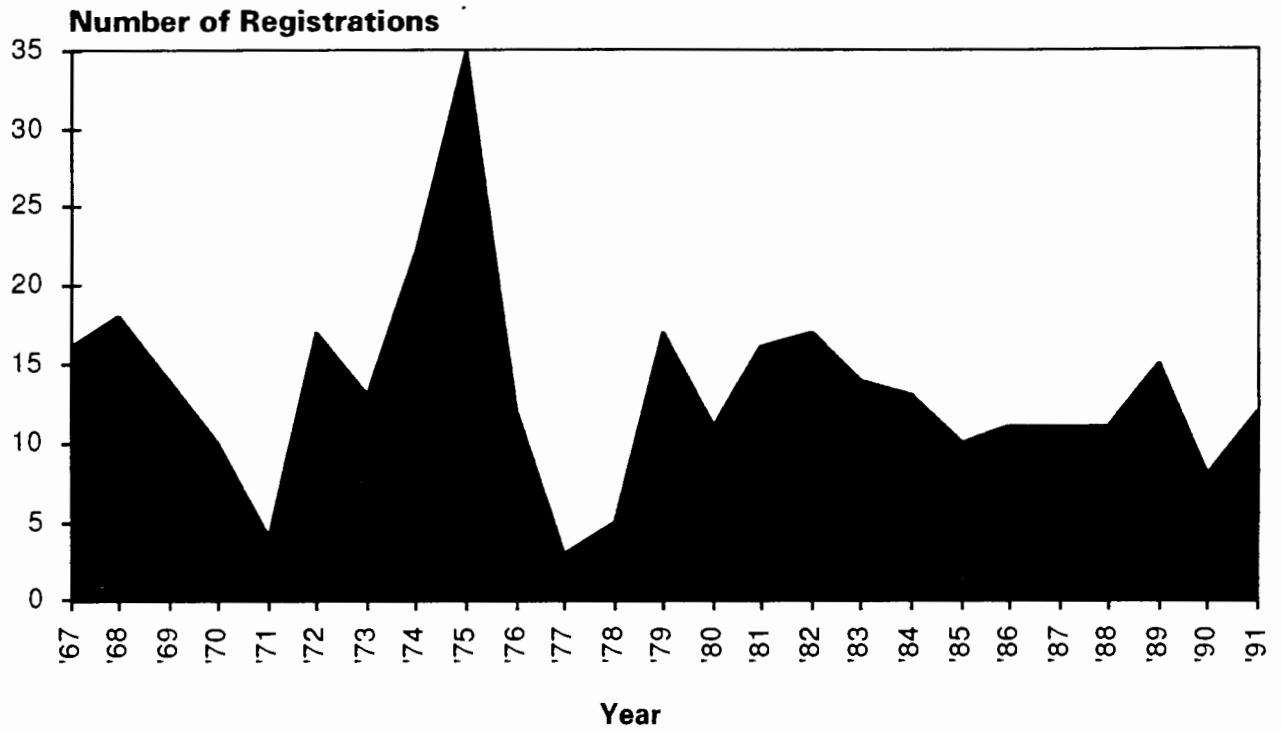


Table 12.**Number of Certified Applicators in the U.S., 1990 Estimates.**

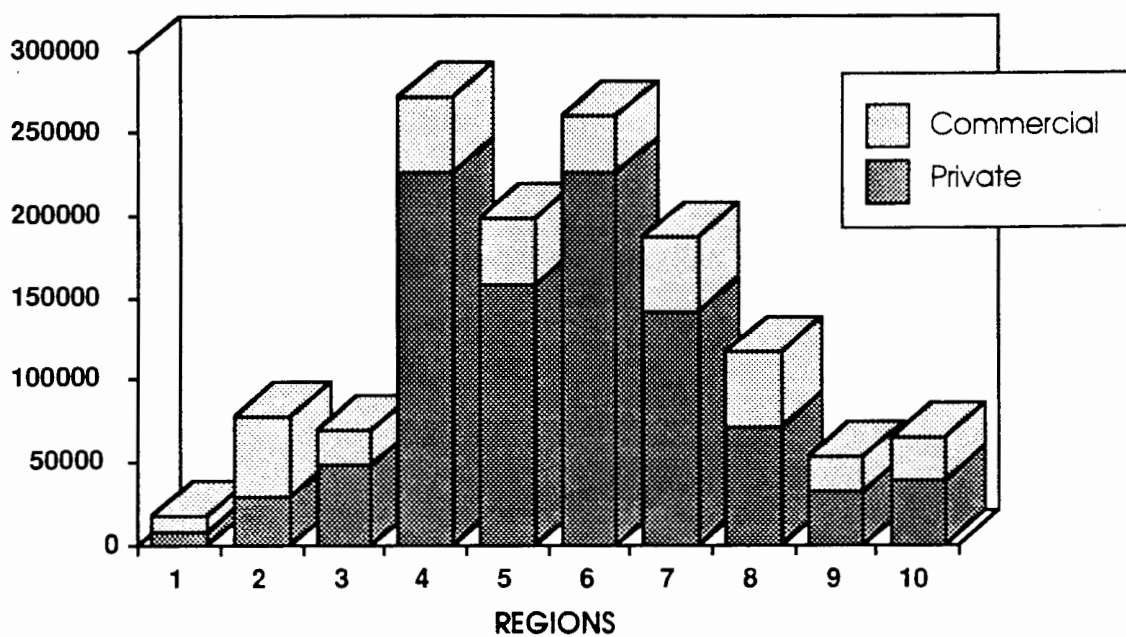
EPA Region¹	Private²	Commercial³
1	7,869	9,025
2	28,735	49,071
3	47,690	22,581
4	225,370	46,925
5	156,925	41,977
6	225,831	34,585
7	140,870	27,418
8	70,510	46,774
9	32,389	20,888
10	39,284	26,092
U.S. Total⁴	975,473	325,336

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



U.S. EPA Regional Map

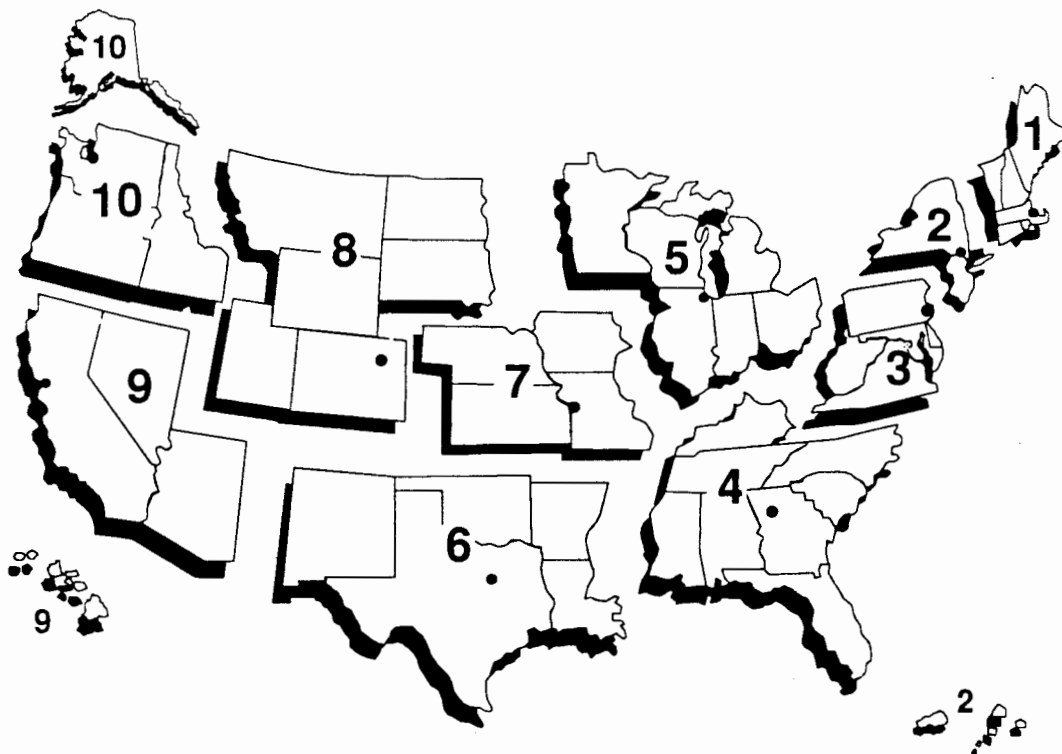


Table 13.

U.S. Annual Volume of Pesticide Usage, by Type, 1979-1991.

Pesticide	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Millions of lbs. A.I.													
Herbicides	560	555	570	544	575	675	670	655	645	660	655	644	628
Insecticides	378	395	405	391	255	270	300	295	260	268	226	245	249
Fungicides	66	78	80	76	78	80	82	86	122	132	111	116	120
Other	54	47	46	45	55	55	60	60	60	70	78	81	80
Total	1,058	1,075	1,101	1,056	963	1,080	1,112	1,096	1,087	1,130	1,070	1,086	1,077

SOURCE: EPA/OPP/BEAD estimates.

Annual Volume of Pesticide Usage
(Total U.S. Volume, by Type 1979-1991)

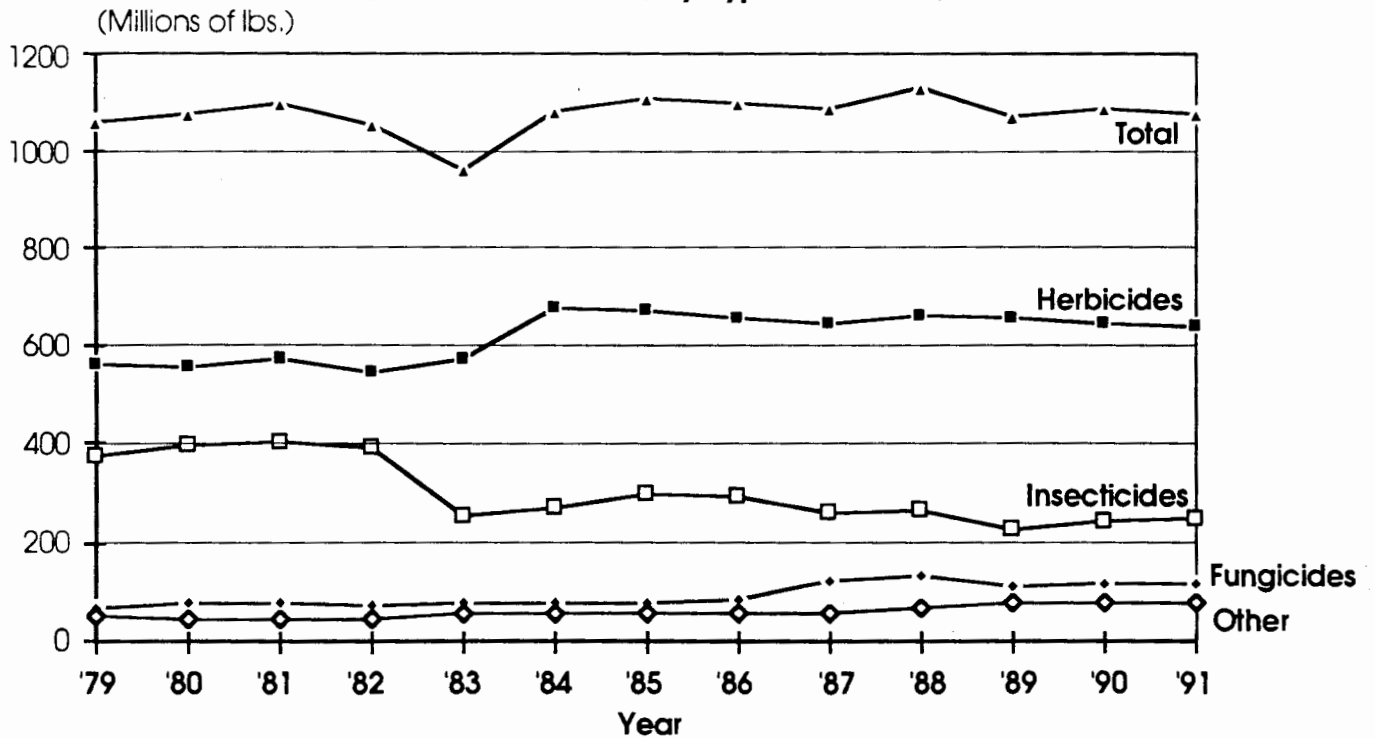


Table 14.

U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979-1991.

----- AGRICULTURE -----

Pesticide Type	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	Millions of lbs. A.I.												
Herbicides	488	455	456	430	445	545	525	500	505	510	520	516	495
Insecticides	302	306	309	295	185	200	225	210	179	185	151	173	175
Fung. & Other	90	95	95	90	103	105	111	110	130	150	135	145	147
Total	840	856	860	815	733	850	861	820	814	845	806	834	817

SOURCE: EPA/OPP/BEAD estimates, Annual publications, 1979-1991

U.S. Annual Volume of Pesticide Usage in Agriculture

(by Type 1979-1991)

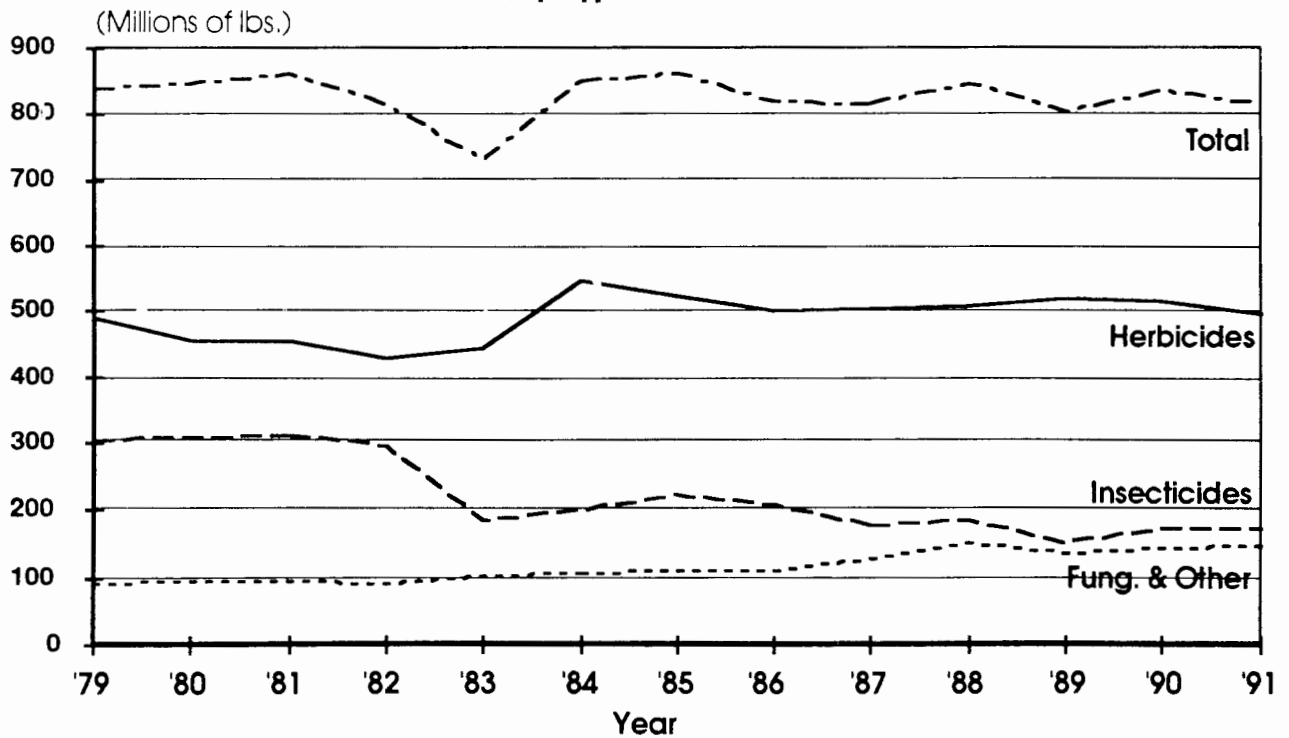


Table 14. (continued)

U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979-1991.

----- IND./COMM./GOV'T. -----

Pesticide Type	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Millions of lbs. A.I.													
Herbicides	84	82	86	86	105	105	115	125	115	120	110	103	108
Insecticides	38	47	48	48	40	40	40	45	45	45	45	42	44
Fung. & Other	18	18	19	19	20	20	21	25	40	40	40	38	39
Total	140	147	153	153	165	165	176	195	200	205	195	183	191

SOURCE: EPA/OPP/BEAD estimates, Annual publications, 1979-1991

**U.S. Annual Volume of Pesticide Usage in Industry, Commercial, & Government
(by Type 1979-1991)**

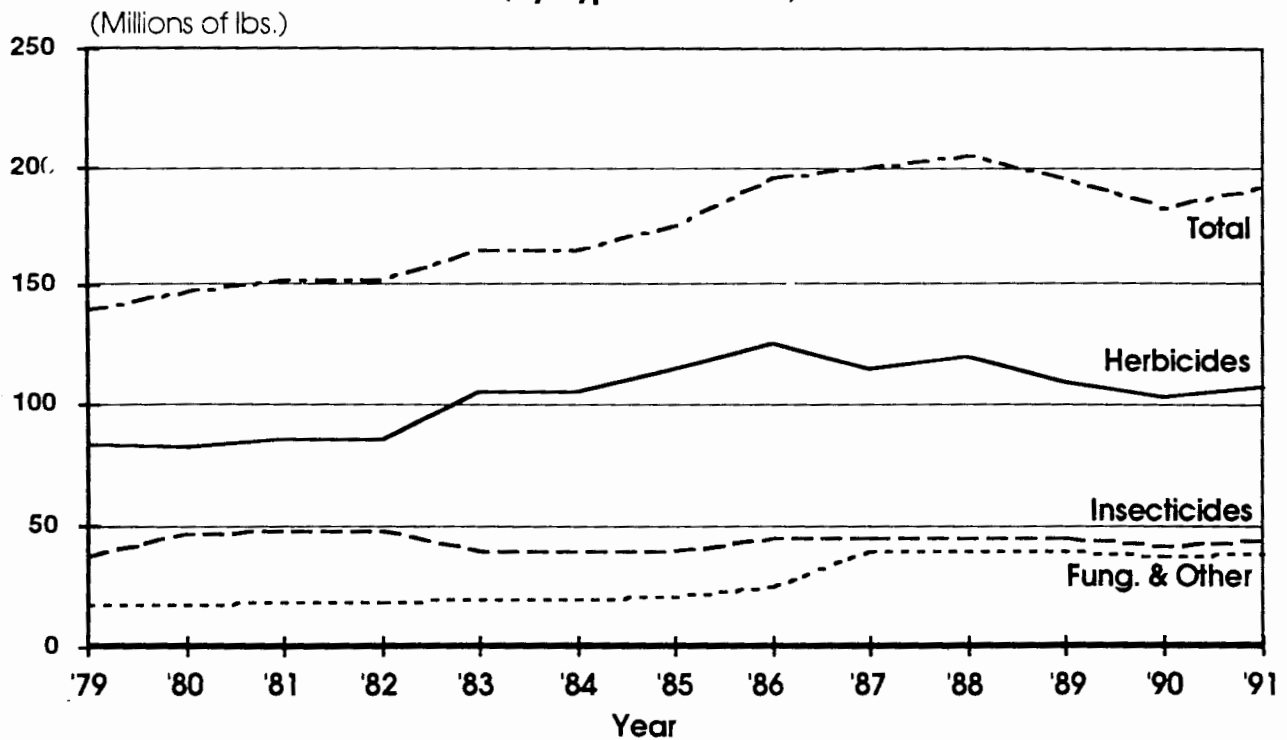


Table 14. (continued)

U.S. Annual Volume of Pesticide Usage, by Sector and Type, 1979-1991.

----- HOME AND GARDEN -----

Pesticide Type	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	Millions of lbs. A.I.												
Herbicides	28	28	28	28	25	25	30	30	25	30	25	25	25
Insecticides	38	42	48	48	30	30	35	40	36	38	30	30	30
Fung. & Other	12	12	12	12	10	10	10	11	12	12	14	14	14
Total	77	82	85	88	65	65	75	81	73	80	78	69	69

SOURCE: EPA/OPP/BEAD estimates, Annual publications, 1979-1991

**U.S. Annual Volume of Pesticide Usage in Home & Garden
(by Type 1979-1991)**

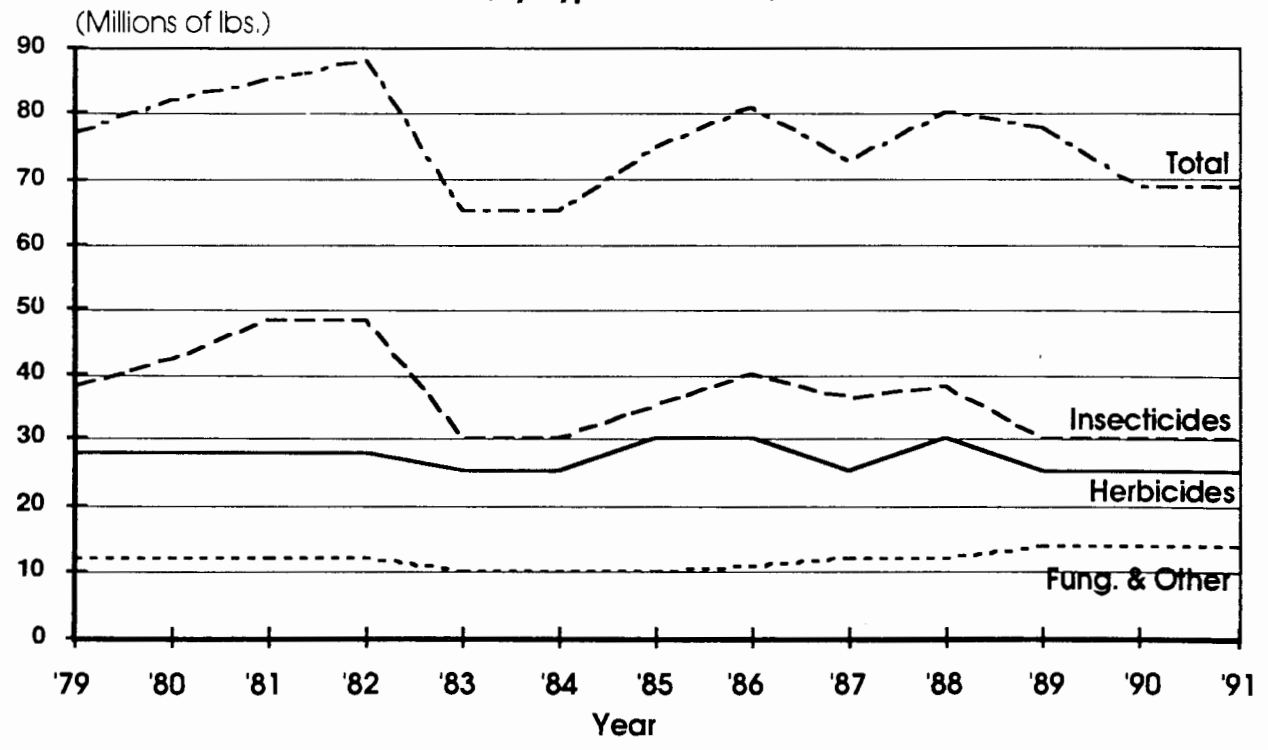


Table 15.

U.S. Annual User Expenditures on Pesticides, by Type, 1979-1991.

Pesticide	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	Millions of \$												
Herbicides	2,830	3,100	3,500	3,500	3,650	4,260	3,700	3,625	3,745	3,930	3,980	4,155	4,359
Insecticides	1,565	1,805	1,903	1,929	2,100	1,880	1,975	1,980	1,990	2,110	2,299	2,340	2,407
Fungicides	228	249	288	288	421	418	515	515	730	860	798	911	910
Other	205	153	189	191	247	225	370	370	385	480	538	562	584
Total	4,828	5,307	5,880	5,908	6,418	6,783	6,560	6,490	6,850	7,380	7,615	7,968	8,260

SOURCE: EPA/OPP/BEAD estimates.

Annual User Expenditures on Pesticides
(Total U.S. Expenditures, by Type 1979-1991)

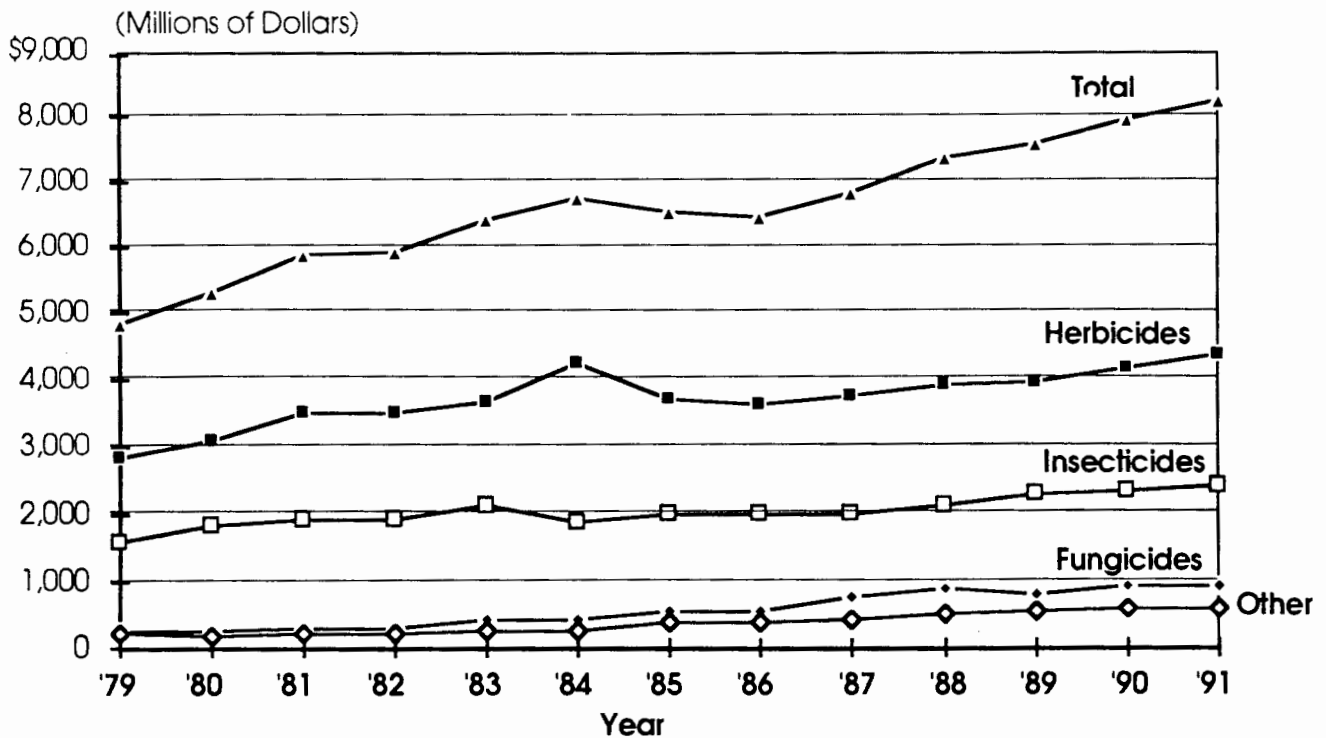


Table 16.

U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979-1991.

----- AGRICULTURE -----

Pesticide Type	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	Millions of \$												
Herbicides	2,060	2,300	2,590	2,465	2,800	3,390	2,900	2,775	2,935	3,080	3,255	3,463	3,644
Insecticides	900	1,095	1,139	1,120	1,300	950	1,100	1,050	1,050	1,110	1,099	1,172	1,208
Fung. & Other	240	205	272	268	450	418	615	600	770	920	1,071	1,218	1,231
Total	3,200	3,600	4,001	3,853	4,550	4,758	4,615	4,425	4,755	5,110	5,425	5,853	6,083

SOURCE: EPA/OPP/BEAD estimates, Annual publications, 1979-1991

U.S. Annual User Expenditures on Pesticide for Agriculture

(by Type 1979-1991)

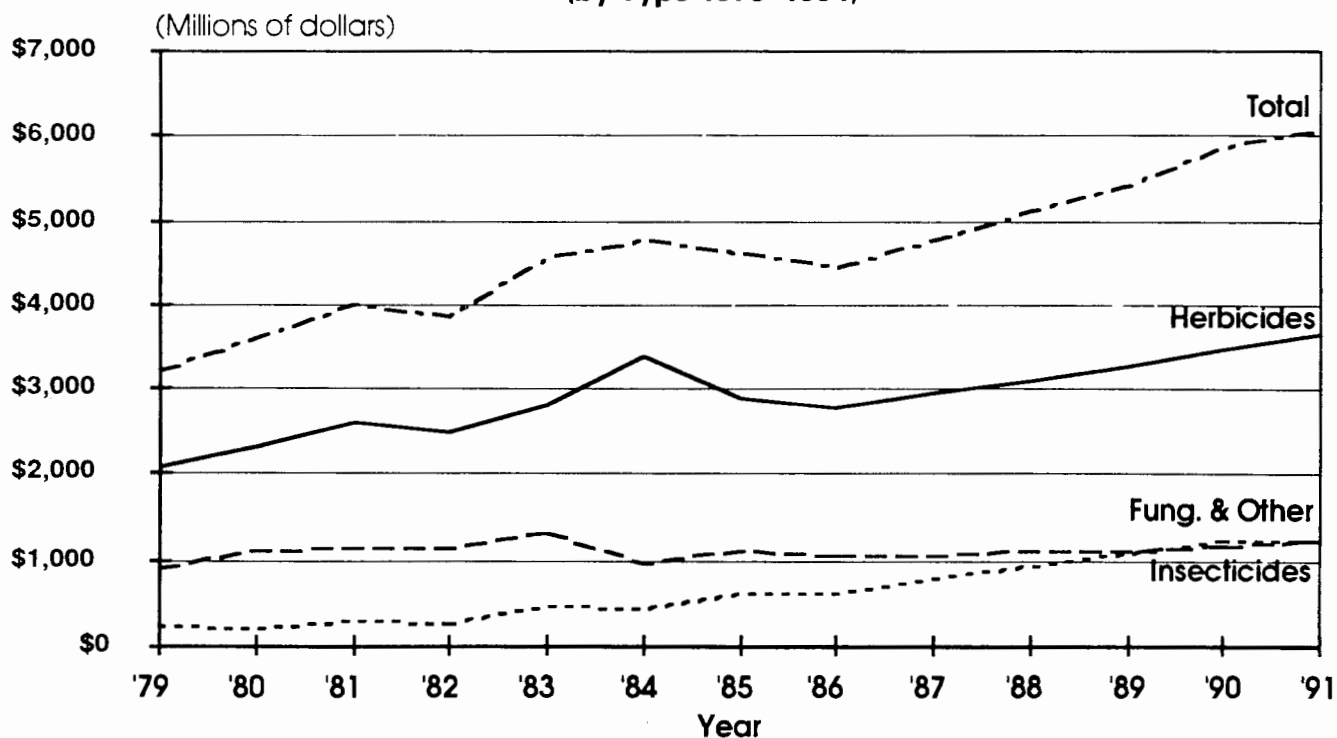


Table 16. (continued)

U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979-1991.

----- IND./COMM./GOV'T. -----

Pesticide Type	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	Millions of \$												
Herbicides	560	550	630	710	600	600	500	535	480	500	525	494	513
Insecticides	240	260	289	299	300	400	375	405	410	440	400	376	391
Fung. & Other	108	110	115	118	120	125	150	160	210	250	150	141	147
Total	908	920	1,034	1,127	1,020	1,125	1,025	1,100	1,100	1,190	1,075	1,011	1,051

SOURCE: EPA/OPP/BEAD estimates, Annual publications, 1979-1991

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

(by Type 1979-1991)

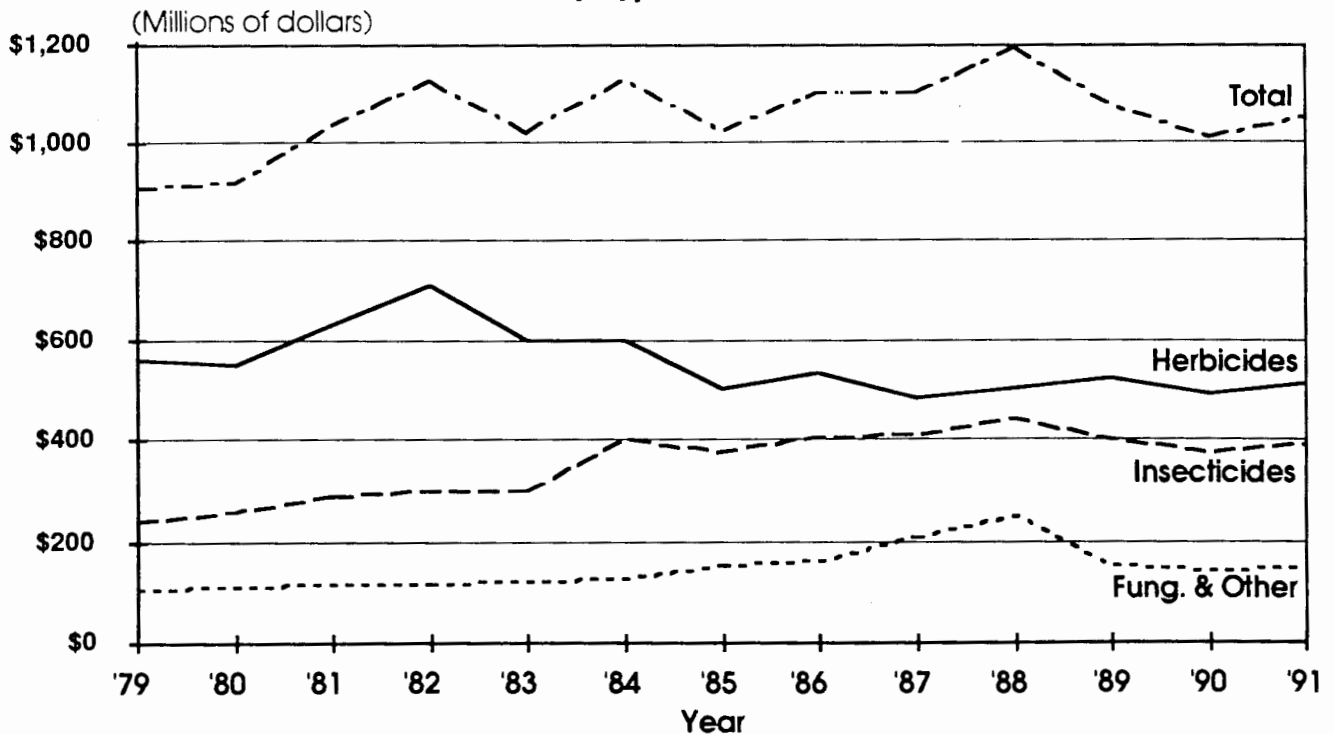


Table 16. (continued)

U.S. Annual User Expenditures on Pesticides, by Sector and Type, 1979-1991.

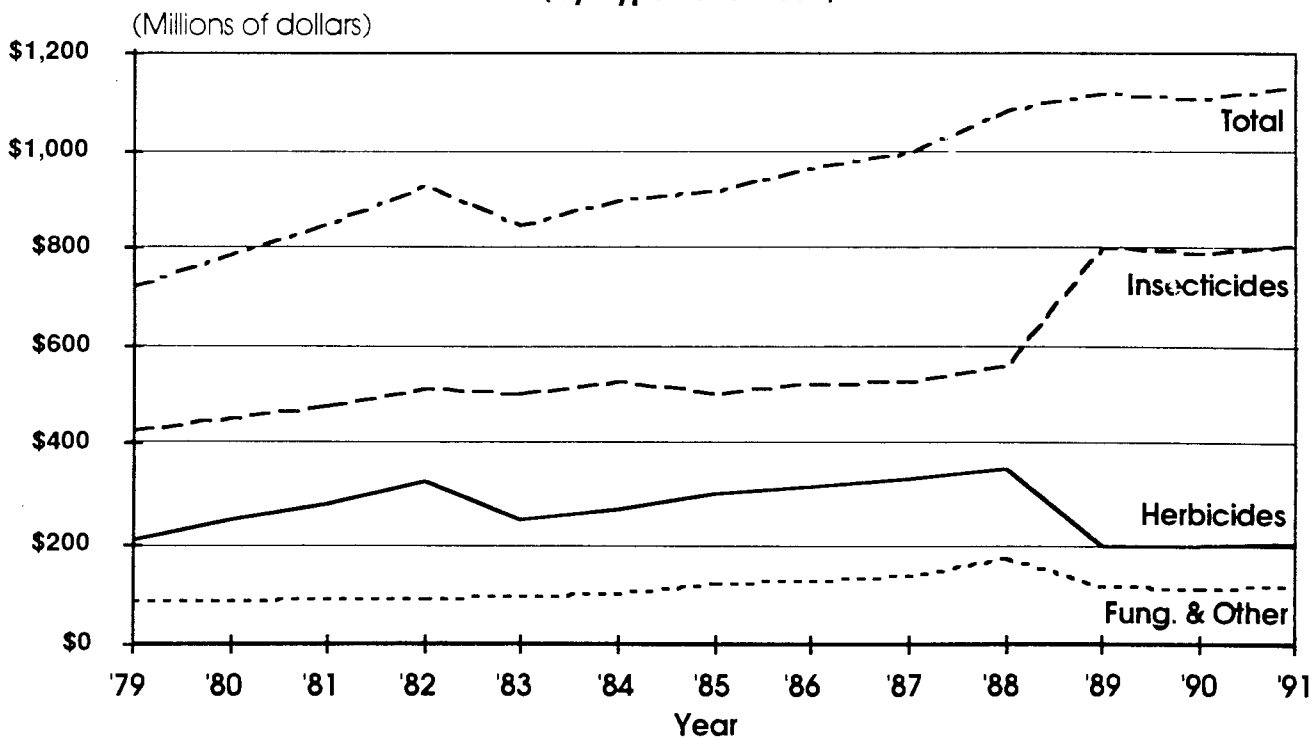
HOME AND GARDEN

Pesticide Type	Year												
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
	Millions of \$												
Herbicides	210	250	280	325	250	270	300	315	330	350	200	198	202
Insecticides	425	450	475	510	500	530	500	525	530	560	800	792	808
Fung. & Other	85	87	90	93	98	100	120	125	135	170	115	114	116
Total	720	787	845	928	848	900	920	965	995	1,080	1,115	1,104	1,126

SOURCE: EPA/OPP/BEAD estimates, Annual publications, 1979-1991

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

(by Type 1979-1991)



The following was adapted from the *National Home and Garden Pesticide Use Survey (Questions and Answers)* published on April 23, 1992 by U.S. EPA.

National Home and Garden Pesticide Use Survey

Q1. What is the purpose of the survey?

The Home and Garden Survey is intended to provide a snapshot of the non-agricultural use of pesticides in and around urban and rural homes in the United States. The survey compiles data on what pesticides are used in and around homes, which pests they are used to control, and what safety precautions people take when using, storing, and disposing of pesticides.

EPA will use the survey data to improve its risk and benefit assessments of pesticides used around the home, to support regulatory development in such areas as storage and disposal, and as a basis for expanding its outreach and education programs on pesticide safety for consumers.

Q2. When and where was the survey conducted?

The survey was conducted during August and September of 1990. Data were collected from 2,078 households in 29 states.

Q3. How were the data collected?

The survey was conducted under contract to EPA by Research Triangle Institute. Data were collected by trained interviewers who visited each home personally. In addition to interviewing household members, the interviewers directly observed stored pesticides and recorded information about product identity, packaging, and the location and security of storage sites. Survey interviewers also carried a pest identification notebook to help minimize pest identification errors.

Q4. How reliable are the data?

EPA believes the data to provide a good representation of household pesticide use nationwide, because the 2,000+ households were selected by a scientific, random-sample method, and because the response rate was high (85%). The report was also favorably peer reviewed by scientists and statisticians from state universities, market research firms, USDA, and trade associations.

What did we learn from the survey?

Q5. What bugs us?

The report indicates that 76% of households nationwide have treated for insects and related pests during 1990. Forty-four percent (44%) of all households have at least one insect they consider a major problem. More than one third of all households have treated for ants in the last year; next are mosquitoes, followed closely by cockroaches and fleas. Cockroaches are the most commonly reported pest problem for households living in multi-family dwellings. Ants are the most commonly reported pest problem for single-family households.

Q6. What pests are the most difficult to control?

Fleas are the pest reported most often when households are dissatisfied with a pesticide product. Households reported that they were not satisfied with the effectiveness of 15% of their flea-control products as compared to 8% on average for all products used. The survey also cites weeds, ticks or chiggers, mice, rats and other mammals, and soil dwelling insects or nematodes as difficult-to-control pests.

Q7. Do people use pesticides effectively?

Approximately 8 percent of the survey respondents said they were dissatisfied with a pesticide's effectiveness. This could be due to a number of reasons:

- a. lack of product efficacy;
- b. lack of user knowledge of pest biology (e.g., not knowing proper time to apply the pesticide product);
- c. unrealistic expectations regarding level of control possible; or,
- d. lack of user understanding of the product (e.g., pesticide may not be labelled to control a specific pest).

Q8. What safety precautions do people take when using pesticides?

Sixty to ninety percent of the survey respondents said they wash their hands after applying pesticides. However, only about 33% or less of the respondents took further precautions, such as: wearing impermeable gloves, long pants, or a long-sleeve shirt; changing clothes after the pesticide application; removing or covering food during indoor applications; placing the treated area off-limits; mixing pesticides outdoors; or avoiding spraying outdoors on windy days.

Q9. How safely are pesticides stored?

The survey revealed that a substantial portion of all pesticides are stored within reach of small children. Almost half — 47% — of all households with children under the age of five had at least one pesticide stored in an unlocked cabinet, less than 4 feet off the ground (i.e., within the reach of children). Approximately 75% of households without children under the age of five also stored pesticides in an unlocked cabinet, less than 4 feet off the ground. (This number is especially significant because 13% of all pesticide poisoning incidents occur outside the child's home.)

Of note, at least 85 percent of all households have at least one pesticide in storage in and around the home; most families have between one and five pesticide products stored; and slightly over 27% of households in single-family dwellings have more than six products stored.

Q10. How do people dispose of leftover pesticides and containers?

Most households dispose of leftover pesticides and empty containers in the regular trash, as directed on many product labels. In addition, 16% of households disposing of concentrated chemicals utilize special collection facilities. Thirty-six percent (36%) of households that dispose of leftover diluted mixtures do so improperly by pouring them down the sink or toilet.

Six percent of households continue to store unwanted pesticides because they do not know how to dispose of them safely. In addition, the report suggests that up to one million households may have old stocks of cancelled pesticides including DDT, chlordane, heptachlor, and silvex. (See Question #14.)

Q11. Are people informed about pesticides that are applied by commercial companies to their home or lawn/garden?

The survey indicated that households that hire professional pest-control services are more likely to receive information about pesticide applications from lawn-care companies than from indoor pest exterminators. About half of the households surveyed who use a commercial lawn-care service could recall receiving written information regarding the pesticides used and safety precautions to follow. By comparison, less than a quarter of the households that use a professional exterminator to treat indoor pests could recall receiving this type of information.

For more information regarding State requirements, please contact your county or State pesticide/regulatory agency.

* * *

Q12. The survey pointed out that less than half of the households are notified by their commercial applicators of the chemicals used or the safety precautions to take. Are commercial applicators required to notify people?

Currently, there are no Federal requirements, but many States have implemented programs requiring companies to post treated areas or notify potentially exposed people. These programs vary widely, and are often targeted specifically at lawn pesticides. States that require some type of posting or notification for outdoor pesticide treatments are: Arizona, Colorado, Connecticut, Florida, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, Washington, Wisconsin, and Wyoming.

States that require some form of notification to households for indoor pest control treatments are: Connecticut, Indiana, Maryland, Massachusetts, Minnesota, New Jersey, New York, and Vermont.

Q13. What is EPA doing to require child-resistant packaging for pesticide products?

EPA regulates pesticide use in the United States under the Federal Insecticide, Fungicide, and Rodenticide Act. Since 1981, the law has required residential-use pesticides with a signal word of "danger" or "warning" to be in child-resistant packaging (CRP). CRP is designed to prevent most children under the age of five from gaining access to the pesticide within a reasonable time, or at least delay their access. EPA is currently working on CRP protocol testing revisions with the Consumer Product Safety Commission to make CRP more effective by making it easier for adults to properly use CRP.

Q14. What should homeowners do if they are storing pesticides whose registrations have been cancelled (DDT, chlordane, heptachlor and silvex) or if they are storing other unwanted pesticides?

Homeowners should check with their county or State pesticide/regulatory agency or EPA Regional Office for any special requirements concerning cancelled pesticides or other unwanted pesticides. Or, they can contact the National Pesticide Telecommunications Network (1-800-858-7378). Disposal of any unused pesticide or its container must be done according to both the instructions on the label and State laws. Some State and local governments occasionally sponsor "clean-up days" to help people dispose of unwanted chemicals and chemical-contaminated items.

Q15. Is EPA collecting any additional pesticide use information?

The Farm Bill requires farmers to keep records for two years concerning all pesticide applications, whether done by themselves or others.

The Food, Agriculture, Conservation and Trade Act (FACT) of 1990 states that USDA "shall require certified applicators of restricted-use pesticides to maintain records comparable to records maintained by commercial applicators of pesticides in each State." Before passage of the FACT Act, Federal recordkeeping requirements in States were limited to recordkeeping by

commercial certified applicators under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). However, FIFRA prohibits EPA from requiring private applicators to maintain records.

The FACT Act also directs USDA in consultation and cooperation with EPA to survey applicator records and maintain a data base on agricultural and non-agricultural uses of Federally restricted-use pesticides. This will allow for an annual report of Federal restricted-use pesticides to Congress. However, these records and the information obtained through this survey in the future, are for products not available to homeowners; they are for use by or under the direct supervision of Certified Applicators.

Q16. What can we learn from the survey?

The survey suggests that household pesticides are not always used as carefully or effectively as they should be.

For EPA and States, the survey will serve as an important resource to help improve risk and benefit assessments of pesticides used in and around the home. It will help support regulatory development in such areas as storage and disposal. And, it will provide a basis for expanding outreach and education programs on pesticide safety for consumers.

For the pesticide chemical industry, the survey will also serve as an important resource to help provide a better understanding of consumer practices and consumer knowledge about pesticide products. This survey underscores the importance of clearly understandable labels, and especially the need for labels to clearly indicate appropriate safety precautions.

For consumers, the survey points to the need for more public understanding and awareness of the safety precautions that should be taken when using, storing, or disposing of pesticide products. Remember to read labels carefully, follow all safety precautions, and ask for information from commercial applicators and lawn care services. And, importantly, always store pesticides out of the reach of children.