
Pesticides Industry Sales And Usage:

1994 and 1995 Market Estimates

Arnold L. Aspelin, Ph. D.*

Introduction

This report provides an overview of the pesticide industry for 1994 and 1995. It contains a series of 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/individuals involved in production/use of pesticides, number of pesticides, certified applicators and on a number of other topics.

Much of the tabular information in this report is for the years 1994 and 1995, but historical data are also presented. In a number of cases, the historical estimates of volume used and dollar expenditures have been updated (reestimated) as presented in tables 13 through 16 in this report. Care should be taken to use the new values in this report rather than earlier editions. The estimates of usage are presented for new, more specific categories (types) of usage than in earlier editions of this report. (See Table 3 column headings and discussion of the new categories in the section titled, "About This Report".) Graphic representations of the data are included along with a number of the tables.

* Arnold Aspelin is Senior Economic Advisor, Biological and Economic Analysis Division, Office of Pesticide Programs, EPA. If you have questions regarding this report or need further information, please contact the author at the following address: BEAD/OPP/EPA (7503W), 401 M Street, SW, Washington, DC 20460—telephone (703) 308-8136 or email: ASPELIN.ARNOLD@EPAMAIL.EPA.GOV.

Acknowledgments

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

- ◇ John Wilkin, Marypat Corbett, and Greg Malcom, *Doane Marketing Research, St. Louis, MO*, and Sam Moore, *Maritz Marketing Research, St. Louis, MO*, (agricultural usage and markets),
- ◇ Phil Calderoni and Sally Landels, *SRI Consulting, Menlo Park, CA* (non-agricultural and world markets for pesticides), and
- ◇ Mancor Cyr and Gillian Morris, *Kline & Co., Fairfield, NJ* (non-agricultural markets and biocide usage).

Also, recognition is accorded for the efforts of reviewers of the draft versions of this report including:

- ◇ Sam Rives, Van Johnson, M. Padgitt, and Jim Smith of *USDA*; Roger Holtorf, Bob Torla, Steve Nako, Art Grube, Ed Brandt, *EPA*; Steve Wanser, *USITC/DOC*; Leonard Gianessi, *National Center for Food and Agricultural Policy*; and Dan Francke, *DPRA, Manhattan, KS*.

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, nematocides, and acaracides 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 usage are not achieved without potential risks to human health and the environment due to the toxicity and potency of pesticide chemicals. For this reason, the chemicals are regulated under the pesticide laws to avoid unacceptable risks.

Pesticide Types

In terms of the chemicals involved, a majority of the active ingredients registered as pesticides (about 875 currently) are “conventional” pesticides, i.e., ones developed and produced primarily for use as pesticides. However, there are also other chemicals produced mostly for other purposes some of which are used as pesticides. Notable examples are chlorine, sulfur, and petroleum which are used as pesticides. Also, there are industrial wood preservatives and biocides, which are not generally included in the term conventional pesticides. All of these types of pesticides are regulated under the Pesticide Laws (principally the Federal Insecticide, Fungicide and Rodenticide Act—FIFRA) administered by EPA in cooperation with other Federal Agencies (such as FDA and USDA) and the States.

Overall Quantities of Pesticides Used

About 4.5 billion pounds of chemicals are used as pesticides in the U.S. in a typical year (measured on basis active ingredient). For 1995, the quantities used are estimated, by type of pesticide, as follows:

Type	Bil. of lbs.	Percent
Conventional pesticides	.97	21
Other pesticide chemicals (sulfur, petroleum, etc.)	.25	6
<i>Subtotal</i>	<i>1.22</i>	<i>27</i>
Wood preservatives	.72	16
Specialty biocides	.26	6
Chlorine/hypochlorites	2.32	51
Total	4.52	100

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. (1.22 billion pounds or 27 percent of the total). A majority of these pesticides is used in agriculture to produce food and fiber (77 percent or 939 million pounds of active ingredient in 1995), with the remainder used in industry/government applications and by homeowners. With usage of 1.22 billion pounds for conventional

pesticides plus other pesticide chemicals, the U.S. accounts for about one-fifth of such usage world wide. Chlorine/hypochlorites are the leading type of pesticides in the U.S., with half of the U.S. total. Wood preservatives and specialty biocides make up the remainder of the U.S. total of 4.52 billion pounds in 1995. 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.

Expenditures for Pesticides

The pesticide industry is quite significant in dollar terms. Annual expenditures by users of pesticides totalled \$11.3 billion in 1995 (conventional pesticides plus sulfur, etc.). Of this, 70 percent was for use in agriculture (a total of \$7.9 billion — an average of nearly \$4,200 per farm in the U.S. — for 1.9 million farms). The U.S. total of \$11.3 billion equals \$43 per capita in the U.S. The average U.S. household had expenditures of 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.

Numbers of Pesticide Producers and Users

The U.S. pesticide sector involves the following numbers of firms and individuals (approximate numbers); major pesticide manufacturers (18); other manufacturers (100); manufacturing workers (6-10,000); producing establishments (7,300); formulators (2,200); distributors/establishments (17,000); farms using pesticides (1.4 mil. out of 1.9 mil. total); commercial pest control firms (35-40,000); certified commercial applicators (384,000); households using pesticides (70 mil. out of 95 mil. total).

Trends in Conventional Pesticide Usage

Agriculture: Usage of conventional pesticides on farms increased from about 400 mil. lbs. in the mid-1960s to a peak of nearly 850 mil. lbs. around 1980, primarily due to the widespread adoption of herbicides in crop production. Since that time, usage has been somewhat lower and has varied from a low of 658 mil. lbs. in 1987 to a high of 786 mil. lbs in 1994 (active ingredient basis). 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.

Usage of conventional pesticides in agriculture increased noticeably in 1994 (by about 11 percent over 1993) due to more acreages grown for important pesticide-using crops (principally corn and soybeans) and due to impacts of floods/unseasonable weather during the 1993/94 period in midwest and western states. The total U.S. acreage of corn and soybeans grown increased about 7 mil. in 1994 over 1993. Acreages of cotton, rice and sunflowers also increased in 1994. The flooding in 1993 accelerated weed infestation problems in 1994, resulting in more herbicide usage. The need for herbicides in 1994 was intensified due to wet soil conditions and reduced usage of post-harvest herbicide applications in 1993. Also flooding conditions had the effect of moving weed seeds into new areas. Within midwest states, the areas most affected by flooding had reduced herbicide usage in 1993 compared to other areas. Then, in 1994, herbicide usage in the most affected areas increased much more than in the less flooded areas. Herbicides accounted for most of the increase in agricultural pesticide usage in 1994 over 1993 (60 mil. out of 80 mil. pound increase in conventional usage).

Other Sectors: In the non-agricultural sectors, conventional pesticide usage reached a peak of more than 300 mil. lbs. in the 1970s and has declined rather consistently since 1980—to a level of about 200 mil. lbs. in 1995. Most of this decline is due to less usage in the industrial/commercial/governmental sector (referred to as the professional market) which totalled 128 mil. lbs. in 1995. Usage of conventional pesticides by homeowners is estimated at 74 mil. lbs. for 1995.