

Public Attitude Toward Pesticides

A random survey of pesticide use in Allegheny County, Pa.

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WHEN A PESTICIDE IS USED, the user, either consciously or unconsciously, makes two decisions: first, that an organism is not desirable and should be eliminated, and second, that a given pesticide is the best method for its elimination. The user's decision that an organism is undesirable usually reflects health, economic, social, and cultural factors. The decision to use a pesticide and how it is used depends upon information from the pesticide industry (manufacturer, formulator, and retailer); public sources, such as the Agricultural Extension Service; private groups, such as the Audubon Society; expert literature; and the press.

In its sales programs, the pesticide industry often attempts to influence the public's attitudes on what organisms are pests. Sales campaigns promote pesticides as the best way to eliminate a pest and at the same time create an image of pesticides as totally safe household products. For example, advertising for the fertilizer and pesticide combinations, usually referred to as "weed and feed" products, generally combines the appeal of the ideal lawn with the benefit of routine product application to achieve and maintain it.

Prompted by local interest in public and environmental health aspects of pesticides, the Allegheny County Health Department was asked to monitor local use and health effects of pesticides and to develop a public education and in-

formation program on pest control without pesticides and on safe use of pesticides. To execute these missions, the health department created the Pesticide Information Office. To establish the best possible community services, we needed more information than was available in the literature on public attitudes and pesticide use. We conducted a survey to obtain this information and herein report some of the salient observations. Although this study was concerned with Allegheny County's problems, the information gained and how we used it could be of interest to other communities.

Procedure

A quadrate overlay with 185,000 sites was created for the map of Allegheny County. We randomly selected 110 sites from this map, and the staff of the health department visited them in October and November 1973. The person responsible for the upkeep of a site was questioned by a standard interview technique which included the following questions:

1. Have you ever employed a professional service such as a landscaper, gardener, or pest control operator (exterminator)?

2. What were your sources of information for choosing pesticides: (a) advertisement, (b) recommendation of friend, (c) recommendation of dealer, (d) recommendation of the county extension agent or the health department, (e) books on gardening, pest control, and so on, and (f) other?

3. Where do you store pesticides? When do you dispose of them? How do you dispose of them?

4. What information on labels of pesticide containers do you read?

We asked about the respondents' use of pesticides for the period from

October 1972 to September 1973, including the brand name of the product, its active ingredients and percentages, where it was used, its target, and if it was used as a preventive measure. In this study pesticides included all products so registered by the U.S. Environmental Protection Agency with the exception of germicides and sanitizers.

Results and Discussion

The sites were classified as single-family dwellings, commercial and recreational lawns, institutions, farms, rights-of-way, and wastelands; none of the sites were multifamily dwellings. One site, a hospital which operated a greenhouse and a farm, was classified as both an institution and a farm. Therefore, the following percentages for the sites in each category are based on 111 sites.

Category	Number	Percent
Single-family dwellings ..	41	36.9
Commercial and recreational lawns	7	6.3
Institutions	5	4.5
Farms	4	3.6
Rights-of-way	12	10.8
Wilderness and wasteland	42	37.8

Single-family dwellings. Two of the 41 sites classified as single-family dwellings were vacant at the time of the visit; each was vacant for a minimum of 12 months, during which time no pesticide was applied. These sites were eliminated from the survey results. Table 1 presents the results of the interviews for the remaining 39 sites. Since the homes were visited during the day, the interviewed family member was usually the housewife.

Of the households interviewed, 33 (84.6 percent) used some pesticide in the previous 12 months.

This percentage is consistent with previous studies of use in urban areas in which it was found that 80 to 95 percent of the households surveyed used some pesticide (1-4). Pesticides used by these 33 households included aerosol insecticides (76 percent), herbicides (54 percent), mothballs (12 percent), and insecticides other than aerosols (21 percent). None of the

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Table 1. Pesticide use in single family dwellings, Allegheny County, Pa., October 1972–September 1973

Item	Number of households	Percentage of total
Pesticide used in the last 12 months	33	84.6
Pesticide not used in the last 12 months	6	15.4
<i>Choice of Pesticide¹</i>		
Advertisement	9	27.3
Cost	6	18.2
Dealer recommended	3	9.1
From shelf products	² 11	33.3
Habit	5	15.2
Other	³ 5	15.2
<i>Read From Label¹</i>		
Don't read	7	21.2
Everything	4	12.1
Directions	15	45.5
Precautions	9	27.3
Target	3	9.1
<i>Storage¹</i>		
None stored	3	12.4
Basement, garage	18	54.5
Kitchen	5	15.2
Closet	3	9.1
Other	⁴ 3	9.1
<i>Classification of Products Used¹</i>		
Aerosol insecticides	25	75.8
Herbicides	18	54.5
Mothballs	4	12.1
Insecticides other than aerosols	⁵ 7	21.2

¹ Percentages based on 33 using pesticides.

² 2 stated that choice was made from label.

³ Includes 2 households in which pesticide was chosen by a neighborhood handyman, 1 household used the advice of a friend, 1 household chose on the basis of "safety," and 1 chose no pesticides with "bad press."

⁴ Includes a utility shed, a bathroom, and on top of the piano.

⁵ Active ingredients include DDVP, dieldrin, chlordane, rotenone, malathion, carbaryl, sulfur, and a tree spray of unknown ingredients.

households reported using rodenticides or fungicides. The majority of persons who reported using herbicides remembered the product's name. Eight did remember using weed and feed formulations but not the product's name. Although none reported using fungicides, such ingredients might be in some weed and feed formulations. All aerosols contained pyrethrum and a synergist as their active ingredients; one product also contained methoxychlor. The active ingredients of the other insecticides included rotenone, sevin, dieldrin, chlordane, DDVP, sulfur, and an unknown tree spray. An interesting comment on the use of pesticides was that only two households replied that their use was a preventive measure; all other households considered use necessary to kill existing pests.

Many householders were not aware of all the pertinent information on pesticide labels. While 21 percent of the users stated that they

did not read pesticide labels, only 12 percent claimed to read everything. Twenty-seven percent read the precautions; 9 percent read the targets; and 46 percent read the directions. None of those interviewed reported reading the label information about active ingredients. These results are not directly comparable to any literature known to us on the subject except for the work of Miller and co-workers (7); they observed that the majority of insecticide users failed to read the labels adequately. Although 63 percent of their sample responded that they read the label instructions, a maximum of only 44 percent could, in fact, name at least one precaution.

Most households, 55 percent of all pesticide users, stored these products in garages or basements. Other places of storage included the kitchen (15.2 percent), closet (9.1 percent), utility shed, bathroom, and on top of the piano (one household each). Four

households stored no pesticides at the time of the interview. Except for one household, all used up their pesticide before disposing of the empty containers in the garbage. The exceptional household threw old products into the garbage.

Only three households reported that they hired pesticide applicators. Two of these households hired neighborhood handymen to care for their lawns and gardens, which included herbicide application. Only one household hired a professional applicator, an exterminator hired for termite control. This infrequent use of pest control operators stands in marked contrast to the situation in Charleston, S.C., where Finklea and co-workers (2) found that 42 percent of all family households regularly employed pest control operators. The lower percentage of households serviced by pest control operators apparently arises from a lesser problem with pests in Allegheny County.

In buying pesticides, most households did not seek expert aid or information in making their choice. Instead, they bought either on the basis of advertisements or from available products: nine households chose advertised products; seven households picked from available products; four households bought the cheapest available products; two households used the dealer's recommendations; one household used a friend's recommendation; and six bought because of brand loyalty. Only two households stated that they made their selection because of safety and environmental considerations. They gathered their information from press and other sources. No household has used the services of the county extension agent or the health department.

Rumker and co-workers (4a), discussed the available information sources and also concluded that the majority of pesticides are purchased based on information supplied by the manufacturer and the retailer. They imply that pesticide users do not use public agencies such as the agricultural extension service principally

because these agencies advise according to the active ingredients in pesticides, and the information is incomprehensible to the lay public (4b). According to the authors, "an overwhelming majority of suburban gardeners are keenly aware of the pesticide problem" and "would be most receptive to more information and practical advice on how to translate these concerns into action" (4c). Unfortunately, they neglected to publish either quantitative or qualitative supporting data. According to the data in table 1 and the work presented in the literature, we question the quantitative numbers of pesticide users aware and concerned about safety and environmental problems. Based on the evidence at hand, we cannot determine why the population sampled in our study neglected the services of the extension service or the Pesticide Information Office of the Allegheny County Health Department: was the sampled population aware of the services of these agencies, were they indifferent, were they confused as suggested by Rumker and co-workers (4), or was there some other reason?

Although our reasoning is intuitive, we suggest that dissemination of information through alternative sources cannot compete with present marketing methods, because the majority of the public is satisfied with their present source of information. In support of our conclusion, we cite articles in Consumer Reports (5,6) which recommend herbicides and insecticides by brand name. The article on herbicides stated "shun combination products that claim to double as herbicide and insecticide, fungicide or fertilizer" (5). But, our data establish that this national information source has been unheeded if, in fact, not entirely overlooked.

All other sites. At sites other than single-family dwellings, our staff sought and interviewed maintenance personnel with the appropriate responsibility and knowledge. The active ingredients of pesticides they used are summarized in table 2.

The commercial and recreational

lawn sites consisted of three golf courses, two parks, and two cemeteries. While none of these had contracts with professional pesticide applicators, the golf course maintenance people have responsibilities and knowledge equivalent to the professional applicator's. They update their training and ability from personal contact with their professional organization. As shown in table 2, golf courses and the farm greenhouse were the only users of fungicides. One golf course used a single fungicide and no other pesticides. They disposed of the empty containers in the garbage. The other two golf courses used a wide variety of pesticides and disposed of the empty containers by burning and burying the remains. The parks did not use a variety of active ingredients that the golf courses did. They accepted the recommendations of their pesticide dealers. The cemetery used one

weed and feed lawn product.

The institutions included four schools and a hospital. Three schools and the hospital employed pest control operators for structural work, but they did not know what insecticides or rodenticides were used. The schools employing pest control operators used no insecticides, but used weed and feed products and disposed of the empty containers in the garbage. Since most of the hospital's pesticide use was in their greenhouse and farm, the interview results are summarized under farms.

Three farms, including the farm and greenhouse of the hospital, followed recommendations of the State extension service and the fourth farm used the dealer's recommendation. One farm did not use a pesticide during the period of this survey. Only one farm considered its pesticide use preventive. Except for the hospital farm and greenhouse, farms used few and

Table 2. Active ingredients of pesticides reportedly used in Allegheny County, Pa., by other than single family dwellings, October 1972-September 1973

Site	Fungicides	Herbicides	Insecticides
Recreational and commercial lawns:			
Golf courses	Benomyl, bichlorate mercury, mercuric acetate, methylthursam disulfide, phenylmercuric acetate, Thiram	2,4-D, Amitrol, tricalcium, arsenite	Chlordane, diazinon, lindane, malathion, methoxychlor
Cemeteries	None	Weed and feed	None
Parks	None	Unknown herbicide	Sevin
Institutions:			
Schools	None	Weed and feed	Lethane
Hospital	Captan	Trifluorolin	DDVP, Demeton, Dimethote, Dursban, Endosulfan, Guthion, Kelthane, lead arsenate, malathion, Pentac,
Farm and nursery	Dinocap, Maneb, Zineb,		
Farms	None	Atrazine	malathion, rotenone
Rights-of-way	None	2,4-D, 2,4,5-T, Atraton, MSMA† pentachlorophenol, picloram, simazine, sodium arsenite,	None

simple formulations.

Rights-of-way were distinguished from wilderness or waste areas by apparent proximity. The 12 rights-of-way consisted of two railroads, two high-tension lines, seven municipal roads, and a site at the Greater Pittsburgh Airport. Both railroads and the utilities contracted for the application of pesticides. The contracted companies were contacted and interviewed by our staff. While the contracted company chose the pesticides for application along high-tension lines, the railroads chose their own pesticides. The only pesticides used by the airport were herbicides for weed and vegetation control along its runways. Whereas the railroad and high-tension line right-of-way spray programs used a rather sophisticated choice of active ingredients, those at the airport and along the municipal roads relied on a few active ingredients.

Conclusions

Our observations agree with prior reports that the general public usually purchases and uses pesticides based on information supplied by the pesticide industry. Furthermore, we speculate from our observations that the public is satisfied with this situation and no

more concerned about pesticides than other household chemicals.

Householders usually limited pesticide use to an aerosol or a lawn care herbicide. Except for the golf courses, a farm and nursery, and right-of-way maintenance programs, the majority of pesticides used consisted of low toxicity and low persistence active ingredients. Since the literature on chronic pesticide exposure did not conclusively demonstrate any adverse health effects to human beings, we based our inferences on the need for a pesticide information program on the health hazards from short-term exposures. The short-term effects on people, which are discussed elsewhere (7,8), accounted for less than 5 percent of all reported poisonings, for example poisoning with caustics or aspirins. Based on these observations, we judged that pesticides are neither unusually dangerous among all household chemicals nor among hazardous chemicals present in urban environments.

The evidence at hand did not justify a special program oriented to change public attitudes toward pesticides. When faced with so many other urban problems, we asked ourselves why we should single out pesticides. Instead, the health department now provides

the community with pest control and pesticide advice through existing programs as a public service.

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SYNOPSIS

LANDE, SHELDON S. (Allegheny County Health Department): Public attitude toward pesticides: A random survey of pesticide use in Allegheny County, Pa. *Public Health Reports*, Vol. 90, January-February 1975, pp. 25-28.

Pesticide use was examined by means of a random survey in Allegheny County, Pa., in October and November 1973. The objectives included gaining insight into the need for a new community pesticide program and estimating its public acceptance. The 110 survey sites were grouped as single-

family dwellings, commercial and recreational lawns, institutions, farms, rights-of-way, and wasteland. In the single-family dwellings, most householders (85 percent) used a pesticide in the previous 12 months, usually an aerosol insecticide (76 percent) or herbicide (55 percent). Their pesticide selections were most often based on advertisements or available products. A high percentage lacked either the interest or the knowledge of the information on the pesticide's label. No observation in this or any other study supports the need for a new special program in pesticides or in-

dicates that a substantial segment of the public would use its services.

The main users of "hard" pesticides were the golf courses, rights-of-way, and one farm-nursery. The rights-of-way used chemicals only for vegetation control. Utilities and railroads contracted with pesticide companies for this work. Municipal users applied pesticides recommended by dealers. The golf courses and a farm-nursery used a broad range of fungicides, insecticides, and herbicides, which they selected because of information received from the Pennsylvania Extension Service and professional organizations.