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HOUSEHOLD HAZARDOUS WASTE COLLECTION DA VS: WHO PARTICIPATES?

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HOUSEHOLD HAZARDOUS WASTE COLLECTION DAYS:

WHO PARTICIPATES?

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INTRODUCTION

In the spring and fall of 1986, collection days for household hazardous wastes were organized by the Planning Commission of Rockingham County, New Hampshire. Separate collections took place in a number of seacoast-area communities. Residents were invited to bring in hazardous household materials, up to a ten-gallon limit, that they did not know how to dispose of properly. These collections were very successful; the hundreds of participants brought in enough material to fill many drums with waste. Without such collections, these wastes would have been disposed of improperly, or kept indefinitely in people's homes.

At the same time people brought in wastes to be picked up, they were asked to fill out a questionnaire. Since the collection program was new and experimental, these surveys sought to answer basic questions about who was participating, how they had learned of the event, and how badly such collections were needed. This report describes the survey results.

The first chapter below examines surveys collected during the fall round of collection days in 1986. Surveys collected during the earlier spring round are examined in Chapter 2. Although the details of these two analyses differ, several important findings are confirmed in both sets of data.

CHAPTER 1: FALL 1986 SURVEYS

PARTICIPATION

During the fall round of collection days, 236 questionnaires were collected from participants at six different sites: Derry, Epping, Plaistow, Raymond, Salem and Sandown (see Table 1.1). Almost half of the participants went to either Derry or Plaistow.

Participation was not limited to the population of the town where the site was located, although all but 2% of the participants were from towns within Rockingham County. Table 1.2 describes the participation at each site by residents of each town represented. Local participation (participation by residents of the town where the disposal site was located) varied from a high of 90% in Salem to 31% in Epping. In other words, 90% of those who came to the Salem site were from the town of Salem while only 31% of those who came to the Epping site were from Epping. This variation among the six sites is represented graphically in Figure 1.1.

Distribution of publicity outside the site town may partly account for the participation by residents of other towns. The population density of the site towns may also have been a

Table 1.1. Participation in Collection Day survey.

Disposal Site	Participants	
Derry	62	(26%)
Plaistow	54	(23%)
Raymond	45	(19%)
Salem	40	(17%)
Epping	32	(14%)
Sandown	3	(1%)
All Sites	236	(100%)

Table 1.2. What town are you from?

Home Town of Participants	Disposal Site*					
	<u>Derry</u>	<u>Epping</u>	<u>Plaistow</u>	<u>Raymond</u>	<u>Salem</u>	<u>Sandown</u>
Atkinson	---	---	15%	---	---	---
Barrington	---	3%	---	---	---	---
Brentwood	---	9%	2%	---	---	---
Chester	5%	---	---	4%	---	---
Danville	---	3%	2%	---	---	---
Deerfield	---	---	---	9%	---	---
Derry	66%	---	---	---	---	---
Dover	2%	3%	---	---	---	---
Epping	---	31%	---	2%	---	---
Exeter	---	6%	2%	---	---	---
Fremont	---	3%	---	4%	---	---
Hampstead	2%	---	9%	---	3%	33%
Kingston	---	6%	9%	---	---	---
Londonderry	11%	---	---	---	---	---
Methuen, MA	---	---	---	---	3%	---
Newfields	---	9%	---	---	---	---
Newmarket	---	9%	---	---	---	---
Newton	---	3%	2%	---	---	---
Northwood	---	3%	---	---	---	---
Nottingham	---	---	---	9%	---	---
Plaistow	---	3%	59%	---	---	---
Portsmouth	---	3%	---	---	3%	---
Raymond	---	---	---	71%	---	---
Salem	5%	---	---	---	90%	---
Sandown	---	---	---	---	---	67%
Stratham	---	3%	---	---	---	---
W. Topsham, VT	2%	---	---	---	---	---
Windham	6%	---	---	---	3%	---
Unknown	2%	---	---	---	---	---

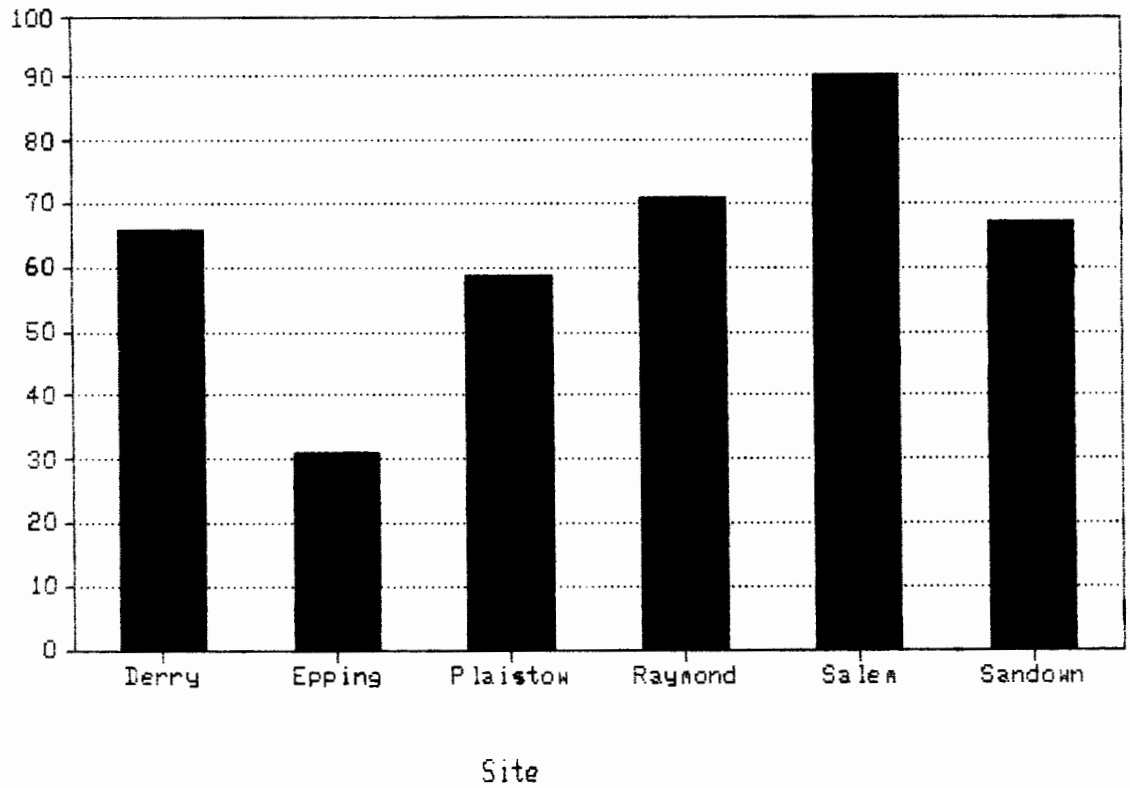
*The highest percentage for each site is shown in bold-face type.

factor. Salem was the largest town among the sites, while Epping was the smallest with any sizable number of participants.

Participation can also be considered in relation to population using 1980 U.S. Census estimates. Those county residents who came to the Collection Day sites were approximately .1% of Rockingham County's population. More specifically, Figure 1.2 shows the participation by residents of each site town as a percent of the population of the site town. Plaistow and Raymond had the highest rates of participation while Salem and Sandown had the lowest.

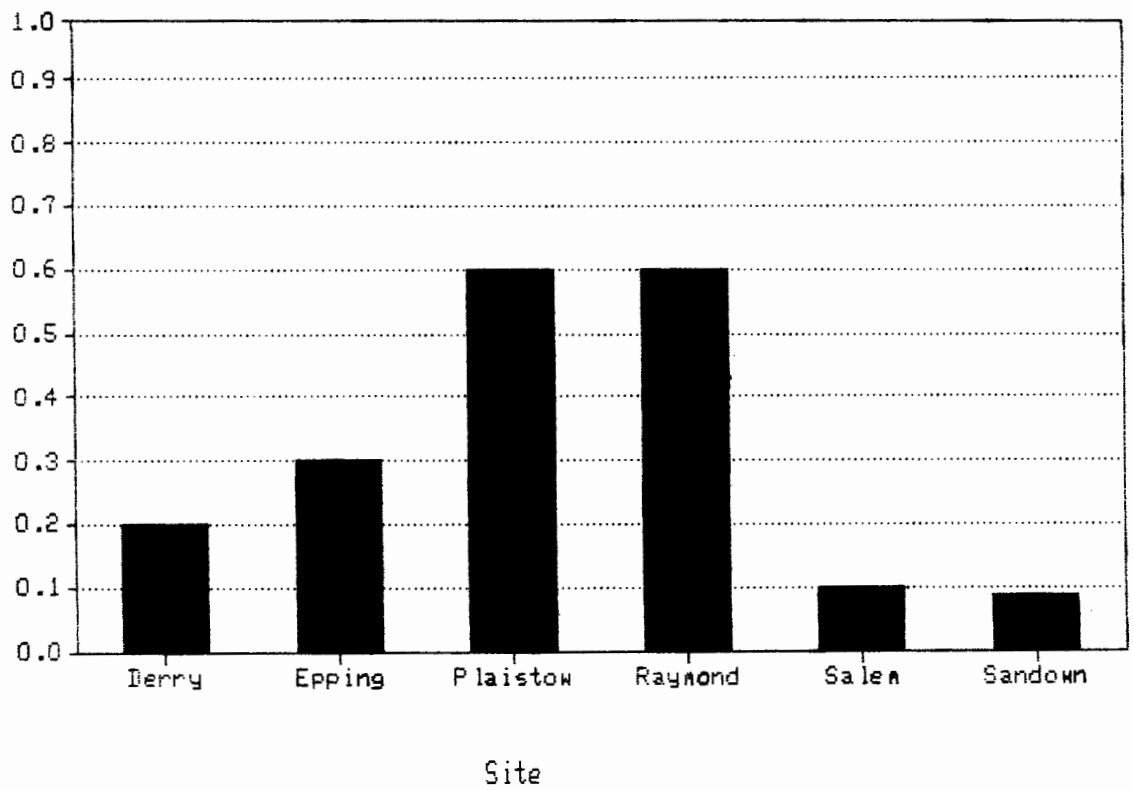
Comparing the two approaches to participation represented in Figures 1.1 and 1.2 produces a more complex picture. For example, Salem's local participation was highest among the sites but it had almost the lowest rate of participation when compared to its own population. Epping, on the other hand, had the lowest rate of local participation but did not have the lowest rate when compared to its own population. This difference may be accounted for in part by the status of the towns: Epping is rural while Salem is more urban. However, this does not explain the moderate rates of participation by the other towns which also vary from rural to more urban.

Figure 1.1. Participation by local residents.



■ % local

Figure 1.2. Participation as % of population.



■ % of pop

DISTANCE TRAVELED

Table 1.3 describes the distance the participants traveled to the disposal site. Not surprisingly, the farther the distance, the fewer the people who came. Part of the reason for this is the emphasis on local participation. As noted above, most people who came to the sites were from the towns where the sites were located. Salem had the highest percentage of people traveling the least distance. Since more people came to the Epping site from out-of-town, it is not surprising that more of them traveled further than travelers to other sites.

Some people (8%) were willing to drive more than 10 miles to a disposal site, suggesting that for these people the motivation was high enough to overcome the resistance to travelling so far.

HAZARDOUS WASTE COLLECTION

It is estimated that a total of 1086 gallons of waste was collected at the six sites. Almost half (47%) of the participants brought one to five gallons of waste while another third (32%) brought five to ten gallons. Less than one gallon was brought by 14% of the participants and more than ten gallons were brought by 6%. These figures suggest that moderate amounts of wastes must be on hand for disposal in order for people to

Table 1.3. Approximately how many miles did you travel to this disposal site?

Disposal Site	Distance*				
	<u>0-5 mi.</u>	<u>6-10 mi.</u>	<u>11-15 mi.</u>	<u>16 + mi.</u>	<u>Unknown</u>
Derry	76%	13%	8%	3%	0%
Epping	28	53	6	13	0
Plaistow	65	28	2	0	6
Raymond	73	18	7	2	0
Salem	78	3	0	3	10
Sandown	67	33	0	0	0
All sites	67	22	5	3	3

*The highest percentage for each site is shown in bold-face type.

participate. Perhaps smaller amounts are not worth the trouble of the drive to a disposal site. Larger amounts are less likely to be kept in a residence and be available for disposal.

Figure 1.3 illustrates the relative amounts of the types of hazardous wastes brought to the disposal sites. They fall into five categories: pesticides; paints; cleaners; solvents and thinners; and others named specifically by the participants. Paints, solvents and thinners made up over half of the waste brought. Almost a quarter of the waste was either pesticides or cleaners. The remainder included a wide variety of materials, with automobile and motor products leading the list (see Table 1.4).

Some participants (13%) said they had additional wastes at home that they did not know how to dispose of properly. These materials were primarily: paints (33%); motor oil (13%); pesticides, including DDT (13%); and building materials such as asbestos (13%). Other materials mentioned included: aerosols, brass cleaner, solvents and resins.

ALTERNATIVES TO COLLECTION

If the Collection Day had not been held, two thirds of the participants said that they would have continued to store the

Figure 1.3. Major types of hazardous waste brought to sites.

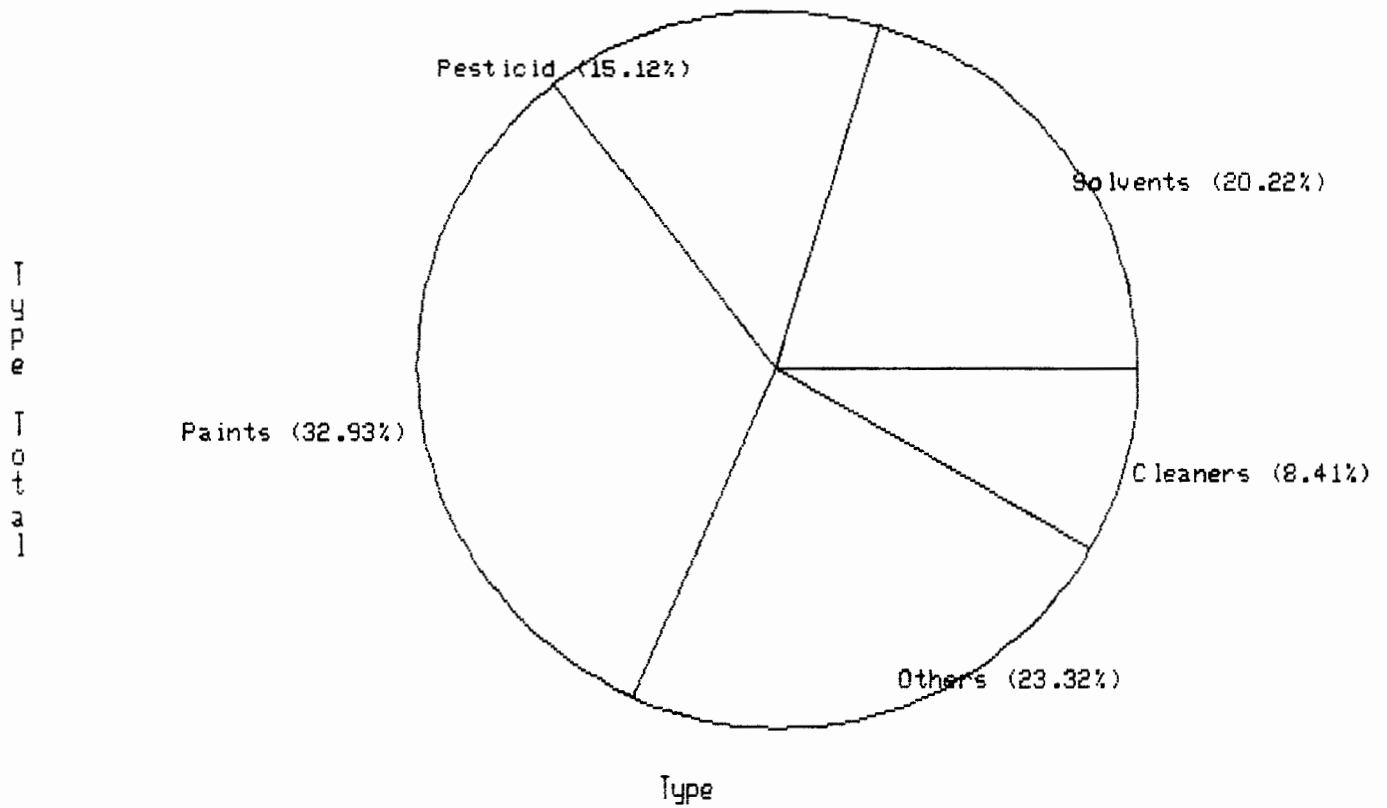


Table 1.4. Other types of waste brought to the sites.

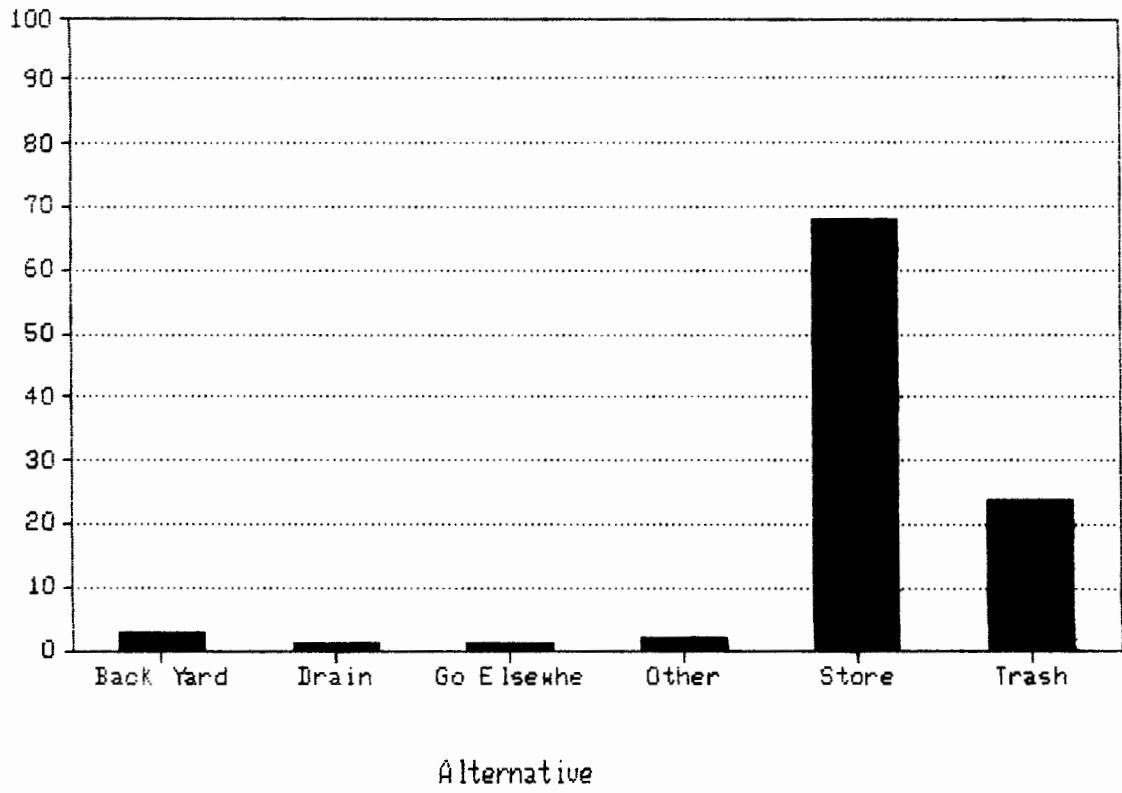
37%	Auto and other motors (oil, antifreeze, gasoline and kerosene)
20%	Miscellaneous chemicals (photography; pool, including chlorine; laboratory, including mercury).
11	Acids (battery acid, muriatic acid)
11	Construction materials (sealants, creosote)
9	Agricultural chemicals (weed killers, arsenic, potato dust)
9	Household products (bleaches, polish, epoxies, adhesives, smoke detector)
4	Miscellaneous (degreasers, shellac)

materials that they had brought to the sites (Figure 1.4). One major reason for participating in this project was probably concern about environmental pollutants. Therefore, this response was expected since storing is possibly the safest alternative to disposal at an authorized site. However, storing is a temporary solution since it must be assumed that eventually these people or their children would face the problem of disposal.

Approximately one-quarter of the participants stated that they would put such materials in the trash or take them to the dump, the end result being the same--hazardous waste deposited in a landfill. Another common method for disposing of liquid waste is to pour it down a household drain. However, only a small percentage of the participants in this project would use this alternative or would dispose of waste in the back yard. Several people mentioned going elsewhere to a hazardous waste disposal site (Massachusetts was mentioned) and one person suggested burning the materials as an alternative.

The lack of safe alternatives available to these people and the lack of easily accessible authorized and monitored hazardous waste disposal sites may account for the popularity of this project with its participants. When asked if this project should be made available yearly, 95% were in favor and some commented that twice a year would be better.

Figure 1.4. Alternatives to Collection Day disposal.



■ Alt Total %

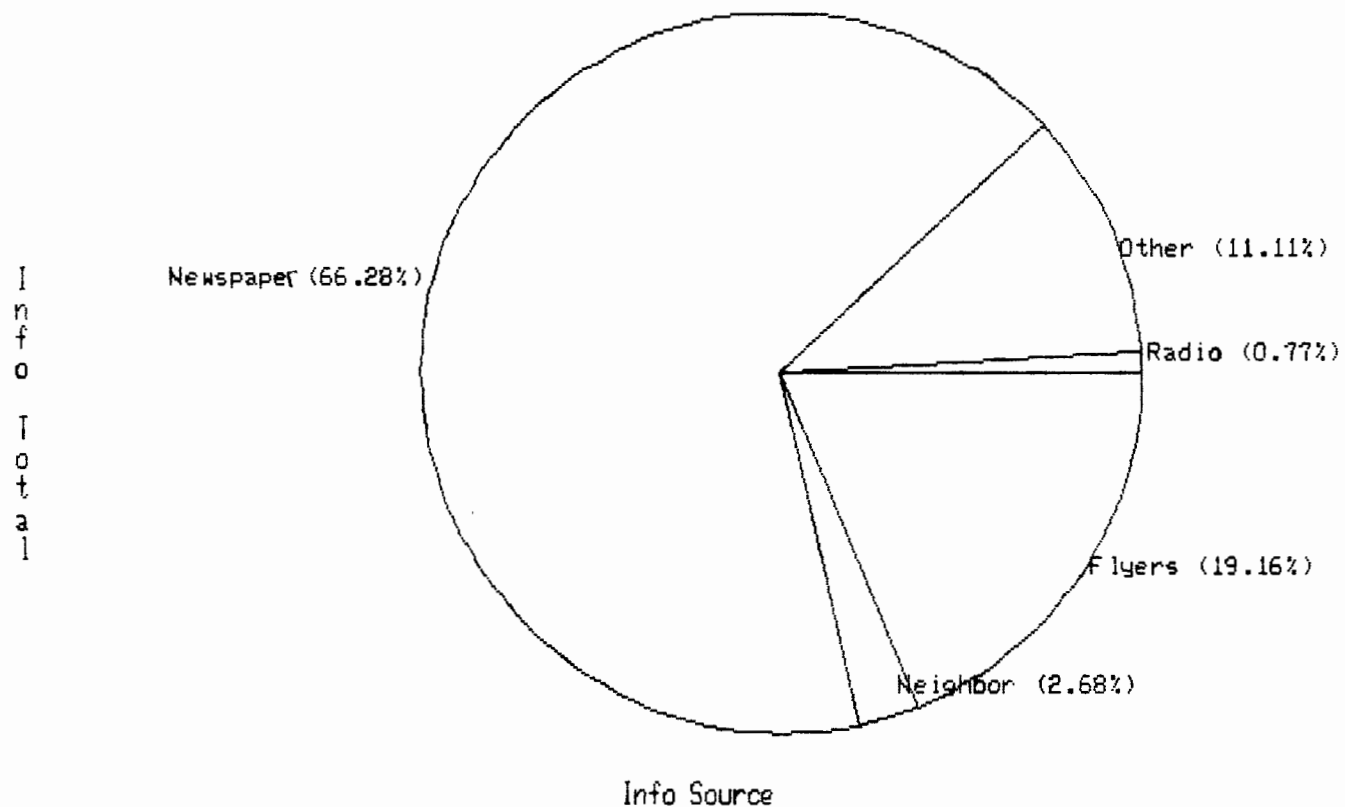
PUBLICITY

When asked how they had learned about the Collection Day, participants responded in either of two ways. Some described the type of publicity they saw or heard, while others gave the location of that publicity.

Due to the emphasis of the questionnaire, most participants (89%) gave the type of publicity: flyers, signs and posters; newspapers; radio; or word-of-mouth (neighbors, friends and relatives). Figure 1.5 shows the predominance of newspapers in informing these participants of the event. Flyers, signs and posters were also important. These figures varied only slightly from site to site.

Other participants described where they heard or saw the publicity. Work and school were mentioned most often (28%). Local dumps followed in importance (24%) and a few people mentioned town halls, selectmen's offices, and fire departments. The following were mentioned by one person each: conservation voters, women's club, N.H. Audubon, Agriculture, N.H. Weekly Bulletin, Deerfield Fair, Extension Service, Montshire Museum of Science in Hanover, N.H.

Figure 1.5. Sources of information for Collection Day.



DESCRIPTION OF PARTICIPANTS

Type of Residence

The questionnaires allowed participants to describe their residences as one of three types: apartment, house or farm. According to the 1980 U.S. Census, houses (single, detached dwellings) are 53%, apartments (single or multiple attached dwellings) are 46% and farms are less than 1% of the housing units in Rockingham County. This split between house and apartment dwellers was not reflected by the participants in this event. Table 1.5 shows that participants overwhelmingly lived in houses rather than apartments. Very few people who lived on farms participated but their turnout was slightly higher than one would have expected given the Census figure.

The high participation of house dwellers can perhaps be explained in part by the type of waste products that were brought to the disposal sites. As described above, over half of the materials were paints, solvents and thinners. While these are used in apartments, used and old cans are less likely to be stored in apartments because of space limitations than they would be in a house or farm. Other materials that were brought to the sites such as sealants, creosote, herbicides and pool chemicals intended for house, farm or yard construction and maintenance seem less likely to be needed, and therefore stored, in an apartment.

Table 1.5. Residence type of participants.

Site	Type of Residence*			
	<u>Apartment</u>	<u>House</u>	<u>Farm</u>	<u>Unknown</u>
Derry	3%	95%	2%	0%
Epping	6	94	0	0
Plaistow	4	87	4	6
Raymond	0	91	7	2
Salem	8	88	0	5
Sandown	0	100	0	0
All Sites	4	91	3	3

*The highest percentage for each site is shown in bold-face type.

This does not mean apartment dwellers do not have household hazardous waste. A number of household and automobile products were brought to the sites that are used by many people regardless of their living arrangements, e.g., motor oil, pesticides, cleaners, antifreeze, gasoline, bleaches, polish and adhesives. This suggests that apartment dwellers potentially have such materials to dispose of but may perceive the quantity as too small to be worth the trouble of driving to a site.

Apartment dwellers have less space to store materials of any kind, needing to dispose of containers as they are used. Because of this they are perhaps more likely than house and farm owners to improperly dispose of unused or half-used hazardous materials, or empty containers even if disposal sites are available once or twice a year. Much more frequent and convenient collection seems necessary if greater participation is to be expected from this group.

Age

Table 1.6 shows the participation by different age groups for each of the disposal sites. For comparison, the 1980 U.S. Census estimated population figures for each site town (detailed information for Sandown was unavailable) are also included.

Table 1.6. Age of participants and 1980 U.S. Census data.

Site	Age Group*					
	<u>Below 30</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>Over 60</u>	<u>Unknown</u>
Derry	5% (38%)	48%** (25%)	18% (13%)	8% (10%)	21% (14%)	0%
Epping	9 (36)	28 (22)	16 (13)	25 (12)	22 (17)	0
Plaistow	7 (33)	28 (23)	28 (16)	7 (13)	24 (15)	6
Raymond	9 (33)	31 (22)	20 (13)	16 (11)	24 (21)	0
Salem	3 (34)	38 (22)	13 (16)	23 (13)	20 (15)	5
Sandown	0 (***)	100 (***)	0 (***)	0 (***)	0 (***)	0
All Sites	6	36	19	14	22	2

*1980 U.S. Census data shown in parentheses below Collection Day participants. Below 30 group is taken from Census data for ages 15-29.

**The highest percentage for each site is shown in bold-face type.

***Unavailable

The Census figures for all site towns are highest for the Below 30 group; in fact over 50% of the population in each town are under 40. By contrast, in all towns but Derry, over 50% of those who participated in Collection Day were 40 and over. However, of the five age groups, those who were 30 to 39 participated more than any other group.

The lack of participation by younger people may be related to home ownership and type of housing. Younger people are less likely to own a home, are probably more likely to live in an apartment or room, and are therefore less likely to be using or storing materials such as paint, solvents and thinners. It is also possible that the people under 40 at these sites were less aware or concerned about environmental issues although this is the opposite of what is usually expected.

Publicity may also have had an impact on different age groups. Table 1.7 describes how the different age groups learned of the Collection Day. While the general pattern follows that described above for the types of publicity, one noticeable difference is that a much larger percentage (40%) of people under 30 found out about the event through flyers, higher than for any other group. Also radio was mentioned more frequently by this group than by the other groups. Correspondingly, newspapers were mentioned less often by this group. This suggests that the older participants more than the younger ones rely on newspapers for

Table 1.7. Age of participants and information sources.

Source	Age Group*				
	<u>Below 30</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>Over 60</u>
Newspaper	53%	67%	82%	76%	81%
Flyer	40	22	29	18	12
Radio	7	0	0	0	2
Neighbor	0	3	0	0	8
Other	13	19	7	15	2

*Percentages do not total to 100% due to more than one source listed by some participants.

news about community events. Participants under 30 may prefer less active ways of getting information, e.g., radio or television, or accidentally coming across a flyer or sign. Increasing participation may require different publicity strategies for younger people than for older ones.

Education

Table 1.8 describes the educational background of the participants. In the site towns for which there was 1980 U.S. Census data (detailed information on Sandown, the smallest town in the six sites, was unavailable) about two-thirds of the population had no more than a high school education. By comparison, in all but one of the sites (Raymond was split evenly between high school and college) participation was highest among people with college, graduate or professional degrees.

As in Age, difference between Census data and survey results may be partially explained by the publicity strategy used by the organizers. If people who read newspapers are more likely to be college-educated, then the higher turnout of such people could have been expected. Perhaps an emphasis on television and radio, which does not rely so heavily on written information, would have brought a higher percentage of less highly-educated people to the disposal sites. However, Table 1.9 illustrates that this does not seem to have been the case. There does not appear to be much

Table 1.8. Education of participants and 1980 U.S. Census data.

Site	Amount of Education*				
	<u>Below Hi Sch</u>	<u>Hi Sch</u>	<u>Vocation/ Some Coll</u>	<u>Coll Grad/ Grad or Prof Sch</u>	<u>Unknown</u>
Derry	6% (10%)	16% (52%)	16% (19%)	58%** (19%)	3%
Epping	6 (20)	31 (52)	9 (15)	53 (13)	0
Plaistow	2 (9)	9 (60)	6 (17)	30 (14)	54
Raymond	0 (18)	44 (60)	4 (15)	44 (7)	7
Salem	5 (11)	23 (56)	15 (17)	43 (16)	15
Sandown	0 (***)	33 (***)	0 (***)	67 (***)	0
All Sites	4	23	10	46	17

*1980 U.S. Census data shown in parentheses below Collection Day participants.

**The highest percentage for each site is shown in bold-face type.

***Unavailable.

Table 1.9. Education of the participants and information sources.

Source	Amount of Education*			
	<u>Below Hi Sch</u>	<u>Hi Sch</u>	<u>Vocation/ Some Coll</u>	<u>Coll Grad/ Grad or Prof Sch</u>
Newspaper	89%	73%	75%	72%
Flyer	22	15	25	18
Radio	11	2	0	0
Neighbor	0	4	4	3
Other	0	16	4	14

*Percentages do not total 100% due to more than one source listed by some participants.

difference between the education groups and their sources of information. The one exception to this is for radio. All the participants who mentioned radio were in the High School or Below High School groups.

It is also possible that these results indicate a greater concern for environmental issues among the more highly educated. They may also show a greater optimism by the highly educated that participation in such an event is beneficial to the community and environment. This is speculation about motivation since the participants were not asked why they came (although several mentioned in their comments that they were interested in environmental issues).

COMMENTS

Seventy-five of the participants chose to make comments or suggestions regarding the project. Of the comments, almost two-thirds (64%) were favorable and 5% were clearly negative. The favorable comments were phrases and words such as "good idea," "great idea," "glad to have the opportunity," "wonderful," "well-run program," and "thanks." Negative comments were directed entirely at the survey, for example: "paperwork too time consuming" and "don't ask so many questions." In addition

to these evaluations were comments concerning the management of the program, such as "hold more frequently and regularly" (20%) and "needs more publicity" (10%).

Specific suggestions came from sixteen people. Most of these were organizational in nature. They included: "hold twice a year," "hold more frequently for contractors," "have door-to-door pickup," "town should have permanent collection site," "hold in the afternoon," "hold on weeknights," "longer hours," "more locations," and "make program readily available."

Other people suggested ways to improve publicity: "more radio and newspaper advertising," "perhaps consecutive ads," "more signs on highway," and "put up notices at town dumps a few weeks before."

Finally, a few people wanted more education on the issue: "program to educate people on what is hazardous waste," and "more public information about hazards."

Apparently, most of the participants in the Collection Day were glad to have the disposal site available. They would prefer more frequent and convenient collections of hazardous waste, even to the extent of door-to-door pickups. Their perception that the publicity for the project was limited suggests that they saw

their participation as exceptional, that many more people in the community would have participated had they only known about it.

CHAPTER 2: SPRING 1986 SURVEYS

TURNOUT AT THE DISPOSAL SITES

Judging from the numbers of surveys completed, the largest spring turnout was at the Portsmouth site. In all, 280 surveys were collected from the six disposal sites. A breakdown of participation according to disposal sites appears in Table 2.1.

While the turnout was comparatively high in Portsmouth, it represents only a small fraction of the total population. Based on 1980 census data, the turnout equaled approximately .4% of Portsmouth's population. In contrast, the turnout in Kensington equaled approximately 1.4% of that town's population.

In the bar chart in Figure 2.1 the darker, solid bars illustrate turnout size in proportion to local population size. The turnout in Stratham was equal to 1.5% of that town's population, followed closely by Kensington (1.4%), Kingston (.7%), Exeter (.6%), and so on. However, while these measurements do help us compare turnout in relation to local population, they do not provide reliable indications of local participation. While 79% of the respondents traveled less than 5 miles to the disposal sites (see Table 2.2), some sites received a disproportionate number of out-of-town participants. For example, 56% of the respondents who deposited wastes at the

Table 2.1. Number of participants responding to survey by site.

Disposal site	Number of respondents	
Exeter	66	(25%)
Hampton	42	(15%)
Kensington	16	(6%)
Kingston	25	(9%)
Portsmouth	99	(35%)
Stratham	32	(11%)
Total	280	(100%)

Figure 2.1. Participation as a percentage of local population. Out-of-town participants are included in "Turnout A"; excluded in "Turnout B".

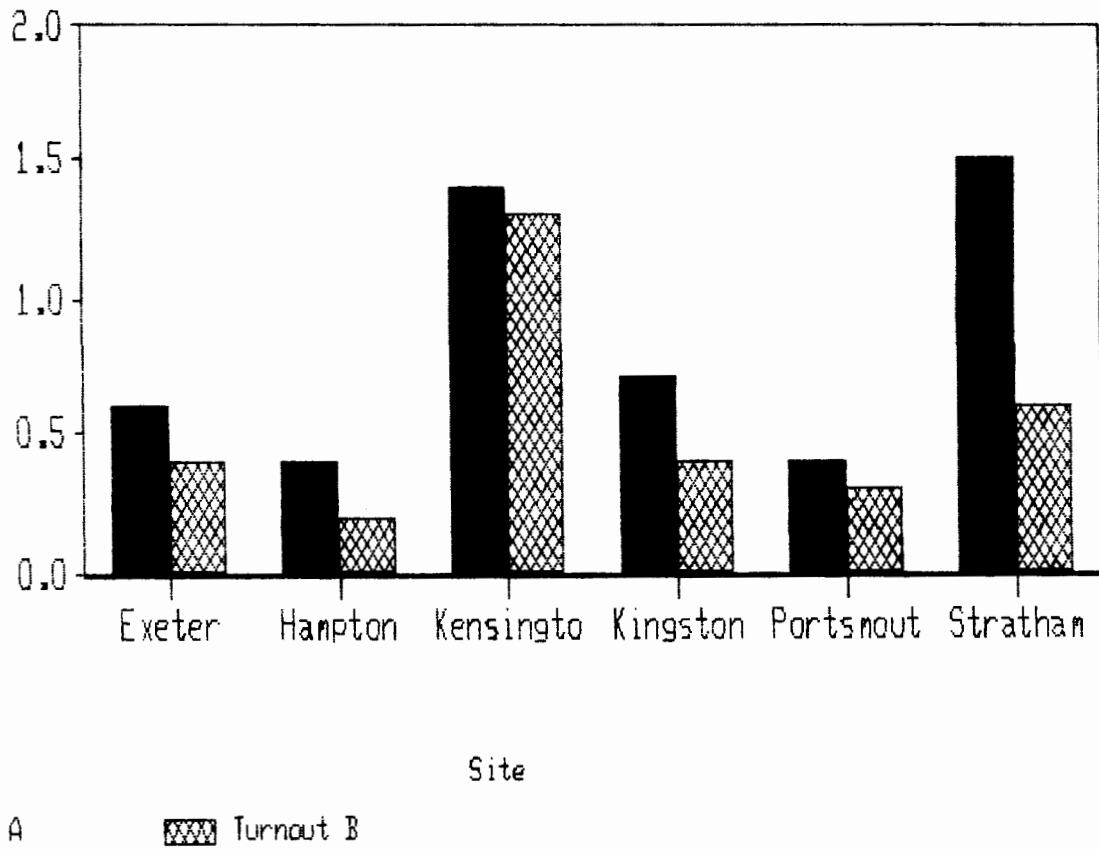


Table 2.2. Approximately how many miles did you travel to this disposal site?

Distance	Disposal site						all
	Exeter	Hampt	Kensig	Kingst	Portsm	Stratham	
0-5 miles	70%	83%	94%	76%	86%	66%	79%
6-10 miles	17%	7%	6%	12%	10%	34%	14%
11-15 miles	11%	10%	---	8%	3%	---	6%
16+ miles	3%	---	---	4%	1%	---	1%
count	66	42	16	25	99	32	280

Stratham site were from out of town. The lighter, diamond bars in Figure 2.1 show the number of local participants in proportion to local population with out-of-towners excluded. Under this arrangement, Kensington emerges as the most successful site in terms of local participation. A breakdown of disposal site turnout by residency appears in Table 2.3.

AMOUNTS AND TYPES OF WASTES DEPOSITED

Based on responses to the question, "Approximately how much waste did you bring to the collection?", it is estimated that a total of more than 1400 gallons of hazardous wastes were deposited at the six different collection sites. Forty-six percent said they brought between 1-5 gallons; 26% brought between 5-10 gallons; 12% brought more than 10 gallons; and 15% deposited less than 1 gallon.

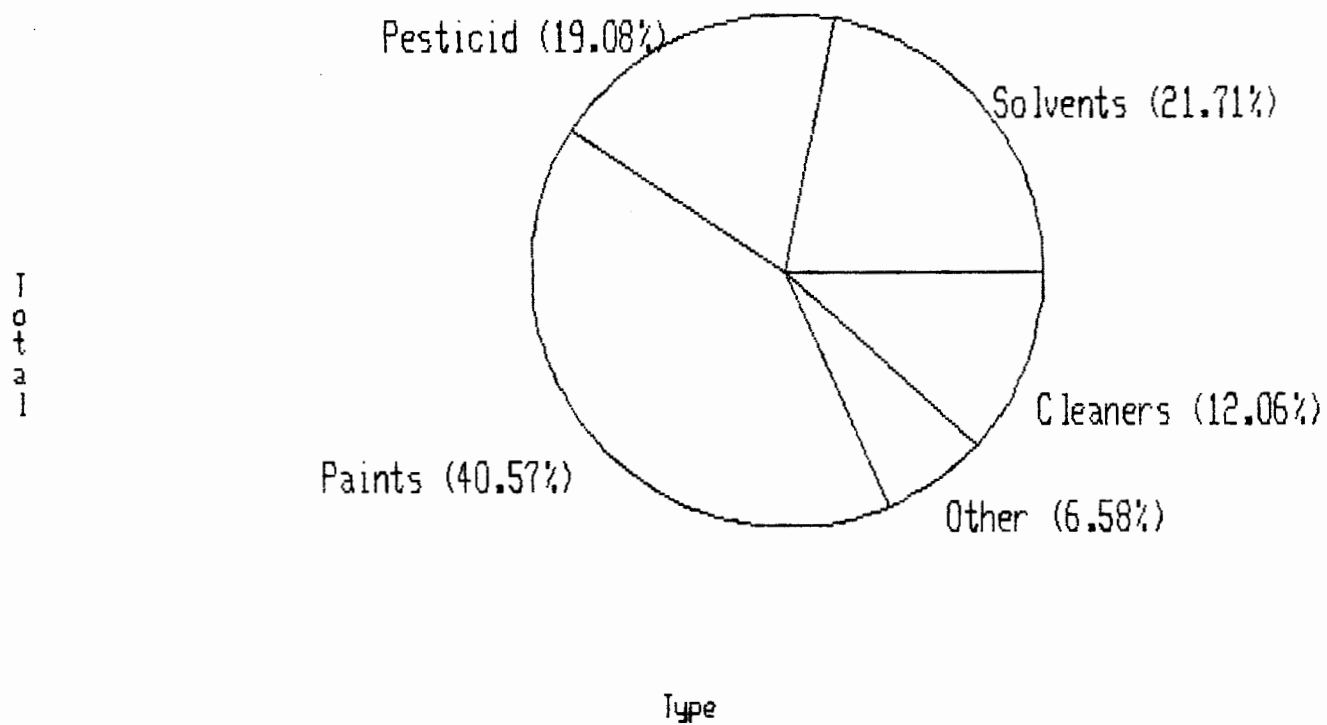
Figure 2.2 is a pie chart showing relative proportions of the different types of wastes that were deposited by participants. Readers should be cautioned that the illustrated percentages are not percentages of total amount of gallons collected, but rather, percentages of the respondents, who said they brought in wastes of each type. For example, 19% of the respondents said that they brought in pesticides.

Table 2.3. Turnout percentages for each site by home town of respondents (read from top to bottom).

Home town of respondents	Disposal site					
	Exeter	Hampton	Kensing	Kingston	Portsm	Stratham
Brentwood	---	---	---	8%	---	3%
Epping	3%	---	---	---	---	---
Exeter	61%	5%	---	---	---	25%
Greenland	---	---	---	---	5%	3%
Hampstead	---	---	---	8%	---	---
Hampton	2%	55%	12%	---	---	---
N.Hampton	2%	21%	---	---	---	3%
Kensington	2%	---	88%	---	---	6%
Kingston	---	---	---	56%	---	---
E.Kingston	---	5%	---	12%	---	---
Newcastle	---	---	---	---	7%	---
Newfields	5%	---	---	---	---	3%
Newmarket	11%	2%	---	4%	1%	9%
Portsmouth	---	---	---	---	75%	---
Rye	4%	2%	---	---	6%	3%
Salem	---	---	---	4%	---	---
Stratham	---	---	---	---	---	44%
York	---	---	---	---	2%	---
Total*	90%	90%	100%	92%	96%	99%

* Totals exclude towns represented by only one respondent. The towns represented by only one respondent were Candia, Chester, Danville, Dover, Durham, Fremont, Kittery, Raymond, Seabrook, and S. Hampton.

Figure 2.2. Major types of hazardous waste brought to sites.



Twenty percent of the respondents said that they possessed hazardous wastes that they did not bring to the disposal site, with DDT, paint and oil accounting for close to half of what was left at home.

IMPORTANCE OF THE COLLECTION DAY PROGRAM

The respondents indicated that they were overwhelmingly in favor of yearly collection days. Nearly all (99.3%) responded "yes" when asked "Should this type of pickup be made available every year?" When asked what they would most likely have done with the material they brought if the program had not been held, 208 (79%) said that they would have continued to store the material; 62 (22%) said that they would have disposed of the material in the trash; three respondents indicated that they would have put the material in their backyard; and one respondent said he/she would have dumped the material down the drain.

These figures illustrate the importance of the hazardous waste collection program. If the 62 participants who said that they would have dumped their hazardous wastes in the trash had actually done so, an estimated 300 gallons of toxic wastes would have been improperly disposed of throughout Rockingham County. In addition, if the collection day had not been held, an estimated 1120 gallons would have remained stored, most likely to

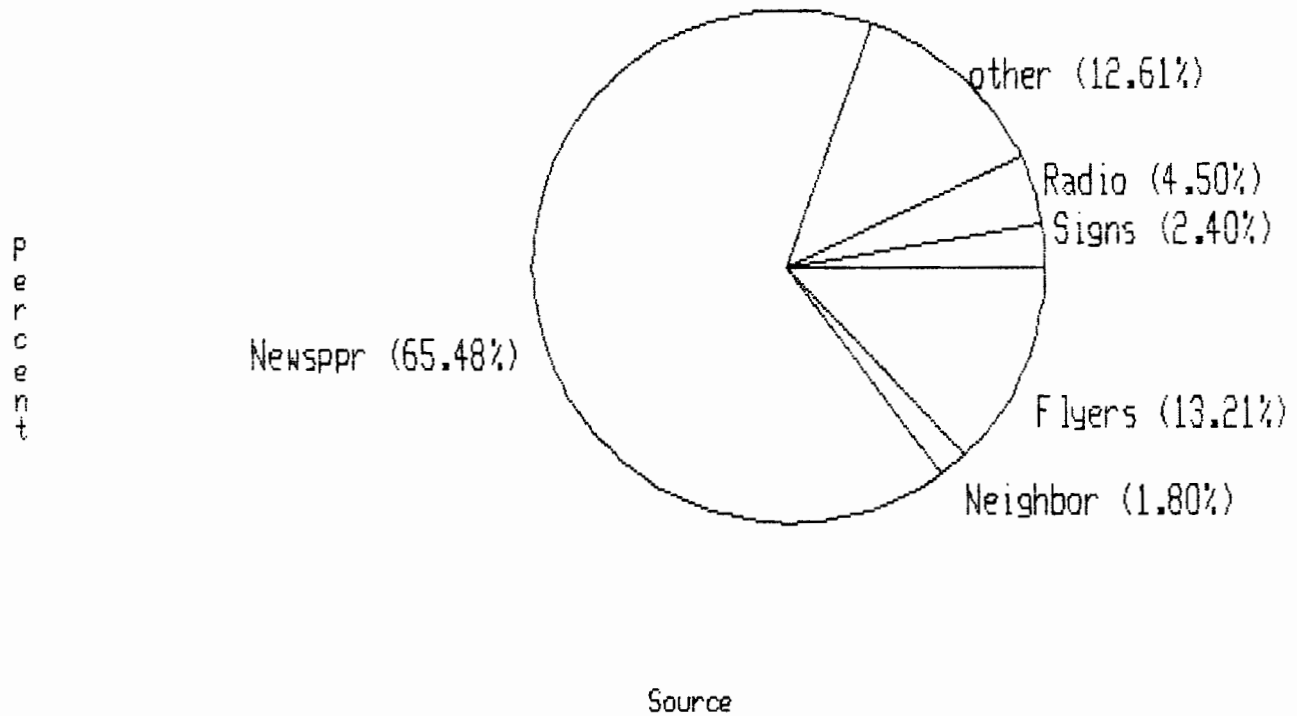
be disposed of improperly sometime in the future. The strong support for yearly collection efforts provides hope that there is widespread concern about the problems of disposing of hazardous wastes. Educational efforts could be focused on enhancing this popular concern.

GETTING THE MESSAGE OUT

When we consider the task of widening the base of concern for proper disposal of hazardous wastes, we must consider the relative effectiveness of the various media. Possibly the medium which was most effective in advertising the recent collection day effort might be the best method for future educational efforts, as well as for advertising specific collection plans.

The pie chart in Figure 2.3 illustrates the effectiveness of newspapers in advertising the recent collection day effort. Two-thirds of the respondents had learned of the effort through newspapers, while flyers appeared to be the second most effective form of advertising. The "other" category was mostly comprised of "word of mouth" responses; that is, respondents had heard of the effort through conversations with people other than their neighbors. This pattern varied little from site to site, with the exception of Portsmouth, where radio accounted for 11% of collection day awareness.

Figure 2.3. Sources of information for Collection Day.



DEMOGRAPHIC FACTORS

Is there any one "type" of person who is more likely to be concerned about the proper disposal of hazardous wastes, and consequently, more likely to participate in collection efforts? Research indicates that younger and better-educated people tend to be more concerned about environmental issues. However, the data in Table 2.4 show that younger people were substantially less likely to participate in the collection day program. This is suggested by the discrepancies that emerge when we compare the age groups of respondents with population estimates based on 1980 Census data. The general pattern that emerges from such comparisons is that the younger and older age groups were both disproportionately represented when it came to collection day participation. For example, it is estimated that 30% of Kensington's population is between the ages of 18 and 29, and yet no one from this age group responded to the evaluation survey at the Kensington site. In contrast, 38% of the respondents at the Portsmouth site were 60 years of age or older, and that age group accounts for only 10% of Portsmouth's population. As can be seen in Table 2.4, this pattern is consistent regardless of disposal site.

Although this finding conflicts with the established research which associates environmental concern with youth, it is consistent with findings based on earlier surveys of hazardous

Table 2.4. What age group do you fit in? Survey responses compared with population estimates based on 1980 Census data.

Age group	Disposal site*							all
	Exeter	Hampton	Kensing	Kingst	Portsm	Stratm		
18-29	8 (28%)	5 (30%)	0 (30%)	8 (30%)	3 (35%)	6 (30%)		5%
30-39	27 (18%)	19 (19%)	25 (19%)	32 (22%)	23 (34%)	19 (21%)		24%
40-49	12 (13%)	19 (13%)	25 (16%)	16 (16%)	13 (11%)	19 (18%)		15%
50-59	15 (11%)	16 (12%)	25 (15%)	16 (11%)	21 (10%)	19 (12%)		18%
60 +	38 (29%)	40 (25%)	25 (20%)	20 (21%)	38 (10%)	36 (19%)		36%

*Percentages of survey respondents, with corresponding population estimates from Census data in parentheses.

waste collection efforts in Dover, Exeter, and Salem (Hamilton, 1985). In all cases, there were more older participants and fewer young participants than would be expected based on Census estimates of the community population.

While our analysis of age provided us with an unexpected finding, this was not the case with education. Table 2.5 shows that college graduates and graduates of graduate or professional schools were disproportionately represented when it came to collection day participation. For example, in Hampton, where the higher educated account for 35% of the population, 77% of the respondents said that they had graduated from college or graduate or professional school. This pattern is evident in all six cases and is consistent with findings from Hamilton (1985).

In addition to age and level of education, type of residency appears to be an important demographic factor. Employing the same comparative method used in our analyses of age and education, Table 2.6 shows that the number of respondents living in apartments is much lower than would be expected based on population of the general community. In addition, the proportions coming from farms were large at all six sites, despite the fact that, on the average, they represent only 1% of the total number of households. For example, in Kensington, where farms represent only 2% of the total number of households, farms accounted for 25% of the turnout. The explanation for this

Table 2.5. What is your educational background? Including comparisons of college graduates and graduate or professional school graduates with population estimates based on 1980 Census data.*

Educational background	Disposal site**							
	Exeter	Hampt	Kensing	Kingst	Portsm	Stratm	all	
Less than HS	2%	2%	0	4%	3%	0	2%	
High School	23%	14%	19%	16%	33%	34%	26%	
Vocational- some college	15%	5%	6%	12%	18%	6%	13%	
College grad and grad. or prof. school	60% 32	77% 35	75% 33	68% 26	45% 30	60% 38	59%	

*The nature of 1980 Census data prohibited comparisons of the other educational categories with population estimates.

**Including percentages of college graduates and graduate or professional school graduates, with corresponding population estimates from 1980 Census data presented alongside.

Table 2.6. Please check your type of residence: Survey respondents compared with population estimates based on 1980 Census data.

Type of resid.	Disposal site*							
	Exeter	Hampton	Kensing	Kingst	Portsm	Stratm	all	
Apart- ments	8 (26%)	5 (34%)	0 (4%)	0 (11%)	4 (31%)	3 (10%)	4%	
House	88 (73%)	90 (65%)	75 (95%)	92 (88%)	95 (69%)	75 (89%)	89%	
Farm	4 (1%)	5 (.1%)	25 (2%)	8 (1%)	1 (.1%)	22 (5%)	7%	

*Percentages of survey respondents, with corresponding population estimates from Census data in parentheses.

finding, which is consistent with findings from the earlier surveys in Dover, Exeter, and Salem, is that there are presumably fewer reasons to accumulate household toxic wastes such as paints, pesticides, and chemical solvents when living in an apartment. This suggests that residency is a factor to be considered when planning collection programs.

COMMENTS BY PARTICIPANTS

The last question to appear on the evaluation survey was, "Do you have any suggestions or comments?" Because this type of question taps the subjective experience of program participants themselves, responses can be surprising. The comments provided in response to this particular survey may be placed into three general categories: the congratulatory, the critical, and the suggestive.

The congratulatory comments indicated that participants appreciated the program, and were generally pleased with the way it was run ("fine," "good idea," "great idea," "excellent idea," "wonderful," "pleased," "very pleased," "delighted," "very happy," "like it"). These comments also included more substantive words of encouragement ("we wouldn't know what to do otherwise," "didn't know what to do until collection," "best way to handle it," "good start," "impressed with operation," "keep it

up"). Appreciation for the program was expressed by the fact that some participants "would be willing to pay for this" and were "willing to give donations."

The critical comments indicated that while participants were generally pleased with the program, they believed there was room for improvement. These comments mostly concerned two specific aspects of the program: its advertising and its restrictions on types of waste. Respondents were most critical when it came to commenting on advertising. One Greenland resident commented, somewhat sarcastically, that program officials should, "Let people know it will happen." The majority of comments suggested that the advertising campaign was wanting in several respects ("more publicity," "more advertising," "more radio," "more posted signs and flyers," "ongoing publicity," "more lead time and better publicity," "larger articles in newspapers," "not enough advertising"). One person suggested that program advertisers "mail flyers to homes."

In addition to the criticism concerning the quantity of advertising, many respondents commented on the informational shortcomings of the messages they did receive. This criticism focused primarily upon a lack of clarity concerning amount limitations and restrictions on what would be accepted ("make limits clear," "let people know about categories," "make clear what you'll take," "list exact items to bring," "better listing

of what can be brought," "what do they do with collected wastes?", "specify what is hazardous waste," "provide map or directions to disposal site").

Some respondents wanted to know why there was a limitation on the disposal amount ("why limit?"), and called for acceptance of a wider variety of wastes ("take DDT," "take batteries," "accept wider variety of wastes," "holding place for DDT," "clean up for other products"). One respondent suggested "upping limit so neighbors can bring stuff for others."

Some suggestions called for more frequent collection days ("do more often," "twice a year"), and one respondent suggested that programs be held "in every town and in Maine." One respondent suggested that collection days should "start earlier"; another said that the pickups should "run longer than two hours."

A number of suggestions centered on the broader issue of raising general awareness of the environmental impact of toxic wastes ("more publicity about impact of the material, and impact on groundwater," "more information and newspaper articles on impact of toxic wastes," "educate public on issues").

One respondent suggested "door to door pickups"; another suggested, "take wastes at dump once a month." In one comment,

which was somewhat out of context but still interesting, a Portsmouth participant claimed that he/she had "called the EPA" and that they "told him/her to bury pesticides."

REFERENCE

Hamilton, Lawrence C. (1985). Public Response to the Discovery of Water Contamination. Durham, NH: UNH Water Resource Research Center.

SUMMARY

Although the collection days were conducted in different communities under a variety of different conditions, the surveys turned up several consistent findings. These include:

(1) Types of chemicals: paints were most common, followed by solvents, pesticides, and a wide variety of other chemicals--see Figures 1.3 and 2.2; also Table 1.4. A number of participants complained that the pickups should have no restrictions as to types and amounts of chemicals allowed.

(2) Need for such collection days: participants strongly endorsed the collection program, and asked for more frequent, better-publicized events. If there were no pickups, nearly all of these chemical wastes would have been disposed of improperly (see Figure 1.4).

(3) Sources of information: newspapers were most effective in publicizing the collection days (see Figures 1.5, 2.3). However, many still complained that the events were under-publicized. For younger participants and those with less education, radio may be an important source (see Tables 1.7 and 1.9). Participants seemed to feel that many more people would have participated, had the events been more heavily advertised.

(4) Who participates: most participants drove only short distances to the sites (see Tables 1.3 and 2.2); evidently they must be held "close to home." Compared to the population of their respective communities, pickup participants were:

- a. unlikely to be young (Tables 1.6 and 2.4);
- b. more likely to live in houses than in apartments
(Tables 1.5 and 2.6);
- c. more likely to be college-educated (Tables 1.8 and 2.5).

The last two points listed above should be helpful in designing the publicity needed to make future collection days successful. Great quantities of potentially hazardous chemicals are being stored indefinitely, or simply thrown away, by the households in each community. Without pickup programs such as the ones examined here, much of this waste may eventually find its way into the soil and water. Hazardous waste collection programs could become an important tool for limiting the spread of such nonpoint-source pollution. Their success, however, will depend heavily on the extent of public participation--which will be largely a matter of convenience, information, and education.