

June 30, 2009

*Northeast Regional IPM Competitive Grants Program (RIPM)*

**Design and Delivery of IPM Outreach Programs to Low-Income Urban Neighborhoods**

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*States involved:*

Pennsylvania and New Jersey

*Grant Award Number*

2006-34103-16964

*Year Awarded:*

2006

*Length of Grant:*

Two years (extended until 6/30/09)

*Funding Amount:*

\$175,000

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This report is dedicated to Michael Dansbury. Mike was an MPH student at the University of Medicine and Dentistry of New Jersey, and was a surveyor for the Camden team. He was a pharmaceutical professional, and family man. He died suddenly of a heart attack on February 12, 2009.

**Program Summary:**

We investigated the attitudes and behaviors of low-income urban residents towards pest and pest control, and we provide advice and recommendations aimed at reducing pesticide use through educational outreach. This joint effort of the Pennsylvania IPM Program and the New Jersey IPM Program sought to assist residents at risk of developing asthma due to pests and pesticide triggers adopt safer, more effective pest management in Philadelphia, PA, and Camden, NJ. This final report summarizes the project through the end, June 2009.

IPM, or integrated pest management, is a safe, effective, and scientific approach to managing pests. IPM uses knowledge of pests' habits and needs to help residents implement pest prevention tactics as a first line of defense. Both cockroaches and mice have been shown to trigger asthma attacks. Asthma rates in Philadelphia are about twice the national average, and significantly higher in low-income areas. In Philadelphia over 20% of school age children are diagnosed with asthma. Controlling pests is an essential part of asthma control. Pest control measures that pose the least-toxic, least risk of exposure to residents are preferred. Because pesticides are poisonous, they are chosen only as a temporary tool. Information about proper use, storage and disposal of pesticide products is also critical to avoid personal and environmental contamination.

The project first identified residents' attitudes and current activities concerning pests and pesticide use in Philadelphia and Camden, NJ. Over the past seven years, PA IPM has been working in Philadelphia through the Philadelphia School and Community IPM Partnership (PSCIP). PA IPM also performed a preliminary survey local stores to find out the types of pesticides are being sold to local residents. Vendors' knowledge of and interest in receiving pest product and pest management education was informally assessed.

Each resident that participated in the project received an IPM resource kit containing information about using IPM to control pests, non-toxic traps with instructions, non-toxic cleaning supplies, and sealable containers to store food items. New outreach materials were developed to meet the needs of the target communities. In addition, Spanish language materials are being developed. PA IPM estimates that at least 500 residents and six health care organizations and their staff will be educated on pests, pesticide use and IPM.

This project seeks to better understand the knowledge, attitudes, beliefs and skills (KABS) of inner city residents, and to provide one-on-one education on effective interventions that low-income urban residents can use to address pest control problems in their own homes. The overarching goal is to provide individuals the tools for better decision-making and to minimize the health impact of both pests and pest control methods. Progress and effectiveness of educational intervention were measured in part by comparison of results of the pre and post intervention interviews. New and effective, multi-lingual outreach materials were created. Non-traditional IPM partners were enlisted.

**Objectives**

1. *Research city residents understanding and behavior pertaining to pests and pesticides using standard demographic methods.*

Complete – report follows. The source data, and the analysis tables for each question are in an Excel spread sheet on the CD included with this report. The survey instrument is included in Appendix B.

2. *Develop new and improved outreach materials targeted to the expressed needs of city clientele.*

Outreach and education materials for survey were developed, and are included in Appendix A; survey results will inform production of new IPM education materials for distribution to the urban population.

3. *Deliver information about pests, pesticides and IPM approaches.*

Ongoing: even though the grant is completed, the work continues, with participation in community health fairs, neighborhood- and city-wide events, health education coalitions, public health seminars, etc. continuing to advance knowledge of IPM in both the resident and health-delivery spheres.

## Approach

Community events, including health fairs, neighborhood- and city-wide events, health education coalitions, and public health seminars, were used as both educational opportunities and as recruiting events for resident participation in the primary survey. Relationships were established with community and tenants groups, and health and social service providers to refer possible participants. Participation is qualified by residence in a low-income area and presence of children under the age of six in the household.

Participants in Philadelphia were visited three times:

- An initial survey, focusing on existing pest problems, attitudes towards pests and control measures used. 50 were completed.
- An educational session, where IPM principles and practices are introduced, pesticide use hazards discussed, and an “IPM kit” of materials presented and demonstrated. When resident interest allows, demonstration of monitoring devices will be coordinated with a return visit to make actual counts of pest species presence and relative abundance pre and post educational intervention. 34 were completed.
- A follow-up visit, where the survey is again administered, with the focus on changed attitudes and behavior, and understanding and application of IPM practices. 22 were completed.

To avoid some of the issues that the Philadelphia survey encountered, the Camden team adopted a different model, using the same instruments and materials. They worked directly with community agencies to recruit participants, and conducting the sessions at the agency offices; only two sessions were required. The reasons for the change and the implications are described in the survey analysis, below. Fifty initial interviews and trainings were completed, and 32 final interviews were completed.

This fall-off in completion is indicative of a problem working with the target population. The residents are frequently unmotivated and reluctant to participate with extensive studies such as this project. After the product kit is received in session two, it is difficult to schedule the third session, or in many cases, get any response from the resident. In a many cases they consented to the third visit, but was clear that it is viewed as an imposition; one respondent was frankly hostile, in spite of admitting that the intervention had, in fact, helped her pest problems. She just did not want any more contact with us.

Camden began their interviewing after Philadelphia. Two enumerators, Masters of Public Health candidates from the University of Medicine & Dentistry of New Jersey (UMDNJ), were trained in two sessions, totaling eight hours. Training materials were adapted from the NHANES and NYC-HANES enumerator training, and are included in Appendix C. IRB approval from both Rutgers and UMDNJ was received.

A survey of pesticide types and formulations available to residents in local stores is needed, and will be developed as funding allows. This will utilize both observation by bi-lingual team members and

interviews of store managers and/or sales personnel. The objective is to help determine what pesticide active ingredients and formulations are available in low-income urban areas, and how stores assist customers with purchasing decisions. Previous studies suggest that resident's pest control practices are influenced by their neighbor's practices, by advertising – particularly television – and by simple availability, since transportation is a limiting factor.

### **Process**

Project staff (Dion Lerman) was hired in January 2007. Rhonda Griffin assisted part-time with scheduling and conducting interviews. Penn State University Office for Research Protections IRB approval for the Resident-survey and materials was obtained. Education materials were produced, and IPM Kits assembled (see list of contents, Appendix D). Many of the materials were donated by manufacturers: Woodstream/Victor provided snap- and glue-traps; Sun & Earth green-cleaning products.

Outreach and recruitment were using the Philadelphia School & Community IPM Partnership. Referrals were received from the Childhood Asthma Link Line, the Community Asthma Prevention Project, the Temple University School of Nursing, the PHMC Health Connection, and other agencies. Resident interviews were conducted, primarily in a North Philadelphia public housing project, and in West Philadelphia and Germantown. One of our partner agencies referred a cluster of Spanish-speaking residents, and a native-Spanish speaker (Sueane Cortez) was hired part-time to conduct interviews with them. In addition, Community Health Students from Villanova University School of Nursing assisted with resident interviews in July 2008.

### **Conclusion**

The project overcame many logistical hurdles and completed its primary objectives. The data analysis below indicates how successful we were: residents experienced a 58% reduction in cockroaches, and 51% in mice, and said overwhelmingly (69%), “I've had pest problems in the past but I know how to get rid of the pests.” The information about residents' knowledge, attitudes and behavior will aid program development and inform future research.

### **Survey Analysis**

#### **Demographics (Section 3 of survey) & Protocol:**

The study groups were a convenience-sample recruited in Philadelphia and Camden, they do not reflect a cross section of those communities. They are therefore referred to as the “P-group” and “C-group” respectively. 50 households in each city, total 100, were recruited. The selection criteria included a child less than 6 years old living in the household, and meeting Federal poverty guidelines. Participants were recruited through local health providers, and then by referrals from participants.

There are substantial differences between the two study populations. (Table 1) The P-group is older, both in average age and in distribution – 50% of the C-group is less than 32 years old, while only 28% of the P-group. 18% of the P group are over 62 years old, as opposed to only 8% of the C-group group. While the income is almost identical, the demographics vary considerably. The P-group is predominantly African-American (76%), with only a token representation of whites, and 14% Hispanic or Latino. In C-group the Hispanic participants were 36% of the sample, and whites 34%; African Americans 54%. The C-group group tended to have higher education: 80% completed high school, and 34% have some further education or technical training, as opposed to P-group with only a 62% high school and 28% further education.

The two groups also differ in the length of time that they have lived in their homes or neighborhoods: in P-group the average number of years in the current home is over 12, with an average of 23.5 years in the

neighborhood. The longest response was 52 years. In C-group, however, the average was less than 5 years in the current home, and just less than 6 years in the neighborhood; even the longest resident 29 years, was nearly half of the P-group maximum. In P-group, several of the respondents lived in houses that had belonged to their parents or grandparents. C-group is much younger, immigrant community, much more fluid, with fewer “traditions.”

**Table 1: Resident’s Demographic Summary**

Q #		Q19		Age Distribution		
		P-group	C-group		P-group	C-group
20	<b>Race</b>			<b>Age</b>	<b>Ave</b>	
	AA/black	76%	54%		41.8	33.4
	Asian	0	0		<b>Min</b>	19
	White	4%	34%		<b>Max</b>	82
21	Hispanic	14%	36%		<b>&lt;22</b>	2
	<b>Education</b>				<b>&lt;32</b>	12
22	HS/GED Diploma?	62%	80%		<b>&lt;42</b>	11
23	College/Certification	28%	34%		<b>&lt;52</b>	11
	<b>Household Size</b>				<b>&lt;62</b>	4
24	Boys - Ave #	1.6	1.7		<b>62&gt;</b>	5
	Total	57	86			
	Girls - Ave #	1.6	0.76			
	Total	49	32			
26	Adults	83	108			
27	Seniors	6	8			
	<i>Total residents</i>	195	234			
	Family size	3.9	4.56			
25	Children visiting	126	116			
	<b>Housing</b>					
31	Homeowners	32%	20%			
32	Public Housing Residents	34%	26%			
33	Years in present home- Ave	12.3	4.6			
	Max	52	29			
34	Years in neighborhood - Ave	23.5	5.84			
	Max	53	29			
28	<b>Income</b>	\$1455/mo	\$1460/mo			

Family size is also larger in C-group; the average is 4.86 people, vs. P-group’s 3.9. According to national US Census data, Hispanic households and families are twice as large as white (average 4 persons, as opposed to 2 for whites). African Americans split the difference with an average household size of 3. In

addition, the survey asked about children who regularly visited the home – cousins, grandchildren and other close and regular visitors; almost as many visitors as resident children were regularly in the home. Overall this survey population included 466 children and 204 adults.

	<b>P-group</b>	<b>C-group</b>
<b>Age - Average</b>	34.2	27.2
<b>Population</b>	1,447,395	79,383
<b>Poverty</b>	24%	38%
<b>Family size</b>	2.5	3.1
<b>AA/black</b>	43%	53%
<b>White</b>	43%	7%
<b>Hispanic</b>	9%	39%
<b>HS Diploma?</b>	71%	51%
<b># Murders /100,000</b>	27.3	53.2
<b>Est. Median Income</b>	<b>35,365/ yr</b>	<b>25,389/ yr</b>

**City comparison** (*U.S. Census Bureau, 2006 American Community Survey, August 2007*)

This divergence in the two groups reflects the difference between the cities themselves (table 2): Camden is poorer, and with a much higher Hispanic population (over a third of the city). However, the dramatic reversal of educational attainment between the two groups may be a function of age and culture, with younger Hispanics being more likely to complete high school. They may also have recorded themselves as graduates even if they do not in fact have a high school diploma or GED.

**Difference in methodology:** The change in methodology used by the C-group surveyors amplifies the difference between the data sets. In P-group interviews were done one-on-one in each respondents home. The advantage of this was privacy and confidentiality – people were open to discussing with one or two surveyors things that they would not be willing to discuss in public – such as pests. The rapport that was established with the resident aided the training. Direct observation of the living conditions was possible. Since the surveyors were filling out the form, questions about meaning or comprehension were handled directly. The disadvantage is that the residents may have been biasing their responses based what they assumed surveyors wanted to hear. Subsequently, the surveyors returned for a second visit, The IPM kit was presented, including demonstration of effective product use. Other elements of the training include an explanation of IPM principles, and of the importance of reading & following pesticide labels, and especially understanding signal words. The training is reinforced with a full-color guide (listed below), other printed materials on pests and pest control, and the DVD, “Arrest the Pests in their Nest” (bilingual, listed below), co-produced by our research partner, Rutgers University. A third visit to conduct the follow-up interview (again using the survey instrument) was difficult to secure; the P group completed 22, or 44% of the final interviews.

Partly to overcome this issue, C-group surveyors conducted the interviews in a group setting, up to 30 people at a time. The interviews were conducted in the offices of the social service agency that had referred the residents. This was a neutral, and familiar location. The surveyors read each question aloud, answered any questions, and then respondents filled in the form themselves. The IPM kits were distributed and the training was conducted immediately following the survey. The main advantage was time – each group was surveyed and trained in a few hours, as opposed to the several hours per individual that P-group invested (recruitment, scheduling, travel time, and multiple visits because of client no-shows, all consumed significant time). The primary disadvantage was the group setting: respondents did not have privacy, or develop individual rapport with the surveyors. The communication dynamic may also

have shifted, with people more concerned with their *neighbor's* perceptions of them. There are also concerns about the survey forms: since residents completed them, misunderstanding or incomprehension could affect the results, particularly for the large Spanish-speaking sample. No direct observation of homes was made. These concerns influence the interpretation of the data. The final survey was conducted in another group session. The C-group was able to complete 32, or 64% of their final surveys – substantially higher than the P-group. Since different methodologies were used the two data sets are not identical, and usually cannot be combined. In fact, combining them would dilute the important differences. While we prefer the P-group data, the C-group data does illuminate other problems, and for some of the questions may have got a better response, such as question 2.

All the respondents were low income, i.e. they met the Federal poverty guidelines. 40% receive TANF (Temporary Aid to Needy Families – “welfare”) or other cash assistance. 66% receive food stamps, and about 33% receive WIC or Medicaid. (Table 3)

Q29		P-group	C-group
a.	TANF/welfare cash assistance	19	21
b.	Food stamps	34	22
c.	WIC program	16	18
d.	Free or reduced price school breakfast or lunch program	7	11
e.	Medicaid	14	19
g.	CHIP health insurance program	8	1
h.	ACCESS	3	6

### Survey Questions & Results

**Note:** The charts below show the number of responses to each question; in the narrative these are usually translated into percentages. Since each group has 50 members, the transition from data to percentage can be easily calculated. When data is aggregated and expressed as percentages, the smaller sample set for the Post responses (22 for P-group; 32 for C-group.) was calculated. Numbers and percentages may not equal 100 because of rounding, or because of missing or multiple answers, Full charts and source data are on the accompanying CD.

### Knowledge, Attitudes, Behavior and Skills

The questions below survey resident’s knowledge of, and attitudes toward, pests, current pest control practices.

### Pest Frequency

Question 1. How often do you experience problems with the following pests?

Q1	P-group	Never	Rarely	Season-ally	Some-times	Often	Don't know
a	<b>Ants</b>	21	1	19	2	5	0
	<b>Bedbugs or “Cinches”</b>	44	1	1	0	0	2
b							
c	<b>Fleas</b>	29	4	11	1	2	0
d	<b>Roaches</b>	3	1	6	8	30	0
e	<b>Spiders</b>	10	16	0	14	5	2
f	<b>Termites</b>	30	1	1	0	0	14
g	<b>Waterbugs</b>	9	7	12	9	11	0
h	<b>Mice</b>	5	6	1	7	28	1
i	<b>Rats</b>	41	3	0	2	0	1

j	Opossums	40	2	0	3	1	2
k	Raccoons	40	1	0	4	1	1
l	Squirrels	35	3	3	2	1	2
m	Feral Cats	4	1	9	4	6	12

Table 4 (cont.)

Q1	C-group	Never	Rarely	Season-ally	Some-times	Often	Don't know
	Ants	11	5	18	6	7	2
a	Bedbugs or "Cinches"	34	1	0	2	0	8
b	Fleas	33	8	2	2	1	1
c	Roaches	23	6	4	4	8	1
d	Spiders	12	10	9	7	9	2
e	Termites	37	2	2	2	1	4
f	Waterbugs	28	6	6	5	1	2
g	Mice	28	7	4	6	2	2
h	Rats	38	4	0	1	2	3
i	Opossums	36	6	0	1	1	5
j	Raccoons	36	4	1	1	3	5
k	Squirrels	23	7	2	4	8	3
l	Other_____	0	0	2	2	1	2

The most common pest experienced by the P-group is cockroaches; 60% reported having roaches “often;” only 3 individuals report “never” having roaches. Mice were only slightly less common: 56% experienced mice “often.” “Waterbugs” (the popular name applied to either American or Oriental cockroaches), were common in 22% of the homes, and an additional 24% reported seasonal problems with them. The other main seasonal offender was ants. Rats were only cited by 4%, whereas raccoons and opossums were twice as common, and frequently mentioned as pests; feral cats are also a growing urban problem. Flies were the pests most frequently added (by 20% of respondents) to our list. Only two respondents mentioned the presence of bedbugs, and neither were active infestations.

The C-group data was collected in a group setting, and seems to reflect social conformity rather than reality. The idea that almost 60% of households had no cockroaches, or 65% without mice does not correspond with observed conditions or other studies. The robust National Survey of Lead and Allergens in Housing (Cohn 2004 & 2006) found mouse allergens (indicating the pest’s presence) in 85% of all US homes, and 95% of homes below the poverty level, and 13% of households had cockroach allergens present in the kitchen. Ants and spiders are the most frequently noted pests. In fact more people – 76% - complain of spiders than any other pest. This is an education issue: spiders are a very low risk problem. The New Jersey Department of Environmental Protection recognized only two poisonous spiders in the state and a handful of others “of concern.” (Boyle 2005). Recent research has indicated that most of the so-called “Brown Recluse Spider” bites reported are misdiagnosed (Vetter 2009); both Brown Recluse and Black Widows – the other poisonous species – are reclusive and seldom encounter or bite people. As with the P-group, squirrels, raccoons and opossums were frequently mentioned as pests; feral cats are also a growing urban problem. Flies were the pests most frequently added.

**TOP PESTS:**

- Cockroaches
- Mice
- “Waterbugs”
- Flies

**ON THE HORIZON:**

- Fleas
- Urban wildlife: squirrels, raccoons, opossums, feral cats, etc.

Termites were not an issue for either group. Most of the respondents were tenants, but even among the homeowners there was little awareness of termites.

Table 5 reports the decline in pest presence respondents reported in the follow-up survey, after the IPM training and kit use. Although P-group had more pests, C-group had a larger post-group; their contribution to the aggregate is about equal. The 58% reduction in cockroaches, and 51% in mice, from “often” is gratifying as well as remarkable. It speaks to the effectiveness of the training design. The C-group surveyors, who were not IPM professionals, and had only received training in delivering the kits and demonstrating their use, were almost as effective as the P-group surveyors, who are IPM professionals. The essential features of the training are simplicity; focus on key concepts; and concrete imagery and suggestions. The unique aspect is the multi-media approach: a full color booklet (Appendix A) was used as the script as products were introduced and demonstrated. A bi-lingual DVD accompanied other brochures and pamphlets. This format was well received by residents, and apparently successful. Residents repeatedly thanked us, saying that they had never before been exposed to the information. Specific items that were mentioned repeatedly were: pesticide exposure risks; signal words; proper use of boric acid and of gels and baits, especially avoiding contamination.

**Table 5: Decline (%) in Reported Pest Presence, Post-training**

Q 1	Never	Rarely	Seasonally (When)	Some-times	Often
<b>Aggregate</b>					
<b>Ants</b>	-19%	11%	-42%	11%	-19%
<b>Bedbugs or “Cinches”</b>	-47%	10%	-2%	1%	0%
<b>Fleas</b>	-24%	-10%	-17%	-1%	-6%
<b>Roaches</b>	16%	18%	-15%	-1%	-58%
<b>Spiders</b>	11%	-16%	-13%	-15%	-19%
<b>Termites</b>	-29%	8%	-1%	1%	-2%
<b>Waterbugs</b>	3%	1%	-31%	-19%	-19%
<b>Mice</b>	2%	10%	-5%	-8%	-51%
<b>Rats</b>	-53%	0%	5%	3%	-4%
<b>Opossums</b>	-38%	-2%	5%	-3%	-4%
<b>Raccoons</b>	-38%	4%	-2%	-1%	-8%
<b>Squirrels</b>	-25%	-2%	-5%	11%	-13%

**Measuring Attitudes**

2. Please tell me how whether you agree or disagree with the following statements.

(Table 6) While almost everyone agreed that “(a) The presence of pests in my home is a problem for me” (only 1 dissention), they also were *not* “(b)...satisfied with the pest control measures I use to get rid of household pests” – only 10% thought they had the skills to control pests effectively. There was broad agreement that pests were embarrassing (e; 94%), are a problem in their neighborhood (j; 88%), and that both pests (d; 90%) and pesticides (f; 90%) could harm children. However two questions illustrated the ambivalence and frustration people experience: they were split almost evenly on responses to “(c) There is nothing I personally can do about pests in my house,” and “(h) Chemicals must be used to control pests.”

POST-TRAINING CHANGES:

- Reduction in roaches – 58%
- Reduction in mice – 51%
- “I’ve had pest problems in the past but I know how to get rid of the pests.” – 69%

People feel that pests are inevitable, and that “extermination” solutions are expensive and temporary. There is also a wording-issue; the term “chemicals” is vague and was broadly interpreted.

The striking thing about the C-group data is how different it is from the P-group. Many more C-group disagreed with statements than the P-group’s- this may reflect their true opinion, without an attempt to please the interviewer. The C-group were much more willing to tolerate pests (a; 32%), and resigned to their presence (c; 82%; e, 24%). There is less awareness of possible health risks, from pests (d), and, especially in (f): 78% recognizes possible harm from pesticides, contrasted to P-group’s 95%. They were almost evenly split over their competency in pest control (k) – 48% feel confidence; 52%, not so much.

The changes measured by the post-survey are interesting: pests are not so much a problem for folks anymore (a); they feel much more able to deal with pests (b, 76%); 22% have lost the disempowered “there is nothing I can do...” (c). There is less frustration (e). People have not abandoned the concern for risk (f); they are more aware of the risks to children (g). There is still confusion over whether “chemical” are necessary (h) or a part of IPM: this is an issue that needs additional clarity. Fully 69% report, “I’ve had pest problems in the past but I know how to get rid of the pests.” Residents feel that gained information and tools that allowed them to decrease pest presence, and change long-standing conditions.

TABLE 6		PRE #			POST #			CHANGE %		
Q	P-group									
		Agree	Dis-agree	Neutral / Don't Know	Agree	Dis-agree	Neutral / Don't Know	Agree	Dis-agree	Neutral/ Don't Know
2										
a	The presence of pests in my home is a problem for me.	47	0	1	19	2	0	-8%	9%	-2%
b	I am satisfied with the pest control measures I use to get rid of household pests.	5	36	7	19	0	2	76%	-72%	-5%
c	There is really nothing I personally can do about pests in my house.	20	23	5	4	16	1	-22%	27%	-5%
d	The presence of pests in my home can be harmful to my family’s health.	45	1	2	21	0	0	5%	-2%	-4%
e	The presence of pests in my home can be frustrating and embarrassing.	47	1	0	20	0	0	-3%	-2%	0%
f	Chemicals (bug sprays, bug bombs, foggers, rat/mouse bait, etc...) can be harmful to my family’s health.	45	0	2	21	0	0	5%	0%	-4%
g	Children are more harmed by chemicals than are adults.	38	2	8	19	0	2	10%	-4%	-7%
h	Chemicals must be used to control pests.	23	12	12	8	12	0	-10%	31%	-24%
i	Pests are a problem for most of the households in my neighborhood.	39	1	7	18	1	2	4%	3%	-5%
j	Pests are not a problem in my neighborhood.	2	39	5	0	19	2	-4%	8%	-1%
k	I’ve had pest problems in the past but I know how to get rid of the pests.	11	29	8	20	0	1	69%	-58%	-11%

<b>Q 2</b>	<b>C-group</b>	<b>PRE #</b>			<b>POST #</b>			<b>CHANGE %</b>		
		<b>Agree</b>	<b>Dis- agree</b>	<b>Neutral / Don't Know</b>	<b>Agree</b>	<b>Dis- agree</b>	<b>Neutral / Don't Know</b>	<b>Agree</b>	<b>Dis- agree</b>	<b>Neutral/ Don't Know</b>
<b>a</b>	The presence of pests in my home is a problem for me.	34	9	7	18	12	2	-12%	20%	-8%
<b>b</b>	I am satisfied with the pest control measures I use to get rid of household pests.	17	23	9	25	4	2	44%	-34%	-12%
<b>c</b>	There is really nothing I personally can do about pests in my house.	9	33	9	3	21	7	-9%	0%	4%
<b>d</b>	The presence of pests in my home can be harmful to my family's health.	34	7	9	22	7	3	1%	8%	-9%
<b>e</b>	The presence of pests in my home can be frustrating and embarrassing.	38	5	7	24	7	0	-1%	12%	-14%
<b>f</b>	Chemicals (bug sprays, bug bombs, foggers, rat/mouse bait, etc...) can be harmful to my family's health.	39	7	4	28	2	1	10%	-8%	-5%
<b>g</b>	Children are more harmed by chemicals than are adults.	35	9	6	28	2	1	18%	-12%	-9%
<b>h</b>	Chemicals must be used to control pests.	25	13	11	16	14	1	0%	18%	-19%
<b>i</b>	Pests are a problem for most of the households in my neighborhood.	24	10	15	18	4	9	8%	-8%	-2%
<b>j</b>	Pests are not a problem in my neighborhood.	13	21	16	7	17	7	-4%	11%	-10%
<b>k</b>	I've had pest problems in the past but I know how to get rid of the pests.	24	14	12	16	12	2	2%	10%	-18%

### Information sources.

#### Q3 Where do you get information on what works best to get rid of pests?

The primary source of information about “what works best to get rid of pests” is word of mouth – friends, neighbors, family, etc. for 58% our residents. One typical response was, “I do what my grandma says!” 16% rely on the product label in the store, and 16% will ask sales personnel for assistance. The role of stores is discussed in the next question.

12% reported getting information from exterminators – not necessarily in their own home: people questioned PCO's at their workplace, and also friends who work in building maintenance. Custodians and

contractors frequently deal with pests and offer advice. Several people added “television” to our list; they seemed to mean primarily commercials. However several residents did report seeing the Discovery Channel program *The Verminators* that follows a Los Angeles PMP company. This show has raised awareness about pests, control methods, and even of PCO as a career path.

The C-group data is very similar – primary sources of information are word of mouth (k; 52%), the stores (h; 36%) and the product labels (g; 30%). Exterminators (b) are a source for 40%, and C-group use the Internet (I; 22%) and read more (a; 26%) – probably because they are younger and better educated. Virtually no one in C-group recognized the role of Cooperative Extension; the C-group surveyors probably did not mention it since they were affiliated with the University of Medicine and Dentistry of New Jersey. Newspaper ads get no response from either group.

**Table 7: Information Sources**

Q3		P-group	C-group
a	Books and pamphlets	2	13
b	From the exterminators	12	20
c	Phone book ads	0	3
d	Newspaper ads	0	2
e	Newspaper articles	2	5
f	Penn State Extension (outreach center)	7	2
g	Product labels	16	15
h	Store where I buy pest control products	16	18
i	The Internet	2	11
j	Workshops	4	5
k	From friends, neighbors, family, “word of mouth”	29	26
l	Janitorial or maintenance staff	5	6
m	Other	2	0

**The final ranking of the media is (combined data):**

1. (k) From friends, neighbors, family, “word of mouth” 51%
2. (h) Store where I buy pest control products 33%
3. (b) From the exterminators 32%
4. (g) Product labels 31%
5. (a) Books and pamphlets 15%
6. (i) The Internet 13%
7. (l) Janitorial or maintenance staff 11%
8. (f) Penn State Extension (outreach center) 9%
9. (j) Workshops 9%
10. (e) Newspaper articles 7%
11. (m) Other 2%
12. (c) Phone book ads 0

13. (d) Newspaper ads

0

**Place of purchase for Pest control products****Table 7 Place of purchase for Pest control products** (compiled data)

Q4	Group: Frequency of purchase:	P Never	C Never	P Some- times	C Some- times	P Often	C Often
a	Neighborhood corner store	28	26	11	16	7	2
b	Neighborhood discount store	28	22	10	16	6	4
c	Grocery store (PathMark, etc)	28	19	13	14	5	13
d	Dollar store (Dollar Tree, Dollar Express)	29	26	11	14	6	7
e	Hardware store (True Value, Ace)	31	29	13	11	1	5
f	Major retailers (Wal-Mart Kmart/Home Depot)	12	10	17	20	14	14
g	Professional pest control company (Orkin, Terminex)	36	28	7	14	1	3
h	Pest control supply store (Humphrey's, Honest Lou, Pest- Free Maintenance)	30	36	13	6	3	3
i	The Internet	43	39	1	3	0	2

Both groups gave similar results, and are presented side by side for comparison. This question is distinguished by the negative answers people gave: most respondents shopped only from one or two sources: others were regarded as “to high (expensive).” The most popular purchasing location (28%) were “big box” retailers – Wal-Mart, Home Depot and Target were the most mentioned. Most of the additional purchases were in local, neighborhood businesses: discount and dollar stores, corner stores and supermarkets. C-group residents were much more likely to purchase supplies from the supermarket (e; 26% vs. 10%) Hardware stores are very infrequent in low-income communities, and are not used by 60% of respondents. The Internet is still a luxury for most of the low-income respondents, especially the seniors. However, a couple of residents were online, and used the Internet to search for information. Very few people reported purchasing professional product, either from supply stores (h) or from PCO’s (g), although C-group residents did “sometimes.” We are aware from personal experience and statements from respondents that pest control technicians sometimes sell professional product directly to consumers “from the truck.” This “gray market” can put Restricted Use pesticides into consumer hands, usually without a label, MSDS, or anything beyond basic instructions.

The importance of stores and their personnel was highlighted by the last question: they are the second most common source for information on pest control. One of the tasks of this project was to try to get more information on the stores. We have done preliminary visits to ascertain needs. A wide variety of product is available: boric acid dust, many types of glue boards, snap traps, and wide selection of aerosol

sprays, including “Lavender-scented Cockroach Killer. Cockroach baits and gels are not usually available in neighborhood stores, although supermarkets and other major chains carry Combat products.

Stores tend to be leery of talking too much, especially to “outsiders with clipboards.” (Dominicans or Koreans, or other immigrant groups operate most of the neighborhood stores.) In Indiana Home Depot was sued over providing pesticide information to consumers: the law states that only trained and certified pesticide applicators may give advice on pesticide use, and their clerks were in violation. The EPA and state agencies have raided Asian groceries and seized Chinese Caulk, an illegal, unregistered pesticide. Approaches should be carefully made by bi-lingual surveys recruited from the community.

The post-results for this question are examined in Table 8. Basically, everyone was buying much less product – the big box retailers (f) were the biggest losers, with 36% of families purchasing pest controls much less often.

**Table 8: Change in Purchasing Behavior**

Q4	Frequency of purchase (%):	Never	Sometimes	Often
a	Neighborhood corner store	-53	-36	-27
b	Neighborhood discount store	-49	-31	-25
c	Grocery store (PathMark, etc)	-46	-31	-26
d	Dollar store (Dollar Tree, Dollar Express)	-54	-36	-24
e	Hardware store (True Value, Ace)	-59	-41	-24
f	Major retailers (Wal-Mart Kmart/Home Depot)	-21	-26	-36
g	Professional pest control company (Orkin, Terminex)	-63	-34	-21
h	Pest control supply store (Humphrey's, Honest Lou, Pest-Free Maintenance)	-65	-48	-19
i	The Internet	-80	-39	-4

### Professional Pest Control Services

In general, property owners are responsible for providing pest control services to tenants. Of the 25 P-group renters who were *not* PHA residents, 12 – almost 50% - were **not** provided with PMP (Professional Pest Management) services. In the C-group this was not a problem – all the renters reported having PMP service.

Twelve of our P-group respondents were Philadelphia Housing Authority (PHA) residents. At the time of our survey, PHA had not had either in-house service, or a contract with a pest control provider, for over a year. A senior maintenance supervisor for PHA explained that they had to cut budgets and that pest control had been let go. Property managers were supplied with cockroach bait stations and loose rodent bait-blocks to give directly to residents. In addition, staff cutbacks impacted maintenance and repairs, allowing more access and conditions conducive for pests. Pest pressure, particularly in the high-rise apartment building, was extreme. In one unit where we placed 6 cockroach bait stations the tenant reported that the bait has been eaten out within 24 hours – the manufacturer expects 90 days of useful life. Their marketing studies were clearly not done in P-group! PHA subsequently contracted with outside

agencies who have been attempting to provide IPM services. However, although written into the pest management professionals (PMP) contract, PHA does not have an institutional commitment to IPM.

Of the 38 non-PHA residents, only 13 used outside pest control (Table 9). Most believed that they hired licensed pest control technicians; no one had asked to actually see the license (Table 9A). Only a few (<5) had used a major firm (Orkin, Terminix, etc). Most used neighborhood based companies. In fact, many

**Table 9A**

Q6	P-group	C-group
Licensed Pest Control Technician	10	15
Non-licensed Pest Control Technician	?	34
Not sure	2	1

probably used neighbors and local handymen to treat their homes; however they would not admit it to surveyors. This is another situation where the C-group situation favors a more accurate response. On the anonymous survey, respondents indicated two-to-one that they used unlicensed personnel; these probably included neighbors and handymen. This suggests that most pest control in low-income communities is informal and preformed by unlicensed, untrained and unsupervised people. Our experience in P-group bears this out: observations, statements from residents and our personal interaction with local contractors and handymen who routinely treat for pests to enable them to complete other tasks. They are unaware that their actions are unsafe or illegal.

**Table 9**

Q5	P-group		C-group	
	Y	N	Y	N
Pre	13	25	27	21
Post	0	0	16	14

**Resident Choices**

Four cards - regarding the order of importance of criteria that are important when choosing pest control products - were shown to respondents, who were asked to rank them accordingly (Table 10).

**Table 10: Purchase Criteria**

**Q7. P-group**

Frequency (%) that value was chosen for each place:	1	2	3	4
a. Effectiveness, power	20	20	16	16
b. Cost	10	20	16	32
c. How Fast It Works	12	20	34	12
d. Product Safety	32	12	16	18

**Q7. C-group**

Frequency (%) that value was chosen for each place:	1	2	3	4
a. Effectiveness, power	24	26	12	16
b. Cost	10	20	16	32
c. How Fast It Works	12	20	34	12
d. Product Safety	32	12	16	18

Although no factor was chosen by more than a third of the respondents, the ranked choices are very consistent across both groups, suggesting that the ranking is reliable. The combined data demonstrate this clearly (Table 10A):

**Table 10A: Final Ranking of Purchase Criteria**

Q7	P-group	%	C-group	%	Combined	%
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Rank						
1	Product safety	32	Product safety	32	Product safety	64
2	How fast it works	16	How fast it works	26	How fast it works	42
3	Effectiveness, power	16	Effectiveness, power	34	Effectiveness, power	50
4	Cost	50	Cost	32	Cost	68

**Neighbors responses.**

Q8. What do most of your neighbors use to get rid of roaches?

This was a subjective and difficult question for many respondents; others had no problem rattling off what products their neighbors used, although few completed ranking all five options. This data, while not robust, is suggestive. The response patterns are similar for both groups and reiterate other quantitative and anecdotal evidence (Table 11). Aerosols are probably the most used product (52%), followed by foggers (40%). Boric acid was more popular than traps and even with bait stations.

**Table 11: Perceptions of Neighbors Pest Control Practices.**

Q8		<i>P-group</i>				
Frequency (%) that value was chosen for each place:		1	2	3	4	5
a	Foggers	26	14	12	4	4
b	Sprays	26	32	6	2	2
c	Baits	4	10	18	14	6
d	Roach motels	10	8	18	14	6
e	Boric acid dust	14	12	14	6	18
Q8		<i>C-group</i>				
Frequency (%) that value was chosen for each place:		1	2	3	4	5
a	Foggers	14	14	20	16	6
b	Sprays	26	16	8	8	12
c	Baits	6	14	18	12	20
d	Roach motels	14	16	18	20	2
e	Boric acid dust	10	16	4	12	28
8		<i>Aggregate</i>				
Frequency (%) that value was chosen for each place:		1	2	3	4	5
a	Foggers	40	28	32	20	10
b	Sprays	52	48	14	10	14
c	Baits	10	24	36	26	26
d	Roach motels	24	24	36	34	8
e	Boric acid dust	24	28	18	18	46

**Pest control products used**

The data for both groups is presented in Table 11. General consistency allows the sets to be aggregated.

The ubiquity of aerosol sprays is evident: 73% of residents say they use them at least sometimes; 36% used them frequently. However, many of our respondents said that they did not use aerosols because it aggravated asthma and/or allergies of someone in the home. Rodenticides are also commonly used (41%): residents want the mice gone, and do not want to set traps or see or handle dead mice on traps.

Total release foggers (TRF) were used by 47% of respondents – and avoided by the other half (46%). Residents with asthmatics in the home avoid foggers, but they are generally considered the “pesticide of

last resort” – when all else fails, “bomb and kill everything.” None of our respondents reported explosions or accidental human exposure, but one respondent did report a pet-death.

Tank sprayers are not frequently used; overall 24% of residents have used them, but only 6% use them regularly. Residents are familiar with sprayers from experience with exterminators, and associate them with extermination. Many people feel that extermination “doesn’t work”: the roaches survive, and the

**Table 11: Most Frequently Used Pest Control Products**

Q9 Cell	P-group	%	Cell	C-group	%	Rank	Combined	#	Cell
a	Aerosol bug sprays (e.g., Raid, )	52	a	Aerosol bug sprays (e.g., Raid, )	42	1	<b>Aerosol bug sprays (e.g., Raid, )</b>	47	a
e	Roach motels	46	i	Mouse/Rat glue traps or boards	24	2	<b>Mouse/Rat glue traps or boards</b>	34	i
f	Rodenticide	46	b	Foggers, “Bug bombs”	22	3	<b>Roach motels</b>	31	e
i	Mouse/Rat glue traps or boards	44	d	Ant baits	18	4	<b>Rodenticide</b>	31	f
j	Boric acid dust	42	e	Roach motels	18	5	<b>Moth balls or flakes</b>	28	k
k	Moth balls or flakes	32	f	Rodenticide	16	6	<b>Boric acid dust</b>	26	j
b	Foggers, “Bug bombs”	26	c	Spray Tanks, refillable	10	7	<b>Spray Tanks, refillable</b>	18	c
g	Box mouse traps	24	g	Box mouse traps	10	8	<b>Foggers, “Bug bombs”</b>	14	b
l	“Tres pasitos” or “Chinese chalk”	12	h	Snap mouse/rat traps	10	9	<b>“Tres pasitos” or “Chinese chalk”</b>	10	l
h	Snap mouse/rat traps	10	j	Boric acid dust	10	10	<b>Box mouse traps</b>	7	g
c	Spray Tanks, refillable	8	k	Moth balls or flakes	8	11	<b>Snap mouse/rat traps</b>	7	h
d	Ant baits	6	l	“Tres pasitos” or “Chinese chalk”	8	12	<b>Ant baits</b>	5	d
n	Other (for example: Tempo...)	4	m	Repackaged or unlabeled Pesticides	2	13	<b>Other (for example: Tempo...)</b>	4	n
m	Repackaged or unlabeled Pesticides	0	n	Other (for example: Tempo...)	0	14	<b>Repackaged or unlabeled Pesticides</b>	0	m

chemical smells and can cause gasping and trigger allergies and asthma attacks. Residents perceive the flushing action of the spray as “Feeding them, making them come out more!” Since the cockroach population rebounds, conventional extermination is not a popular option. Some residents see sprayers as the “professional” solution. One homeowner owned a sprayer, and had used it for decades. She

complained the insecticide she preferred had been removed from the market. Three other respondents reported borrowing a sprayer “sometimes.”

“Roach motels” lead to some ambiguity: we had intended it to refer to sticky roach traps, however it was understood by the respondents to mean cockroach bait stations (e.g., Combat, Maxforce, etc.) The use of bait products has had good penetration into the community – up to 50% of residents report using the “motels,” 36% frequently. However, they are difficult to obtain in resident’s neighborhoods. Aerosol sprays are readily available in neighborhood Dollar Stores. Some residents reported they have tried baits, but found them ineffective. The training (subsequent to this survey) explained avoiding contamination of baits by repellent sprays and strong chemicals.

Rodenticides are used by 41% of residents – 32% frequently. Rodenticides are popular as a “no muss, no fuss” control method, and perceived as safer than snap traps. Baits can simply be put out, or stuffed in holes, and there are no traps to inspect or bodies to dispose of. There is a common belief that the rodenticides cause the mice to seek water and they leave the wall cavities and die outside. There is the recognition of their own experience, however, that dead mice in the walls stink. Safety concerns are discussed in the next question.

<b>MOST POPULAR PRODUCTS:</b>	
1. Aerosol bug sprays	<b>73%</b>
2. Mouse/Rat glue traps or boards	<b>54%</b>
3. Roach motels	<b>50%</b>
4. Foggers, “Bug bombs”	<b>47%</b>
5. Rodenticides	<b>41%</b>
6. Boric acid dust	<b>40%</b>
7. Moth balls or flakes	<b>33%</b>

Box mouse traps (disposable cardboard or plastic; multiple-catch traps are generally not used in residential buildings, and most residents are unfamiliar with them) are not as familiar to residents as other styles. 23% of residents reported using them. They are easily overlooked and forgotten: dead mice may not be discovered until they smell.

Snap traps are used by only 19% of the respondents, frequently by only 12%, despite 56% reporting mice. Traditional wooden snap traps are considered difficult to set, disgusting to dispose of, and, possibly, as a public and humiliating sign of a too-large infestation. The safety aspects of snap traps is discussed in question 10.

Glue traps were widely used (54%; 32% frequently) – it is often the only pest control product used by residents who are adverse to chemical pesticides for health or other reasons. They are often provided by landlords or PCO’s; however little or no training in effective use is provided, and many residents consider glue traps to be ineffective against rodents, which encourages them to instead use rodenticides.

Boric acid was familiar to most of the respondents; 40% use it, 27% frequently. It is typically misused (large amounts are scattered or left exposed in piles). This in turn, led 40% of the respondents to consider boric acid as “Not at all safe.”

Mothballs are another product popular with seniors: they are considered “old school,” and younger respondents used them less. 33% of residents report using them, but only 19% frequently. They are, however, used many ways: down mouse holes to poison or to repel mice, scattered throughout the garden to repel cats, crushed and scattered behind furniture to repel pests – even lodged within furniture to neutralize any body odor! Some residents even use them to repel moths. 30% of respondents do recognize the safety concern.

Chinese calk was one of three illegal or misused pesticides they were specifically asked about; *Tres pasitos* and Tempo were unknown in P-group. *Tres pasitos* is an illegally imported aldicarb pesticide; Tempo is a restricted use product also sold to the public, where it is often used undiluted; both are popular in the Hispanic community, are were used by 8% of C-group residents. Chinese chalk has been used (6%), particularly by older respondents, but reportedly has gotten harder to find in recent years. 84% of respondents indicated that they would never buy repackaged or unlabeled pesticides; however, 2% of residents do; this is typically how *Tres pasitos* is sold.

The “Other” category (5%) discovered one resident who used a pet boa constrictor as bio-control for mice, and another with an iguana who ate cockroaches. Many mentioned keeping a cat, but cats are not considered generally effective in urban IPM and were not recorded – a recording shortfall discovered only in hindsight.

Although ants were reported as a major seasonal pest, only 5% of P-group respondents use ant baits; most were unfamiliar with the product, and used aerosols for ant problems. More C-group residents use them, and 18% use them frequently.

### Perceived safety of pest control products

Question 10 goes to the heart of the resident knowledge and behavior. (Table 12) Note that “Don’t know” was a frequent response in P-group, but much less common in C-group – 10-36%. This may reflect the different administration conditions. Respondents were encouraged to say when they did not know; for example, 22% did not know about the safety of tank sprayers. Ant traps were not widely used, as noted above; knowledge about them was consequently sparse. Most people said they had no exposure to illegal or repackaged pesticides.

P-group did recognize the risky nature of rodenticides (f; 62% “Not at all safe”), but only 9% of C-group did. However, 24% of the respondents had noted in the previous question (#9), that they used rodenticides (f) “Often” or “Sometimes.” These *same* individuals perceived rodenticides (f) as “Not at all safe!” This behavioral disconnect – routine use of product perceived as unsafe –is a reflecting the disempowerment and desperation of people unable to rid themselves of pests. It illustrates the profound lack of knowledge of effective alternatives. It does include an awareness of the risk, which suggests that there may be openness to safer methods.

Aerosol use (a), shows the same disconnect– 12% spray “Often” or “Sometimes;” *and* perceive them as “Not at all safe.” 48% considered aerosol not at all safe; 30% considered them “Somewhat safe.” 18% simply have no idea. about the safety of aerosols at all.

Glue boards are regarded as safe by virtually all the P-group ; only four individuals thought they were unsafe, and one didn’t know. In the C- group, on the other hand 33% thought glue board were “not at all safe.” Only 32% thought they were safe, and 18% didn’t know. This is rather confounding, and raises questions about how glue boards have been used in C-group!

**Table 12: Perceived Safety of Pest Control Products (Pre)**

Q10	P-group	Not At All Safe	Somewhat Safe	Very Safe	Don’t Know
a	Aerosol bug sprays (e.g.,” Raid, Black Jack”)	24	15	0	9
b	Foggers, “Bug bombs”	27	11	2	8
c	“Squirters” (Tank & pump concentrates sprays)	20	16	0	12
d	Ant baits	2	10	8	28
e	Roach motels	4	18	19	7
f	Mouse/Rat bait or poisons (pellets or blocks)	31	13	0	4
g	Box mouse traps	4	16	17	11
h	Snap mouse/rat traps	33	6	5	3
i	Mouse/Rat glue traps or boards	4	21	22	1
j	Boric acid dust	21	15	3	9
k.	Moth balls or flakes	10	14	7	16

<b>l.</b>	“Tres pasitos” or “Chinese chalk”	14	5	3	26
<b>m.</b>	Repackaged or unlabeled Pesticides	33	1	1	13
<b>n.</b>	Other (for example: Tempo...)	6	1	2	29

Table 12 (cont.)

<b>Q10</b>	<b>C-group</b>	<b>Not At All Safe</b>	<b>Somewhat Safe</b>	<b>Very Safe</b>	<b>Don't Know</b>
<b>a</b>	Aerosol bug sprays (e.g.,” Raid, Black Jack”)	13	22	2	9
<b>b</b>	Foggers, “Bug bombs”	28	13	1	6
<b>c</b>	“Squirters” (Tank & pump concentrates sprays)	18	12	3	10
<b>d</b>	Ant baits	10	22	8	7
<b>e</b>	Roach motels	18	23	8	6
<b>f</b>	Mouse/Rat bait or poisons (pellets or blocks)	9	23	8	6
<b>g</b>	Box mouse traps	26	10	4	5
<b>h</b>	Snap mouse/rat traps	11	18	9	8
<b>i</b>	Mouse/Rat glue traps or boards	19	13	4	8
<b>j</b>	Boric acid dust	15	16	6	9
<b>k.</b>	Moth balls or flakes	26	10	2	8
<b>l.</b>	“Tres pasitos” or “Chinese chalk”	17	15	3	11
<b>m.</b>	Repackaged or unlabeled Pesticides	26	3	3	14
<b>n.</b>	Other (for example: Tempo...)	14	6	0	18

Snap traps were generally regarded as “Not at all safe” (33%) in P-group – the concern is about setting the trap, and of possible exposure of children and pets. This again points to a cognitive break: something that causes immediate and obvious pain is perceived as dangerous and is avoided, while the not-obvious, but profound health risks of pesticides are not even considered. C-group residents were more assured with only 11% considering them unsafe.

Boric acid dust was another product with profound confusion about safety – 36% considered it unsafe. Again, P-group was more likely to be concerned, but 15% of the C-group group concurred.

The main change pre/post (Table 13) was that fewer people considered aerosols and foggers “Somewhat safe” – they had moved into “Not at all safe.”

**Table 13: Perceived Safety of Pest Control Products (Post)**

Q10 P	P-group	Not At All Safe	Somewhat Safe	Very Safe	Don't Know
a	Aerosol bug sprays (e.g., "Raid, Black Jack")	18	2	0	0
b	Foggers, "Bug bombs"	17	3	0	0
c	"Squirters" (Tank & pump concentrates sprays)	16	4	0	0
d	Ant baits	0	8	11	1
e	Roach motels	0	5	15	0
f	Mouse/Rat bait or poisons (pellets or blocks)	14	4	4	0
g	Box mouse traps	2	6	12	0
h	Snap mouse/rat traps	9	5	4	2
i	Mouse/Rat glue traps or boards	2	6		0
j	Boric acid dust	4	9	7	0
k.	Moth balls or flakes	7	8	2	3
l.	"Tres pasitos" or "Chinese chalk"	6	4	0	#
m.	Repackaged or unlabeled Pesticides	17	0	0	3
n.	Other (for example: Tempo...)	4	1	0	14

  

Q10 P	C-group	Not At All Safe	Somewhat Safe	Very Safe	Don't Know
a	Aerosol bug sprays (e.g., "Raid, Black Jack")	17	14	1	0
b	Foggers, "Bug bombs"	22	9	0	1
c	"Squirters" (Tank & pump concentrates sprays)	16	13	1	1
d	Ant baits	5	14	12	1
e	Roach motels	5	17	6	1
f	Mouse/Rat bait or poisons (pellets or blocks)	19	10	2	1
g	Box mouse traps	7	16	8	1
h	Snap mouse/rat traps	14	11	5	0
i	Mouse/Rat glue traps or boards	9	15	8	0
j	Boric acid dust	16	11	3	1
k.	Moth balls or flakes	14	13	3	2
l.	"Tres pasitos" or "Chinese chalk"	15	11	1	3
m.	Repackaged or unlabeled Pesticides	22	5	1	2
n.	Other (for example: Tempo...)	17	6	1	4

**Q11 Which pests would a spray product, such as Raid, kill?**

The intent of this question was to gauge peoples understanding of labeling, and of pesticide specificity. It is a "trick question" because there are, of course multiple formulations carrying the Raid brand-name. The key issue was whether respondents would recognize that one product might not work for all species of insects, and was not optimal control for mammals.

In general, P-group were fairly accurate in their assessment, recognizing that fleas, bedbugs and termites were not controlled by the same sprays as cockroaches. “Not sure” was a popular choice C-group was more willing to use the spray for anything, including, fleas and bedbugs. Both groups contained a few individuals who considered a spray to be effective on mice or rats, or to use them against raccoons and opossums.

**Table 14: Perceived Lethality of General Aerosol Pesticide**

Q11	P-group	Yes	No	Not Sure
a.	Ants	27	10	11
b.	Bedbugs or Cinches	1	13	34
c.	Fleas	7	41	18
d.	Roaches	37	8	2
e.	Spiders	15	8	25
f.	Termites	3	13	32
g.	Mice	3	38	7
h.	Rats	2	39	7
i.	Waterbugs	26	12	9
j.	Opossums	1	36	11
k.	Raccoons	2	38	8
l.	Flies	24	16	6
m.	Other _____	3	4	0
Q11	C-group	Yes	No	Not Sure
a.	Ants	34	12	2
b.	Bedbugs or Cinches	12	26	9
c.	Fleas	15	20	10
d.	Roaches	38	5	5
e.	Spiders	17	21	9
f.	Termites	9	27	11
g.	Mice	3	33	12
h.	Rats	2	33	10
i.	Waterbugs	16	23	9
j.	Opossums	1	34	13
k.	Raccoons	1	35	12
l.	Flies	17	22	9
m.	Other _____	2	16	16

The pre/post change (Table 14) is a large increase in the number of residents saying “Not sure”. There are also more people making correct determinations.

**Table 14: Change in Perceived Lethality of General Aerosol Pesticide (Aggregated, %)**

Q11 P	Yes	No	Not Sure
a. Ants	5%	-11%	1%
b. Bedbugs or Cinches	7%	29%	-41%
c. Fleas	0%	-27%	-13%
d. Roaches	3%	-7%	-4%
e. Spiders	-3%	11%	-14%
f. Termites	-6%	19%	-19%

<b>g.</b>	Mice	-6%	15%	-14%
<b>h.</b>	Rats	-4%	13%	-14%
<b>i.</b>	Waterbugs	3%	12%	-18%
<b>j.</b>	Opossums	3%	14%	-22%
<b>k.</b>	Raccoons	-4%	15%	-16%
<b>l.</b>	Flies	2%	9%	-12%
<b>m.</b>	Other _____	-1%	1%	9%

**Perceived Effectiveness of Various Pest Control Measures**

This is one of the questions that may have benefited from the less intensive approach of the C-group: the P-group results seem “too good to be true” – especially given the actual observed conditions in their homes, which did not reflect the claimed understanding. The C-group had a more realistic spread of opinion on the effectiveness of measures.

Overall, both groups seem to have a fair handle on the concepts of sanitation and denial; the barriers seem to be lack of resources and hoarding – both symptoms of poverty. Many residents do not have vacuum cleaners, for instance, and buying filter bags is yet another expense. Many of the residents are reluctant to discard items because of chronic resource shortages: they might not have it when they need it, so they keep it. Again, poverty prevents purchase of proper storage: pile of garbage bags full of clothes, for instance, are common, and offer cockroaches prime harborage.

**Table 15: Perceived Effectiveness of Various Pest Control Measures (Pre)**

<b>Q 12</b>	<b>P-group</b>	<b>Least Effective</b>	<b>Somewhat Effective</b>	<b>Most Effective</b>	<b>Don't Know</b>
<b>a.</b>	Proper bait and trap placement	2	26	9	11
<b>b.</b>	Good sanitation of home	4	9	34	1
<b>c.</b>	Fix leaks, drips and standing water	2	7	36	3
<b>d.</b>	Seal all openings and entryways against pests	3	6	37	2
<b>e.</b>	Store food in clean tightly sealed containers	0	8	39	0
<b>f.</b>	Store all trash in cans with lids	0	6	40	1
<b>g.</b>	Timely trash pick up in the neighborhood	2	7	35	2
<b>h.</b>	Use of bug sprays (“Raid”)	11	24	10	2
<b>i.</b>	Rat & mouse bait or poison	9	18	9	11
<b>j.</b>	Exterminator	6	16	14	10
<b>k.</b>	Other _____	0	0	3	3
<b>Q12</b>	<b>C-group</b>	<b>Least Effective</b>	<b>Somewhat Effective</b>	<b>Most Effective</b>	<b>Don't Know</b>
<b>a.</b>	Proper bait and trap placement	2	27	9	10
<b>b.</b>	Good sanitation of home	3	13	26	6
<b>c.</b>	Fix leaks, drips and standing water	6	16	18	8
<b>d.</b>	Seal all openings and entryways against pests	5	12	24	8
<b>e.</b>	Store food in clean tightly sealed containers	3	15	24	7
<b>f.</b>	Store all trash in cans with lids	2	15	25	6
<b>g.</b>	Timely trash pick up in the neighborhood	3	13	25	6

h.	Use of bug sprays (“Raid”)	4	23	15	7
i.	Rat & mouse bait or poison	5	22	12	9
j.	Exterminator	5	15	19	9
k.	Other_____	5	4	7	15

The post-training follow up survey (Table 16) shows clear improvement in the residents understanding of pest control methods. Knowledge of “Most effective” methods virtually doubled. More residents moved the exterminator from “Most effective” to “Least Effective.”

**Table 16: Perceived Effectiveness of Various Pest Control Measures (Post)**

Q12 P	P-group	Least Effective	Somewhat Effective	Most Effective	Don't Know
a.	Proper bait and trap placement	1	4	15	0
b.	Good sanitation of home	0	3	17	0
c.	Fix leaks, drips and standing water	0	2	18	0
d.	Seal all openings and entryways against pests	0	1	19	0
e.	Store food in clean tightly sealed containers	0	0	20	0
f.	Store all trash in cans with lids	1	1	18	0
g.	Timely trash pick up in the neighborhood	1	3	16	0
h.	Use of bug sprays (“Raid”)	9	9	1	0
i.	Rat & mouse bait or poison	5	8	7	0
j.	Exterminator	8	3	7	2
k.	Other_____	0	0	1	0
Q10 P	C-group	Least Effective	Somewhat Effective	Most Effective	Don't Know
a.	Proper bait and trap placement	3	12	14	1
b.	Good sanitation of home	3	6	22	0
c.	Fix leaks, drips and standing water	5	4	21	1
d.	Seal all openings and entryways against pests	3	7	22	0
e.	Store food in clean tightly sealed containers	2	6	24	0
f.	Store all trash in cans with lids	2	6	22	2
g.	Timely trash pick up in the neighborhood	5	4	22	1
h.	Use of bug sprays (“Raid”)	5	16	9	2
i.	Rat & mouse bait or poison	8	11	8	4
j.	Exterminator	3	13	15	1
k.	Other_____	2	3	4	11

### Where Pesticides are stored

This question elicited the most consistent response – “under the kitchen sink!” (Table 17) 44% of *both* groups store their pesticides under there; another 10% under the bathroom sink. There is a segment of the populations who clearly *have* received the safety message about storing chemicals in high cabinets – about 10-12%. There is also a small group that does not “store” the products – they leave them ready to use, wherever is handy. We have observed aerosol pesticides (or substitutes – Formula 409 has a reputation in the community as lethal to bugs!) on living room end tables, bedside tables, bathrooms, and of course kitchens.

The post results are hardly different. This suggest that behavior not directly associated with pest control is less likely to be changed and retained, post-training. While the safety issues are clear, residents seem to separate storage of toxics from pest control. Child safety locks are seldom in use.

**Table 17: Storage of Pesticides (Pre)**

Q13	P-group	Never	Sometimes	Usually	N/A
a.	In whichever room they are being used, on a tabletop or dresser	7	0	2	0
b.	In the kitchen, under the sink	2	2	22	0
c.	In the kitchen, in a cabinet above 4 feet high	7	1	10	0
d.	In the basement on an open shelf	7	0	2	0
e.	In the basement in a cabinet above 4 feet	6	0	3	0
f.	In the bathroom under the sink	4	2	10	0
g.	In the bathroom in a cabinet above 4 feet	7	0	1	0
h.	Other _____	2	0	3	0
i.	Other _____	2	0	0	0
Q13	C-group	Never	Sometimes	Usually	N/A
a.	In whichever room they are being used, on a	33	4	5	5
b.	In the kitchen, under the sink	6	15	22	4
c.	In the kitchen, in a cabinet above 4 feet high	18	15	13	2
d.	In the basement on an open shelf	24	7	8	9
e.	In the basement in a cabinet above 4 feet	25	9	7	6
f.	In the bathroom under the sink	21	16	9	3
g.	In the bathroom in a cabinet above 4 feet	25	9	9	4
h.	Other _____	8	8	6	10
i.	Other _____	6	5	4	12

### Rank these “signal words” found on pesticide labels.

This was a difficult exercise for respondents. To make it easier, respondents were given cards that each had a signal word and were asked to order them. Most were not familiar with the concept of signal words; some had trouble even reading the words on the cards. The two groups had very different responses; language issues may have further confused the C-groups Hispanic members.

P-group choose most correctly for the high end (Table 18) – about 45% choose “Danger” followed by “Poison.” However, “Warning” and “Caution” were very difficult for people to distinguish between. Only five P- and two C-group members correctly ordered the entire sequence of four signal words.

<b>Table 18: Ranking Signal Words (Pre)</b>									
<b>Q14 P-group</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		
<b>Frequency that each value was chosen for each place:</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	
Poison - 4	7	16%	4	9%	13	29%	<b>21</b>	<b>47%</b>	
Danger -3	2	4%	8	18%	<b>20</b>	<b>44%</b>	15	33%	
Caution - 1	<b>17</b>	<b>38%</b>	15	33%	7	16%	6	13%	
Warning - 2	19	42%	<b>17</b>	<b>38%</b>	6	13%	3	7%	
<b>Q14 C-group</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		
<b>Frequency that each value was chosen for each place:</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	
Poison - 4	19	58%	4	6%	4	24%	<b>17</b>	<b>12%</b>	
Danger -3	2	8%	20	38%	<b>16</b>	<b>25%</b>	7	29%	
Caution - 1	<b>8</b>	<b>9%</b>	13	36%	17	38%	7	18%	
Warning - 2	15	44%	<b>8</b>	<b>18%</b>	8	18%	14	21%	

**NOTE: Green figures indicate correct order**

Interestingly, the post results (Table 19) show little change, and still no clear distinction between “Warning” and “Caution.” These terms are clearly considered synonymous, and not as escalating.

<b>Table 19: Ranking Signal Words (Post)</b>									
<b>Q14P P-group</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		
<b>Frequency that each value was chosen for each place:</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	
Poison - 4	0	0%	1	5%	7	32%	<b>14</b>	<b>64%</b>	
Danger -3	2	9%	2	9%	<b>12</b>	<b>55%</b>	6	27%	
Caution - 1	<b>10</b>	<b>45%</b>	9	41%	2	9%	1	5%	
Warning - 2	10	45%	<b>1</b>	<b>5%</b>	1	5%	1	5%	
<b>Q14 P-group</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		
<b>Frequency that each value was chosen for each place:</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	
Poison - 4	9	28%	2	6%	6	19%	<b>14</b>	<b>44%</b>	
Danger -3	1	3%	9	28%	<b>14</b>	<b>44%</b>	6	19%	
Caution - 1	<b>7</b>	<b>22%</b>	13	41%	8	25%	2	6%	
Warning - 2	14	44%	<b>6</b>	<b>19%</b>	2	6%	8	25%	

**NOTE: Green figures indicate correct order**

**PART 2 – IPM questions**

**Prior Exposure**

This question triggered the following set of questions, to measure knowledge of IPM. Most respondents had no prior knowledge of IPM – less than five in each group. Most indicated that they had heard of it during the recruitment process. Only one individual in each group thought they had any significant prior knowledge. The P-group were not asked the subsequent questions if they answered “no” to this question. C-group, however, went ahead and filled them all out. In retrospect, P group should have been asked Q 18, on attitudes: the answers from the C and the few P are very interesting, especially when compared to the post results. (Table 20). Question 16 asked who they had heard about IPM from – the P-group said PSU Outreach; the C-group, community meeting.

**Table 20: Previous Exposure to IPM**

Q15 P	Pre Yes	Post No	Post Yes	Post No
P-group	4	47	23	0
C-group	5	45	25	0

Pre-training the level of knowledge was very low, even among the handful who had heard of IPM. (Table 21) Post-training results show a difference in confidence between the P- and C-groups. This may be cultural, but is probably a reflection of the of the skills and knowledge of the trainers, and the context of the training. The P-group trainers were IPM professionals, doing one-on-on in-home visits. C-group trainers were not IPM professionals, and the training was in a group meeting. There was much less chance for individual interaction and specific problem solving. While they were effective in changing knowledge and behavior, as noted earlier, they did not have the same impact that the P-group trainers did.

**Table 21: Self-reported knowledge of IPM**

Q17	Pre				Post	
	P-Group	C-Group	P-Group	%	C-Group	%
Very little	2	3	4	18%	13	41%
Some	1	1	5	23%	9	28%
A lot	1	1	15	68%	9	28%

**Perceptions of IPM**

This question was designed as a follow-up question; very few pre-answers were collected from the P-group, unfortunately. Table 22 collects the aggregated responses, and shows a significant improvement in respondent’s knowledge. What is striking is not so much the positive change in the percentage responding, but the huge increase in *numbers* of people who were able to respond, mostly appropriately, post training.

Only three question had mixed results, indicating confusion:

- c. IPM is just another way of using pesticide chemicals.
- d. IPM never uses pesticide chemicals.
- k. All pesticides are equally dangerous

These are the most complex concepts, and clearly the messages to need to be refined. However, the basic training model was validated by the responses to this question.

Q 18	COMPOSITE	PRE - correct	POST - correct	Change
A	Sound house maintenance is an important part of IPM.	84%	<b>93%</b>	9%
B	IPM is more expensive than calling the exterminator.	67%	<b>91%</b>	25%
C	IPM is just another way of using pesticide chemicals.	39%	<b>50%</b>	11%
D	IPM never uses pesticide chemicals.	46%	<b>48%</b>	2%
E	IPM is safe and effective.	78%	<b>98%</b>	20%
F	IPM does not help protects kid's health.	84%	<b>86%</b>	2%
G	IPM helps protect adult's health.	78%	<b>90%</b>	12%
H	IPM won't help protect the environment.	65%	<b>92%</b>	27%
I	IPM uses many strategies and tactics to reduce pest problems.	79%	<b>96%</b>	17%
J	I can use IPM inside and outside the home.	88%	<b>96%</b>	9%
K	All pesticides are equally dangerous	50%	<b>54%</b>	4%
L	IPM is something I plan on using in my home.	93%	<b>96%</b>	3%

(The demographic questions that followed were summarized at the beginning of this report.)

### References Cited:

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## Surveying attitudes and knowledge about pests and pest control in Philadelphia and Camden

The Pennsylvania IPM Program (PA IPM) is conducting a collaborative research and education project with the New Jersey IPM Program at Rutgers University to better design and deliver IPM outreach programs to urban neighborhoods.

This joint effort seeks to identify and assist residents who are at risk of developing asthma due to pest infestations and pesticide exposures to adopt safer, more effective pest management in Philadelphia, PA, and Camden, NJ. The project will first attempt to better understand the knowledge, attitudes, beliefs and skills (KABS) of inner city residents via a one-on-one survey, followed by provision of personalized education on less toxic, effective interventions which residents can use to address pest control problems in their homes. The overarching goal is to provide individuals the tools for better decision-making and to minimize the health impacts of both pests and pest control methods.

Protocol: We will be interviewing about 100 households in each city, which have children 5 years old or younger, visiting in their home to ask questions about pests and how they control them. This will take about a half an hour.

A second visit, 30-45 minutes long, will provide education in IPM basics and a special kit of pest control and household cleaning materials (worth over \$25). We will explain and demonstrate how to safely use the items.

Finally, we will come back about four to six weeks later to follow up with a post-test survey. This will take about a half an hour. Participants will receive a gift card (value \$10) for their choice of either Pathmark or Rite-Aid.

Progress and effectiveness of educational intervention will be measured by comparison of results of the pre- and post- intervention interviews. Effective, multi-lingual outreach materials will be developed using the lessons learned from this project.

This work is supported by a grant from the USDA's Northeast Regional IPM Center.

For more information, please contact:

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Philadelphia School and Community IPM Partnership (PSCIP)

**Overarching Goal:**

Promote health and well-being of low-income urban residents, with special attention to infants and children, elderly and other sensitive populations.

**Major issue:** Exposure of residents to wide range of toxins in homes/schools.

**Indoor toxins**

Lead, radon, cigarette smoke, dust/dust mites, household cleaning products, cosmetics, medications, alcohol, paint, **pest “contaminants”** (rats, mice, roaches: feces, urine, dander), and **pesticides**. Pests can communicate disease, cause/exacerbate asthma, damage and reduce the value of homes, and demoralize residents.

**Key issues with pesticides**

Pesticides are inherently toxic. Formulated to be nerve & stomach poisons, if ingested. Can be absorbed through the skin and lungs if in liquid or aerosol forms. Many kinds of pesticides are readily available, legal and illegal. Pesticides are widely used and stored in homes; considered “safe”.

**What potential health effects?**

- Direct poisoning
- Long-term chronic (developmental, cancers, endocrine, etc.)
- Short and/or long term (asthma, “temporary” poisoning)
- Psychological well being (e.g. living w. roaches = disgust/desperation/shame/out-of-control of own home)
- Children, elderly and immuno-compromised are more at risk
- Pesticides are not a “solution” so must be used repeatedly
- Residents have little knowledge of pests & pesticides, and are therefore at the mercy of sales reps, advertising, pest control operators and the pests! “If some is good, more is better.”

**Solution**

Integrated Pest Management (IPM) approach:

- Looks for causes of pest problems & elimination of same
- Teaches prevention over intervention
- When intervention is needed, least toxic choices favored
- Based on knowledge of each pest AND each pesticide
- Each intervention is site-specific
- Each intervention is part of an IPM plan for long-term control

**Program**

Work strategically with key partners in Philadelphia to design, coordinate, promote, fund and disseminate mutually related programming on toxics reduction to targeted communities. Build campaign for healthy homes.

Include strong element of education and mechanisms for implementation of integrated pest management, reduction of asthma triggers, reduction in pesticide use, how to choose less toxic products, how to safely handle and store pesticides, how to contract a reputable pest control operator, and IPM practices for long-term pest suppression.

# Control Pests in Your Home

Pests such as cockroaches, mice, rats, fleas, flies and other bugs, are not just a nuisance. They can make asthma or allergies worse, and spread diseases. Bug sprays that are often used to control pests can also cause health problems, especially for pregnant women and young children.

We can help you safely control bugs and rodents in your home and community! Penn State has a **Philadelphia-based program** that wants to help you.

1. If you have children 5 years old or younger, we would like to visit you in your home to ask you questions about pests and how you control them. This will take about a half an hour.
2. In appreciation for your time and input, we will give you a special kit of pest control and household cleaning materials (worth over \$25!) and explain how to safely use the items. (We can schedule this half hour visit for another time if that is more convenient for you.)
3. We would like to come back about four to six weeks later to ask you a few more questions. This will take about a half an hour. When you complete this final part of the program you will receive a gift card (value \$10) for your choice of either Pathmark or Rite-Aid.

We've been in Philadelphia for almost 5 years, and last year we did a similar project with some of your neighbors in Guildford Place. You may call us for help or advice on how to control pests at anytime – we will continue to work with your community.

We are the **Philadelphia School and Community IPM Partnership (PSCIP)**, based in West Philadelphia, in the Kirkbride Center: 111 North 49<sup>th</sup> Street, Suite KN3-100, 3<sup>rd</sup> Floor North, Philadelphia PA 19139. You can phone us at **215-471-2200 extension 109**, if you have any questions. Our fax number is 215-271-2231.

**Please fill out and return the survey invitation (on blue paper) if you would like to participate.**





## *Invitation for Study Participation...*

Penn State University is conducting a study of the pest problems faced by households with children in your neighborhood. We would like to interview the head of your household about current pest problems. In return we will provide expert advice on how to control your pest problems, and also how to provide safe pest control in homes with children. Your participation in this study is voluntary. If you do decide to participate your answers will be completely confidential, and you will receive compensation for completing the study. If you are interested in participating, please answer these questions and return the form, Thank you!

1. How many children in each age group below live in your household?  
 less than 1 year old  
 1-5 years old  
 6-11 years old  
 12-17 years old
2. Has your household had a pest problem in the past? By pests we mean fleas, mice, rats, roaches, ants, bedbugs, waterbugs, pigeons, squirrels or any other types of pest.  
 yes       no
3. Have you ever heard of Integrated Pest Management (IPM)?  
 yes       no
4. Are you willing to participate in a Penn State study on pest management in households with children?  
 yes       no

5. If you are willing to participate in a study, please provide your contact information:

Name: \_\_\_\_\_

Address: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Email: \_\_\_\_\_

6. Best time of day to reach you:  
 Mornings       In the afternoon       After 5PM       After 8PM

If you have any questions, we can be reached at 215-471-2200 Extension 109 or [ipmsurvey@psu.edu](mailto:ipmsurvey@psu.edu)

Penn State University Philadelphia Outreach Center, PA IPM Program, The Kirkbride Center  
111 N. 49<sup>th</sup> Street, Ste. KN3-100, 3<sup>rd</sup> Floor North, Philadelphia, PA 19139 - Fax: 215-471-2231

# IPM Main Survey

PA IPM Program 215-471-2200  
(v.5.2.3, 6/12/07)

**Survey Number:**

**Interviewer:**

*My name is \_\_\_\_\_ and I work with the Pennsylvania IPM program and Penn State University. Penn State is conducting a community outreach project to learn how Philadelphia residents feel about pest problems and pest control.*

*We need to start by going over some information so that you can give us your Informed Consent to participate. We'll ask you to sign the form, and give you a copy of it. If you don't understand any part of it, please ask us to explain it.*

***Read Informed Consent Form; have interviewee sign, leave them a copy.***

*Ok – we're ready to get started!*

*The first set of questions will help us identify the pest history and pest control actions that have taken place in your home. For this survey, the term pest means insects (roaches, ants, fleas, bedbugs, etc.), rats, mice, squirrels, raccoon, opossums, pigeons, other birds or any other living thing that has invaded your home.*

*Then we will ask you a few questions about yourself and your household. Remember – this survey is confidential; no one will be able to identify you or your answers.*

*Thank you for agreeing to be part of this survey about pest problems in households with young children.*

## Section 1. Attitudes, Knowledge, and Behaviors Related to Pests and Pest Control

1. How often do you experience problems with the following pests?

*(Circle answer for each answer)*

	Never	Rarely	Season-ally (When)	Some- times	Often	Don't know	Notes
<b>Ants</b>	1	2	3	4	5	0	
<b>Bedbugs or "Cinches"</b>	1	2	3	4	5	0	
<b>Fleas</b>	1	2	3	4	5	0	
<b>Roaches</b>	1	2	3	4	5	0	
<b>Spiders</b>	1	2	3	4	5	0	
<b>Termites</b>	1	2	3	4	5	0	
<b>Waterbugs</b>	1	2	3	4	5	0	
<b>Mice</b>	1	2	3	4	5	0	
<b>Rats</b>	1	2	3	4	5	0	
<b>Opossums</b>	1	2	3	4	5	0	
<b>Raccoons</b>	1	2	3	4	5	0	
<b>Squirrels</b>	1	2	3	4	5	0	
<b>Other _____</b>	1	2	3	4	5	0	

2. Please tell me how whether you agree or disagree with the following statements.

	<b>(Circle answer)</b>	<b>Agree</b>	<b>Dis- agree</b>	<b>Neutral/ Don't Know</b>
<b>a</b>	The presence of pests in my home is a problem for me.	2	1	0
<b>b</b>	I am satisfied with the pest control measures I use to get rid of household pests.	2	1	0
<b>c</b>	There is really nothing I personally can do about pests my house.	2	1	0
<b>d</b>	The presence of pests in my home can be harmful to my family's health.	2	1	0
<b>e</b>	The presence of pests in my home can be frustrating and embarrassing.	2	1	0
<b>f</b>	Chemicals (bug sprays, bug bombs, foggers, rat/mouse bait, etc...) can be harmful to my family's health.	2	1	0
<b>g</b>	Children are more harmed by chemicals than are adults.	2	1	0
<b>h</b>	Chemicals must be used to control pests.	2	1	0
<b>i</b>	Pests are a problem for most of the households in my neighborhood.	2	1	0
<b>j</b>	Pests are not a problem in my neighborhood.	2	1	0
<b>k</b>	I've had pest problems in the past but I know how to get rid of the pests.	2	1	0

3. Where do you get information on what works best to get rid of pests?

*(Circle all that apply)*

1. Books and pamphlets
2. From the exterminators
3. Phone book ads
4. Newspaper ads
5. Newspaper articles
6. Penn State Extension (outreach center)
7. Product labels
8. Store where I buy pest control products
9. The Internet
10. Workshops
11. From friends, neighbors, family, “word of mouth”
12. Janitorial or maintenance staff
13. Other \_\_\_\_\_

4. How often do you buy pest control products from the following types of stores?

	<b>(Circle answer)</b>	<b>Never</b>	<b>Sometimes</b>	<b>Often</b>
<b>a</b>	Neighborhood corner store	1	2	3
<b>b</b>	Neighborhood discount store	1	2	3
<b>c</b>	Grocery store (PathMark, Thriftway, etc)	1	2	3
<b>d</b>	Dollar store (Dollar Tree, Dollar Express)	1	2	3
<b>e</b>	Hardware store (True Value, Ace)	1	2	3
<b>f</b>	Major retailers (Wal-Mart/Kmart/Home Depot)	1	2	3
<b>g</b>	Professional pest control company (Orkin, Terminex)	1	2	3
<b>h</b>	Pest control supply store (Humphrey’s, Honest Lou, Pest-Free Maintenance)	1	2	3
<b>i</b>	The Internet	1	2	3

5. Do you or your landlord hire someone to take care of your pest problems (extermination services)? *(Circle One)*

1. Yes *(go to next question)*
0. No *(go to question 8)*

6. If so, who is hired to do the work? *(Circle One)*

1. Licensed Pest Control Technician
2. Non-licensed Pest Control Technician
4. Maintenance/janitorial staff
5. Handyman
6. Not sure

7. I'm going to give you four cards (*blue cards*). Please show me the order that they are important for you in choosing pest control products.

(Record rank 1 to 4, by importance)

- a. Effectiveness, power \_\_\_\_\_
- b. Cost \_\_\_\_\_
- c. How Fast It Works \_\_\_\_\_
- d. Product Safety \_\_\_\_\_

8. What do most of your neighbors use to get rid of roaches? I have another set of cards – can you put them in order, also? (*White cards; Note 1 to 5, by importance*)

- a. Foggers \_\_\_\_\_
- b. Sprays \_\_\_\_\_
- c. Baits \_\_\_\_\_
- d. Roach motels \_\_\_\_\_
- e. Boric acid dust \_\_\_\_\_

9. How often do you use the following pest control products listed below?

	(Circle answer)	Never	Rarely	Seasonally (When)	Sometimes	Often
<b>a</b>	Aerosol bug sprays (e.g., "Raid, Black Jack")	1	2	3	4	5
<b>b</b>	Foggers, "Bug bombs"	1	2	3	4	5
<b>c</b>	"Squirters" (Tank & pump concentrates sprays)	1	2	3	4	5
<b>d</b>	Ant baits	1	2	3	4	5
<b>e</b>	Roach motels	1	2	3	4	5
<b>f</b>	Mouse/Rat bait or poisons (pellets or blocks)	1	2	3	4	5
<b>g</b>	Box mouse traps	1	2	3	4	5
<b>h</b>	Snap mouse/rat traps	1	2	3	4	5
<b>i</b>	Mouse/Rat glue traps or boards	1	2	3	4	5
<b>j</b>	Boric acid dust	1	2	3	4	5
<b>k</b>	Moth balls or flakes	1	2	3	4	5
<b>l</b>	"Tres pasitos" or "Chinese chalk"	1	2	3	4	5
<b>m</b>	Repackaged or unlabeled Pesticides	1	2	3	4	5
<b>n</b>	Other (for example: Tempo...)	1	2	3	4	5

10. How safe do you think each of the pest control products is for people:

	(Circle answer)	Not At All Safe	Somewhat Safe	Very Safe	Don't Know
<b>a</b>	Aerosol bug sprays (e.g., "Raid, Black Jack")	1	2	3	4
<b>b</b>	Foggers, "Bug bombs"	1	2	3	4
<b>c</b>	"Squirters" (Tank & pump concentrates sprays)	1	2	3	4
<b>d</b>	Ant baits	1	2	3	4
<b>e</b>	Roach motels	1	2	3	4
<b>f</b>	Mouse/Rat bait or poisons (pellets or blocks)	1	2	3	4
<b>g</b>	Box mouse traps	1	2	3	4
<b>h</b>	Snap mouse/rat traps	1	2	3	4
<b>i</b>	Mouse/Rat glue traps or boards	1	2	3	4
<b>j</b>	Boric acid dust	1	2	3	4
<b>k.</b>	Moth balls or flakes	1	2	3	4
<b>l.</b>	"Tres pasitos" or "Chinese chalk"	1	2	3	4
<b>m.</b>	Repackaged or unlabeled Pesticides	1	2	3	4
<b>n.</b>	Other (for example: Tempo...)	1	2	3	4

11. Which pests do you think a spray product like "Raid" would be effective against?

	(Circle response)	Yes	No	Not Sure
<b>a.</b>	Ants	2	1	0
<b>b.</b>	Bedbugs or Cinches	2	1	0
<b>c.</b>	Fleas	2	1	0
<b>d.</b>	Roaches	2	1	0
<b>e.</b>	Spiders	2	1	0
<b>f.</b>	Termites	2	1	0
<b>g.</b>	Mice	2	1	0
<b>h.</b>	Rats	2	1	0
<b>i.</b>	Waterbugs	2	1	0
<b>j</b>	Opossums	2	1	0
<b>k.</b>	Raccoons	2	1	0
<b>l.</b>	Flies	2	1	0
<b>m.</b>	Other _____	2	1	0

12. How effective do you think the following pest control measures are?  
 (Circle answers)

		Least Effective	Somewhat Effective	Most Effective	Don't Know
a.	Proper bait and trap placement	1	2	3	4
b.	Good sanitation of home	1	2	3	4
c.	Fix leaks, drips and standing water	1	2	3	4
d.	Seal all openings and entryways against pests	1	2	3	4
e.	Store food in clean tightly sealed containers	1	2	3	4
f.	Store all trash in cans with lids	1	2	3	4
g.	Timely trash pick up in the neighborhood	1	2	3	4
h.	Use of bug sprays ("Raid")	1	2	3	4
i.	Rat & mouse bait or poison	1	2	3	4
j.	Exterminator	1	2	3	4
k.	Other _____	1	2	3	4

13. Where do you usually store your pest control products?

		Never	Sometimes	Usually	N/A
a.	In whichever room they are being used, on a tabletop or dresser	1	2	3	0
b.	In the kitchen, under the sink	1	2	3	0
c.	In the kitchen, in a cabinet above 4 feet high	1	2	3	0
d.	In the basement on an open shelf	1	2	3	0
e.	In the basement in a cabinet above 4 feet	1	2	3	0
f.	In the bathroom under the sink	1	2	3	0
g.	In the bathroom in a cabinet above 4 feet	1	2	3	0
h.	Other _____	1	2	3	0
i.	Other _____	1	2	3	0

14. I'm going to give you four cards (*yellow cards*) again. These are "signal words" found on pesticide labels. Please show me how would you rank them from least dangerous to most dangerous? (Record rank 1 to 4, from least to most toxic)

- Poison \_\_\_\_\_
- Danger \_\_\_\_\_
- Caution \_\_\_\_\_
- Warning \_\_\_\_\_

## Section 2. IPM Questions

15. Have you ever heard of IPM (Integrated Pest Management)? (*Circle answer*)

1. Yes (*go to question 16*)
0. No (*go to next section*)

16. If yes, where did you hear about IPM? (*Circle answer*)

1. Community meeting
2. Co-worker
3. PSU Cooperative Extension Office
4. Workshop
5. Neighbor
6. Other

17. How much do you know about IPM? (*Circle answer*)

1. Very little
2. Some
3. A lot

18. I'm going to read you some statements about Integrated Pest Management. Please tell me whether you think they are true or false. (*Circle answer*)

		True	False	Not Sure
<b>a</b>	Sound house maintenance is an important part of IPM.	2	1	0
<b>b</b>	IPM is more expensive than calling the exterminator.	2	1	0
<b>c</b>	IPM is just another way of using pesticide chemicals.	2	1	0
<b>d</b>	IPM never uses pesticide chemicals.	2	1	0
<b>e</b>	IPM is safe and effective.	2	1	0
<b>f</b>	IPM does not help protect kid's health.	2	1	0
<b>g</b>	IPM helps protect adult's health.	2	1	0
<b>h</b>	IPM won't help protect the environment.	2	1	0
<b>i</b>	IPM uses many strategies and tactics to reduce pest problems.	2	1	0
<b>j</b>	I can use IPM inside and outside the home.	2	1	0
<b>k</b>	All pesticides are equally dangerous	2	1	0
<b>l</b>	IPM is something I plan on using in my home.	2	1	0

We will now ask you a few questions about yourself and your household. Remember – This survey is confidential; no one will be able to identify you or your answers

### Section 3. Demographic and Housing Characteristics

19. How old are you (*in years*)? \_\_\_\_\_
20. Race: Are you... (*Circle answer*)
1. African American/Black
  2. Asian
  3. Caucasian/White
  4. Other racial group
21. Ethnicity: Are you Latino or Hispanic? (*Circle answer*)
1. Yes
  2. No
22. Do you have a high school diploma or GED? (*Circle answer*)
1. Yes
  2. No (*Skip to question 24*)
23. Did you go to school beyond high school? (*Circle answer*)
1. Certification (CNA, etc) or Trade school
  2. Associate's degree, etc.
  3. 4 year college education or higher

*I'm going to ask you about the people who live in your household:*

24. How many **children live** in your households?
- Boys \_\_\_\_\_ Ages \_\_\_\_\_
- Girls \_\_\_\_\_ Ages \_\_\_\_\_
25. How many **children visit** in your home regularly?
- Boys \_\_\_\_\_ Ages \_\_\_\_\_
- Girls \_\_\_\_\_ Ages \_\_\_\_\_
26. How many **adults** (18-64 years old) live in your households?
- Men \_\_\_\_\_ Ages \_\_\_\_\_
- Women \_\_\_\_\_ Ages \_\_\_\_\_
27. How many **seniors** (65 or older) live in your households?
- Men \_\_\_\_\_ Ages \_\_\_\_\_
- Women \_\_\_\_\_ Ages \_\_\_\_\_
28. Considering all income sources from all members of your household, in an *average* month what is the total income of your household in dollars?
- \$ \_\_\_\_\_

29. In the past 12 months has anyone in your household received assistance from any of the following state or federal programs? (*Circle all that apply*)

- a. TANF/welfare cash assistance
- b. Food stamps
- c. WIC program
- d. Free or reduced price school breakfast or lunch program
- e. Medicaid
- g. CHIP health insurance program
- h. ACCESS

31. Do you own or rent your current place of residence? (*Circle answer*)

- 1. Own (*skip to question 33*)
- 2. Rent
- 0. Other

32. Do you currently live in public housing? (*Circle answer*)

- 1. Yes
- 0. No

33. How many years have you lived in your current home?

\_\_\_\_ Years

34. How many years have you lived in your current neighborhood?

\_\_\_\_ Years

Notes: \_\_\_\_\_

*Thank you – that’s all the questions we have for you at this time. We would like to make an appointment to come back and give you an IPM Solutions Kit and explain how to use it. The kit contains pest control and cleaning materials, and is worth over \$25! Then, we’ll come back about 6 weeks after that to see how the kit is working for you, and complete the survey. At that time we will give you a \$10 gift card for either **Pathmark** or **RiteAid** – your choice – to thank you for your participation. Again, your answers to this survey will remain completely confidential, and we greatly appreciate your willingness to help.*

*When would it be convenient for you to have us bring the IPM Solutions Kit – the visit will again take about half an hour or so? (Fill out date and time here, and on a “Your next appointment...” form and give it to the participant)*

**Day** \_\_\_\_\_ **Date** \_\_\_\_\_ **Time** \_\_\_\_\_ **AM/PM**

*Thank you, you have been very helpful, and your participation will help us to design safe and more effective pest management programs for your community. We look forward to seeing you at our next appointment!*

## Additional Resources included in IPM Kit

Format	Title	Author
1 DVD	Arrest the Pest & Dust does not Discriminate (English & Spanish	Rutgers
2 Hand out	Kit contents	
3	Child-safety lock instructions	(manuf.)
4	DIY Cleaning compounds	Organic Gardening
5 Brochures	Pest problems? Kick them out with IPM!	PA IPM
6	Got Roaches?	PA IPM
7	Got Ants?	PA IPM
8	Evict & Exile Mice	Cornell
9	PA IPM	PA IPM
10	PSCIP	PA IPM
11	Sun & Earth + coupon	(manuf.)
12	Lyme Disease	PA IPM
13	West Nile Virus	PA IPM
14	Is something Biting me?	PA IPM
15	Identifying common household insects in PA	PA IPM
16	Reading a Pesticide Label	PSU Pest Ed
17	Disposing of a Pesticide	PSU Pest Ed
18	Choosing a Pest Control Company	PSU Pest Ed

## Contents of the IPM Kit - And where to get more!

What	Why	Where to get more
Roach stations	Long-term control	Pest control stores, hardware stores
Ant Stations	Long-term control	Pest control stores, hardware stores
Boric Acid	Long-term control	Pest control stores, hardware stores
Fly swatter	Instant control!	Dollar stores
Fly trap	Nuisance control	Grocery, dollar, hardware & pest control stores
Glueboards	Catch pests, monitoring	Pest control stores, hardware stores
No-touch trap	Catch pests, monitoring	Dollar & pest control stores
Insect magnet	Catch insects, monitoring	Pest control stores, hardware stores
Snap trap	Catch mice	Grocery, dollar, hardware & pest control stores
Copper mesh	Plug holes against mice	Dollar stores (pot scrubbers)
Caulk	Seal crevices against insects	hardware stores
Caulk gun	For applying caulk	Dollar & hardware stores
Child safety locks	To secure cabinets with poisons	Hardware & housewares stores
Gloves	To protect your hands	Grocery, dollar & house wares stores
Green soap	Non-toxic cleaning	Whole Foods, Health food stores
Vinegar	Non-toxic cleaning	Whole Foods, grocery stores
Baking Soda	Non-toxic cleaning	Whole Foods, grocery stores
Borax	Non-toxic cleaning	Whole Foods, grocery stores
Spray bottle	Mixing cleaning solutions	Dollar stores

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### ***We would like to thank the following companies for donation their products:***

**Sun & Earth** 221 King Manor Drive, King of Prussia, PA 19406

*For donating:* All-purpose Cleaner, Ultra Dishwashing Liquid, and Glass Cleaner

**Whole Foods** 2100 Pennsylvania Avenue (Hamilton Street), Philadelphia

*For donating:* Baking soda and white vinegar

**Victor (Woodstream)** PO Box 327, Lititz, PA 17543

*For donating:* Fly Guard, Mouse Glue Traps, EZ Set Mousetraps, and Poison Free Insect Magnets

## Interviewer Training

IPM Survey  
PA IPM Program

## Agenda

■ Introductions	15 min
■ Why the Survey; funding; rationale	10
■ Phila & NJ - respective roles	10
■ Interviewer training	90
■ Survey form	60
■ Lunch	30
■ Roleplays: <i>practice!</i>	90
■ Conclusion	10

- ## Purpose of training
- Ensure understanding
  - Ensure quality
  - Ensure consistency
  - Compliance with IRB

- ## Training Methods
- Interviewing skills training (this!)
  - Interview Booklet review
  - Practice interviews (training)
  - Supervised interviews (actual)

- ## Purpose of Survey
- Research residents KABS on pests & pesticide use
    - Knowledge
    - Attitudes
    - Behavior
    - Skills

- ## Purpose of survey - cont.
- Aid development of new and improved outreach & education tools
  - Deliver information about pests, pesticides and IPM
  - Obtain quantified data on pest burden (pre-) and reduction (post-intervention)

## Roles - Phila & NJ

- Philadelphia
  - Lead partner - admin
  - Developed survey, etc
  - Developed kit & booklet
  - Will provide items for kits
- NJ
  - Developed DVD
  - Provide NJ surveyors
  - Will do initial data entry & analysis (NJ only?)

## Selecting Residents for Participation

- Low income
- Children <6 yrs old in Household
- Complete screening form
  - Name
  - Address
    - Cluster vs. diversity...
  - Phone number
- Contactable & returns calls!

## Contacting Residents

- Prompt
- Polite
- Explain entire process:
  - 3 visits over 6-8 weeks, etc.
- Schedule first visit
- Send reminder postcard, if possible
  - More than 3 days out

## Protecting Residents

- Privacy
- Sensitive topic
- IRB restrictions
- Exception:
  - Child abuse must be reported

## Conducting the Interview

## Developing Rapport

- Introduce yourself
- Friendly, polite
- Independent, unbiased, honest
- Appearance, verbal manner, body language
- "Bracket" disgust, disapproval, impatience

## Motivating participation

- Explain benefit to them & their family
  - Understand why pests are problem
  - Learn new ways of controlling pests
  - Get free IPM kit & instructions
  - Reduce pests in home
- Also: benefit of survey
  - Help others more effectively
  - Reduce pests in neighborhood

## Helping resident be responsive

- May never have been interviewed before
  - Asked for their opinions
- Use verbal cues:
  - "Un-huh, I see."
  - "Let me get that down."
  - "I see" (repeat answer).
  - "I want to make sure I have that right."
  - "It's useful to get your ideas on this."
  - "Thanks, it's important to get your opinion on that."
  - "I see, that's helpful to know."

## Asking questions

- Ask the questions exactly as they are worded in the questionnaire
  - Ask the questions in the order in which they are presented in the questionnaire
  - Ask every question specified in the questionnaire
  - Read each question slowly (two words per second)
  - Repeat questions that are misunderstood or misinterpreted
  - Do not let the respondent stray from the questions in the interview
  - Keep nonverbal cues as neutral as possible

## Ensuring Understanding

- Try *not* to rephrase
  - Do not ask new or additional questions
  - Repeat the question
  - Give an expectant pause
  - Repeat the respondent's reply
  - Make neutral questions or comments
  - Probe carefully
- "Anything else?"
  - "Any other reason?"
  - "Any others?"
  - "How do you mean?"
  - "Could you tell me more about your thinking on that?"
  - "Would you tell me what you have in mind?"
  - "What do you mean?"
  - "Why do you feel that way?"
  - "Which would be closer to the way you feel?"

## Ensuring Non-Bias

- When asking questions be careful:
  - In the way you pose the questions
  - Not to introduce your own ideas into a probe
  - Of adding certain verbal emphasis
  - To maintain neutral body language.
- Not to destroy your neutrality
- Be careful not to filter out portions of the message that alter the true response.

## Getting good answers

- If the answer is incomplete or vague, ensure that the question is understood
- Sometimes, you may select two or more responses (not just one) from the set and ask the interviewee which one best matches his or her answer.
  - This should be done, however, only as a last resort and only after giving the respondent ample time to respond.

## Length of Interview

- You are then under some obligation to adhere to the time estimate (30-60 min)
- Interviewees may prolong their answers by adding examples, critical incidents, or other stories
- If neither you nor the interviewee has a time problem, this may be acceptable.
- You may use techniques to speed up the interview to not lose valuable answers at the end

## Sensitivity to Residents Burden

- Be aware of the amount of work the interviewee needs to go through to answer
- If a relatively unimportant question requires a significant amount of time or energy by the interviewee, it may not be worth pursuing.
- Be aware of any anxiety or anger building in the interviewee
  - Change tactics
  - If necessary, terminate interview

## Survey activities

## Scheduling

- Schedule appointments to allow travel time and breaks in between
- Explain procedures, including Informed Consent Form (ICF) when scheduling first interview.
- No follow-up visits may be scheduled if the ICF is not signed.

## Logging Contacts

- All contacts with residents must be recorded, including:
  - Date & time
  - Person contacting
  - Outcome of contact
- A spreadsheet of contacts is maintained

## Materials for interview

- Ensure that you have *all* materials for *each* interview before going into field
  - Use the Checklist
- Appearance
  - Neat & clean
  - Appropriate dress
  - ID visible

## Conducting the Initial Interview

- Survey session (next on the agenda)
  - Gives detailed instructions
- Informed Consent Form
  - Must be read
  - May not be modified
  - Must be signed
  - Give resident a copy

## No shows

- If the resident is not at home at the time of the interview:
  - Wait 15 min if practical (or safe)
  - Leave a "Sorry we missed you..." form
- Follow-up with phone calls...
  - Later that day
  - Next day
  - Next week

## Refusals

- In spite of the arrangements, some residents may decide they do not wish to participate.
- They may not refuse outright, but may exhibit
  - Hesitancy
  - Reservation
  - Hostility
- Learn to recognize "No!"

## Common objections

- Too busy; don't have the time
- Not interested in the study or surveys
- Don't want to be bothered or involved
- Waste of time and money
- Dislike interfering do-gooders
- Too ill, don't feel well enough
- No problems, don't need this

## Special populations

- **See notes**
- Seniors
- Hearing loss
- Vision impaired
- Physical impairments
- Language function limitations
- Mobility limitations

## Aborted interviews

- If you find that you are not getting anywhere with a respondent, try to end the contact **before** you get a final "No."
- Always maintain a pleasant, courteous manner.
- Do not antagonize or alienate the respondent.
- **Try to keep the door open for future contacts.**
- After leaving the respondent, record the situation *completely*
- Tell the participant that they will receive the gift card (\$10) and that they may be contacted at a later date to finish interview if interested.

## Scheduling Education Visit

- At end of the first interview:
  - Ask for convenient time
  - 1-3 weeks out
  - Record on survey form
  - Give participant a "Your next appointment form..."
  - Record in contact log & calendar
- If participant cannot schedule at that time call back, as soon as possible
  - Until a new appointment is scheduled
  - Send resident a postcard reminder

## Post-interview

- Check form
  - Participant ID number
  - Your ID number
- Survey Questions
  - Skipped answers - fill in or note
  - Illegible handwriting - translate!
  - Unclear markings or abbreviations - annotate

## Conducting Educational Visit

- Same conditions as all contacts!
- Review entire survey procedure
- Review today's purpose & agenda
- Go through education script
- Explain & demo kit components
- Ask if they will participate in monitoring

## Monitoring

- Explain
- Place dated monitors:
  - Under stove
  - Behind fridge
  - Under sink
- Explain:
  - Don't move
  - Don't get wet or crush
  - Allow collection by survey staff - about 1 week
- Note & schedule pick-up!

## Schedule Follow-Up Visit

- At end of the educational session:
  - Ask for convenient time
  - 4-6 weeks out
  - Record on survey form
  - Give participant a "Your next appointment form..."
  - Record in contact log & calendar
- If participant cannot schedule at that time call back, as soon as possible
  - Until a new appointment is scheduled
  - Send resident a postcard reminder

## Conducting Follow-Up Interview

- Same conditions as all contacts!
- Review entire survey procedure
  - Review today's purpose & agenda
- Complete survey
  - Note esp. changes to Parts 1 & 2
  - Part 3 - any demographic changes?
- Thank resident
  - Tell them that their gift card will be mailed
  - Inform them that they may receive a follow-up phone call, 30-90 days later

## Post-interview

- Check form
  - Participant ID number
  - Your ID number
- Survey Questions
  - Skipped answers - fill in or note
  - Illegible handwriting - translate!
  - Unclear markings or abbreviations - annotate

## Wrap-Up Procedures

- Turn in all forms, etc.
  - Ensure that all personal information about resident (names, directions, etc) has been turned in or destroyed!
- Complete all contact logs
- Ensure thank you letter & gift card sent

## Quality Control

- Data quality is an ongoing process
  - Training - this!
  - Interview - on-the-job learning
  - Post-interview - self-review
  - Office review
  - Validation - selected residents called

## Child Abuse Protocol

- Obligated by ethical standards, the IRB and the law to report child abuse if you:
  - Observe physical abuse
  - If a child tells you they are abused
- **Call the state hotline:**
  - PA:800-932-0313
  - NJ:800-792-8610
- Reporting is anonymous
  - Reporting confers "good faith" immunity from liability
- Tell the survey Office that you have made a call!

## Interviewer Safety Protocol

- Protect yourself!
- **See written policy**
  - Notify supervisor of schedule
  - Carry cell phone
  - Work in pairs
  - Leave if situation is not safe
- Call 911
  - Call supervisor/office

## Other Issues?

- Questions
- Concerns
- Areas to explore

# Safety Protocols<sup>1</sup>

## Introduction

The maintenance of staff safety and the effective handling of client emergencies are of the utmost importance. Research staff that work in the field face special circumstances. These may include working in unfamiliar environments and meeting with clients that they do not know well, or at all. The policy that follows is designed to address these concerns. Staff must review and understand it before conducting research in the field.

## Communication Equipment

Staff teams conducting field screening should carry a cell phone with them at all times. This will help to ensure their ability to summon emergency assistance or consult with supervisory staff when appropriate. The phone should be kept on so that supervisory staff members are able to initiate communication with them.

## Schedule Notification

Staff should always verify their schedule with their supervisor before going into the field. This includes the time, date, and location of screening interviews.

## Physical Surroundings

Whenever possible, staff should not meet with potential survey participants alone. Rather, staff should operate in pairs. When screening participants in an enclosed area, staff should sit between the potential participant and the exit to help ensure their ability to exit the space if necessary. If upon arrival at a home, it appears unsafe or inappropriate, the screening interview should be terminated or conducted at the doorstep only.

## Additional Safety Tips

- Staff should carry only enough money for their immediate needs (lunch, transportation) when working in the field.
- Staff should learn activity periods in the neighborhoods and alter time of visits to avoid setting a routine.
- Staff should be courteously alert, maintain vigilance, and convey the idea that he/she is expected somewhere if approached by strangers.

## Assessing and Responding to Threats

All staff are expected and encouraged to pay attention to their personal safety during all aspects of their work. We encourage staff to make their own safety their first concern. In assessing for safety, the goal should be to minimize potential threats by recognizing the earliest possible indicators that a safety threat exists.

Indicators that a survey participant *may become* a threat to a staff member's personal safety – in either the field or clinic -- include but are not limited to the following:

- Client is agitated.
- Client is unwilling to interview in spaces other than own apartment or room.

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<sup>1</sup> Excerpted and modified from: *New York City Health and Nutrition Examination Survey Field Procedures Manual*, NY Department of Health & Mental Hygiene, May 2004., Section 12.  
[www.nyc.gov/html/doh/downloads/pdf/hanes/HANES\\_training\\_fieldprocedures.pdf](http://www.nyc.gov/html/doh/downloads/pdf/hanes/HANES_training_fieldprocedures.pdf)

- Client uses inappropriate and/or suggestive language towards staff.
- Client is physically intimidating or appears to have inappropriate physical boundaries.
- Client either reports or appears to be under the influence of drugs or alcohol.
- Staff member's intuition tells them that they may not be safe.

If any of these instances occur at *ANY* point during screening or interview, the staff member's response should include the following:

Inform the client that you need to take a break to check in with your supervisor for technical assistance or to check your schedule. If after consultation by cellphone it is decided that the interview should not move forward, inform the client that the interview is ending due to technical difficulties/and or problems with the survey.

Tell the client that they will receive the gift card (\$10) as payment for their participation thus far and inform them that they may be contacted at a later date to finish interview if interested. If level of threat appears to have escalated, follow emergency protocol outlined below.

Indicators that a client *has become* a threat to a staff member's personal safety include but are not limited to the following:

- Client is agitated and cannot calm down
- Client is verbally or physically threatening
- Client has a weapon such as a knife or a gun
- Client is attempting to block the exit by standing in front of it and refusing to move
- Client is disruptive and appears to be under the influence of alcohol or another drug
- Client attempts to assault staff member
- Staff member's gut feeling that they are not safe

If any of these occur, the staff member's response should include the following:

- Staff member should remove him/herself from the area and get to a safe place. For clinic staff, this may mean another part of the clinic. For field staff, a safe place is preferably one that is populated and/or where site personnel is present.
- If the staff member must immediately call 911 to maintain their personal safety, they should do so. If they don't need to do this immediately, they should call their supervisor to report the incident and decide upon next steps. They should follow their supervisor's directions.
- The supervisor must report such incidents to the Study Director (Dr. Gwynn) as soon as it is possible to do so. She will provide consultation as necessary.
- When necessary, the supervisor or the deputy director will contact the agency's on-call medical consultant for additional assistance.

### **Assessing and Responding to Client Medical Emergencies and Psychiatric Emergencies**

Survey staff members are encouraged to recognize client emergencies, and **call 911 for assistance**. Indications of a medical emergency include but are not limited to the following:

- Difficulty breathing
- Pain in the chest

- Numbness on one side of the body
- Profuse bleeding
- Severe Pain
- Feeling faint or loss of consciousness
- Seizures
- Confusion or disorientation
- Inability to walk

Staff member should:

- Call 911 immediately
- Keep resident calm while waiting for ambulance.
- Provide relevant information to paramedics.
- Document incident, including badge numbers of paramedics, police or fire department personnel. Submit documentation to supervisor. Supervisory staff member should notify departmental administrators as soon as possible to report situation.

**Miscellaneous Situations** – Any survey staff member who recognizes a threat to their own well-being or that of the client that does not fit the situations outlined above should immediately contact their supervisor for consultation. The supervisor should involve departmental administrators as necessary. **When in doubt staff should always err on the side of caution!**



April 2006

Esta hoja informativa es  
disponible en español  
[www.childwelfare.gov/pubs/  
factsheets/sp\\_signs.cfm](http://www.childwelfare.gov/pubs/factsheets/sp_signs.cfm)

# Recognizing Child Abuse and Neglect: Signs and Symptoms



The first step in helping abused or neglected children is learning to recognize the signs of child abuse and neglect. The presence of a single sign does not prove child abuse is occurring in a family; however, when these signs appear repeatedly or in combination you should take a closer look at the situation and consider the possibility of child abuse.

## What's Inside:

- Recognizing child abuse
- Types of abuse
- Signs of physical abuse
- Signs of neglect
- Signs of sexual abuse
- Signs of emotional maltreatment
- Resources



If you do suspect a child is being harmed, reporting your suspicions may protect the child and get help for the family. Contact your local child protective services agency or police department. **For more information about where and how to file a report, call the Childhelp USA® National Child Abuse Hotline (1.800.4.A.CHILD).**

## Recognizing Child Abuse

The following signs may signal the presence of child abuse or neglect.

### The Child:

- Shows sudden changes in behavior or school performance.
- Has not received help for physical or medical problems brought to the parents' attention.
- Has learning problems (or difficulty concentrating) that cannot be attributed to specific physical or psychological causes.
- Is always watchful, as though preparing for something bad to happen.
- Lacks adult supervision.
- Is overly compliant, passive, or withdrawn.
- Comes to school or other activities early, stays late, and does not want to go home.

### The Parent:

- Shows little concern for the child.
- Denies the existence of—or blames the child for—the child's problems in school or at home.

- Asks teachers or other caretakers to use harsh physical discipline if the child misbehaves.
- Sees the child as entirely bad, worthless, or burdensome.
- Demands a level of physical or academic performance the child cannot achieve.
- Looks primarily to the child for care, attention, and satisfaction of emotional needs.

### The Parent and Child:

- Rarely touch or look at each other.
- Consider their relationship entirely negative.
- State that they do not like each other.

## Types of Abuse

The following are some signs often associated with particular types of child abuse and neglect: physical abuse, neglect, sexual abuse, and emotional abuse. It is important to note, however, these types of abuse are more typically found in combination than alone. A physically abused child, for example, is often emotionally abused as well, and a sexually abused child also may be neglected.

## Signs of Physical Abuse

Consider the possibility of physical abuse when the **child**:

- Has unexplained burns, bites, bruises, broken bones, or black eyes.

- Has fading bruises or other marks noticeable after an absence from school.
- Seems frightened of the parents and protests or cries when it is time to go home.
- Shrinks at the approach of adults.
- Reports injury by a parent or another adult caregiver.

Consider the possibility of physical abuse when the **parent or other adult caregiver**:

- Offers conflicting, unconvincing, or no explanation for the child's injury.
- Describes the child as "evil," or in some other very negative way.
- Uses harsh physical discipline with the child.
- Has a history of abuse as a child.

## Signs of Neglect

Consider the possibility of neglect when the **child**:

- Is frequently absent from school.
- Begs or steals food or money.
- Lacks needed medical or dental care, immunizations, or glasses.
- Is consistently dirty and has severe body odor.
- Lacks sufficient clothing for the weather.
- Abuses alcohol or other drugs.
- States that there is no one at home to provide care.

Consider the possibility of neglect when the **parent or other adult caregiver**:

- Appears to be indifferent to the child.
- Seems apathetic or depressed.
- Behaves irrationally or in a bizarre manner.
- Is abusing alcohol or other drugs.

## Signs of Sexual Abuse

Consider the possibility of sexual abuse when the **child**:

- Has difficulty walking or sitting.
- Suddenly refuses to change for gym or to participate in physical activities.
- Reports nightmares or bed wetting.
- Experiences a sudden change in appetite.
- Demonstrates bizarre, sophisticated, or unusual sexual knowledge or behavior.
- Becomes pregnant or contracts a venereal disease, particularly if under age 14.
- Runs away.
- Reports sexual abuse by a parent or another adult caregiver.

Consider the possibility of sexual abuse when the **parent or other adult caregiver**:

- Is unduly protective of the child or severely limits the child's contact with other children, especially of the opposite sex.
- Is secretive and isolated.
- Is jealous or controlling with family members.

## Signs of Emotional Maltreatment

Consider the possibility of emotional maltreatment when the **child**:

- Shows extremes in behavior, such as overly compliant or demanding behavior, extreme passivity, or aggression.
- Is either inappropriately adult (parenting other children, for example) or inappropriately infantile (frequently rocking or head-banging, for example).
- Is delayed in physical or emotional development.
- Has attempted suicide.
- Reports a lack of attachment to the parent.

Consider the possibility of emotional maltreatment when the **parent or other adult caregiver**:

- Constantly blames, belittles, or berates the child.
- Is unconcerned about the child and refuses to consider offers of help for the child's problems.
- Overtly rejects the child.

## Resources

### Identifying Child Abuse and Neglect

[www.childwelfare.gov/can/identifying](http://www.childwelfare.gov/can/identifying)  
Resources and information from the Child Welfare Information Gateway website about signs and symptoms of child maltreatment, including training resources.

### Preventing Child Abuse and Neglect

[www.childwelfare.gov/preventing](http://www.childwelfare.gov/preventing)  
Resources and information from the Child Welfare Information Gateway website.

This factsheet was adapted, with permission, from *Recognizing Child Abuse: What Parents Should Know*.  
Prevent Child Abuse America © 2003.

## Special Target Group Considerations<sup>1</sup>

For certain groups that will be included in the study, it may be helpful to focus attention on their special needs or characteristics in order to obtain maximum cooperation. Examples of such groups include the elderly and the disabled.

### The Elderly

Older persons are an important part of the population and will be an important focus of this survey. Keep in mind that:

- Older Americans (60+) are the fastest growing group in the U.S. population. In year 2000 they were 20% percent of the population and it is expected that their numbers will continue to increase dramatically over the next 50 years.
- The number of people over 85 is also increasing rapidly. In the year 2000 they numbered about 5 million and by 2050 at least 16 million (more than 5 percent of the population).

Experience indicates that older respondents have some unique concerns about participating in studies. Some items to watch for:

- **Fear:** This group is going to be more concerned than others about opening the door, participating in anything new, and dealing with strangers.
- **YOUR RESPONSE:** Display your ID prominently, and remind them of the appointment if they do not remember having one. You may also offer to come back when someone else will be at home.
- **Confidence:** This group is likely to feel less confident about their ability to perform in general, whether it be to read something properly, remember something, hear what you say, or complete the process
- **YOUR RESPONSE:** Be extra-patient. Offer lots of encouraging comments, and downplay any instances of fumbling around, slowness of response, loss of concentration, or inability to recall. **Avoid putting any kind of pressure on elderly respondents**, either verbally or with body language. Allow extra time for everything. Your aim should be to make their participation **easy**.
- **Physical Need:** Elderly respondents are more likely to have problems hearing, seeing, talking, walking, getting up and sitting down, fatigue, and so on.
- **YOUR RESPONSE:** Be attentive. If you think your respondent is having trouble hearing, ask, "Should I repeat the question?" If you think s/he is getting tired, take a break. If s/he is having trouble getting up to get something, offer to do it yourself (e.g., get up to get vitamins).

### Interviewing Respondents with Health Impairments

In this study you may be interviewing a number of respondents who have impairments either because of age, illness or accidental injury. In this section, we are going to discuss in more detail some of the difficulties you may encounter when interviewing respondents who have impairments. While we will discuss these impairments in relation to older people, you may also encounter younger people with some of these conditions.

When you interview an older respondent, you need to address your own attitude towards the

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<sup>1</sup> Excerpted and modified from: *New York City Health and Nutrition Examination Survey Field Procedures Manual*, NY Department of Health & Mental Hygiene, May 2004, Section 9.6.  
[www.nyc.gov/html/doh/downloads/pdf/hanes/HANES\\_training\\_fieldprocedures.pdf](http://www.nyc.gov/html/doh/downloads/pdf/hanes/HANES_training_fieldprocedures.pdf)

aging and the elderly. Your fears and assumptions could create a barrier between you and the respondent. Fear or discomfort with the elderly might make you sound stiff or insincere. In general, try and be sensitive, matter-of-fact, flexible, and patient. Let the interviewee know that s/he is not threatened by any aspect of the study (an older respondent might, for example, fear that participating in the study will result in him/her having problems with building inspectors or other officials). Reassure them about the confidentiality of the study and their participation.

First, let's begin by talking about some of the sensory impairments you may encounter, then about some physical impairments and disorientation or confusion. Finally, we'll discuss some other types of problems that may confront you and how to handle them.

### **Auditory Limitations in Hearing**

A gradual hearing loss begins about age 20. As age increases, sharpness and accuracy of hearing often diminish. This type of hearing loss may make a person misunderstand words, which is often interpreted as confusion. Inability to hear well, i.e., noise from other sources (people talking, dishwasher or TV operating, etc.) may make it difficult for a hearing impaired person.

Apparently, in the English language, consonants are more important in the identification of words than vowels, i.e., they are slightly softer in sound. Unfortunately, some consonants, e.g., s, z, t, f and g, are some of the higher frequency sounds that are lost when hearing impairment occurs.

**Hearing limitations may be detected by the presence of a hearing aid or by behavioral cues, such as the appearance of inattentiveness or a strained facial expression, particularly when listening.**

People with hearing limitations may lean toward the interviewer with their "good" sides, tilt their heads, or cup their hands behind their ears. Others with hearing problems may show none of these behavioral signs but **may answer questions inappropriately or frequently ask the interviewer to repeat questions. People with hearing limitations may tire easily or show annoyance because of pain or auditory blurring when the interviewer speaks too loudly.** It requires a great deal of effort for them to listen and to sort and file sounds into meaningful thoughts, especially when the conversation and the interviewer are both strange to them. Hard of hearing people may tire and give up, so be patient.

In short, some of the **behavioral manifestations of hearing loss** are:

- A tendency to confuse words which sound alike or occur out of context;
- An increase in the volume of speech on the part of the hearing impaired speaker (**they** compensate);
- Positioning of the head to increase hearing in the good ear;
- Asking for statements to be repeated: becoming confused over oral statements or questions;
- Blank looks: inappropriate answers;
- Isolation and withdrawal from normal social participation; and
- Shorter attention span (especially when two people are talking at once), due to confusion.

Hearing impairment **affects daily life** in such a way that, as a result, a hearing impaired person:

- Might be incorrectly judged forgetful;
- Might be incorrectly regarded as confused;
- Might withdraw to protect his/her dignity;

- Might not hear alarms (think of all the high-pitched alarm sounds there are); and
- Might be depressed at the loss of sounds important to them, i.e., bird song, children's voices, music, etc.

Here are some **tips on communicating with hearing impaired** persons:

- Speak **slightly** louder than normal, and, if you can, lower the pitch of your voice. Remember that shouting will not make your message any clearer, however, and may sometimes distort it.
- Speak a little slower than your normal rate without making it stilted or unnatural.
- Avoid chewing, eating or covering your mouth with your hands when speaking to a hearing impaired older person.
- The best distance when speaking to elderly hearing impaired persons is from 3 to 6 feet (0.9 to 1.8 m).
- Facial expression, gestures, lip and body movements all give cues to the hearing impaired person. Therefore, good lighting on the face of the speaker is important.
- Wait until you are visible to the older person before speaking, and face the respondent when you speak. If possible, arrange the environment so that the speaker's face and body can be seen easily.
- Communication with hearing-impaired older persons is much more difficult when there are other noises.
- Never speak directly into the person's ear. This may distort your message and make your visual cues less readily understood.
- If the hearing impaired older person does not appear to understand what is being said, rephrase the statement in short, simple sentences. Of course, you may not rephrase interview questions — simply repeat an interview question.
- Whenever possible, give the hearing impaired older person a clue to the topic of conversation, such as "Now we're going to talk about things people do most days, like bathing."
- Some consonants are louder or more visible than others. For example, "p" is easier to see on the lips than "k". Therefore, some words or parts of conversations may be more easily heard or understood than others.
- Do not exaggerate sounds when speaking. This distorts the message and makes the use of visual cues from your face difficult to understand.
- Hearing impaired individuals take longer to respond; give them time.
- Do not make sudden movements that could startle the respondent who gets no prewarning from sound.

### **Limitations on Vision**

Between the ages of 40-45, certain changes begin in the eyes. The lens and the muscle begin to stiffen. Many people who never wore glasses before need them to read. With advancing age, other changes take place in the eyes which can often:

- a. Make the environment seem faded; and
- b. Cause light refraction and a loss of some visual detail.

Some results of this can be that more light is required to see; yet glaring lights cause discomfort and, in the case of night driving, are hazardous.

Difficulties in vision may be identified by the presence of thick or dark glasses, a cloudy film over the eyes, or other discoloration of the eyes. However, some visual problems have no obvious signs.

In these cases, the interviewer may be able to infer visual limitations by the manner of the respondent's mobility and balance.

People with visual loss depend upon immediate sounds and tactile sensations to maintain their sense of security. They may be fearful, distrusting, and awkward in movement.

Some of the **behavioral manifestations of visual loss** are:

- A handshake may be missed because the offered hand is not seen.
- A respondent may be unable to read letters of introduction and explanation, identification and hand cards, etc.
- The respondent may be unwilling to sign his/her name to consent forms because s/he may not be able to read some or all of the forms and may not wish to say so.
- Vision impaired individuals may be unable to recognize other people. They may also be unable to distinguish an object from its background (objects may be knocked over and/or dropped).
- Vision impaired individuals may be unwilling or unable to move about freely because of inability to see objects in their paths.

Vision impairment can **affect daily life** in such a way that a vision impaired person:

- Might mismatch clothing — select bizarre combinations;
- Might apply makeup inappropriately;
- Might wear clothing that is stained because 1) the stains weren't removed because they were not seen when they first occurred, and 2) because at the time of selection the stains may not be observed;
- Or might appear to be an inadequate housekeeper because crumbs, spills and dirt are not observed and therefore not cleaned up.

Here are some **tips on communicating with vision impaired people**:

- Before speaking, position yourself where the respondent may be able to see at least your outline or a shadowy form.
- Use a calm, reassuring voice and speak clearly and softly at first. Say who you are.
- Do not touch or shake hands until you have spoken first.
- Don't make sudden movements.
- Give letters of introduction, information, consent form, etc., to the respondent and say "here's a letter; why don't you look at it while I read it out loud, just so we both are clear about what it states." Try to do this where there is a maximum amount of light.
- Encourage the respondent to seek the help of significant others in reading such documents.
- Don't judge the respondent's cleanliness or appropriateness of choice of clothing.

## Physical Impairments

Physical impairments have many causes, including:

- Accidents which may also be the result of sensory impairment(s);
- Osteoporosis (deterioration of the bones);
- Arthritis and rheumatism which can cause severe pain and crippling; and
- Stroke which can leave the patient weak or paralyzed.

Note that stroke patients may have hearing and visual impairments, and difficulty in speaking (slurred speech), understanding what is said to them, reading, writing, understanding writing, and confusing words. Stroke victims may also cry or laugh more easily than they did previously. It is important that as an interviewer you realize that a stroke patient who is crying may not really be upset — the crying may be an involuntary act which has little to do with an emotional upset. If you remember this, you will not be unduly upset yourself.

### A. Limitations in Language Function

Limitations in language function have many causes. People with limitations in language function probably know what they want to say, but are unable to form words. (Do not assume such people lack intelligence.) People with limitations in language are especially sensitive to the attitude and moods of others and may become irritated over minor incidents. They are often frustrated about their inability to communicate. There may be marked loss of self-confidence and self-worth.

Some **tips on handling limitations in language function** are:

- Give the respondent time to answer without pressure and be attentive;
- Try to give non-spoken cues and gestures, so that the individual will feel comfortable responding in this fashion; and
- Let individuals write if they wish to and are able.

### B. Limitations on Mobility

If a person is limited in mobility or has experienced paralysis, you should be careful about the physical arrangements of the interview — seating, lighting, the availability of a table — so as to minimize the need for the older person to move or to perform on his/her affected side.

When **interviewing people with physical impairments**, please remember that:

- They may not be able to sit for long and may have to move around, and
- They may tire more easily and you may have to allow them to rest or reschedule to complete the interview.

In such circumstances, please be considerate of the respondent's needs.

# Common Urban Pests



Photo: Cheryl Moorehead, individual, Bugwood.org

**Picture A: Ant (many types)**

Size: 1/8 - 1/2"



Photo: Whitney Cranshaw, Colorado State University, Bugwood.org

**Picture B: Bedbug (cinch)**

Size: 1/16 - 1/4"



Photo: Hardin-M www.lib.uiowa.edu/hardin/md/pictures22/flea.jpg

**Picture C: Flea**

Size: 1/8"



Photo: Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

**Picture D1: Cockroach (German)**

Size: 1/2 - 1"



Photo: Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

**Picture D2: Cockroach (Oriental)**

Size: 1 - 1-1/2"



Photo: Division of Plant Industry Archive, Florida Department of Agriculture and Consumer Services, Bugwood.org

**Picture E: Spider (many types; shown: brown recluse, which is very rare!)**

Size: varies



Photo: Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

**Picture G: "Waterbug" (American cockroach)**

Size: 1- 1-1/2"



Photo: Steve Jacobs, Sr., Penn State University Entomology Department

**Picture F: Termites (Eastern subterranean, workers)**

Size: 1/4 – 3/4"



Photo: Susan Hoffman, Miami University-Ohio, University of Michigan Museum of Zoology, Animal Diversity Web

**Picture H: Mouse**

Size: 1-2", plus tail



Photo: Bugstoppers [www.westopthebugs.com/info/pests.shtml](http://www.westopthebugs.com/info/pests.shtml)

**Picture I: Rat (Norway or sewer)**

8-10", plus tail



Photo: Snail' Tails, Aydin Örstan, Maryland, USA

**Picture J: Opossum**

Size: Small dog



Photo: Patrick Metzger  
[http://torontoist.com/attachments/toronto\\_patrickm/2006\\_10\\_05\\_raccoon.jpg](http://torontoist.com/attachments/toronto_patrickm/2006_10_05_raccoon.jpg)

**Picture K: Raccoon**

Size: Medium dog



Photo: Purdue News Service photo/David Umberger

**Picture L: Gray squirrel**

Size: 6-8", plus tail

# Pest Control Products

*(Brand names are shown for identification only – this is NOT a product endorsement!)*



Picture A: Aerosol sprays



Picture C1: Sprayer for concentrate-mix



Picture B: Foggers; "Bug-bombs"



Picture C2: Concentrate for use in sprayer



Picture E: Roach bait, "hotels"



Picture F1: Mouse/rat poisons (pellets)



Picture D: Ant bait stations



Picture F2: Mouse/rat poison – block



Picture G: Box trap for mice (end view), glue board inside



Picture I: Glue traps/monitors



Picture H: Mouse/rat snap trap



Picture G: Boric acid dust



Picture H: Mothballs - and candy!



Picture L1: "Tres Pasitos"



Picture L2: "Chinese chalk"



Picture N: Tempo