

**March 1998
Bulletin
No. B-770**

**PARENTS, PUBLIC SCHOOLS
AND
INTEGRATED PEST MANAGEMENT**



**Department of Entomology
Office of Agricultural Research Programs
Purdue University
West Lafayette, Indiana**

Parents, Public Schools and Integrated Pest Management



Purdue University
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January 1998

CONTENTS

	Page
Executive Summary.....	4
Introduction.....	5
a. Background.....	5
b. Purpose of Study.....	7
Methodology.....	7
a. Study Site.....	7
b. Current Pest Control Practices.....	8
c. Survey Instrument.....	8
d. Sample.....	9
Results.....	9
a. Section I. Socio-Demographics.....	10
b. Section II. Pests.....	11
c. Section III. Pesticides.....	13
d. Section IV. Integrated Pest Management	17
Discussion.....	22
a. Parental Expectations.....	23
b. Recommendations.....	23
Acknowledgements.....	25
Literature Cited.....	25

Executive Summary

This study emphasizes a need for decision-makers to involve parents in the discussion and implementation of pest management practices and policies in schools. Integrated pest management (IPM) is a pest management strategy which is designed to prevent pest populations from attaining unacceptable aesthetic or economic levels while minimizing unfavorable socio-logical environmental consequences.

Survey results indicate that parents do understand basic integrated pest management concepts and are willing to support reallocation of school resources to implement IPM practices. Parents insist that their children be taught in a “pest free” environment, and they are equally insistent that pesticides be used only as a last resort. Parents expect a pest management program to emphasize pest prevention and pest scouting in lieu of pesticides. Potential health risks due to exposure of children to chemical pesticides used on school property are of concern to parents. They expect school administrators to implement preventative safety measures (i.e., application restrictions, posting, and re-entry times) to prevent exposure to their children. Parents strongly support the documenting of pest control activities at school and ask that the documentation be made available to them.

Based on this survey of elementary school parents, it is clear that school administrators, parents, and pest control professionals must establish significant lines of communication in order to effectively institute an acceptable IPM program in schools. Dialog of this nature must be based on perceptions and expectations of what IPM means to parents and school administrators, together with what pest control professionals can provide.

Introduction

Public health and environmental issues associated with urban environments continue to fuel public debate. Recent discussions have focused on the effects of indoor air pollutants (e.g., radon, chemical emission from new carpets, cigarette smoke, asbestos, and pesticides) on human health (1,2,3). These issues have been closely linked to a relatively new area in environmental medicine involved with the treatment of individuals identified as sensitive to low levels of chemicals found in public buildings (4).

Concurrently, concern about children's safety is at an all-time high. Child abuse, children's rights, school violence, gangs, and food safety issues are topics of national debate. As a result, children's safety while in public schools is now receiving increased attention. Drugs in schools, guns in the classrooms, and smoking in the hallways are sensitive issues that the public is monitoring very closely.

Background

The use of pesticides in and around homes, schools, hospitals, public parks, and office buildings has been regarded as a key urban health issue (5,6,7,8,9,10,11,12). Encompassing both questions, of environmental quality of public buildings and child safety, is the use of pesticides in public schools. Parents hold school administrators responsible for the safety of their children when at school and are beginning to demand accountability for the use of pesticides in the school environment.

Unfortunately, pest management in schools is a relatively complex issue, and simple solutions are not immediately forthcoming. A 1991 survey of New York schools found that 90 percent used chemical pesticides but that students, faculty, and parents were seldom notified of such applications, creating significant anxieties (13). The survey concluded by outlining a series of recommendations that the authors believed would eliminate or reduce parental anxiety surrounding pesticide applications in and around schools. In short, they concluded that public schools should adopt "least toxic pest management policies," that schools should not use pesticides containing known or probable carcinogens, that pre- and post-notification should be made to school staff, teachers, students, and parents, and that legislation should be enacted to make IPM mandatory in schools.

During the last few years, a number of organizations have published Integrated Pest Management guidelines for schools (14,15). These reports triggered numerous popular articles about the role that IPM would have in schools (16,17). The reports generally indicated that the use of IPM programs would allow schools to take advantage of all pest management options (including pesticides) to help reduce pests to an acceptable threshold.

Reports concluded that the establishment of an IPM program could be achieved through the use of preventative maintenance, improved janitorial practices, and better staff training. It was recommended that IPM programs become part of the official policy statements of the schools. Inspection, identification, and monitoring of pest populations, and evaluation of results should be used to determine the effectiveness of the school's IPM program. Mandating integrated pest management in schools likely will become part of the legislation in most states within the next decade.

Currently, Texas, Arizona, California, Louisiana, and New York have proposed or passed legislation that makes IPM a part of "reading, writing, and arithmetic." Michigan became the first of several midwestern states contemplating mandatory IPM programs for schools to pass legislation (Michigan Pesticide Use Regulation No. 637). This law requires that an IPM approach be taken to reduce pests in schools and other public buildings. The responsibility for ensuring that such an IPM program be implemented in schools was assigned to the Michigan Department of Agriculture. The three major parts of the legislation concern: applicator training, development of a verifiable integrated pest management program, and restrictions as to when and where pesticides may be applied. For example, some of the specifics include: (1) all pesticide applicators must receive training on pest inspection, monitoring, chemical and alternative control tactics, preventative techniques, and record keeping (2) reentry periods must be established that forbid liquid spray or aerosol insecticide applications in a schoolroom unless the room is to remain unoccupied by students for at least four hours after the application, and (3) outdoor ornamental and turf applications of liquid spray pesticides on school grounds cannot be made within 100 feet of occupied classroom buildings during class hours.

Purpose of Study

Any school program must be supported by parents and taxpayers in order to remain viable over the long term. Voluntary adoption of IPM programs into school policy should be based on needs and desires of the community. However, information is generally lacking in regards to how parents of schoolchildren understand the basic concepts of pest management, and how they perceive pest control needs versus pesticide use in schools. Such information is vital to elected officials, school administrators, and the pest control industry as they engage in IPM in schools. In order to ascertain specific parental bias and expectations with regards to pests, pesticides, and pest management in schools, an anonymous question-type survey was conducted in an elementary school in Indiana.

Methodology

Study Site

Happy Hollow Elementary is one of 1,905 public schools in Indiana. It is part of the West Lafayette Community School Corporation, which consists of a high school, a junior high school, and three elementary schools containing approximately 2,208 students. The school system is managed by a superintendent who is appointed by a seven-member elected school board.

Happy Hollow school, located in West Lafayette, Indiana, has a total capacity of 700 students. The (1994) enrollment was 475 students assigned to five grade levels (preschool through fourth grade). The students are supervised by 50 faculty and support staff (i.e., full time nurse and counselor). The school building sits on a 12.5 acre tract of land which is landscaped and includes playgrounds, tennis courts, and a swimming pool. The building was constructed in 1961 and contains 31 classrooms, a gymnasium complete with showers, teachers' lounge, nurse's station, and library. It is structurally sound and in good mechanical order. The entire roof was replaced in 1990, and the restrooms have been remodeled and upgraded since then. The school offers a lunch program wherein hot lunches are brought into the school each day and served and eaten there. Although hot food is not prepared at school, some food items are stored in the kitchen and in storage areas under classroom sinks.

Current Pest Control Practices

Pest control is done primarily through noncertified, in-house custodial services. Pesticides most commonly used by the four custodial staff are over-the-counter aerosols. Local professional pest control companies are contracted to deal with specific pest outbreaks on a case-by-case basis. Pests currently of concern include ants, cockroaches, bees and wasps, birds, and mice.

Survey Instrument

A Purdue interdisciplinary working group, consisting of entomologists, turf specialists, and a pesticide safety specialist was assembled to provide input into the research project. Each Purdue specialist is professionally associated with research and extension activities in the urban setting. A professional sociologist with research and survey expertise was contracted to construct and evaluate a questionnaire. The team members discussed what factors would be important in identifying parental perceptions and expectations of an IPM program at Happy Hollow.

A survey instrument, pretested on Purdue clerical staff, was composed of four components: socio-demographics, pests, pesticides, and IPM.

- The *socio-demographics* section included questions on age, gender, education, income, and the frequency of visits to the school premises by the parent.
- The *pests* section included questions relating to the perception of pest problems at the school, types of pests, occurrence of pests, and the relative satisfaction with the schools' current pest control efforts.
- The *pesticides* section included questions on the parents' perceptions of students' exposure to pesticides and potential health risks.
- The *integrated pest management (IPM)* section was designed to gain parental opinion regarding such things as pesticide use, sanitation, building construction, and regular pest inspection.

Sample

Happy Hollow Elementary administration provided the names and addresses of 390 families. In March, a survey questionnaire with a cover letter and return envelope was mailed to each family head.

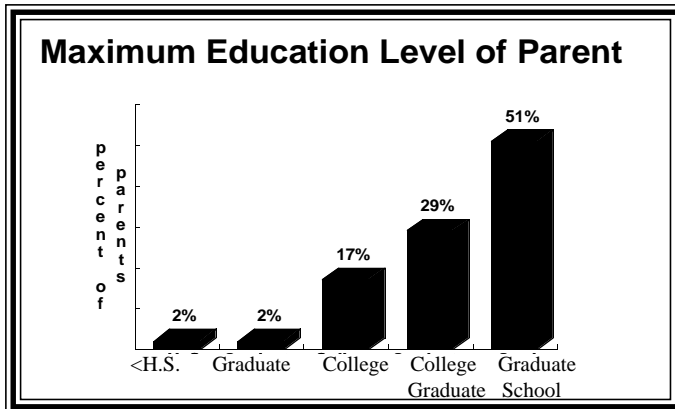
Results

Thirty-four percent of the questionnaires were completed and returned by the parents. Data were compiled and interpreted, using appropriate statistical analyses. Results are presented in summary form by the following figures and tables. Key points are highlighted next to each figure or table. Results are presented in the order of socio-demographics, pests, pesticides, and integrated pest management.

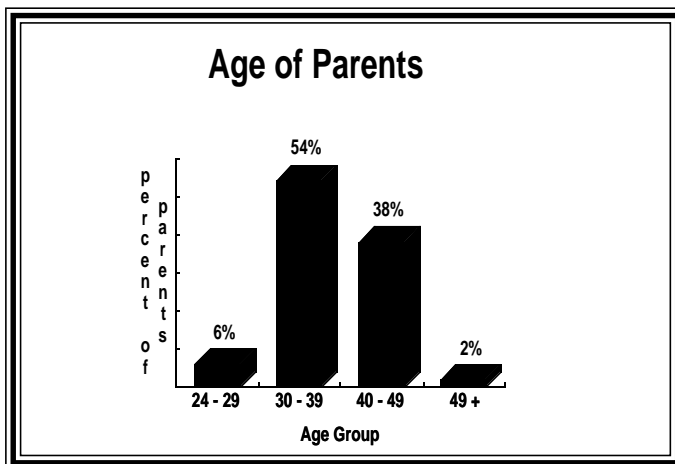
Section I. Socio-Demographics

	Percentage of total responses
● 390 families surveyed	(34%)
● Females	(77%)
● Married	(85%)

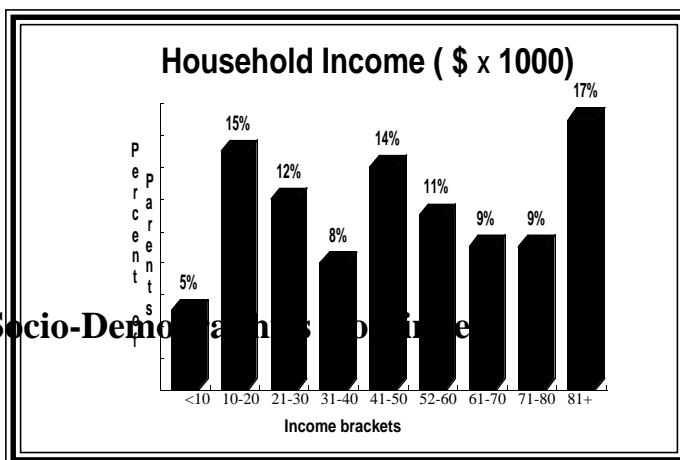
- Most surveys were completed by the mothers of Happy Hollow School children.



- Parents are well educated.

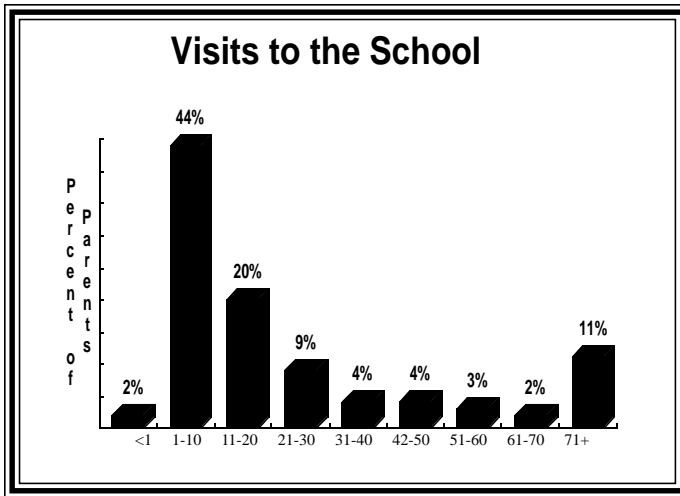


- The majority of parents were between 30 and 49 years of age.

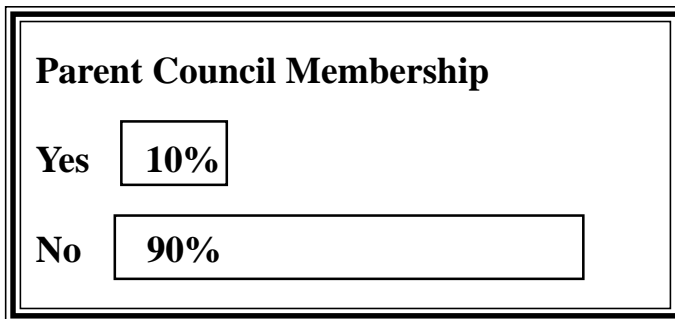


- Parents have middle to high incomes.

Socio-Demographics

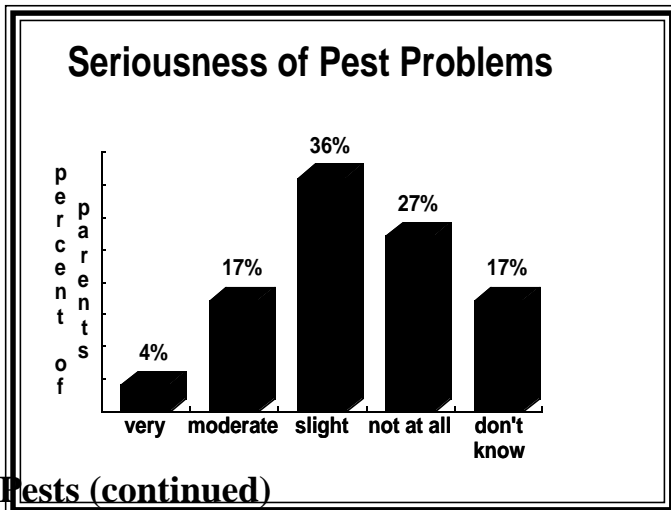


- Most parents visited the school from 1-20 times per semester.



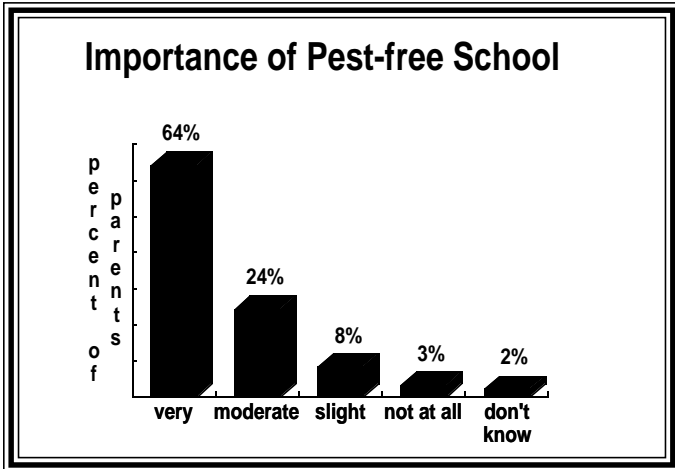
- Parents were generally not members of the Parent Council of Happy Hollow.

Section II. Pests

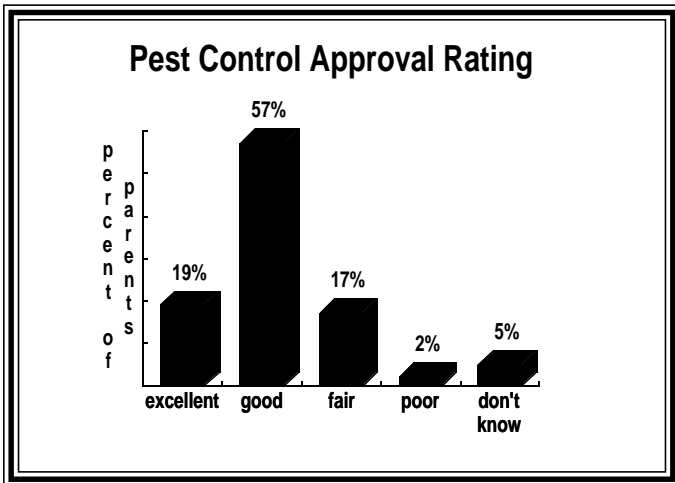


- More than half the parents believed that Happy Hollow Elementary has pest problems, although most ranked the problem as slight.

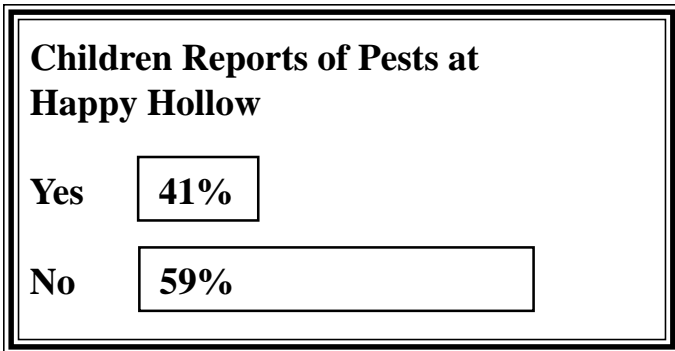
Pests (continued)



- Parents agreed that maintaining a pest-free school was important.

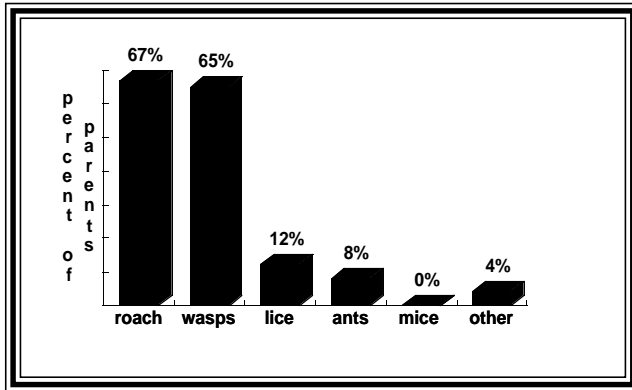


- Overall, most parents approved of the levels to which pests were kept at school.



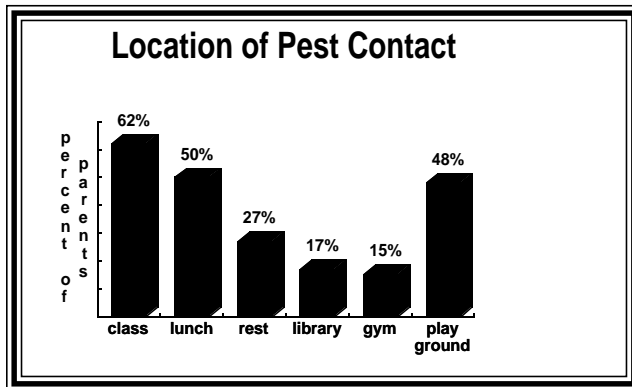
- Children of 41 percent of the respondents have complained of pests while attending school.

Pests (continued)



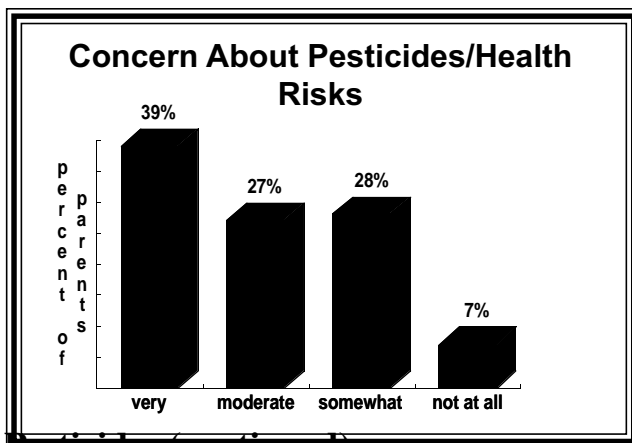
- The source of the children's complaints were primarily from roaches and wasps.

*Pest complaints were not significantly different when analyzed by sex, age, or income.



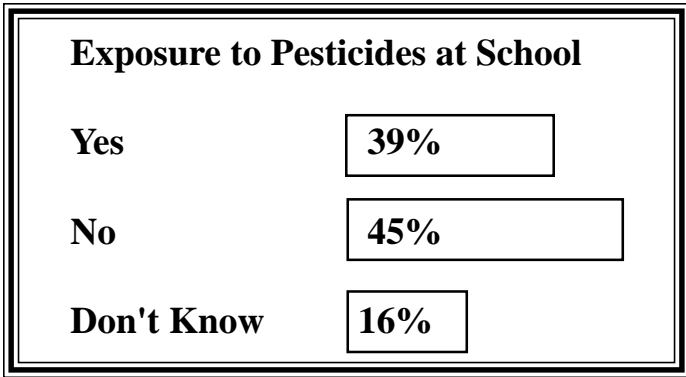
- Children encountered pests throughout the school, but primarily in the classroom, lunchroom, and playground.

Section III. Pesticides

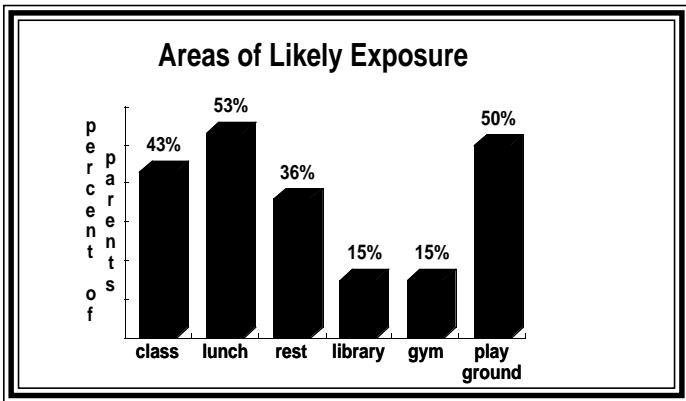


Pesticides (continued)

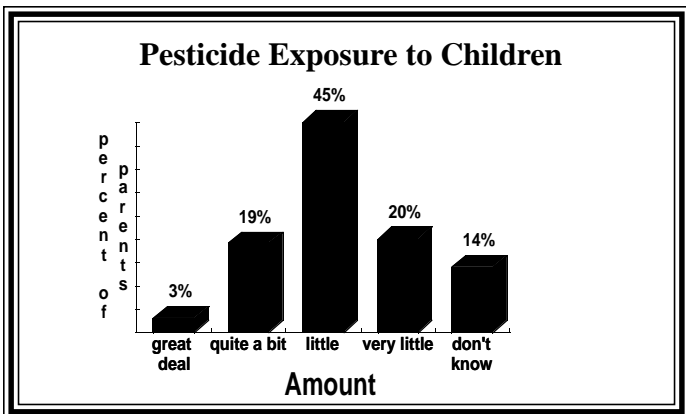
- Health risks associated with the use of pesticides at Happy Hollow were of significant concern to parents.



- Nearly 40 percent of parents believed their children are exposed to pesticides while attending school.

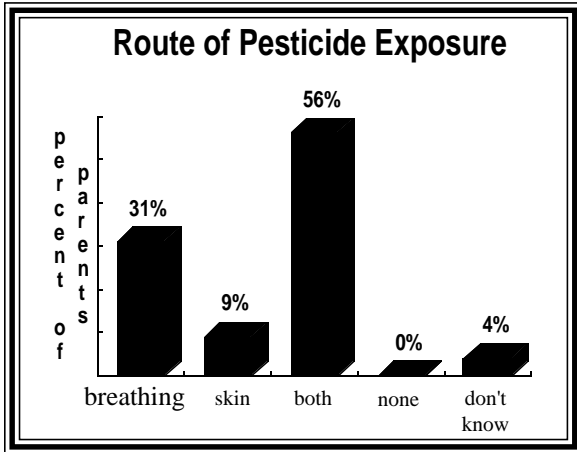


- Parents believed that their children's exposure occurs throughout the school buildings and grounds.



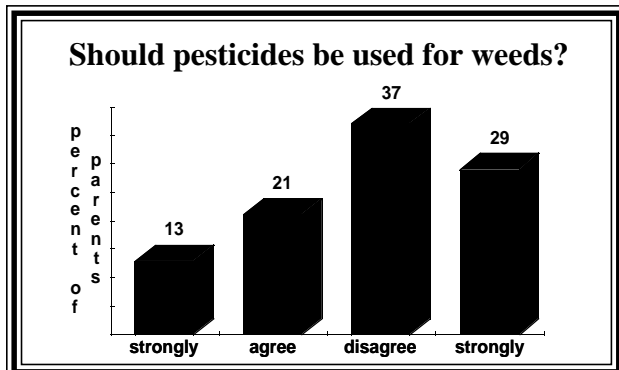
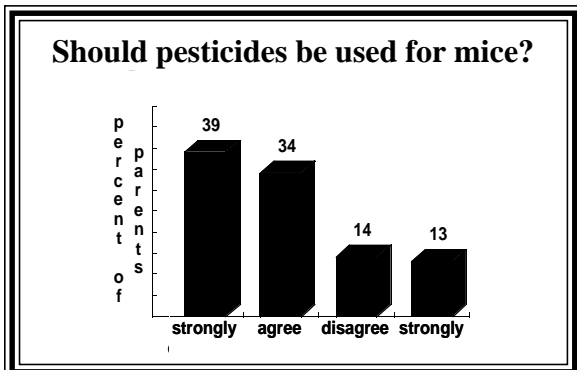
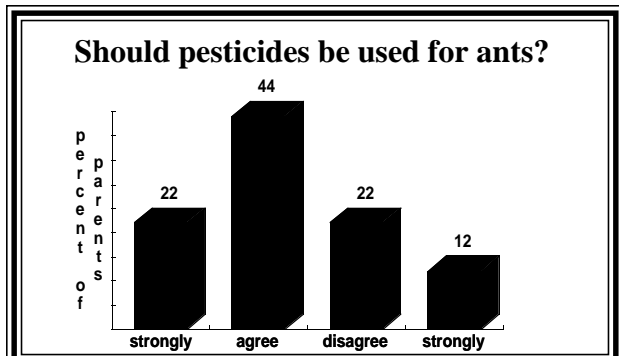
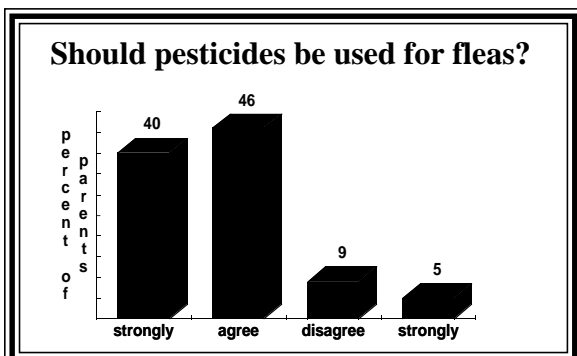
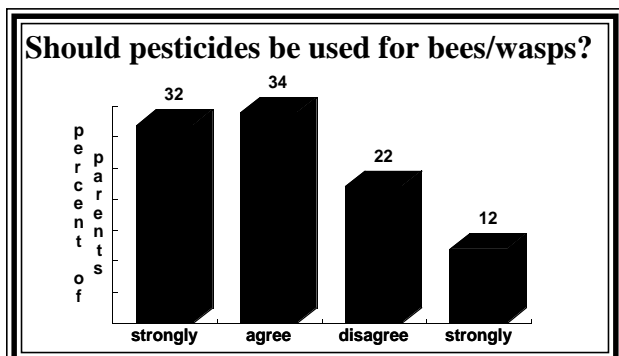
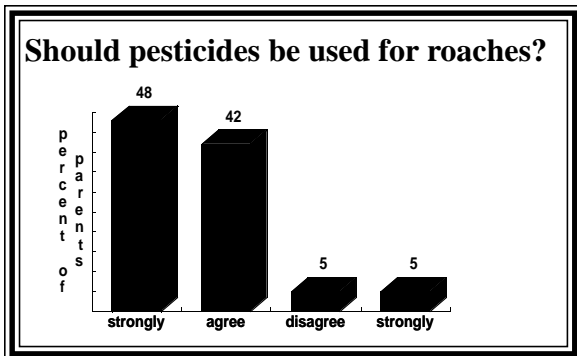
- The level of student exposure to pesticides was considered low by parents.

Pesticides (continued)

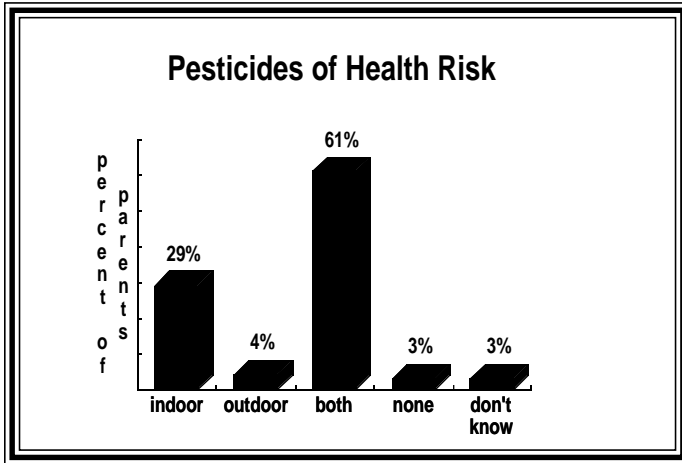


- Parents believed that pesticide exposure occurs both by breathing and through skin contact. However, when separated, they believed that breathing pesticides poses the greatest risk.

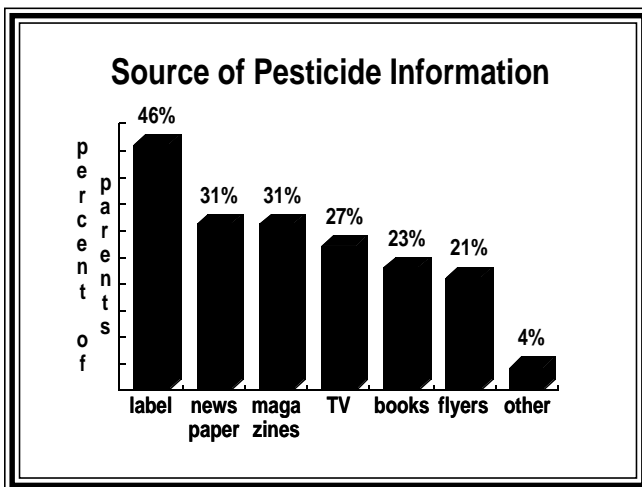
- Parental acceptance of the use of pesticides in school was pest specific.



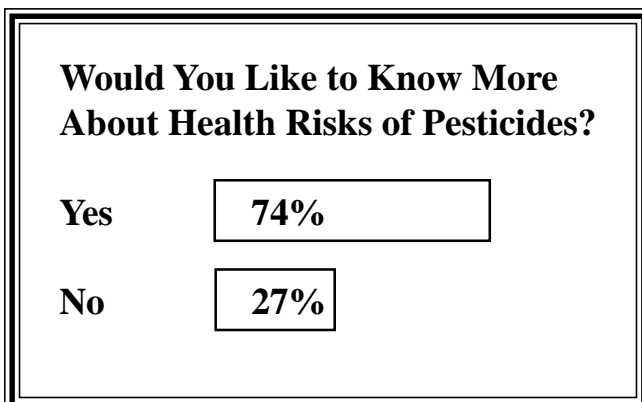
Pesticides (continued)



- Parents were concerned over the use of both indoor and outdoor pesticides. However, when separated, indoor pesticides posed the greatest concern.

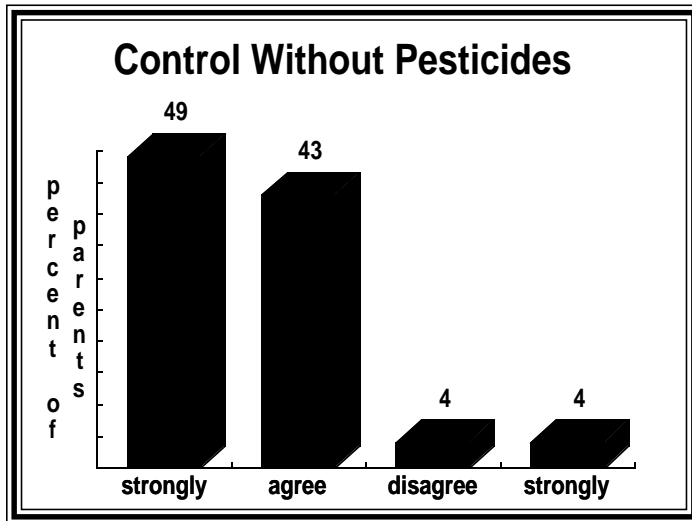


- Pesticide information was obtained from many sources.

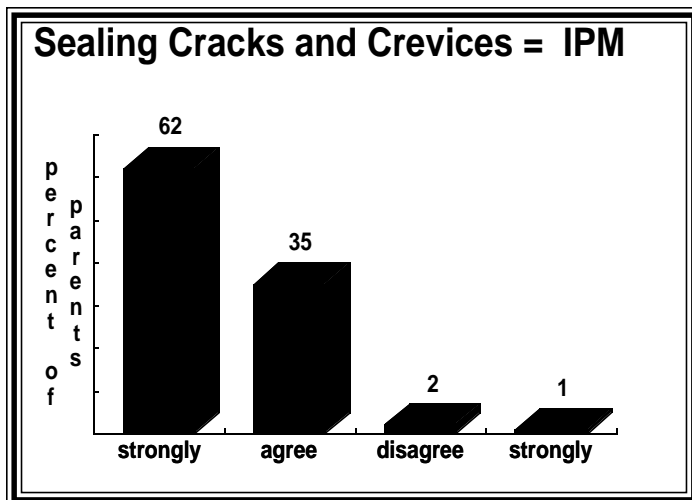


- Parents indicated they want more information about pesticides and potential health risks.

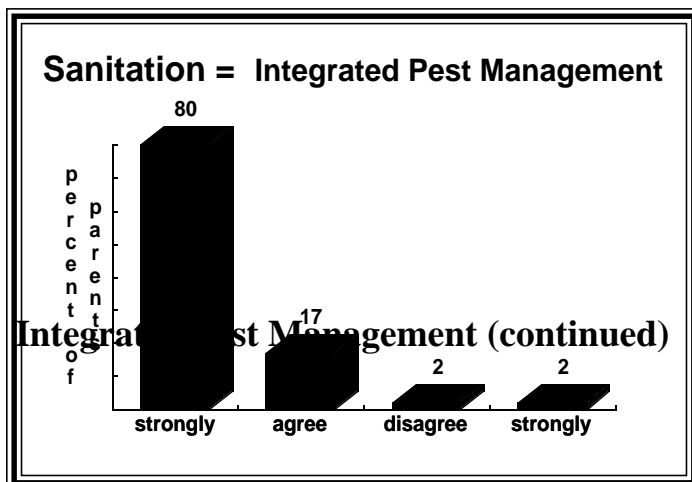
Section IV. Integrated Pest Management



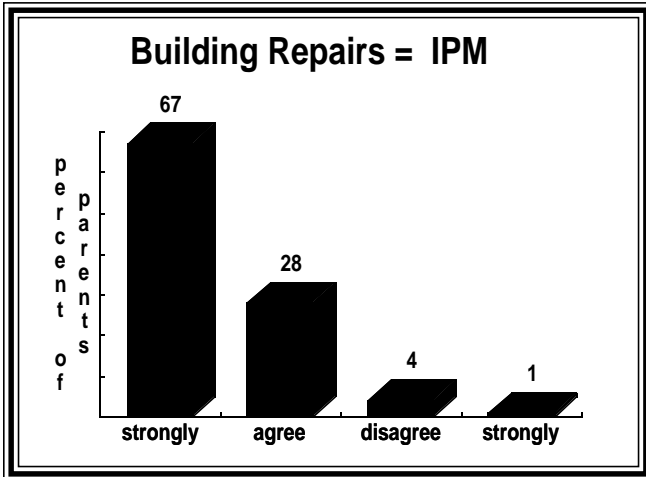
- Parents agreed that pesticides should be used only as a last resort.



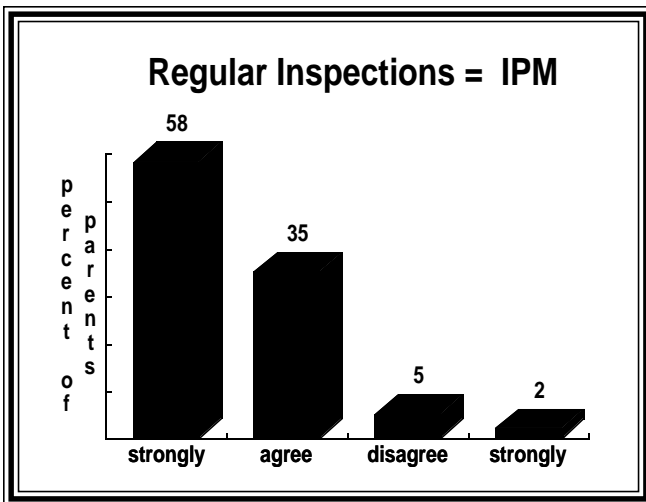
- Parents understood that building maintenance is an important part of pest control.



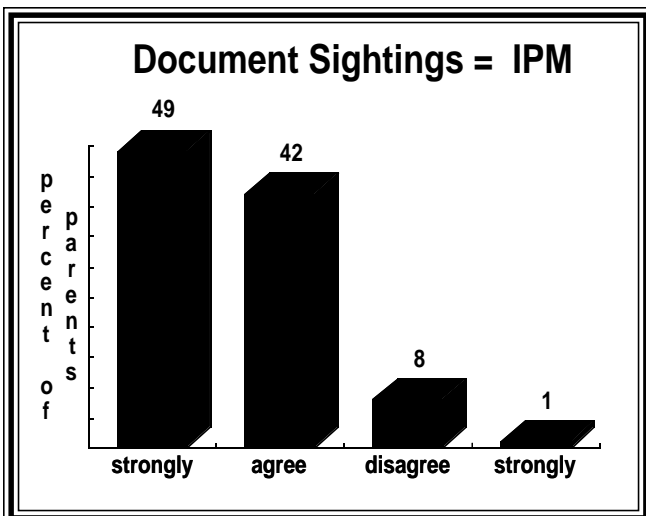
- Parents understood that sanitation is an important part of pest control.



- Parents believed building repairs are part of a pest management program.

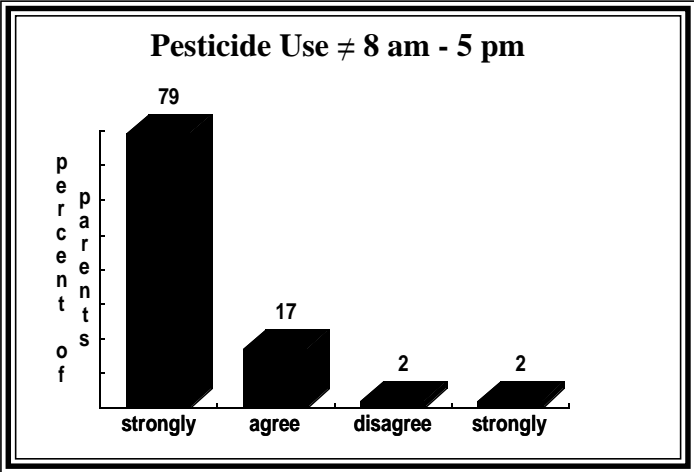


- Parents considered regular inspections for pests necessary.

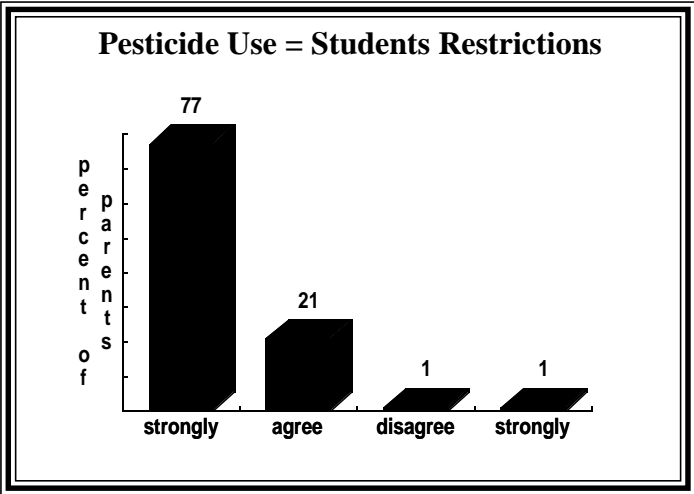


- Parents believed pest sightings should be documented.

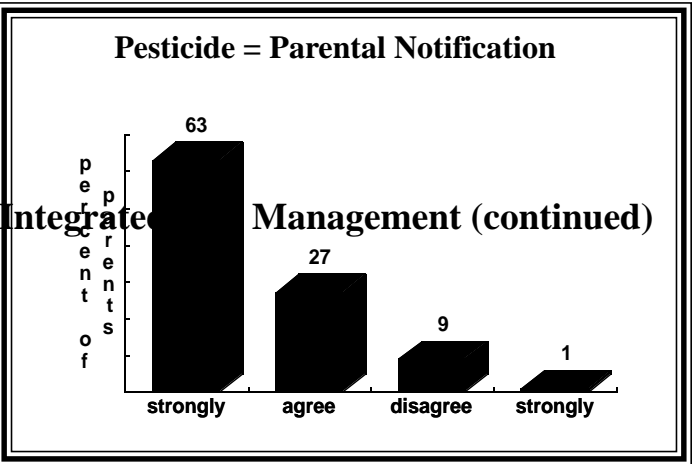
Integrated Pest Management (continued)



- Parents strongly agreed that students should not be at school when pesticides are used.

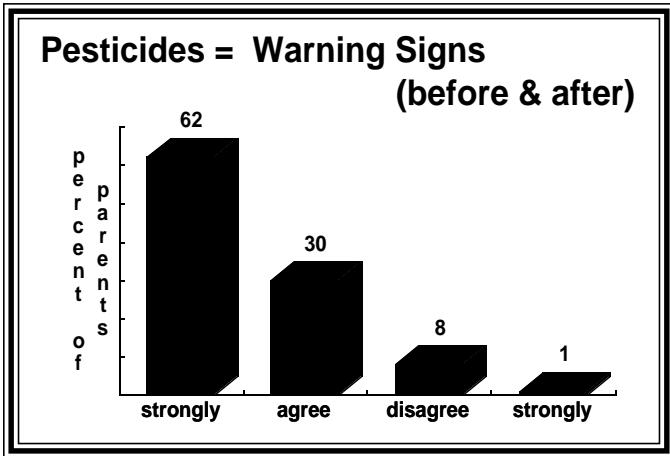


- Parents believed students should be prevented from entering rooms or lawns for specific periods of time after pesticide application.

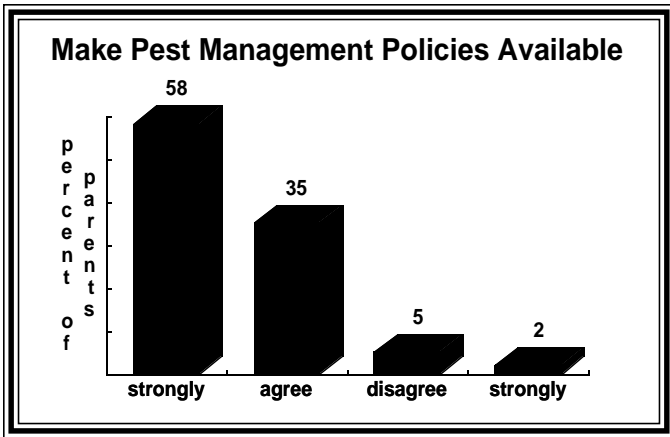


- Parents indicated they expect to be notified by administrators when pesticides are used.

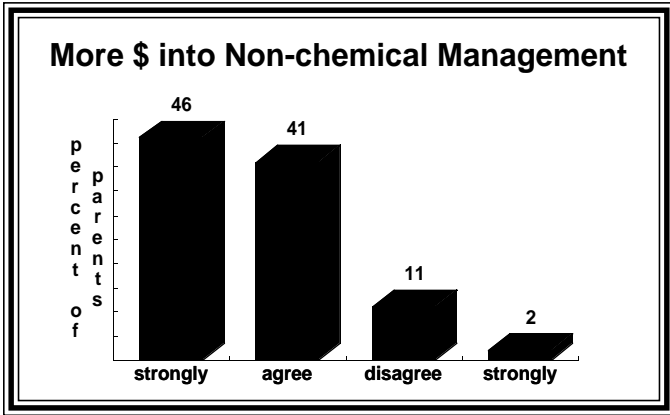
Integrated Pest Management (continued)



- Parents expect pesticide warning signs to be posted.

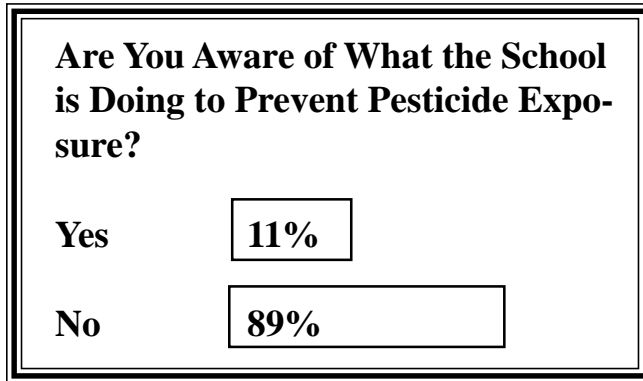


- Parents want pest management policies to be publicly available.

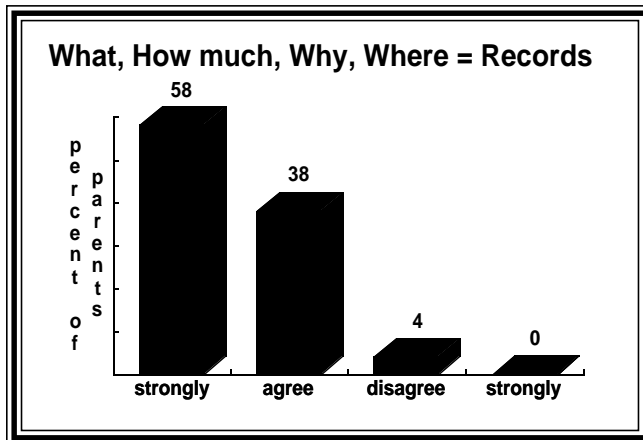


- Parents wanted more resources put into nonchemical pest management programs.

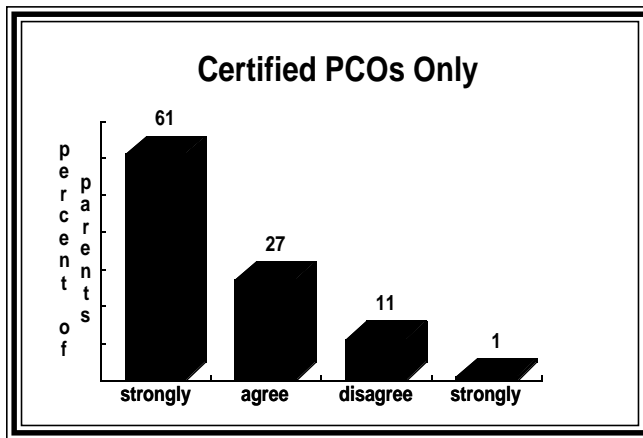
Integrated Pest Management (continued)



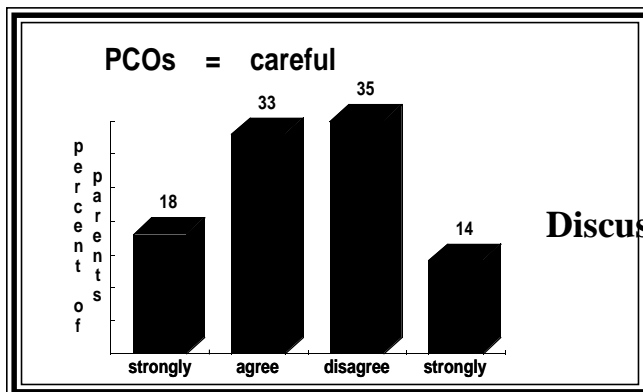
- Parents were not aware of what the school was doing to prevent pesticide exposure to their children.



- Parents indicated they expect documentation when pesticides are used.



- Parents believed that only certified pest control operators should apply pesticides in schools.



- Parents do not believe that pest control operators conscientiously minimize health risks to students when applying pesticides.

Discussion

The benefits of integrated pest management are to prevent pest populations from attaining unacceptable levels while minimizing unfavorable sociological, economic, or environmental consequences. University and industry experts on integrated pest management are able to provide many specific guidelines on implementing a school IPM program. However, it is the local Board of School Trustees who must adopt these recommendations as school policy if they are to become part of the school mandate. School boards usually consist of elected trustees who represent parents and patrons within their respective school corporation boundaries. Implementation of school policy is the responsibility of the superintendent and other administrators, teachers, and custodial staff. Successful adoption of an integrated management program for pests in schools is therefore contingent on: (first) the desire of the parents, (second) approval of the school board, and (third) implementation by the school administration.

Parents and citizens of local school corporations are demanding greater accountability from school officials and desire increased participation into the program adoption process in public education. It behooves the school administration and policy makers alike to consider the goals, concerns, and perceptions of parents when adopting pest management programs. Decision-making processes, including cost and benefit analyses, must precede adoption of IPM. The effectiveness of IPM programs is a legitimate concern for administrators in light of the possibility of student allergic reactions to bee stings or disease transmission by pests. Administrators should consider custodian safety and capability and weigh the cost of certification of custodians against costs of hiring commercially certified pest controllers. Additional training in IPM will, no doubt, be incumbent upon those called upon to implement IPM, including parents, teachers, staff, and students.

Some seemingly obvious IPM strategies may be eliminated and other solutions offered in a compromise that will eventually constitute a specific set of guidelines for pest control tailored for each individual school. After considering the value of IPM in schools and assessing the perceptions of parents, we believe that an improved pest management program is in the best interest of the students, parents, and administration of any school corporation.

Parental Expectations

Parents believe in the concepts and goals of IPM. Those embarking on an IPM program must remember that its success will hinge on meeting the expectations of parents who expect a pest-free environment for their children. It is clear that regardless of the socio-demographic considerations, gender, age, education, income, and personal visits to the school, parents will judge the success of an IPM program in schools based on: (1) maintenance of a pest-free environment and (2) a documentable reduction in pesticide use at school.

IPM experts generally agree that pesticides will continue to play a role in IPM in schools. Parents are willing to accept chemical pesticides if needed for more serious pest outbreaks. However, this survey clearly illustrates the concerns that parents have about exposure of their children to pesticides. A perception of harm to their children is exacerbated by the parents' lack of information regarding efforts made by school officials in preventing exposures to their children. This survey clearly demonstrates the important role that parents will play when they are invited to participate with school administrators, industry representatives, university specialists, and government officials in implementing integrated pest management in schools.

Recommendations

The points outlined below should be viewed as specific to Happy Hollow Elementary. Many of these recommendations apply to most schools, but agreement on specific points and objectives at the local level may differ among schools. It is also probable that opinions on what constitutes acceptable IPM practices will differ by parents whose children attend inner city schools versus those whose children attend suburban schools. Each school corporation and each school building is unique with respect to resources, funding, building type, and age and even pest complex. Specific decisions must therefore be made and implemented site specifically.

Any school program must be supported by parents and taxpayers in order to remain viable over the long term. To effectively institute an acceptable IPM program in schools, significant lines of communication must be established between parents and: (1) school trustees, who develop school policy; (2) administrators, who enforce policy; and (3) pest control professionals. Dialog of this nature must be based on perceptions and expectations of what IPM means, what

parents and school administrators expect, and what pest control professionals can provide.

Clearly some level of continual education is required.

The following recommendations, based on our survey results, will help gain the confidence of the parents that their children are not exposed to pesticides and pests while attending school.

- Assume public inclusion into the development of an IPM school plan. Parents, staff, teachers, and students will all need to have some level of input. Administrators need to communicate the status of implementation success and failure, and the need for modifications of the plan to all affected individuals.
- Establish an IPM policy, and make it publicly available. Such information will be important in upgrading the knowledge of parents on how pests are controlled at school and under what circumstances pesticides will be used on school property.
- Formally document all pest inspections including sightings and locations.
- Make sanitation and building repairs an important component of the IPM plan. Although practiced to some extent already, these two items are critical to show parents that the school administrators are willing to utilize pest prevention methods other than pesticides.
- Ensure that either custodial staff or their supervisors become state certified, or contract with a commercially certified pest control company.
- Incorporate the use of least toxic pesticides into the IPM plan. This could be accomplished by using products with proven low acute toxicity (caution labels), no long term health effects as indicated on Material Safety Data Sheets, or placements that eliminate exposures such as crack and crevice, or baits.
- Fully and accurately record all information surrounding pesticide use when pesticides are absolutely necessary. Documentation is a key to continued parental support of the use of pesticides.
- Restrict pesticide applications to times when children are not in school. Weekend or evening application reduces the possibility of exposure to children.

- Prevent students from entering rooms or lawns for a specified period of time after pesticide application. Notifying and keeping students out of pesticide-treated areas may be accomplished by posting warning signs at the entrance of rooms or on lawns. Only under specific emergencies should pesticides be applied when students or staff are in session.
- Make pesticide use information publicly available. Send information periodically to parents to inform them as to which pesticides are being used in the control of pests. Make labels and Material Safety Data Sheets available in files at the school office.
- Encourage the principal to address Parent Teachers Organizations on an annual basis, preferably at the beginning of the school year, to discuss the school's IPM policies.

Acknowledgements

The authors thank Mr. Robert Nelson, principal of Happy Hollow Elementary, for his willingness to participate in this study. We wish to extend our thanks to those Happy Hollow School parents who took the time to share their views. Bobby Corrigan, Gene White, Clark Throssel, and Cliff Sadof from Purdue University offered valuable suggestions toward the development of the questionnaire. Andrew Hong was instrumental in statistically analyzing the data set.

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