

A Survey of Pest Problems and Pesticide Use in California Childcare Centers, Including Healthy Schools Act Compliance

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Abstract

The 2006 amendment to the Healthy Schools Act of California requires childcare centers to notify parents and staff of pesticide use, but less than half of those responding to a 2008 survey complied with this law. Almost all California childcare centers responding to the survey reported that they have pests, such as ants and spiders and that they use pesticides to manage those pests. More than half of the responding childcare centers use spray and fogger pesticides, which have a higher potential to expose children to active ingredients than baits and crack and crevice treatments.

Keywords: childcare, schools, California, Healthy Schools Act, survey, centers, pesticides, exposure, children, IPM in the Schools

Introduction

Pesticide Use and Exposure in Childcare Centers

In 2008, 57% of U.S. children under age six had both parents in the labor force, requiring some kind of nonparental care (Children's Defense Fund, 2008). Many infants and young children spend as much as 10 hours per day, five days per week, in childcare centers and preschools (Tulve et al., 2006). By the time they enter kindergarten, 50% of all California children have attended a licensed childcare facility; in addition, California's licensed childcare facilities employ 146,000 persons (Goveia, 2005).

National studies have documented the presence of pesticide residues and other potentially hazardous substances in many childcare centers (Tulve et al., 2006; Breyse et al., 2004; US EPA 2008; Viet et al., 2003). Sixty-three percent of randomly selected, nationally representative licensed centers surveyed in the First National Environmental Health Survey of Childcare Centers (Viet et al., 2003) reported pesticide applications. Approximately 75% of these centers reported at least one pesticide application in the previous year (Tulve et al., 2006). Pyrethroid and organophosphate pesticides were detected in surface wipes and soil samples in 80% of the centers in the study.

There are several factors that increase children's exposure and vulnerability to pesticides, when compared to adults. Children spend more time on the floor, where residues can transfer to skin and be absorbed (Bradman et al., 2006). Young children also frequently place their hands and objects in their mouths, increasing the potential for

nondietary ingestion of pesticides (Cohen et al., 2000; Lo and Connell, 2005). They are also less developed immunologically, physiologically, and neurologically; therefore they may be more susceptible to the adverse effects of chemicals and toxins (Cohen et al., 2000; Lo and Connell, 2005; Bearer, 2000). There is increasing evidence of adverse effects of pesticides on young children, particularly on neurodevelopment. For example, research in California and elsewhere suggests exposure to organophosphate pesticides may be associated with abnormal reflexes in newborns and with poorer mental development and neurobehavior in young children (Eskenazi et al., 2007; Rauth et al., 2006; Eskenazi et al., 2008).

The Healthy Schools Act of California

The Healthy Schools Act (HSA) of California (Torrico, 2006) was originally signed into law in 2000, then amended in 2006. It was enacted in response to parental concern about the health effects of pesticide use on children and school staff in California's public schools. The law established the right of California parents and school staff to know when pesticides are used in California public schools, encouraged least-toxic pest management methods in schools as state policy, and required the California Department of Pesticide Regulation (DPR) to promote and facilitate the voluntary adoption of integrated pest management (IPM) in public schools, and collect school pesticide use information. The Department of Social Services, the licensing agency for California childcare centers, described the new requirements of the HSA via a newsletter posted on its website. Apart from this action, little was done to notify the public – and childcare centers – of the provisions of the new law.

The HSA defines IPM as a means of preventing and suppressing pest problems by using a combination of monitoring and recordkeeping, establishing pest thresholds, and employing nonchemical methods to manage pests. Chemical controls that pose the least possible hazard to human health and the environment are used only with careful monitoring, when nonchemical treatments have failed, and when pre-established thresholds have been exceeded. Given the large number of very young children potentially being exposed to pesticides, the California legislature enacted Assembly Bill 2865 in 2007, which extended the HSA to all California childcare centers (but not licensed family daycare homes).

The HSA requires schools and childcare centers to do the following:

- **Provide annual notification.** Each school/childcare center must provide to parents and staff a written notification of all pesticide products that are expected to be used during the upcoming year.
- **Maintain a registry.** Each school/childcare center must provide a way for parents and staff to sign up to be notified before a pesticide is used.
- **Post warning signs.** Every school/childcare center must post warning signs around each area where pesticides will be applied. These signs should be in place 24 hours before and stay in place 72 hours after pesticides are used. These signs should be large enough to prevent any adult from accidentally entering areas where pesticides have been used.

- **Keep records.** Every school/childcare center must keep records of what pesticides have been used at the site for the past four years, and the records must be available upon request.
- **Prohibit entirely the use of certain pesticides.** Some pesticides may never be used in school/childcare center settings. For a list of these pesticides, see AB 405 List of Pesticide Products Prohibited from Use in Schools (www.cdpr.ca.gov/schoolipm/school_ipm_law/prohibited_prods.pdf).

Relevant to the use of pest management tools, licensed childcare centers in California are also required by regulations to keep their facilities “free of flies, other insects, and rodents.” The regulations do not specify the use of IPM, although under the HSA, IPM is encouraged.

Methodology

In 2008, DPR contracted with the Center for Children’s Environmental Health Research (CCEHR) at the University of California, Berkeley, to identify pest problems and pest management practices in California’s licensed childcare centers. The questionnaire (Figure 1) collected information on five key areas:

- Prevalence of specific pest problems
- Methods used to mitigate pest problems
- How and by whom pest management decisions are made
- Frequency of pesticide use
- Compliance with key requirements of the HSA (parental notification, the posting of signs in areas where pesticides are applied, and pesticide use recordkeeping)

The questions addressed self-reported indoor and outdoor pest problems and management practices at the childcare centers. The survey asked if the respondent had problems with any pests that were listed. Specific pest management information collected included use of any pesticides; use of application methods not exempt from the HSA, such as sprays and foggers; use of HSA-exempt application methods, such as self-contained pesticide bait stations (e.g., roach motels); and use of nonpesticidal pest management practices, such as cleaning, pest exclusion, eliminating food sources, sealing cracks, installing barriers, and building and lawn maintenance. Additionally, the questionnaire asked if the respondent knew of IPM and how they would prefer to receive educational information about pest management in childcare centers.

The questionnaire was limited to two pages in recognition of the time constraints on childcare providers and the survey’s reliance on voluntary participation. The questionnaire was available in two languages (English and Spanish) and in paper and electronic formats. A paper questionnaire was mailed to 2,000 randomly selected, licensed California childcare centers in November 2008.

Results and Discussion

A total of 637 centers completed the questionnaire, for a response rate of 32%. The response rates were slightly higher in the San Francisco Bay area, North Coastal region, and Sierra counties vs. the Central Valley and Southern California counties.

Reported pest problems and pesticide use were slightly higher in the low-response-rate counties. Overall, there were some differences in demographic characteristics between the neighborhoods of responding vs. nonresponding centers. However, characteristics likely to be associated with pest infestations and pesticide use, such as low income and building type, were similar, suggesting minimal bias due to these factors.

A year after the law was amended in 2007 to include childcare centers, fewer than half of the responding centers reported that they always complied with the notification requirements of the HSA. More than a quarter of programs using sprays or foggers (i.e., nonexempt pesticides) reported that they never notify parents of pesticide applications. An additional 12% said that parental notification was not applicable when, in fact, it was applicable (Figure 2).

Warning signs are required when nonexempt pesticides are applied at childcare centers, but less than half of respondents reported they always posted pesticide application warning signs. Over one-third of programs using pesticidal sprays or foggers never posted warning signs. An additional 14% erroneously reported that the requirement to post warning signs was not applicable (Figure 3). The HSA also requires childcare centers to maintain records for four years of all pesticides not exempt from the HSA that are used at the facility and to make the records available to the public upon request. Among the centers reporting pesticide use, almost three-quarters reported keeping records. Nearly all of the centers reported at least one pest problem. Ants, spiders, mice, and rats were common pest problems both indoors and outdoors. Other indoor pests frequently reported in the survey included head lice, cockroaches, and flies. Pests that were a problem outdoors included bees and wasps, weeds, and squirrels/gophers (Figure 4). Although DPR does not regulate products sold for head lice control, they do receive reports of indoor insecticide applications made for the purpose of managing that pest.

More than half of reporting centers (55%) used pesticides to control pests, with 47% reporting the use of sprays or foggers that can leave residues on surfaces and in the air – potentially exposing children and staff to those pesticides. Sprays and foggers are not exempt from the Healthy Schools Act. Thirty percent of centers reported using these pesticide application methods associated with higher exposure risk indoors, where children play and staff work. These methods were used most often to manage ants, spiders, and cockroaches. In contrast, few centers (8%) reported using only HSA-exempt, low-exposure pesticide application methods such as bait stations. These low-exposure methods are exempt from the notification, posting, and school recordkeeping requirements of the HSA and were used most commonly for rodents and cockroaches. Most centers (68%) reported the use of at least one IPM-based practice, such as eliminating food sources or sealing cracks, although only a quarter (25%) of respondents reported knowing what the term IPM meant.

The frequency of pesticide applications varied widely. Twenty-nine percent of respondents reported that pesticide applications occurred a few times or less per year, suggesting spot applications in response to specific problems. As many as one in five respondents, however, reported applying pesticides on a weekly or monthly basis. These types of scheduled applications are not needed if no pests have been detected and are not consistent or usually necessary with an IPM program. The survey did not

include a question about pest thresholds, but, if no pests were detected and/or no monitoring program was in place, this behavior may indicate that many childcare centers apply pesticides without regard to pest thresholds.

Childcare centers reported that many people, and in some cases multiple people, were involved in making pest management decisions. Most childcare centers reported that the director or providers had that responsibility. However, almost one-quarter of surveyed programs reported that custodial staff also made decisions about pest management indoors and/or outdoors, and nearly a third of the programs reported involvement of pest management professionals (Figure 5). These overlapping responsibilities indicate that IPM education and outreach should be targeted to include all groups responsible for pest management in childcare centers.

Similarly, many people were responsible for applying pesticides. Most programs using pesticides reported hiring pest management companies for pesticide application. However, other individuals were also responsible for applying pesticides: one-quarter of respondents identified childcare staff, and one-quarter identified custodial staff. Other people responsible for pesticide applications included property owners and other individuals (Figure 5). Thus, in many facilities, more than one person was applying pesticides, and, in many cases, those individuals were not pest management professionals. Moreover, some of these applicators were not be directly affiliated with the childcare center. Examples include property owners or, in the case of centers located in a larger building or complex, custodial staff maintaining the larger facility. This can be problematic since people not affiliated with the center may not follow or even know of the requirements of the HSA.

Respondents were asked to cite all of their reasons for using pesticides in their childcare centers. More than half used pesticides because they considered them to be more effective than other pest control methods. Pesticide use, when compared to nonpesticidal pest control, was also considered safer, more convenient, and a strategy that kept the child care environment clean (Table 1). The reasons childcare centers provided for decisions to use pesticides suggest that education is needed to ensure that pesticides are considered as only one of several pest management practices and, according to IPM principles, a choice of last resort.

Table 1. Why were pesticides used?

More Effective	55%
Safer	30%
Other	28%
Required	21%
More Convenient	20%
Keeps Things Clean	14%
Less Expensive	8%
Didn't Know What Else To Do	6%

Note: More than one answer was possible

According to respondents, childcare centers received information about pest management from multiple sources. Pest management companies were the most common source of pest management information to respondents; other common sources were government agencies, property owners, the Internet, and product packaging. Respondents preferred to receive IPM information and educational materials through websites, email, and pamphlets.

Conclusion

According to the 2008 survey, most childcare center staff were unaware of either the HSA requirements or of IPM. There are people applying pesticides in childcare centers who are not pest management professionals; DPR staff is concerned that these individuals may not be trained in IPM or in safe pesticide use practices. This information helped DPR to determine the pest management education needs and set a course of action between 2008 and 2012 that included:

- Presenting IPM and HSA training at childcare conferences
- Presenting IPM and HSA training at local agencies responsible for licensing childcare centers
- Presenting IPM and HSA training to licensed pesticide applicators
- Publishing articles describing the HSA in two pesticide applicator newsletters
- Modifying and developing outreach materials (pest factsheets, HSA summary, template forms for complying with HSA requirements, and an IPM toolkit) for distribution to childcare providers.
- Modifying the California School IPM website to include childcare-specific pages
- Developing a listserv for childcare providers

The sheer number (13,000+) of childcare centers that must comply with the HSA makes outreach difficult and expensive. In early 2012, however, an informational postcard was sent to all California childcare centers informing them of their responsibilities under the HSA and directing them to the DPR website for more information. DPR hopes that centers will comply with the law once they know more about it. A follow-up survey is being planned for 2013 to track progress on HSA compliance and adoption of IPM.

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Figure 1. Questionnaire – Pest Problems and Pesticide Use in Childcare Centers in California.

CODE: _____

PEST MANAGEMENT AND PESTICIDE USE IN CALIFORNIA CHILD CARE CENTERS

The California Department of Pesticide Regulation, the California Childcare Licensing Division, and the University of California at Berkeley Center for Children’s Environmental Health Research are working together to help make indoor environments healthier and safer for children. Your child care facility is one of 2,000 across California that has been selected to participate in this important work. Please take a few minutes to complete this short survey on pest problems and the methods that are used to control pest problems in your facility. **Please complete and return this survey by January 1, 2009.** Alternatively, you can complete this survey online by going to <http://www.childcareipm.info>. Your answers will help us learn about the kinds of pest problems faced by California child care facilities and the things we can do to help you keep these problems from harming our children. At the end of this survey, you can enter a drawing for a \$100 gift certificate to Michaels Craft Store for your child care facility.

► 1. In the last year, did you have problems **INSIDE** your facility with any of the pests listed below? If yes, please mark what was done. Please check all that apply.

Indoor Pests	No	Yes	Did nothing	Sprayed Pesticides	Used bait or poison traps	Used poison Pellets or powder	Used pest bombs or foggers	Used sticky fly strip Or mouse/rat trap	Removed food sources	Cleaned the area	Sealed cracks and openings	Installed screens or other barriers	Fixed leaks	Other (Please write in your answer)
Ants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cockroaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Fleas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Head lice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mice or rats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spiders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Termites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Flies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

► 2. Who decides how or when to control indoor pest problems at your child care facility? Please check all that apply.

- Me
- Director
- Teacher
- Another Staff Member
- The property owner
- The custodial staff
- A pest control company
- Don't know/Not sure
- Don't have indoor pest problems
- Other: _____

► 3. If indoor pesticides were used at your child care facility in the last year, who applied them? Please check all that apply.

- Me
- Director
- Another Staff Member
- The property owner
- The custodial staff
- A pest control company
- Don't know/Not sure
- Indoor pesticides were not used in the last year
- Other: _____

► 4. Why were indoor pesticides used? Please check all that apply.

- It was less expensive.
- It was more effective.
- It was more convenient.
- It keeps things clean.
- It was safer.
- It was required.
- I didn't know what else to do.
- Don't know/Not sure
- Indoor pesticides were not used
- Other: _____

Figure 1. Cont'd.

► 5. In the last year, did you have problems **OUTSIDE** your facility with any of the pests listed below? If yes, please mark what was done. Please check all that apply.

Outdoor Pests			Did nothing	Sprayed Pesticides	Used bait or poison traps	Used poison	Used pest bombs or foggers	Used sticky fly strip Or mouse/rat trap	Used bee traps	Removed food/ breeding sources	Mowed or watered the lawn	Other (Please write in your answer)
	No	Yes										
Ants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bees or wasps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Fleas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mice or rats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Snails or Slugs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spiders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Squirrels or Gophers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Weeds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

► 6. Who decides how/when to control outdoor pest problems at your child care facility? Please check all that apply.

- Me
- Director
- Another staff member
- The property owner
- The custodial staff
- A pest control company
- Don't know/Not sure
- Don't have outdoor pest problems
- Other: _____

► 7. If outdoor pesticides (including weed killer) were used at your child care facility in the last year, who applied them? Please check all that apply.

- Me
- Director
- Another staff member
- The property owner
- The custodial staff
- A pest control company
- Don't know/Not sure
- Outdoor pesticides were not used in the last year
- Other: _____

► 8. Why were outdoor pesticides (including weed killers) used? Please check all that apply.

- It was less expensive.
- It was more effective.
- It was more convenient.
- It keeps things clean.
- It was safer.
- It was required.
- I didn't know what else to do.
- Don't know/Not sure
- Outdoor pesticides were not used
- Other: _____

► 9. Over the past year, how frequently were pesticides sprayed, scattered, or "bombed"?

- Once per week
- Once per month
- Once per year
- A few times per year
- Whenever pests become a problem
- No pesticides were used
- Not applicable (No pesticides were sprayed, scattered, or "bombed.")

► 10. Over the past year, did your child care facility notify parents before pesticides (including weed killers) were applied inside or outside your facility?

- Always
- Sometimes
- Never
- Not applicable

► 11. Over the past year, did your child care facility post warning signs after pesticides (including weed killers) were applied?

- Always
- Sometimes
- Never
- Not applicable

Figure 1. Cont'd.

<p>▶ 12. If your landlord or building manager is responsible for pest control, does she/he tell you in advance when pesticides are going to be applied?</p> <p><input type="checkbox"/> Always</p> <p><input checked="" type="checkbox"/> Sometimes</p> <p><input type="checkbox"/> Never</p> <p><input checked="" type="checkbox"/> Not applicable</p>	<p>▶ 13. Integrated Pest Management (IPM) is an approach to keeping pests, like the ones mentioned in this survey, below harmful levels and reducing or eliminating pesticide use. Have you heard of IPM?</p> <p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p>	<p>▶ 14. Does your child care facility keep written records of applications of bug killers, weed killers, rat killers, or other pesticides?</p> <p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Don't know/Not sure</p> <p><input checked="" type="checkbox"/> Not applicable</p>
<p>▶ 15. Does your child care facility have a written policy for use of bug killers, weed killers, rat killers, or other pesticides, stating when and how to apply pesticides?</p> <p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Don't know/Not sure</p> <p><input checked="" type="checkbox"/> Not applicable</p>	<p>▶ 16. Where do you or your center get your information about pest and weed control? Please check all that apply.</p> <p><input type="checkbox"/> Training sessions</p> <p><input checked="" type="checkbox"/> Pest control company</p> <p><input type="checkbox"/> Friends</p> <p><input checked="" type="checkbox"/> Other child care providers</p> <p><input type="checkbox"/> Associations of child care providers</p> <p><input checked="" type="checkbox"/> Government agencies</p> <p><input type="checkbox"/> Product packaging</p> <p><input checked="" type="checkbox"/> Advertisements</p> <p><input type="checkbox"/> The Internet</p> <p><input checked="" type="checkbox"/> Books, magazines, or other publications</p> <p><input type="checkbox"/> The property owner or building manager</p> <p><input checked="" type="checkbox"/> Other: _____</p>	<p>▶ 17. How would you like to see free information on less risky and more effective pest control methods? Please check all that apply.</p> <p><input type="checkbox"/> On a website</p> <p><input checked="" type="checkbox"/> In an email</p> <p><input type="checkbox"/> In a pamphlet</p> <p><input checked="" type="checkbox"/> At a seminar</p> <p><input type="checkbox"/> On a DVD</p>

Thank you for participating in this study! Please return this survey to us in the addressed, stamped envelope provided. If you would like to enter a drawing to win a \$100 gift certificate to Michaels Craft Store for your center, please provide your contact information. Providing this information is optional, and any information provided will be kept confidential.

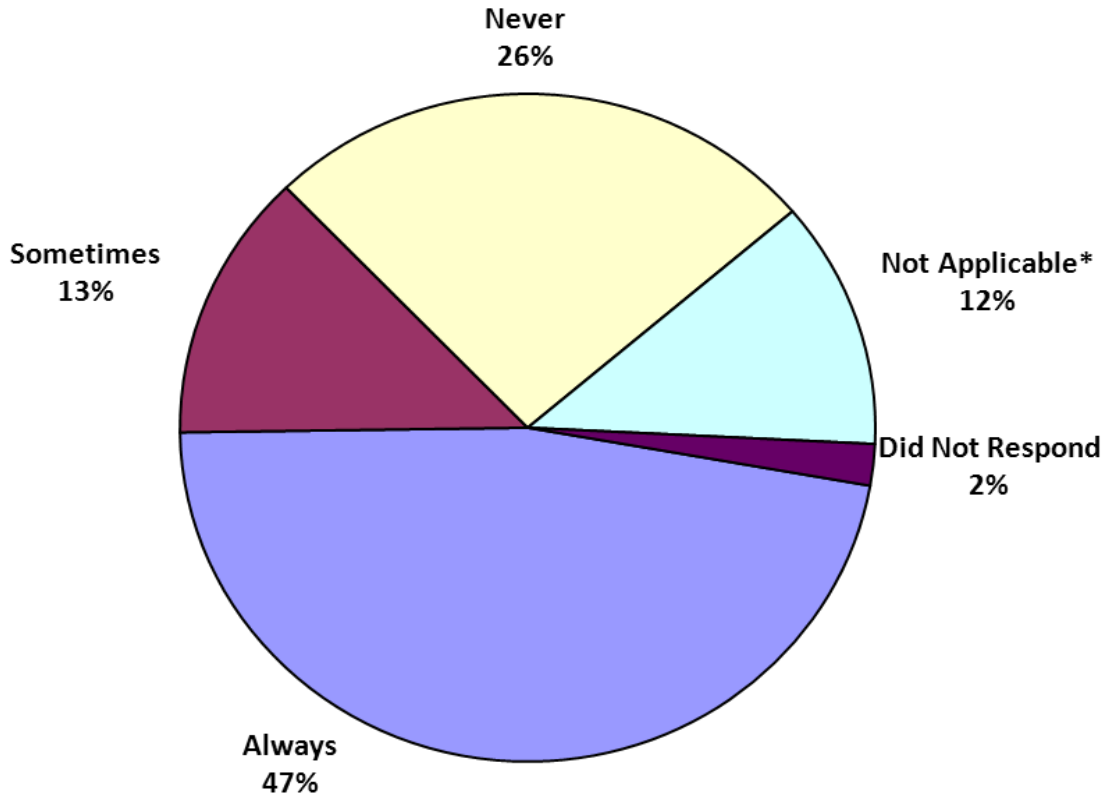
Your name: _____ Your title: _____

Name of your Child Care Center: _____

Address: _____ Phone number: (____) _____

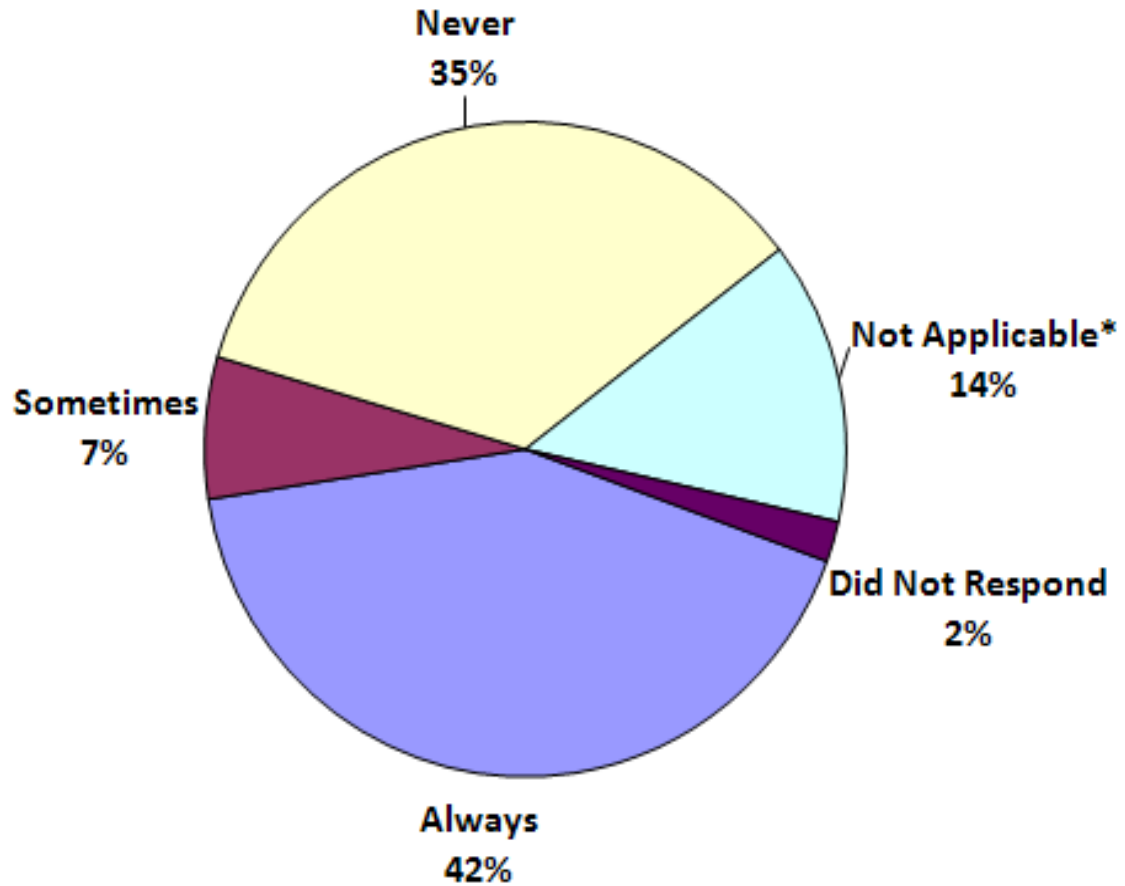
_____ Email Address: _____

Figure 2. Percentage of centers notifying parents of pesticide applications when required.



*Centers erroneously stated that notification was not applicable.

Figure 3. Percentage of centers posting required warning signs when applying pesticides.



*Centers erroneously stated that posting warning signs was not applicable.

Figure 4. Pests found in and around childcare centers.

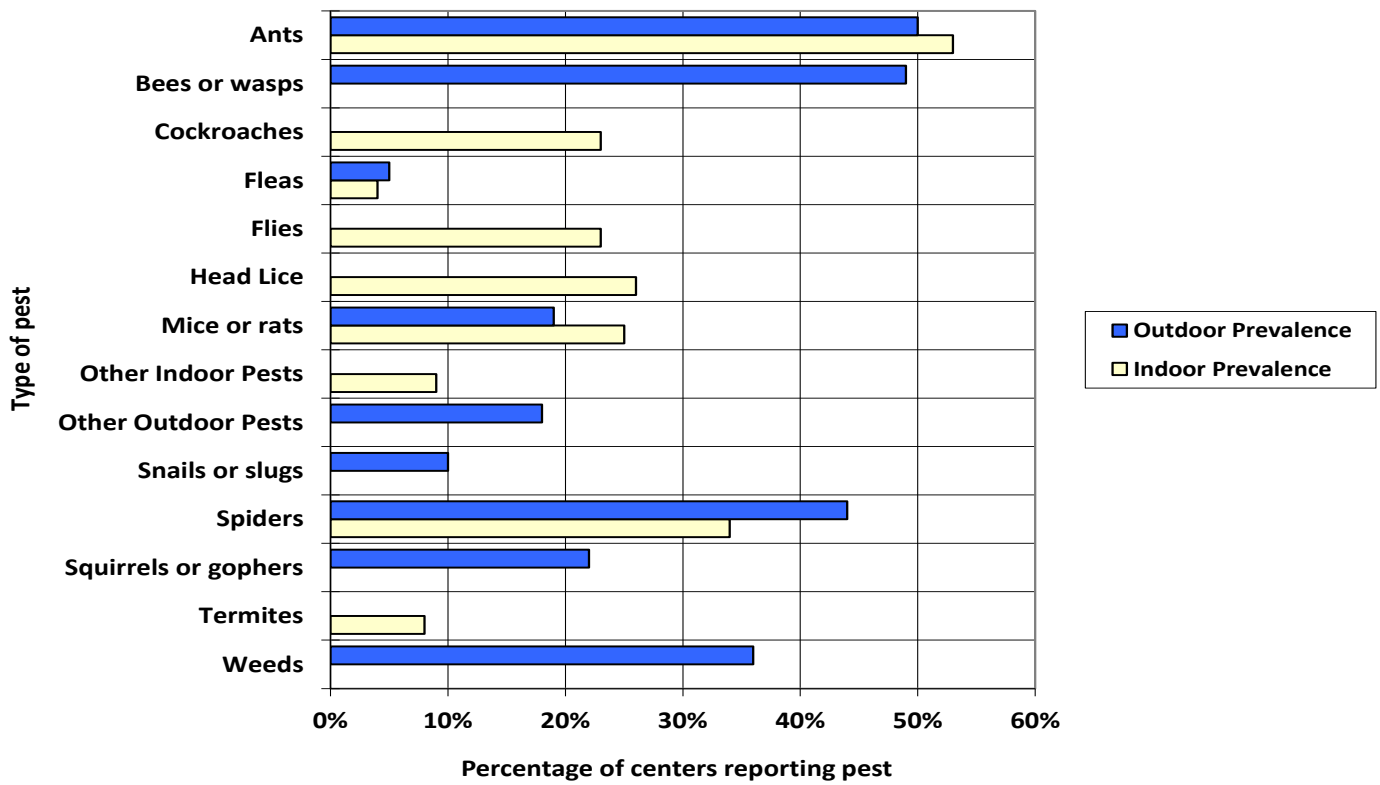


Figure 5. Pest management decision-making and application.

