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Project Title:

**An Integrated Pest Management Curriculum for Early Care and
Education Programs**

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FINAL REPORT

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I. Introduction

Young children, especially infants and toddlers, are at increased risk of exposure to environmental contaminants due to their unique behaviors and physiologic immaturity. They may crawl, roll, and lie on contaminated surfaces. Their hand-to-mouth and object-to-mouth behaviors may inadvertently result in an ingestion of pesticides in contaminated environments. They also breathe close to the ground, where pesticide residues accumulate. Finally, their high daily intake of air, water and food per unit body weight of children and their relatively large skin surface area per unit body weight increase their exposure to environmental pesticides (Wigle 2003). There is increasing concern about the effects, particularly cognitive, neurological and respiratory, on infants and toddlers of exposure to pesticides (Makri, Goveia et al. 2004; Bouchard MF, Chevrier J, Harley KG, et al.). Unlike teachers of school-aged children, child care providers must keep child care environments clean *as well as* sanitized, because of the increased transmission of infectious diseases by young children who share their toys and germs freely. Products that sanitize are potentially more toxic than those agents that simply clean and this risks posed by these have been inadequately studied (Jurewicz, Hanke et al. 2006). In the absence of adequate scientific data on the effects, both short- and long-term, of pesticides on young children, prevention practices that reduce the level of exposure are needed.

In California, many infants and young children spend as much as 10 hours per day, 5 days a week, in child care (Tulve, Jones et al. 2006) with licensed family child care programs serving about 350,000 children and centers serving about 600,000 children under 5. Additionally, 146,000 staff work in the approximately 59,000 licensed facilities in CA. CA has the largest number of licensed childcare centers in the U.S. (CA Child Care Licensing; www.cclid.ca.gov/res/pdf/CCUpdateWinterSpring0411.pdf).

The First National Environmental Health Survey of Childcare Centers, a probability-based study, was conducted by the U.S. Department of Housing and Urban Development (HUD), EPA, and the Consumer Product Safety Commission (CPSC). The study assessed children's exposures to lead, allergens, and pesticides in licensed childcare centers located in the 48 contiguous United States. Sixty three percent reported pesticide applications (Tulve, Jones et al. 2006). An estimated 75% of centers reported at least one pesticide application in the last year. Pyrethroid and organophosphorus pesticides were detected in 80% of the centers. Of 39 pesticides tested, at least one showed up in every center in the study. Individual centers reported using anywhere from 1 to 10 pesticide products (mean (SD) = 3(1.9)) and the frequency of pesticide applications ranged from 1 to 107 times annually.

Pesticides used in and around child care facilities may result in exposures to young children. In California, a questionnaire-based survey of 284 facilities found that problems with mold, cockroaches, and other factors potentially associated with respiratory disease problems were common (Goveia, Shaikh et al. 2005). In a pilot study of nine child care centers, Wilson et al (Wilson, Chuang et al. 2001) detected organophosphate pesticides, pyrethroids, phthalates, and persistent organochlorine compounds in air and dust, suggesting that exposures in child care environments may constitute a significant portion of total child exposures. In one study (Morgan, Sheldon et al. 2007), results showed that the urinary metabolite of pyrethroids, 3-

PBA, was detected in 67% of the preschool age children's urine samples and the authors argue that the children were potentially exposed to cis- and transpermethrin in several media at their homes and child care centers. In 2010, a CA survey on IPM practices was published by Dr. Bradman and colleagues, which was funded by the Department of Pesticide Regulation. The results of the survey of 637 ECE centers showed that over 90% of the ECE programs reported at least one pest problem and 55% reported using pesticides to control these pests (Bradman, et al., 2010).

Assembly Bill 2865 extended the requirements of the California Healthy Schools Act (HSA) to licensed child care centers in California. The HSA encourages CA child care centers to implement IPM practices and requires notification parents about pesticide use. Most child care providers are not familiar with IPM. Many child care providers, and parents, increasingly express concern about how to implement less toxic practices for cleaning, sanitizing and pest control. In a 2002 Minnesota Pest Management Survey (Jones 2002) of Head Start, child care, and preschool programs, programs reported they obtained information on pest management from a pest control/landscape professional (45%), personal knowledge (29%), outlets that sell pesticides (21%), or they did not obtain pest management information at all (20%). In California, key sources of pest management information to child care providers include pest management companies (63%), government agencies (19%), the Internet (18%), property owners (18%), and product labeling (17%) (Bradman, et al., 2010).

All states set licensing requirements for child care centers and providers. Requirements in California include factors related to the home's or center's cleanliness and safety precautions both inside and outside the home/center. With regard to pests and pest control, The State of California Child Care Licensing Regulations http://www.dss.cahwnet.gov/ord/CCRTitle22_715.htm (regulations 101238 and 101238) stipulate that:

The child care center shall be clean, safe, sanitary and in good repair.

- The licensee shall take measures to keep the center free from flies, other insects, and rodents.
- The licensee shall safely dispose of disinfectants/solutions that have been used for cleaning.
- Solid waste shall be stored, located and disposed of in a manner that will not transmit communicable diseases or odors, create a nuisance or provide a breeding place or a food source for insects or rodents.
- All containers used for storage of solid wastes, including moveable bins shall have a tight fitting cover that is kept on, shall be in good repair and shall be leak-proof and rodent-proof.

These regulations are the legally binding requirements for child care providers in the state and child care providers can be cited for non-compliance with these regulations by licensing inspectors. There is no mandate that programs use integrated pest management practices to reduce the use of pesticides in child care programs.

The national quality standards for child care, *Caring For Our Children, Second Edition* (American Academy Of Pediatrics 2002), developed by the American Academy of Pediatrics and the American Public Health Association stipulate that:

Areas where children play shall be kept free of animal wastes, insects, infestation by rodents and other pests and shall not provide shelter to pests. Whenever it is determined that there are pests, the facility shall take the necessary actions to exclude, exterminate or otherwise control such pests on the premises. All extensive extermination shall be provided by a licensed or certified pest control operator and only after IPM methods have been exhausted.

Rationale: This standard reduces potential health hazards to children caused by the presence of pests. Before considering extermination, other non-chemical pest management methods must be implemented. This will reduce unnecessary exposure of children to chemical pesticides.

While the national quality standards recommend that IPM measures be the first line in attempts to control pests, California licensing regulations say nothing about the use of IPM; instead, they emphasize eradication.

To address the gaps in child care providers' knowledge about the Healthy Schools Act, the common use of pesticides in child care programs, and children's vulnerability to the health hazards related to exposure to pesticides, the California Childcare Health Program, administered by UCSF School of Nursing, conducted a project to develop an Integrated Pest Management (IPM) Toolkit for Early Care and Education Programs, disseminate the IPM Toolkit and conduct a pilot study on the changes in IPM practices for programs participating in the workshops, IPM Checklist assessments, and director interviews.

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II. Goals and Objectives

- A. The overall goal of the Project was to increase the use of integrated pest management (IPM), decrease use of pesticides, reduce exposure of young children and child care staff to pesticides and reduce associated health risks for all children and adults in child care settings in California.**

To meet our goal we developed a new IPM Toolkit for Early Care and Education (ECE) Programs, provided IPM workshops for child care staff, disseminated the IPM Toolkits and conducted a pilot study on the effects of the IPM workshop and Toolkits on practices in nine child care centers. The IPM Toolkit was developed to inform child care providers about California's Healthy Schools Act, identify the risks of pesticide exposure to young children, identify the reasons to use IPM in child care programs, assess exposure to pesticides and pests, and implement IPM in child care programs.

Nine child care centers participated in the IPM workshops and pilot evaluation study. These centers included 836 children from low income, diverse ethnic backgrounds. The IPM Checklists and director interviews showed there were many positive changes made over the 4 to 6 months after the IPM workshops were provided for the child care staff. There were improvements in staff's understanding of the Healthy Schools Act, an increase in the use of IPM practices, improvements in the child care facilities' conditions, and a decrease in the number of pests present in the centers.

B. Objectives and Activities Completed

1. Plan, implement and evaluate the project.

We conducted regular meetings with our **CCHP staff**, Abbey Alkon and Vickie Leonard, along with Asa Bradman at the UC Berkeley Center for Environmental Research and Children's Health (CERCH). In 2009, we hired two summer interns (Casey Palmer and Anna Schwarzbach) and in Sept. 2009, we hired Devina Kuo, a graduate student researcher (GSR), and in June, 2010, we hired another GSR, Evie Kalmar, to work with our team. The GSRs helped us develop the IPM Toolkit, Workshop content, format and slides, and evaluation measures. The GSRs also helped write the UCSF Committee on Human Research application, recruit centers for the project,

conduct the IPM workshops, and complete the pre- and post-workshop interviews and Checklists.

The general outline of the Project, included developing the IPM Toolkit, conducting workshops in child care programs, disseminating the Toolkit, and conducting a pilot study on the facility changes implemented after the IPM workshops are described in Appendix A. Overview and Flowchart of Project.

The **Alliance Management Team** was an interdisciplinary group of comprised of scientists and child care professionals, including Abbey Alkon from UCSF School of Nursing and CCHP, Vickie Leonard from CCHP, Asa Bradman from the UC, Berkeley Center for Environmental Research and Children's Health, Mary Lou Flint from the UC IPM Statewide Program, and Nita Davidson and Mark Roberts from the Department of Pesticide Regulation (Appendix B. Interdisciplinary Team). Together we developed the IPM Toolkit outline, key messages, and technical content. The Team met often to plan, develop and review the IPM Toolkit. Face-to-face meetings were held in Jan, Feb, July, Nov. 2009, phone meetings (6/2009, 10/2009), email (12/2009, 4/2010), and there were other small group meetings to review and finalize IPM Toolkit documents. The Team worked very closely together throughout the project and provided regular feedback during each phase of the project. Each team member contributed unique knowledge from their field including epidemiology, entomology, nursing, public health, and child care. This blend of knowledge and excellent team work produced a high quality IPM Toolkit that is relevant for the child care professionals yet based on evidence-based research and practical experience in the field.

We had one in-person **Alliance Partner Team** meeting at CCHP March, 2009 and subsequent contact by email. The Alliance Team (Appendix B. Interdisciplinary Team) was comprised of child care professionals and were asked to review our Toolkit for its relevance to the child care community and ease of understanding the key messages and overall content in the Toolkit. The group confirmed that there is an interest among child care providers in California to develop more 'green' approaches to environmental problems. They shared their experiences dealing with pests and what problems the IPM Toolkit should address. They suggested that the Health and Safety Notes/ Pest Sheets and Fact Sheets for Families should include an Action Plan for each pest. The Action Plan was operationalized as a table at the end of each Note with practical, easy-to-follow information. The Action Plan table includes four columns: When to Take Action, Nonpesticide Practices, Least Harmful Pesticide, and Last Resort (see Health and Safety Notes). The Alliance Team also read each of the final drafts of the IPM curriculum, complimentary materials and IPM Checklist and gave us feedback via email and phone. They were acknowledged on the IPM Toolkit covers and in the Curriculum.

2. Develop an IPM curriculum.

The Alliance Management Team and CCHP staff discussed the IPM language and terms to include in the IPM curriculum and also in the complimentary materials for the IPM Toolkit. We discussed the key messages, common terms, outline, and format for each component of the IPM Toolkit (Appendix C. Guide to Language). This document was very helpful for all the staff working on the documents and the review team to check for our consistent messages and terms in each document included in the IPM Toolkit.

The IPM curriculum was the first document of the IPM Toolkit completed. It was organized with the following sections:

- Introduction, including Learning Objectives
- What is Integrated Pest Management?
- The Healthy Schools Act
- Pests - What you need to know
- Pesticides - What you need to know
- Understanding IPM Practices
- Implementing IPM in your ECE Program
- How to hire a pest management professional
- Glossary of terms
- Resources
- Appendices, including sample IPM Policy, sample letters, parent/staff application to be enrolled in the notification registry, warning signs, sample pest monitoring log

3. Develop complimentary materials to the IPM Curriculum.

The Alliance Management Team reviewed the results of child care Pest Management Survey conducted by Dr. Asa Bradman (Bradman, et al., 2010) to identify which pests to include as Health and Safety Notes/ Pest Sheets. We identified nine pests and the CCHP team conducted research on these pests, wrote numerous drafts, distributed the drafts to our Alliance Team, edited the Notes, and prepared the final drafts. The format and language used to develop the Notes, Fact Sheets for Families, and Posters were consistent (Appendix C. Guide to Language). The complimentary materials were:

Health and Safety Notes (n=9) on specific pests: ants, cockroaches, head lice, molds/mildew, mosquitoes, rodents, slugs and snails, spiders, and yellowjackets. Additional Health and Safety Notes were written on relevant topics for IPM: green cleaning and sanitizing safely and effectively.

Fact Sheets for Families (n=2) on ants and head lice.

Posters (n=4) on Steps to a Pest-Free Indoor Environment, Steps to a Pest-Free Outdoor Environment, How to Choose a Safer Pesticide to Manage Pests, How to Read A Pesticide Label.

4. Pilot test the IPM curriculum.

The CCHP team conducted a pilot workshop with two child care center staff using the English-language IPM curriculum. The child care providers who attended discussed the workshop with the CCHP staff and gave them informal feedback on the key messages, format for the workshop and curriculum, and content relevant to their work. Based on their feedback, we revised the workshop slides, presentation format (added activities), and prepared IPM Toolkits for each workshop (Appendix D. IPM Toolbox_Contents).

5. Translate the IPM Toolkit into Spanish.

The Spanish translation of the Toolkit was led by CCHP's translator, Alejandra Sosa Siroka. She completed the initial Spanish translation of all the materials and then Devina Kuo, bilingual GSR, reviewed the translation. Lastly, Polo Moreno, DPR staff, reviewed the Spanish

translations to check the DPR terms so the IPM Toolkit would include Spanish terms consistent with other DPR materials. During this process we developed a list of Spanish-translations that would be used regularly and consistently throughout the IPM Toolkit (Appendix E. Consistent Spanish Terms). If there were discrepancies between the translators, Abbey discussed them with the staff and Alejandra and Abbey made the final decision about the Spanish translation to include in the IPM Toolkit.

6. Format and print IPM Child Care Toolkit.

The layout, illustrations and format for the curriculum and complimentary materials were created by the graphic designer, Robin Brandes, in consultation with the CCHP team and Dr. Bradman. Ms. Brandes developed special fonts, colors, and layout for each page of the IPM curriculum and for each component of the IPM Toolkit. She included digital illustrations created by Noa Kaplan to illustrate the specific information about IPM. Lastly, Robin Brandes created the folders of the IPM Toolkit to include the title page with an illustration on the front, acknowledgements printed on the front inside cover, and pockets on the right and left hand side to hold the materials in place. The curriculum and laminated posters were placed under the left pocket and the Health and Safety Notes, Fact Sheets for Families and IPM Checklist were placed under the right pocket.

7. Disseminate the IPM Toolkit to R&R Agencies.

IPM Toolkits in English and Spanish were mailed to the 73 Resource and Referral Agencies in California.

8. Submit IPM curriculum to California Emergency Medical Services Authority (EMSA).

Lucy Chaidez at EMSA reviewed the IPM Toolkit and was sent complimentary copies of the IPM Toolkit in English and Spanish.

9. Develop an IPM Checklist and Director Interview.

The team developed a new **IPM Checklist**, an observational, standardized 85-item instrument to assess child care programs' pest control practices, evidence of pests or damage caused by pests, and structural integrity of facility in the outdoor and indoor areas. The Checklist was developed based on our review of other IPM Checklists, content covered under the HSA, the CA School IPM curriculum, feedback from our Alliance Management Team and Partners, two RN Child Care Health Consultants, and pilot testing in 9 child care centers. We used our pilot IPM Checklist (73-items) to complete the pilot study (Appendix F. Pilot IPM Checklist) and revised it to develop the final IPM Checklist. Based on our preliminary findings of the pilot IPM Checklist (Appendix G. IPM Pilot Checklist: Descriptive Data), discussions with our IPM Alliance Management Team, and relevance of items to the final IPM Toolkit, we added some items and consolidated other items. The changes made from the Pilot IPM Checklist to the IPM Checklist were that some of the pilot items were dropped (i.e. presences of dust and cobwebs) and new items were added to include observations of roof gutters, water sources, water drainage, foundation, and food storage.

The final IPM Checklist included in the IPM Toolkit is a 10-page document with 3 main sections:

1. Instructions on how to complete the Checklist; Helpful tools for an IPM inspection; Notes on evidence of pests or damage they cause
2. 85-Item Checklist with 3 main sections and subsections based on location of observation:
 - a. Outdoor areas: garbage storage, building exterior, landscape and play area
 - b. Indoor areas: kitchen, bathrooms, common space, play area, eating area, storage area, staff area
 - c. Pesticide use and IPM practices
3. Explanation of some items listed in the IPM Checklist – more details on why you need to inspect specific areas of the facility.

We also developed a **Director Interview** to collect information about the IPM Practices not easily observable using the IPM Checklist (Appendix H. Director Interview). The interview includes demographic information about the director, staff, and children, building maintenance and policies, cleaning/ sanitizing, and pesticide use/ IPM practices. The post-workshop interview includes the same IPM questions but includes qualitative questions to learn more about what IPM practices were implemented and challenges encountered.

10. Conduct 8 IPM workshops for child care providers, directors and custodial staff.

The CCHP staff identified a convenience sample of child care centers to conduct the workshops and participate in the pilot research study. Two workshops were conducted in Spanish and English and the other workshops were in English only. The workshops were attended by child care providers and directors, and one workshop included primarily custodial or maintenance staff. At each 1 to 1.5 hour workshop, the CCHP staff started the workshop with a game and question to the participants, What did they want to learn at the workshop?. The workshop included a slide presentation and hands on experience with the IPM tools. Each center was given a plastic bin with IPM tools to help the center start using IPM (Appendix D. IPM Toolbox Contents). The slides for the English and Spanish presentations are available on the CCHP website (<http://www.ucsfchildcarehealth.org/html/pandr/trainingcurrmain.htm>) (Appendix IA and IB Workshop Presentation Slides_English and Spanish).

11. Present two IPM workshops at statewide ECE professional conferences.

CCHP staff submitted abstracts to several ECE conferences and presented the IPM Toolkit at the following conferences:

- a. California Association for the Education of Young Children, April 2010, Long Beach, CA. Presenters: Belinda Messenger, DPR, Vickie Leonard, CCHP, Asa Bradman, CERCH
- b. National Association for the Education of Young Children, Nov, 2010; Anaheim, CA; Presenters: Belinda Messenger, DPR, Abbey Alkon, CCHP
- c. Head Start Health Institute, April 2010; Presenter: Vickie Leonard, CCHP

- d. California Childcare Resource and Referral Network State Conference, Monterey, CA, Oct, 2010; Presenter: Vickie Leonard, CCHP

12. Conduct IPM Toolkit evaluation study.

We conducted a small, pilot evaluation study in 9 child care centers to assess IPM knowledge, practices, conditions, and beliefs. Our goal was to evaluate the impact of the IPM workshops and IPM Toolkit on the (1) workshop participants' knowledge of IPM practices and policies, (2) child care center's IPM practices and policies, and (3) the child care directors' attitudes about IPM and ease of implementing IPM.

To identify potential child care centers to participate in this evaluation study, we initially obtained a list of licensed child care centers from 6 counties to recruit a representative sample of centers. The inclusion criteria were that the centers serve low-income children, takes care of their own garbage, interested in the project, and would be in operation in 6 months. These calls were time-consuming and only one center in our project was recruited from this process. Eight out of the 9 participating centers were recruited by our staff. In the end, we recruited a convenience sample of licensed centers from 6 different counties in California, including Alameda, Marin, Contra Costa, San Mateo, Monterey, and Los Angeles.

The first step in the evaluation study was to ask the IPM Workshop participants to complete a consent form and then to complete the knowledge tests before and after the IPM Workshops in English or Spanish (Appendix J. Pre- and Post-Workshop Forms).

Second, the research assistants completed the IPM Checklist, an inspection of the center's IPM practices and condition of the building facility, before the workshop and 4-6 months after the workshop. In addition, interviews with the center directors were usually conducted the same day the Checklist was completed. The follow-up inspections were conducted to assess changes in practices at the participating centers. The director interviews also included information about the center demographics.

Third, the last interview with the child care directors included qualitative questions about their attitudes and implementation of IPM.

All procedures were reviewed and approved by the UCSF and UC, Berkeley's Committees on Human Research.

1. Pre- and post-workshop knowledge test:

There were a total of 207 knowledge tests completed before and after the workshops conducted in 8 of the 9 child care centers (Appendix J. Pre- and Post-Workshop Forms). One child care center did not complete the pre- and post-workshop knowledge tests since they were initially recruited to be in the pilot study of the project but their status changed to participate in the full project. The workshops participants were child care teachers and facility maintenance staff. The results of the analyses on the pre- versus post-workshop knowledge showed:

- a. There was no significant change in knowledge on the overall scores. Overall, the mean scores were 69% before the workshops and their scores increased to 72% after the workshops.
- b. There were significant increases in knowledge on 2 out of the 10 items:
 - i. Question #6; IPM is an approach that never uses any pesticides at all (answer=false).

- ii. Question #7: The Healthy Schools Act applies to CA’s K through 12 schools and licensed child care centers.
- c. There was a significant difference in the overall knowledge scores for the English-language versus Spanish-language participants both before and after the workshops. The English-language participants scored higher than the Spanish-language participants.

Test	English	Spanish	Total
Pre-test	79%	47%	107
Post-test	73%	52%	105
Total	168	44	212

In retrospect, we believe the multiple choice questionnaire may have been written at an inappropriately high literacy level, particularly for Spanish speakers. Future assessments of workshop-participant knowledge should include a validated pre- and post-test that is written at the appropriate literacy level.

2. Director Interviews and IPM Checklist Inspections

The CCHP research staff completed a baseline Pilot IPM Checklist and director interview before the IPM workshop. The director interviews included collecting information on the center demographic characteristics. The 9 centers included 836 children under six years of age with diverse ethnic backgrounds: 60% Latino/Hispanic, 20% White, 8% Asian, 5% African-American, 4% other, and 3% mixed ethnicity/race. Seventy-seven percent of the children attending these centers were eligible for government or other subsidies, including the food program. The center directors were experienced and had a mean of 27 years of ECE experience and a mean of 11 years working in the participating ECE center.

The research staff completed the IPM Checklist inspection before the workshops and compiled a summary of the Checklist findings in a narrative and picture format (Appendix K. IPM Checklist Center Feedback) for each director. The written feedback showed the directors which items on the IPM Checklist needed attention (Appendix K. IPM Checklist Center Feedback). Four to six months after the workshop, Evie Kalmar, research staff, repeated the Pilot IPM Checklists and conducted a follow-up director interview, which included qualitative questions (Appendix H. Director Interview).

The Pilot IPM Checklist showed many positive improvements in IPM practices, building conditions, and presence of pests in the post-workshop inspection compared to the baseline inspection (Appendix G. Pilot IPM Checklist_ Descriptive Data). Overall, there were positive changes in 33 of the 73 items; only 4 items became worse, and 28 items had no change. Importantly, there were fewer pests (n=1) observed post-workshop than pre-workshop (n=10). To summarize, there was a 72% increase in IPM practices (33 items improved out of the 46 that were not 100% compliant at baseline).

At the baseline inspection the following pests were seen: ants, snails and slugs, bees, flies, cockroaches, moths, mouse. At the post-workshop inspections *none* of these pests were present but in one center it was noted that there were possible termites.

The pictures taken post-workshop also documented some of the positive changes noted on the Checklist (Appendix N. IPM Checklist_Compares Time 1 and Time 2). The specific changes noted in the pictures showed improvements:

- d. Storage areas were clean and organized
- e. Gaps between the pipes, vents, and walls were sealed
- f. Garbage bins outside the building were relocated to a hard, cleanable concrete surface
- g. Window trim was free of cracks.

The directors were also asked in the final interview about their impressions of the workshops (Appendix L. Director Interview: Workshop Quotes). Director comments were universally positive about their satisfaction with the workshops, the impact of the workshops, and the utility of the IPM Toolkit (Appendix M. Director Interview Quotes: Changes and Challenges). Typical quotes include, “I thought your workshop was very effective. I think people that went really appreciated it.... You did some games that engaged peopleIt was interactive and informative”.

Lastly, the directors had positive comments about the impact of the IPM Checklist and Workshop on their center (Appendix M. Director Interview Quotes: Changes and Challenges). One director said, “...I think it’s a really good idea because you’re really focusing on cleanliness and using things besides chemical or pesticides to solve the issue, so you’ve looking at the structural integrity of your buildings and how they might be getting in and I think ... it seems much safer and much more effective way when you focus that way rather than just calling our pest man to come out and solve this”.

Overall, the IPM Toolkit was an effective intervention to increase the use of IPM in child care centers and was well received by staff. This finding is supported by the significant increase in IPM practices observed during the post-training inspection and the significant reduction in observed pest problems. This finding underscores the importance of the IPM Checklist and the need for thorough inspections conducted by trained staff. The information in the IPM Checklist combined with pictures provided detailed documentation of the pest problems and specific suggestions on how to address the deficiencies. Thus, center directors were given the information needed to direct staff, including maintenance and custodial, to address the highlighted problems. Even though the pre- and post-test evaluation did not show much change, the training of the staff likely provided a foundation of knowledge that ensured the director’s instructions were followed and problems mitigated. As noted above, the turnover rate of child care provider staff is quite high, however, turnover rates of child care center directors are lower. The child care directors, who have the authority to implement IPM pest management practices, should be targeted for outreach and dissemination of the IPM Toolkit.

13. Disseminate Child Care IPM Toolkit to child care community.

The IPM Toolkit and presentation slides in English and Spanish are posted on the CCHP website (<http://www.ucsfchildcarehealth.org/html/pandr/trainingcurrmain.htm>). We publicized the IPM Toolkit in the California Child Care Health Consultant eNews, California Head

Start Health Institute, Child Care Licensing newsletter, and UCD IPM Project clearinghouse. IPM Toolkits in English and Spanish were also mailed to the 73 Resource and Referral Agencies in California.

14. Complete required reports.

Submitted quarterly progress reports. Presented progress report to DPR on 11/18/2010. (Appendix O. DPR Slide Presentation).

III. Summary and Lesson Learned

Summary

This project's IPM Toolkit, IPM Workshops, Checklist assessment, and interviews with the child care directors were very successful in raising awareness about IPM and the Healthy Schools Act in the participating child care centers. The IPM Toolkit was developed by a multi-disciplinary team and is a high-quality product that includes relevant, evidence-based and user-friendly curriculum and materials. Overall, the IPM project for ECE centers was a comprehensive project that included both the development of a new curriculum and toolkit but also a pilot study to show that ECE programs can make significant changes in their IPM practices over 4 to 6 months.

The development of the IPM Toolkit was the largest, most time-consuming part of this project. It took the team a full two years to complete the Toolkit and then it took several more months to have it translated into Spanish. The team members were all committed to the project and provided unique expertise. They all contributed to the planning and implementation of the project. The staff all reviewed the recent literature and discussed the controversies in the literature to reach a consensus on what information to include in each section of the Toolkit. In addition to the feedback provided by our Alliance Management Team, we reached out to our colleagues around the country to review the final draft of the curriculum and complimentary materials. Our outside reviewers included staff from many agencies, including the National Center for Healthy Homes, IPM Program in Contra Costa County, UCSF School of Nursing, CCHP Advisory Committee, Pennsylvania IPM Program, Alameda County Lead Poisoning Prevention Program, California Department of Pesticide Regulation, California Department of Public Health, Office of Children's Health Protection at the U.S. EPA, and Informed Green Solutions (Appendix B. Interdisciplinary Team – see names and agencies).

Another unique aspect of this project was the format, illustrations and design of the IPM Toolkit. They met with the CCHP often to learn about the IPM content and provided us with an attractive, easy-to-use Toolkit. The illustrations were helpful to show the IPM practices discussed in the publication and also for the workshop slides.

The evaluation of the workshops and IPM practices at participating child care centers showed there were many positive changes made over the 4-6 months of this project. We believe the multifaceted approach to the training contributed to the success of the project. First, the centers were asked to participate in the project and were recruited only if the director showed an interest in the project and would be available for 2 interviews, provide space and time for the IPM workshops, and complete the consent forms. Second, the director interview

included questions about IPM practices, pests, and building maintenance issues. Thus, the interview raised the director's awareness about IPM. Third, the IPM Checklist was completed by study staff and the findings were sent to the director via an email document (for an example, see Appendix K. IPM Checklist Center Feedback). The document included pictures of the problems found and notes about how to fix the problems. Fourth, the IPM Workshops were conducted for the center staff and one IPM Toolkit and IPM Toolbox (Appendix D. IPM Toolbox Contents) were provided for each center. Then, four to six months later, Evie Kalmar, GSR, returned to the center to complete the IPM Checklist and conduct a second interview with the director, mostly including qualitative questions (Appendix H. Director Interview Form).

This multi-faceted approach was acceptable to the center directors and staff. During the final qualitative interviews, the directors said that this project increased their staff's and their own awareness about IPM. One director said it was the first time someone talked to them about pest management. Several directors said they found the IPM Toolbox extremely helpful since they used the contents immediately. In particular, they used the ant traps, yellowjacket traps, and the Webster duster.

Lastly, the project was supported by Mark Robertson and the DPR staff. They provided invaluable guidance and expertise during each phase of the project.

Lessons Learned

Although this IPM project was very successful, there were several lessons learned or challenges that we will discuss. First, the subcontract with UC, Berkeley's Center for Environmental Research and Children's Health took several months to be signed and was not closed until June, 2009. This contract delay changed our timeline since we started working with the student interns and GSRs later than we planned. In the end, we made up some of the time by hiring summer interns and increasing the work hours of the GSRs in the summer.

One of the lessons we learned was that the literacy level of the workshop pre- and post-knowledge test should have been evaluated in more detail, particularly the Spanish-language version. Many of the Spanish-language participants were primarily custodial staff and had had a different literacy level than the child care providers. Thus, the scores on the knowledge tests were lower for the Spanish-language participants compared to the English-language participants.

Another challenge involved recruitment of child care programs. These 'cold' calls to the child care centers were time-consuming and only one center in our project was recruited from this process. In the end, we recruited a convenience sample of licensed centers known to our staff. The centers that ultimately participated in the project may have included managers that were more motivated than typical child care providers. It is known that child care providers are extremely busy, poorly paid, and have a high turnover rate (40%). Dissemination strategies for the IPM Toolkit must consider these factors and make it easy for child care staff to participate.

IV. Recommendations

Additional dissemination of the IPM Toolkit to child care providers is needed. There are approximately 13,000 licensed child care centers in CA. Dissemination strategies to consider include:

- I. Ongoing delivery of workshops to individual child care centers and provider groups. Provider groups include county child care planning councils, First 5 commissions, Resource and Referral Agencies, school districts, Head Start programs, and other public and private child care providers;
- II. Outreach efforts specifically for child care center directors, who have the authority to implement facility policies and relatively low turnover rates.
- III. Workshops should be presented to child care provider training programs, including the directors, teachers, and staff of child development programs in the California Community Colleges;
- IV. A DVD that can be disseminated with the Toolkit and posted online should be developed;

The IPM toolkit should be disseminated to pest management professionals, including workshops through groups such as the Association of California Pest Control Operators and to individual companies.

Appendix A.
Overview of the “An IPM Curriculum for Urban Child Care Programs” Project

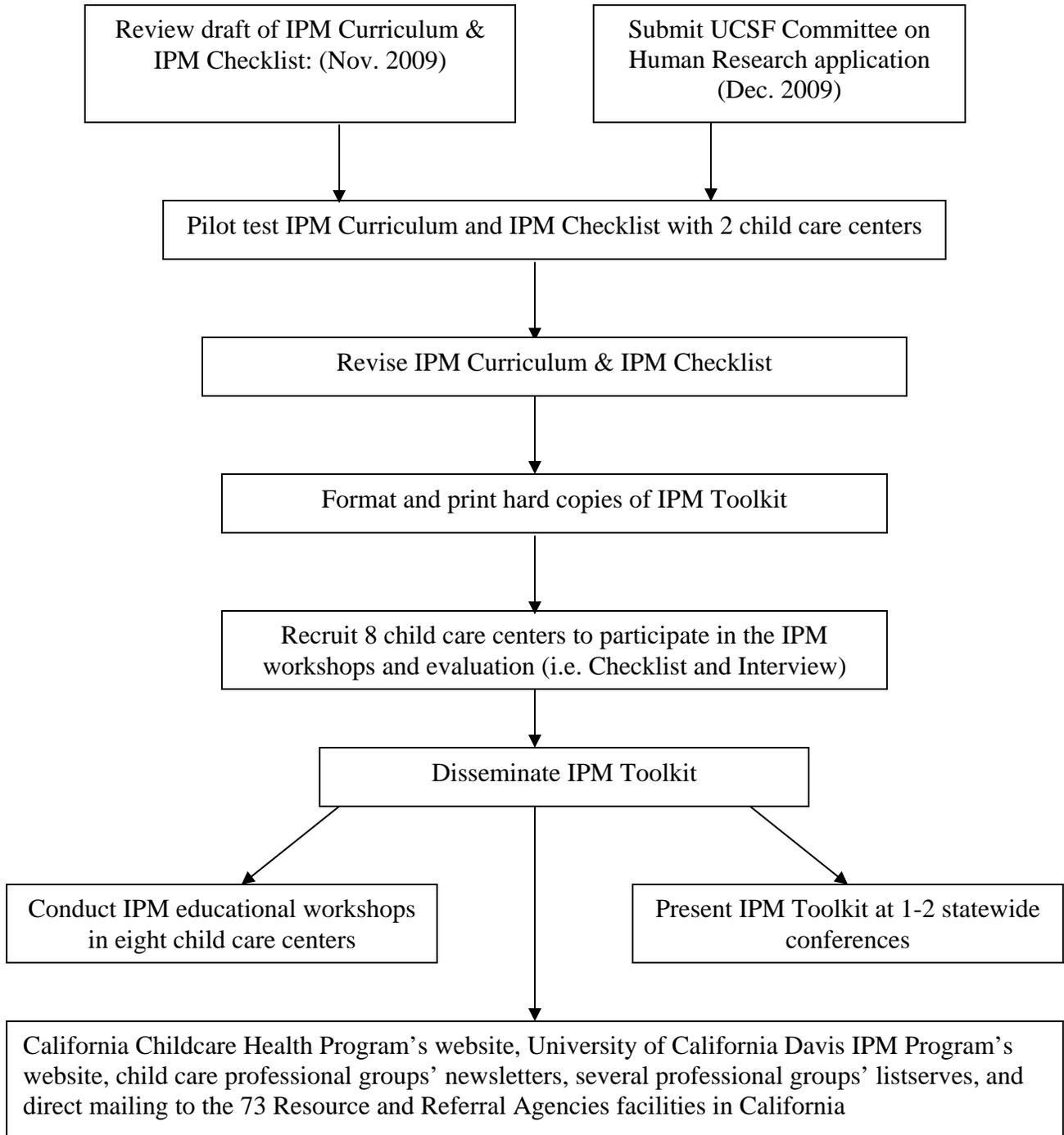
IPM Toolkit and Workshops: Terms

- *IPM Toolkit*: includes IPM Curriculum, Complimentary Materials, and IPM Checklist.
- *IPM Curriculum*: Bound booklet with information on IPM, pesticides, pests, and resources.
- *IPM Checklist*: There are two parts to this checklist: 1) instructions on instruments needed and why conduct observation 2) observable items to note pesticide presence or possible places where pests could be present.
- *Complimentary Materials*: Health and Safety Notes, Fact Sheets for Families, and laminated posters. They are separate pages included in the toolkit to compliment the curriculum.
- *IPM educational workshop*: One-hour workshop to review the IPM Toolkit with directors, child care providers, and custodial staff. They may be held at child care centers, community R&R agencies or professional conferences. The workshops can be also given on different days (e.g. two 30 minute sessions).

Overview of Key Objectives

- I. Submitted UCSF Committee on Human Research expedited application December 2009
 - Once we received approval we began enrolling child care centers into the quasi-experimental study. Starting with pilot testing of workshops and Checklist.
- II. Pilot tested IPM Toolkit and IPM Checklist in two child care centers
 - Scheduled the IPM educational workshops:
 1. Knowledge pre-test before each workshop
 2. Conduct workshop
 3. Knowledge post-test, including process evaluation questions
 4. Discussion of how relevant the content is to their work, appropriate literacy level, and delivery to generate recommendations for improvement.
 - The IPM Checklist was pilot tested in the two child care centers. The IPM Checklist was completed before the first workshop.
- III. Based on the recommendations for improvement, Vickie and Devina revised the IPM Toolkit, IPM Checklist, and evaluation questions
- IV. Formatted and printed hard copies of IPM Toolkit
- V. Recruited 9 child care centers to participate in the IPM workshops and evaluation (including Checklist)
 - Conducted director interviews and collected IPM Checklist data before the IPM workshops were conducted. Scheduled IPM workshops at a day and time that met the child care centers’ needs and schedule. Goal – provide a total of 2 hours of workshop time to review the IPM Toolkit.
 - Format of IPM educational workshops:
 1. Knowledge pre-test before each workshop
 2. Conduct workshop
 3. Knowledge post-test, including process evaluation questions
 - Completed post-workshop IPM Checklist 4-6 months after the IPM workshops.
 - Reviewed results with director after the first Checklist was completed.
- VI. Presented IPM Toolkit at 1-2 statewide conferences. Disseminated IPM Toolkit
 - Long Beach in April 2010
 - Other conferences
- VII. Disseminated IPM Toolkit (see flowchart for places to disseminate)

Flowchart of the Project “An IPM Curriculum for Urban Child Care Programs”



**Appendix B. Interdisciplinary Team
IPM Toolkit Management Team, Alliance Team, Outside Reviewers, and Staff**

Alliance Management Team Partners	Alliance Team Partners
<p>Abbey Alkon, RN PNP PhD Principal Investigator, IPM in Child Care Centers Professor, UCSF School of Nursing Director, California Childcare Health Program</p>	<p>Judith Kunitz Health Services Manager Berkeley-Albany YMCA Early Childhood Services</p> <p>Works in Head Start program providing health resources and trainings to child care staff and parents.</p>
<p>Asa Bradman, PhD, MS Co-Investigator, IPM in Child Care Centers Associate Director, Center for Children's Environmental Research and Children's Health (CERCH) School of Public Health, UC Berkeley</p>	<p>Ana Fernandez-Leon Northern Child Care Initiative Project Manager California Child Care Resource and Referral (R&R) Network</p> <p>Works with local Resource and Referral Agencies to recruit, train, and retain licensed child care providers. There are R&Rs in every county.</p>
<p>Mary Louise Flint, PhD Associate Director, UC Statewide IPM Program and Extension Entomologist Department of Entomology University of California, Davis</p>	<p>Jenifer L. Lipman, RN, CPNP Head Start - State Preschool Los Angeles County Office of Education</p> <p>Child Care Health Consultant who works with over 26 delegate agencies with Head Start programs and state preschools serving approximately 25,000 children.</p>
<p>Vickie Leonard, RN, FNP, PhD. Child Care Health Consultant/Healthline Nurse California Childcare Health Program</p>	<p>Christine Hansel Director UC Berkeley Harold E. Jones Child Study Center</p> <p>Director of a high-quality, model center at UC, Berkeley with 3-5 year old children. Site used for developing the IPM Checklist and training.</p>
<p>Nita Davidson, PhD. Pest Management and Licensing Dept. Pesticide Regulation/Cal EPA</p>	<p>Bobbie Rose RN PHN Child Care Health Consultant UCSF California Childcare Health Program</p>

	Experienced Child Care Health Consultant who has conducted child care workshops at professional statewide conferences on environmental health issues in child care.
Mark A. Robertson Ph.D. Staff Environmental Scientist Pest Management and Licensing Dept. Pesticide Regulation/Cal EPA	Laura Keeley-Saldana Early Childhood Education Director UC Berkeley Child Care Services Director of the UC, Berkeley child care programs serving infants to preschool-age children in 4 different sites. Forerunner in movement to include environmental health issues in center policies.

CCHP Advisory Committee:

Cindy Mall, California Childcare Resource and Referral Network
Sheila Signer, West Ed Center for Child and Family Studies
Lyn Dailey, Berkeley Public Health Department
Scott Herring, California Child Care Licensing

Outside Reviewers (alphabetical order):

Susan Asceti, National Center for Healthy Homes
Tanya Drlik, IPM Program, Contra Costa County
Karen Duderstadt, Clinical Professor, UCSF School of Nursing
Tahereh Garakani, CCHP Infant-Toddler Specialist
Lyn Garling, Pennsylvania IPM Program
Dennis Jordan, Alameda County Lead Poisoning Prevention Program
Belinda Messenger, California Department of Pesticide Regulation
Deanna Rossi, California Department of Public Health
Kathy Seikel, Office of Children’s Health Protection, US EPA
Janet Tobacman, California Department of Public Health
Carol Westinghouse, Informed Green Solutions
Rahman Zamani, CCHP Child Care Healthline Project Director

Staff: UC, Berkeley Students Researchers, School of Public Health:

Devina Kuo, MPH student, Sept., 2009 – April, 2011
Evie Kalmar, MD student, June, 2010 – April, 2011
Casey Palmer, summer intern, June-Aug. 2009
Anna Schwarzbach, summer intern, June-Aug. 2009
Robin Brandes, Graphic Designer, Feb, 2010 – April, 2011
Noa Kaplan, Illustrator, March, 2010 – August, 2010
Alejandra Sosa Siroka, Spanish translator, Jan. - April, 2011

Appendix C. IPM Toolkit: Guide to Language

Key Messages and Phrases (repeat throughout Toolkit):

Keep pests out.

Remove pests' access to food, water and shelter.

Pesticides should only be used as a last resort.

Identify pest habits and characteristics (keep same order in curriculum as H&S Notes))

Use IPM approach: No chemicals, use HAS exempt products; then, no need to notify parents

Use IPM approaches versus practice IPM

Last resort: Use pesticides developed for specific pest's habits and characteristics; Use least harmful pesticide.

Protect/ Reduce harm to people, animals, and the environment (keep in this order and use these terms)

Protect/ Reduce harm to children and staff (keep in this order)

IMP Practices: What you need to know; what you need to do

Identification – type, habits, entry into building

Prevention – identify pest's access to food, water, shelter; what to do – non-chemical things to do

Monitoring

Management

H&S Notes outline:

When are <pests> a problem?

Characteristics and habits (opposite order from curriculum)

IPM strategies (1) Keep <pests> out, (2) remove <pests> water and shelter, (3) Monitor, (4) Get rid of

Other key H&S Note messages:

Prevent infestations.

Minimize pesticide use.

H&S Note key messages consistent with Curriculum:

Keep <pest> out.

Remove <pest> access to food, water, and shelter.

Get rid of <pest>.

Table Column Headers (for most H&S Notes):

When to take action, Nonpesticide practices, Least harmful pesticide, Last resort

Abbreviations

IPM=integrated pest management

ECE = early care and education (not early childhood and education)

UC=University of California

HAS=Healthy Schools Act (not The Healthy Schools Act)

PMP=pest management professional

DPR= Department of Pesticide Regulation

Terms

ECE facility, center or program (pick one)

ECE versus child care

Product

Chemical pesticides versus poison

Spray pesticide (use spray as an adjective not noun)

HAS-exempt pesticides (not exempt pesticides)

the Healthy Schools Act not The Healthy Schools Act

Internet versus website or worldwideweb

Use IPM approach versus practice IPM vs. IPM program vs. IPM strategies (H&S note)

Pest characteristics and habits (in this order)

Health and Safety Notes

Font size is 10.5 on all CCHP Health and Safety Notes.

Must be 2 pages.

Acknowledgements for all documents funded by DPR:

Funding for this project has been provided in full or in part through a grant awarded by the California Department of Pesticide Regulation (DPR). The contents of this document do not necessarily reflect the views and policies of the DPR, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Acknowledgement in the IPM Checklist and cover of the Toolkit:

This Integrated Pest Management Toolkit was developed by the University of California (UC), San Francisco School of Nursing's California Childcare Health Program, UC Berkeley's Center for Environmental Research and Children's Health, UC Statewide IPM Program, and the California Department of Pesticide Regulation.

**Appendix D.
IPM Toolbox Contents**

**Plastic reclosable bins were provided at the IPM Workshops for each Center
Contents**

IPM Posters

School IPM Calendar

Fly swatter

IPM cards – Pest Management Quick Tips for Schools from DPR and UC IPM Statewide

Caulk

Caulk guns

Measuring tapes

Inspection kits (mirror, flashlight)

Ant baits 3 pack

Yellowjacket trap

Copper mesh 100'

Roach trap + attractant tablets

Webster duster

Appendix E. IPM Toolkit: Consistent Spanish Terms

Note: keep *italicized* and Capitalizations

ENGLISH TERM	SPANISH FINAL TERM
California Department of Pesticide Regulation	Departamento de Reglamentación de Pesticidas de California
UCSF California Childcare Health Program	el Programa de Salud para Establecimientos de Cuidado de Niños perteneciente a la Facultad de Enfermería de la Universidad de California (UC) en San Francisco short form: Programa de Salud para Establecimientos de Cuidado de Niños de California
UC Berkeley Center for Environmental Research and Children's Health	Centro de Investigación Ambiental y Salud Infantil (ala Raul Aguilar)
UC Statewide IPM Program	el Programa IPM a nivel estatal de UC
Pest Management Professional	profesionales en manejo de plagas
IPM Checklist	<i>Lista de Control de IPM</i>
IPM Toolkit	<i>Conjunto de Herramientas de IPM</i>
CCHP Health & Safety Notes	<i>Notas de Salud y Seguridad de CCHP</i>
Fact Sheets for Families	<i>Hojas Informativas para las Familias</i>
the Healthy Schools Act	la Ley de Escuelas Saludables
School of Public Health	Facultad de Salud Pública
resources	Fuentes de información
monitoring	monitoreo
suppress	eliminar
nonchemical	libres de químicos
sealed containers	envases herméticos
landscape	áreas verdes
sprays	aerosoles
antimicrobial	antimicrobiano
sanitizers, to sanitize, sanitation	sanitizantes, sanitizar, sanitización
common trigger of asthma	desencadenante común de asma
weed	maleza
swallow	ingeridos, ingestión
candy	dulce
clutter	el abarrotamiento y el desorden
Dumpsters (the ones big trucks pick up)	contenedores de basura
garbage receptacles	botes de basura
dome lids	tapas abovedadas
leaky pipes	las tuberías que gotean
rash	sarpullido
Early Care Education environment Early Care Education programs	establecimientos de cuidado y educación temprana de niños programas de cuidado y educación temprana de niños
address	dirección
acute	agudo (a)
monitoring trap	trampa de monitoreo
get rid of [pest]	deshágase de las/los [plaga]

cabinets	gabinetes
baseboard	zócalo
molding	molduras
screen	mallá
wire mesh	mallá de alambre
hardware cloth	mallá metálica
lightbulbs	focos
foggers	nebulizadores (bombas contra insectos)
bug bomb/flea bomb	bomba contra Insectos/ bomba contra pulgas
caulk	masilla
least-harmful	menos dañinos
harmful effects	efectos dañinos
Keep pests out!	¡Mantenga las plagas afuera!
Remove pests' access to food, water and shelter	<ul style="list-style-type: none"> ▶ Retire todo lo que facilite a las plagas tener acceso a comida, agua o refugio. ▶ Retire la comida y el agua. ▶ Retire los refugios.
child care licensing analysts	personal de la agencia que otorga licencias a establecimientos de cuidado de niños
California Community Care Licensing	División de Licenciamiento para Ofrecer Cuidado en la Comunidad de California

Health and Safety Notes; Fact Sheets for Families IPM consistency table

IPM Spanish Terms document for Curriculum	Keep [pest] out! ¡Mantenga las plagas afuera!	Remove [pest's] food, water, and shelter ▶ Retire todo lo que facilite a las plagas tener acceso a comida, agua o refugio. ▶ Retire la comida y el agua. ▶ Retire los refugios.	Get rid of [pest]
Health and Safety Notes Ants p1	MANTENGA LAS HORMIGAS AFUERA	RETIRE LOS ALIMENTOS, EL AGUA Y EL REFUGIO A LAS HORMIGAS	
Mosquitoes p5	MANTENGA LOS MOSQUITOS AFUERA	RETIRE LOS ALIMENTOS, EL AGUA Y EL REFUGIO A LOS MOSQUITOS	
Spiders p10	MANTENGA LAS ARAÑAS AFUERA	RETIRE LOS ALIMENTOS, EL AGUA Y EL REFUGIO A LAS ARAÑAS	
Cockroaches p14	MANTENGA LAS CUCARACHAS AFUERA	RETIRE LOS ALIMENTOS, EL AGUA Y EL REFUGIO A LAS CUCARACHAS	
Rodents p19	MANTENGA LOS ROEDORES AFUERA	RETIRE LOS ALIMENTOS A LOS ROEDORES	DESHÁGASE DE LOS ROEDORES
Yellowjackets p25		RETIRE LOS ALIMENTOS A LAS AVISPAS CHAQUETA	DESHÁGASE DE LAS AVISPAS

		AMARILLA RETIRE LOS NIDOS DE LAS AVISPAS CHAQUETA AMARILLA	CHAQUETA AMARILLA
Snails and slugs p28	MANTENGA LOS CARACOLES Y BABOSAS FUERA DE LOS JARDINES	RETIRE LOS ALIMENTOS, EL AGUA Y EL REFUGIO A LOS CARACOLES Y BABOSAS	
Mold and mildew p32	MANTENGA EL MOHO A DISTANCIA QUITANDO LA HUMEDAD		DESHÁGASE DEL MOHO DESHÁGASE DE LA HUMEDAD
Fact Sheets for Families Ants p46	MANTENGA LAS HORMIGAS AFUERA	RETIRE LAS FUENTES DE ALIMENTO A LAS HORMIGAS	DESHÁGASE DE LAS HORMIGAS EN EL INTERIOR
Fact Sheets for Families Lice p50		SAQUE LOS PIOJOS Y LAS LIENDRES DEL AMBIENTE	

Appendix F. PILOT IPM Checklist

Developed by UCSF School of Nursing, UCB Center for Children's Environmental Research and Children's Health, UC Statewide IPM Program,
Department of Pesticide Regulation

Date: ___/___/___

Time in: ___:___ AM/PM

Time out: ___:___ AM/PM

Person completing form: _____

OUTDOOR

Garbage Storage

	Yes	No	N/A	Comments
1. Garbage receptacles seal properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Garbage receptacles located at least 50 feet away from doors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Garbage receptacles on hard, cleanable surfaces such as concrete.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Area around garbage receptacles free from spilled liquids or garbage.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. All recyclables rinsed or cleaned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Evidence of pests*	Yes	No		Comments
a. Ants.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
b. Cockroaches.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
c. Flies.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
d. Mice, rats.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
e. Yellowjackets	<input type="checkbox"/>	<input type="checkbox"/>		_____
f. Other, specify.....	<input type="checkbox"/>	<input type="checkbox"/>		_____

Building Exterior

	Yes	No	N/A	Comments
1. Walls, roof, or foundation free of holes or cracks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Window trim free of cracks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Windows close properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Window screens free of damage (e.g. holes).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. Vents/other large openings screened with \leq 1/4 -inch hardware cloth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Exterior doors have sweeps, weatherstripping, or similar barriers.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

7. Evidence of pests*	Yes	No		Comments
a. Ants.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
b. Cockroaches.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
c. Mice, rats.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
d. Yellowjackets	<input type="checkbox"/>	<input type="checkbox"/>		_____
e. Other, specify.....	<input type="checkbox"/>	<input type="checkbox"/>		_____

Landscape and Play Area	Yes	No	N/A	Comments
1. Plants at least 12 inches away from building.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Branches at least 6 feet away from building.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Free of ivy and other vines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Wood, debris, and thick mulch at least 6 inches away from building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. Water sources (faucets or sprinklers) absent of standing water.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Water sources free of drips or leaks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
7. Equipment and toys free of standing water.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
8. Trash containers have dome lids.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
9. Trash containers have linings.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
10. If present, rodent bait stations out of children's reach.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
11. If present, wasp traps away from play and eating areas.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

12. Evidence of pests*	Yes	No		Comments
a. Ants.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
b. Cockroaches.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
c. Flies.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
d. Mosquitoes.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
e. Mice, rats	<input type="checkbox"/>	<input type="checkbox"/>		_____
f. Snails & slugs.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
g. Spiders.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
h. Weeds.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
i. Yellowjackets.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
j. Other, specify.....	<input type="checkbox"/>	<input type="checkbox"/>		_____

INDOOR

Kitchen

	Yes	No	N/A	Comments
1. Area around & underneath dishwasher clean and dry.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Area around & underneath refrigerator clean and dry.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Countertops clean and dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Shelves, cabinets, and drawers clean and dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. Food stored in tightly sealed containers.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Stoves free of food scraps, grease, and sugary substances.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
7. Floors and molding free of food scraps, grease, and sugary substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
8. Faucets and pipes free of dripping and leaks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
9. Gaps between pipes, vents, walls sealed or screened.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
10. Cracks, crevices around cabinets sealed or plugged.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
11. Trash containers have linings.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
12. Trash containers have lids.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
13. If present, insect bait stations out of children's reach.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
14. If present, pest monitoring traps out of children's reach.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
15. Evidence of pests*	Yes	No		Comments
a. Ants.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
b. Cockroaches.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
c. Flies.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
d. Mosquitoes.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
e. Mice, rats.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
f. Other, specify.....	<input type="checkbox"/>	<input type="checkbox"/>		_____

Bathrooms

	Yes	No	N/A	Comments
1. Area free from mold.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Wall/floor/tiles in good condition without cracks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Faucets and pipes free of dripping and leaks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Gaps between pipes, vents, walls sealed or screened.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. Cracks, crevices around cabinets, mirrors sealed or plugged.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Evidence of pests*	Yes	No		Comments
a. Ants.....	<input type="checkbox"/>	<input type="checkbox"/>		_____
b. Mold.....	<input type="checkbox"/>	<input type="checkbox"/>		_____

c. Other, specify.....

Common Space, Play Area, Eating Area

- | | Yes | No | N/A | Comments |
|---|--------------------------|--------------------------|--------------------------|----------|
| 1. Furniture moves easily for vacuuming..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 2. Area free of clutter (e.g. cardboard boxes or paper products)..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 3. Area free of cobwebs..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 4. Area free of dust..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 5. Walls or baseboards are free of holes..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 6. Food items used for arts or crafts in sealed containers..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 7. Trash containers have linings..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 8. Trash containers have lids..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 9. If present, insect bait stations out of children's reach..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 10. If present, pest monitoring traps out of children's reach..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |

- | 11. Evidence of pests* | Yes | No | | Comments |
|------------------------|--------------------------|--------------------------|--|----------|
| a. Ants..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| b. Cockroaches..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| c. Fleas..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| d. Flies..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| e. Mice, rats..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| f. Spiders..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| g. Other, specify..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |

Storage Area

- | | Yes | No | N/A | Comments |
|--|--------------------------|--------------------------|--------------------------|----------|
| 1. Clean, organized, free of clutter..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 2. Mops and buckets clean, dry or hung upside down..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 3. Area dry..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 4. Cracks, crevices around cabinets sealed or plugged..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| 5. Items stored in plastic bins with sealed lids as appropriate..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |

- | 6. Evidence of pests* | Yes | No | | Comments |
|-----------------------|--------------------------|--------------------------|--|----------|
| a. Ants..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| b. Cockroaches..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| c. Fleas..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |
| d. Flies..... | <input type="checkbox"/> | <input type="checkbox"/> | | _____ |

Center ID #: _____

- e. Mice, rats.....
- f. Spiders.....
- g. Other, specify.....

Staff Area

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 1. Area free of clutter (e.g. cardboard boxes or paper products)..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Area free of cobwebs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Area free of dust..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Area free of food, beverage containers, or debris..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Cracks, crevices around cabinets sealed or plugged..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Trash containers have linings..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. If present, insect bait stations out of children's reach..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. If present, pest monitoring traps out of children's reach..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Evidence of pests* | Yes | No | |
| a. Ants..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| b. Cockroaches..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| c. Fleas..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| d. Flies..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| e. Mice, rats..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| f. Spiders..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| g. Other, specify..... | <input type="checkbox"/> | <input type="checkbox"/> | |

Comments

Comments

*This list does not cover birds, termites, and other potential pests.
 To do: need to write objective, observable things that indicate evidence of pests

Appendix G.
IPM Pilot Checklist: Descriptive Data

Table 1. Checklist Item by Pre- and Post-Workshop Observations (n=9 centers)*

Item	Pre-Workshop # yes/ #centers	Pre-Workshop % yes	Post-Workshop # yes/ #centers	Post-Workshop % yes	# changes, % + change
OUTDOOR AREAS					
Garbage Storage: Cans and Dumpsters					
1. Are sealed properly	6/9	67%	7/9	78%	1, 11%
2. Are located 50 ft. away from doors	8/9	89%	8/9	89%	--
3. Are located on hard, cleanable surfaces such as concrete	8/9	89%	9/9	100%	1, 11%
4. Area around garbage cans and dumpsters is free from spilled liquids or garbage	6/9	67%	9/9	100%	3, 33%
5. All recyclables are rinsed or cleaned	5/7	71%	8/8	100%	3, 33%
6. Pests (ants)	1/9	11%	0/9	0%	No pests
Building Exterior					
1. Walls, roof and foundation are free of holes or cracks	4/9	44%	7/9	78%	3, 33%
2. Window trim is free of cracks	7/9	78%	8/9	89%	1, 11%
3. Windows close properly	7/8	88%	9/9	100%	2, 22%
4. Window screens are free of damage (e.g., holes)	3/6	50%	8/9	89%	5, 56%
5. Vents and other large openings are screened with $\leq \frac{1}{4}$ -inch hardware cloth	3/9	33%	2/9	22%	worse
6. Exterior doors have sweeps, weatherstripping or similar barriers	3/8	38%	7/9	78%	4, 44%
7. Pests (other- possible termites)	0/9	0%	1/9	11%	+ Pests
Landscape and Play Area					
1. Plants are at least 12 inches away from building	5/9	56%	6/9	67%	1, 11%
2. Branches are at least 6 feet away from building	8/9	89%	6/9	67%	worse
3. Free of ivy and other vines	6/9	67%	8/9	89%	2, 22%
4. Wood, debris and thick mulch are at least 6 inches away from building	8/9	89%	8/9	89%	---
5. Water sources (faucets or sprinklers) do not cause standing water	9/9	100%	9/9	100%	---
6. Water sources are free of drips or leaks	9/9	100%	9/9	100%	---
7. Equipment and toys are free of standing water	7/9	78%	7/9	78%	---

8. Trash containers outdoors have dome lids	1/9	11%	1/9	11%	---
9. Trash containers have plastic linings	7/9	78%	9/9	100%	2, 22%
10. If present, rodent bait stations are out of children's reach	0/1	0%	1/1	100%	1, 11%
11. If present, wasp traps are away from play and eating areas	0/1	0%	1/1	100%	1, 11%
12. Pests (snails & slugs, bees-other)	2/9	22%	0/9	0%	No pests
Indoor Areas					
Kitchen					
1. Area around & underneath dishwasher clean and dry	7/7	100%	8/9	89%	1, 11%
2. Area around & underneath refrigerator clean and dry	8/9	89%	9/9	100%	1, 11%
3. Countertops are clean and dry	9/9	100%	9/9	100%	---
4. Shelves, cabinets, and drawers clean and dry	9/9	100%	9/9	100%	---
5. Food is stored in tightly sealed containers	5/7	71%	9/9	100%	4, 44%
6. Stoves free of food scraps, grease and sugary substances	8/8	100%	8/8	100%	---
7. Floors and molding free of food scraps, grease and sugary substances	9/9	100%	9/9	100%	---
8. Faucets and pipes do not drip or leak	8/9	89%	9/9	100%	1, 11%
9. Gaps between pipes, vents and walls are sealed or screened	8/9	89%	9/9	100%	1, 11%
10. Cracks, crevices around cabinets sealed or plugged	7/9	78%	8/9	89%	1, 11%
11. Trash containers have plastic linings	9/9	100%	9/9	100%	---
12. Trash containers have lids	8/9	89%	7/9	78%	worse
13. If present, insect bait stations out of children's reach	2/2	100%	2/2	100%	---
14. If present, monitoring traps out of children's reach	2/2	100%	1/1	100%	---
15. Pests (flies, cockroaches)	2/9	22%	0/9	0%	No pests
Bathrooms					
1. Free from mold	9/9	100%	9/9	100%	---
2. Walls, floor and tiles are in good condition without cracks	7/9	78%	7/9	78%	---
3. Faucets and pipes do not drip or leak	8/9	89%	8/9	89%	--
4. Gaps between pipes, vents, and walls are sealed or screened	3/9	33%	5/9	56%	2, 22%
5. Cracks and crevices around cabinets and mirrors are sealed or plugged	4/9	44%	6/9	67%	2, 22%
6. Pests (ants)	1/9	11%	0/9	0%	No pests

Common Space, Play Area, Eating Area					
1. Furniture moves easily for vacuuming	9/9	100%	9/9	100%	---
2. Free of clutter (e.g., cardboard boxes, paper products, playthings, toys, dress-up clothes)	8/9	89%	8/9	89%	---
3. Free of cobwebs	8/9	89%	8/9	89%	---
4. Free of dust	9/9	100%	9/9	100%	---
5. Walls or baseboards are free of holes	7/9	78%	7/9	78%	---
6. Food items used for arts or crafts in sealed containers	9/9	100%	9/9	100%	---
7. Trash containers have linings	9/9	100%	9/9	100%	---
8. Trash containers have lids	8/9	89%	9/9	100%	1, 11%
9. Free of puddles and dripping faucets	n/a		n/a		
10. If present, insect bait stations out of children's reach	1/1	100%	0/0	100%	1, 11%
11. If present, pest monitoring traps out of children's reach	n/a		n/a		
12. Pests (flies x2, moths-other)	3/9	33%	0/9	0%	No pests
Storage Area(s)					
1. Clean, organized and free of clutter	8/9	89%	7/9	78%	worse
2. Buckets are rinsed and mops are hung up to dry	3/6	50%	4/7	57%	1, 11%
3. Dry and free of standing water or moisture	9/9	100%	9/9	100%	---
4. Cracks and crevices around cabinets are sealed or plugged	6/7	86%	9/9	100%	3, 33%
5. Items are stored in plastic bins that have sealed lids whenever possible	6/9	67%	7/9	78%	1, 11%
6. Pests	0	0%	0	0%	No pests
Staff Area					
1. Free of clutter (e.g., cardboard boxes or paper)	7/8	88%	8/9	89%	1, 11%
2. Free of cobwebs	9/9	100%	9/9	100%	---
3. Free of dust	9/9	100%	9/9	100%	---
4. Free of beverage containers, crumbs or debris	8/9	89%	9/9	100%	1, 11%
5. Cracks, crevices around cabinets are sealed or plugged	7/8	88%	9/9	100%	2, 22%
6. Trash containers have linings	8/9	89%	9/9	100%	1, 11%
7. If present, insect bait stations out of children's reach	0/0	100%	2/2	100%	--
8. If present, pest monitoring traps out of children's reach	2/2	100%	2/2	100%	---
9. Pests (mouse, cockroaches)	2/9	22%	0/0	100%	No pests

* The pre- and post-workshop 72-item IPM Checklist has fewer items than the final IPM Checklist included in the IPM Toolkit. The per-workshop IPM Checklist was completed before the 85-item IPM Checklist included in the IPM Toolkit was reviewed and finalized by the Alliance Team.

Appendix H. Director Interview

Interview Questions for Director
UCSF School of Nursing
UCB Center for Children's Environmental Health Research
UC Statewide IPM Program
California Department of Pesticide Regulation

Date: ___/___/_____

Time in: ___:___ AM/PM

Time out: ___:___ AM/PM

Person completing form: _____

BEFORE THE INTERVIEW:

(Thank you for participating in this questionnaire about indoor/outdoor environments in child care centers. With your permission, I would like to ask a few questions about you and your facility. I want to get as much information as possible and will therefore be reading you all of the possible responses to some questions. If you do not know the answer, please give me your best estimate or say you don't know. If none of the choices exactly fit with your answer, please pick the answer that most closely matches. You do not need to answer questions that make you uncomfortable. If you do not want to answer a question, let me know, and I will move to the next question. All of the information you provide will remain confidential.)

Director and staff information

1. How many years have you worked at this child care center? _____ Yrs _____ Mo
2. How many years have you worked in the field of child care? _____ Yrs _____ Mo
3. What is the highest education you have completed?
 - High school diploma/ GED/ equivalent
 - Community college
 - Some college education
 - College graduate (B.A.) or more
 - Master's degree or more
4. How many child care providers work part time (<20 hrs/week) at this facility? _____
5. How many child care providers are full time at this facility? _____
6. In general, what is the education level of the child care providers that work more than 50%-time?
 - High school or less
 - Community college
 - Some college education
 - Bachelor's degree
 - Don't know
7. What types of custodial staff are employed at this facility? How many of each type?
 - landscaping _____
 - indoors _____
 - other _____
8. In general, what is the education level of the custodial staff?
 - High school or less
 - Community college
 - Some college education
 - College graduate (B.A.)
 - Don't know
9. Is this center NAEYC accredited? Yes No Don't Know

Children at center

(Now, I would like to ask you general questions about the children who attend this facility (include both part time and fulltime children). No specific children will be identified in the following questions.)

Center ID #: _____

1. How many children are 0-12 months at this child care center? _____
2. How many children are 13-35 months at this child care center? _____
3. How many children are 3-5 years old at this child care center? _____
4. How many children are >5 years old at this child care center? _____
5. What is the approximate racial/ethnic composition the children?
 - a. Caucasian/White ____%
 - b. African American ____%
 - c. Latino/Hispanic..... ____%
 - d. Asian/Asian American ____%
 - e. Native American ____%
 - f. Mixed race..... ____%
 - g. Other, specify ____%
 - h. Total..... 100%
6. What percent of children receive a government or other subsidy, including food, for cost of attending? _____%

Pets at center

(The next questions will be about pets at your center.)

1. Do you have pets at the center? Yes No Don't Know
2. Where do you store their food? _____

Earthquake supplies

(The next questions will be about your earthquake supplies.)

1. Where do you store your earthquake supplies? _____

Building

(The next questions will be about your building.)

1. When was the building built? _____ year
2. Have there been major renovations or additions? Yes No Don't Know
Month/Year __ __ / __ __

Building Maintenance/ Policy

Outdoor

1. Are gutters cleaned 2 times per year? Yes No Don't Know
2. Does water drain away from building? Yes No Don't Know
3. Is the foundation at least 12 inches above soil level? Yes No Don't Know
4. Do you notice puddles outdoors after rainstorms or watering? Yes No Don't Know

Indoor

1. Is the refrigerator drip pan cleaned every six months? Yes No Don't Know
2. Is food waste taken outside at the end of each day? Yes No Don't Know
3. Is water poured down floor drains once per week? Yes No Don't Know
4. Do you have a tracking system for building maintenance? Yes No Don't Know

Cleaning/ Sanitizing

(I'm going to ask about cleaning and sanitizing practices. Please respond with DAYS PER WEEK.)

1. How many times/week is the kitchen mopped? _____
2. How often is the bathroom mopped? _____
3. How often is the common area mopped or vacuumed? _____
4. How often is a sanitizer used to mop the floors? _____
5. What type of sanitizer is used? Provide name of sanitizer. _____
6. How often are surfaces such as tables and food preparation areas sanitized? _____
7. What type of sanitizer is used? Provide name of sanitizer. _____
8. How often are carpets "deep cleaned by a commercial cleaner?" _____
9. How often are carpeted floors vacuumed? _____
10. How often are garbage containers collected? _____

Center ID #: _____

11. How often are garbage containers rinsed and cleaned? Yes No Don't Know
12. Do you have a tracking system for cleaning and sanitizing? Yes No Don't Know

Pesticide Use/ IPM Practices

(Now I will ask about Pesticide Use and IPM practices.)

1. Does your child care center have a written policy for use of bug killers, weed killers, rat killers, or other pesticides, stating when and how to apply pesticides? Yes No Don't Know
2. Where do you or your center get your information about pest and weed control?*
3. Do you know what integrated pest management is?
- a. If yes, do your written policies of pesticide use incorporate IPM strategies into policy? Yes No Don't Know
- b. Where do you or your center get your information on how to practice IPM? _____
4. Do you have a designated IPM Coordinator? Yes No Don't Know
5. What have been the most serious pests in the last 2 years? _____
6. How do you handle pests? _____
7. Do you have a tracking system for follow-up when pests are reported? Yes No Don't Know
8. Have you tried to use IPM or other ways to deal with pests? Yes No Don't Know
- a. If yes, what did you do? _____
- b. Did it work? Yes No Don't Know
9. Do you use a pest control company that routinely sprays? Yes No Don't Know
10. Have pesticides been applied OUTSIDE this facility*?
- a. In the last 5 years? Yes No Don't Know
- b. In the last 6 months? Yes No Don't Know
- c. If yes, which ones? _____
11. Have pesticides been applied INSIDE this facility*?
- a. In the last 5 years? Yes No Don't Know
- b. In the last 6 months? Yes No Don't Know
- c. If yes, which ones? _____
- If yes, see Health & Safety Pest Notes for non-chemical alternatives to control specific pests.*
12. Who decides how or when to control indoor and outdoor pest problems at your child care facility? Please check all that apply.*
- | | | | |
|---|--|---|-------------------------------------|
| <input type="checkbox"/> Director | <input type="checkbox"/> Custodial staff | <input type="checkbox"/> Pest control company | <input type="checkbox"/> Don't Know |
| <input type="checkbox"/> Another staff member | <input type="checkbox"/> Landlord | <input type="checkbox"/> Other, specify _____ | <input type="checkbox"/> N/A |
13. If pesticides were used at your child care facility in the last year, who applied them? Please check all that apply.*
- | | | | |
|---|--|---|-------------------------------------|
| <input type="checkbox"/> Director | <input type="checkbox"/> Custodial staff | <input type="checkbox"/> Pest control company | <input type="checkbox"/> Don't Know |
| <input type="checkbox"/> Another staff member | <input type="checkbox"/> Landlord | <input type="checkbox"/> Other, specify _____ | <input type="checkbox"/> N/A |
14. Does the facility staff have training on how to apply pesticides safely? Yes No Don't Know
15. If the center has pesticides, where are they stored? (For example, Raid) _____
16. Over the past year, did your child care facility notify parents 72 hours before pesticides (including weed killers) were applied inside or outside your facility?*
- a. If yes, how? _____
17. Over the past year, did your child care facility post warning signs 24 hours before and stay in place 72 hours after pesticides (including weed killers) were applied? Yes No Don't Know
18. Does your child care center have written records of applications of bug killer, weed killer, rat killer, or other pesticides? Yes No Don't Know

(Thank you for taking the time to complete this questionnaire. Do you have any questions?)

*from Pest Management and Pesticide use in California Child Care Centers Questionnaire

Interview Questions for Director – Time 2 (Post- Workshop)

**UCSF School of Nursing
UCB Center for Children's Environmental Health Research
UC Statewide IPM Program
California Department of Pesticide Regulation**

Date: ___/___/____

Time in: ___:___ AM/PM

Time out: ___:___ AM/PM

Person completing form: _____

With your permission, I would like to ask a few questions about you and your facility. I want to get as much information as possible and will therefore be reading you all of the possible responses to some questions. If you do not know the answer, please give me your best estimate or say you don't know. If none of the choices exactly fit with your answer, please pick the answer that most closely matches. You do not need to answer questions that make you uncomfortable. If you do not want to answer a question, let me know, and I will move to the next question. All of the information you provide will remain confidential.)

BEFORE THE INTERVIEW:

Thank you for participating in this interview. It will be broken into two parts. First, I will ask you some questions about your role as a child care director, integrated pest management (IPM), and your experience since the IPM workshop earlier this year. In the second section, I will ask you questions about current IPM practices at your center.

Part 1: Semi-structured Interview**Responsibilities**

In this section, I will ask you some questions about your responsibilities as a child care director. I will write them on index cards and have you rank them.

1. What are your responsibilities as a child care director?

Probes: keeping students healthy, maintaining state licensing regulations, parental support

1a. In what ways do integrated pest management (IPM) and Healthy Schools Act (HAS) enter into your responsibilities as director?

1b. Is IPM integrated into your daily work responsibilities? If so, how?

Policy

questions

Now I will ask you about your center's relationship with new policies.

2. How do you get information when new state policies are developed? For example, if there was a new state policy on pesticide-use, how would you know about it?
3. What are the steps you take when you receive a new policy to incorporate this into the way you run your center?

Workshop Take-away

The following questions are about what you learned from the IPM workshop.

4. What are the top three things you learned from the IPM workshop last (*fill in date of specific workshop*)?
5. Why do you think IPM is important?
6. If you could design the training workshop, what would you have done differently?

Process of IPM Implementation

In this section, I would like to hear about your experiences since the IPM workshop.

7. Please tell me how the experience has been when implementing IPM in your child care setting.
 - 7a. What has changed at your child care center since you attended the IPM workshop, if anything?
 - 7b. Do you think that change is sufficient/truly beneficial/irrelevant?
 - 7c. Do you feel your center is better able to handle a pest problem if one were to arise?
8. What are the barriers to implementing IPM in child care settings?
 Probes: providers, facility management, parents, time, money, control over maintenance
 - 8a. What was easiest to integrate?
 - 8b. What was hardest?
9. What would help you implement IPM in your center?

Current Pest Management Practices

10. Imagine a teacher comes to you and tells you that she just saw a rodent in her classroom. What would you do?

Building Maintenance/ Policy

Outdoor

1. Are gutters cleaned 2 times per year? Yes No Don't Know
2. Does water drain away from building? Yes No Don't Know
3. Is the foundation at least 12 inches above soil level? Yes No Don't Know
4. Do you notice puddles outdoors after rainstorms or watering? Yes No Don't Know

Indoor

1. Is the refrigerator drip pan cleaned every six months? Yes No Don't Know
2. Is food waste taken outside at the end of each day? Yes No Don't Know
3. Is water poured down floor drains once per week? Yes No Don't Know
4. Do you have a tracking system for building maintenance? Yes No Don't Know

Cleaning/ Sanitizing

(I'm going to ask about cleaning and sanitizing practices. Please respond with DAYS PER WEEK.)

1. How many times/week is the kitchen mopped? _____
2. How often is the bathroom mopped? _____
3. How often is the common area mopped or vacuumed?

4. How often is a sanitizer used to mop the floors? _____
5. What type of sanitizer is used? Provide name of sanitizer. _____
6. How often are surfaces such as tables and food preparation areas sanitized?

7. What type of sanitizer is used? Provide name of sanitizer. _____

8. How often are carpets “deep cleaned by a commercial cleaner?”

9. How often are carpeted floors vacuumed? _____
10. How often are garbage containers collected?

11. How often are garbage containers rinsed and cleaned?

12. Do you have a tracking system for cleaning and sanitizing? Yes No Don't Know

Pesticide Use/ IPM Practices

(Now I will ask about Pesticide Use and IPM practices.)

1. Does your child care center have a written policy for use of bug killers, weed killers, rat killers, or other pesticides, stating when and how to apply pesticides? * Yes No Don't Know
2. Where do you or your center get your information about pest and weed control? *
3. Do you know what integrated pest management is?
 a. If yes, do your written policies of pesticide use incorporate IPM strategies into policy?
 Yes No Don't Know
 b. Where do you or your center get your information on how to practice IPM?

-
4. Do you have a designated IPM Coordinator? Yes No Don't Know
5. ~~What have been the most serious pests in the last 2 years?~~

6. ~~How do you handle pests?~~

7. Do you have a tracking system for follow-up when pests are reported? Yes No Don't Know
8. Have you tried to use IPM or other ways to deal with pests? Yes No Don't Know
 a. If yes, what did you do?

 b. Did it work? Yes No Don't Know
9. Do you use a pest control company that routinely sprays? Yes No Don't Know
10. Have pesticides been applied OUTSIDE this facility*
 a. In the last 5 years? Yes No Don't Know
 b. In the last 6 months? Yes No Don't Know
 c. If yes, which ones? _____
-
11. Have pesticides been applied INSIDE this facility*
 a. In the last 5 years? Yes No Don't Know
 b. In the last 6 months? Yes No Don't Know
 c. If yes, which ones?

If yes, see Health & Safety Pest Notes for non-chemical alternatives to control specific pests.

12. Who decides how or when to control indoor and outdoor pest problems at your child care facility? Please check all that apply.*
- Director Custodial staff Pest control company
 Don't Know
 Another staff member Landlord Other, specify _____
 N/A

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

- Director

 Custodial staff

 Pest control company
 Don't Know
 Another staff member

 Landlord

 Other, specify _____
 N/A

14. Does the facility staff have training on how to apply pesticides safely? Yes No Don't Know

15. If the center has pesticides, where are they stored? (For example, Raid)

16. Over the past year, did your child care facility notify parents 72 hours before pesticides (including weed killers) were applied inside or outside your facility?* Yes No Don't Know

a. If yes, how? _____

17. Over the past year, did your child care facility post warning signs 24 hours before and stay in place 72 hours after pesticides (including weed killers) were applied?* Yes No Don't Know

18. Does your child care center have written records of applications of bug killer, weed killer, rat killer, or other pesticides?* Yes No Don't Know

(Thank you for taking the time to complete this questionnaire. Do you have any questions?)

*from Pest Management and Pesticide use in California Child Care Centers Questionnaire

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CALIFORNIA CHILDCARE HEALTH PROGRAM

APPENDIX I. INTEGRATED PEST MANAGEMENT IN EARLY CARE & EDUCATION PROGRAMS




□ INTEGRATED PEST MANAGEMENT TOOLKIT FOR EARLY CARE AND EDUCATION PROGRAMS
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ICEBREAKER QUESTIONS

1. What's your name?
2. What's the pest that bothers you the most?
3. What would you like to learn from today's workshop?



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INTEGRATED PEST MANAGEMENT IN EARLY CARE & EDUCATION PROGRAMS



UC Berkeley
Center for
Environmental
Research
and Children's
Health

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WHY ARE WE HERE TODAY?

Goal: To protect the health of children, staff and the environment




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BY THE END OF TODAY, YOU WILL BE ABLE TO:



1. Identify the requirements for child care centers as specified in California's Healthy Schools Act.
2. Define what is a pest, what is a pesticide and what is integrated pest management.
3. Explain why children are vulnerable to the health risks of pesticides.
4. Describe the health effects for children and staff exposed to pesticides and common pests.



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BY THE END OF TODAY, YOU WILL BE ABLE TO:



5. Develop and implement IPM policies and practices in your program.
6. Identify simple and inexpensive IPM methods to prevent or manage common pests.
7. Inspect your child care facility for the presence of pests or conditions that attract pests using the IPM Checklist.
8. Share IPM information and resources with staff and parents.



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OVERVIEW

A. Healthy Schools Act

B. Background

- o Pests
- o Pesticides
- o The health risks of pesticides to children & the environment

C. Integrated Pest Management




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HEALTHY SCHOOLS ACT (HSA)

The HSA requires that all child care centers:



- **Keep records** about pesticide use;
- **Maintain a registry** of people to notify when pesticides are used;
- **Notify** parents and staff before pesticides are applied and
- **Post warning signs** in areas where pesticides will or have been applied.



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HEALTHY SCHOOLS ACT (II)

The HSA encourages centers to:

Use IPM methods

- Keep pests out
- Remove their access to food, water and shelter

Use HSA exempt pesticides

- bait stations
- gel/paste in cracks/crevices
- exempt materials (e.g. mint oil)
- cleaners/sanitizers

AVOID use of nonexempt pesticides

- sprays
- foggers





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WHAT DOES THE HSA REQUIRE?

Property Owners

If the owner of a property where a child care center is located uses pesticides, they must provide written notice to the ECE center at least 120 hours before they apply a pesticide.

Pest Management Professional (PMP)

If a child care center hires a PMP, the staff must inform the PMP that the facility must comply with the Healthy Schools Act. The PMP must notify the center 120 hours before applying nonexempt pesticides.

If a property owner hires a PMP, the property owner must notify the PMP that a child care facility is present on the property.

For complete list of your responsibilities, see CCHP Health and Safety Note on the Healthy Schools Act.



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WHAT IS A PEST?



A pest is any living organism that causes damage or discomfort, or transmits or produces disease.



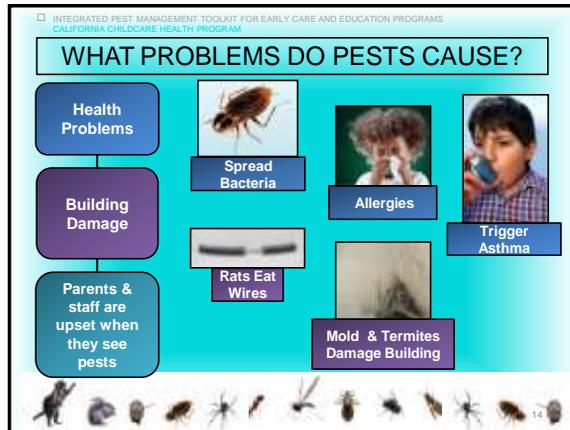
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WHAT ARE THE MOST COMMON INDOOR PESTS IN CALIFORNIA CHILD CARE CENTERS?



Badman, A., Dobson, C., Leonard, V. & Messenger, B. (2010). *Pest Management and Pesticide Use in California Child Care Centers*. Center for Children's Environmental Health Research, School of Public Health, UC Berkeley at http://cehr.cehs.berkeley.edu/childcarepest_mgmt_childcare.pdf.





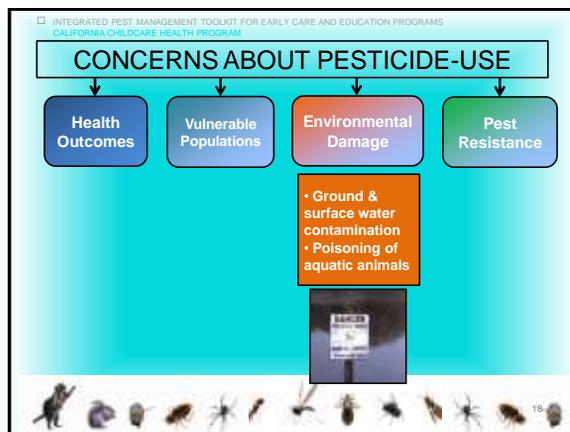
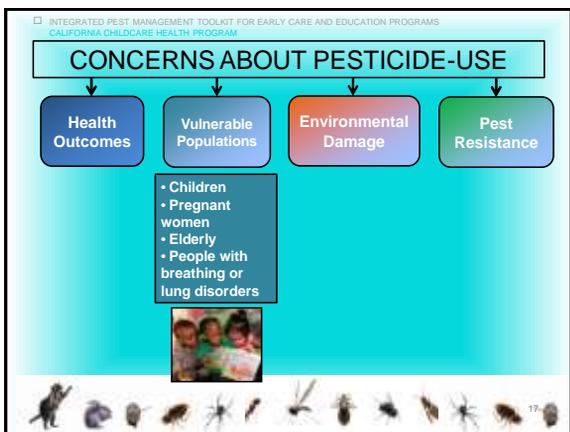
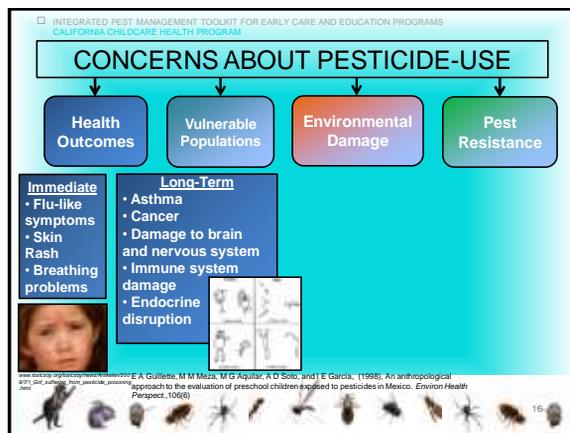
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WHAT ARE PESTICIDES?

Examples:

- Roach and ant spray
- Flea bombs
- Rat poison
- Weed killer
- Mothballs
- Insecticide chalk

Pesticides are **poisons** that are designed to kill or control living things.



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CONCERNS ABOUT PESTICIDE-USE

- Health Outcomes
- Vulnerable Populations
- Environmental Damage
- Pest Resistance

Pests can become resistant

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WHAT WE KNOW ABOUT LONG TERM EFFECTS OF PESTICIDES

Pesticide use became widespread in the 1940's. Many pesticides are new and haven't been around for long, so we don't know their long term effects.

Physicians for Social Responsibility, Los Angeles
Physicians for Social Responsibility, Los Angeles (2003). In Harm's Way at www.psrja.org/in-harms-way

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WHY ARE CHILDREN MORE VULNERABLE?

1. Higher exposures

- Frequent contact with the ground or floor, where pesticides collect
- Hand-to-mouth activity
- Less varied diet
- Eat, drink, and breathe more per kg
- Spend most of their time indoors

vs.

The average child eats **6.9** times more apples per day than an adult.

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WHY ARE CHILDREN MORE VULNERABLE?

1. Higher exposures

- Frequent contact with the ground or floor, where pesticides collect
- Hand-to-mouth activity
- Less varied diet
- Eat, drink, and breathe more per kg
- Spend most of their time indoors

If a pesticide is present in air, food or water, a greater amount will be taken in by a child in proportion to their body size or weight than by an adult.

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WHY ARE CHILDREN MORE VULNERABLE?

2. Metabolism

- Metabolic pathways undeveloped
- Reactivity to environment not yet in place

3. Don't recognize hazards

- Can't read labels
- Get into everything

In 2008, United States Poison Control Centers reported 43,526 cases of possible pesticide poisoning in children younger than six.

Biorestein, A. C., Spayker, D. A., Cantleria, L. R., Green, J. L., Rumaek, B. H., & Giffin, S. L. (2009). 2008 Annual Report of the American Association of Poison Control Centers™ National Poison Data System (NPDS): 26th Annual Report. *Clinical Toxicology*, 47(10), 911-1084.

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WHERE ARE PESTICIDES FOUND?

Sanborn et al. Identifying and Managing Adverse Environmental Health Effects: 4
Pesticides. *CMAA*, May 25, 2002: 165(11): 1431-1439

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WHAT ARE THE PATHWAYS OF EXPOSURE FOR CHILDREN?

1. By eating
2. By breathing
3. Through skin
4. Across the placenta (in the womb)

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HOW COMMON IS PESTICIDE-USE?

California Child Care Pest Management Survey

Pest problem present	
Using any pesticides	
Using spray or fogger	
Using at least one IPM approach	
Aware of IPM	

Bradman, A., Dobson, C., Leonard, V. & Messenger, B. (2010). Pest Management and Pesticide Use in California Child Care Centers, Center for Children's Environmental Health Research, School of Public Health, UC Berkeley at apps.cdpr.ca.gov/schoolipm/childcare/pest_mgt_childcare.pdf.

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WHAT IS INTEGRATED PEST MANAGEMENT (IPM)?

A "common-sense" approach to:

- Preventing pest problems by
 1. keeping pests out and
 2. getting rid of their food, water and shelter.
- Managing pest problems by
 1. using non-chemical approaches;
 2. using least-toxic pesticides when necessary and
 3. reducing the use of harmful pesticide.

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Prevention	↑	Intervention	↑	Toxicity	CHEMICAL	<ul style="list-style-type: none"> Conventional Pesticides <ul style="list-style-type: none"> • Sprays • Foggers Least Toxic Pesticides <ul style="list-style-type: none"> • Silica gel • Boric acid • Diatomaceous earth
					PHYSICAL – MECHANICAL	<ul style="list-style-type: none"> • Vacuum • Snap traps • Glue boards • Fly swatters
					SANITATION	<ul style="list-style-type: none"> • Use tight-fitting lids on trash cans • Keep food containers tightly sealed • Eliminate clutter & standing water • Clean up crumbs immediately
					GENERAL PREVENTION	<ul style="list-style-type: none"> • Caulk cracks & crevices • Replace broken screens • Repair leaky faucets • Weatherstrip doors
					EDUCATION, COMMUNICATION & POLICIES	<ul style="list-style-type: none"> • Train staff & parents • Adopt IPM policy • Hire a PMP with IPM experience

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IPM NUTS & BOLTS

1. **Prevention**
 - Keep Pests Out
 - Remove Pest's Food, Water & Shelter
2. **Inspect and Monitor**
3. **Identify Pests**
4. **Manage Existing Problems**

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PREVENTION: KEEP PESTS OUT

Seal or block gaps around doors. Install doorsweeps.

Take home message: Close off entryways so pests can't get into your facility in the first place!

Seal gaps around pipes

Patch holes in screens

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PREVENTION: REMOVE PESTS' FOOD & WATER

Clean up food before pests are attracted to leftovers

Eliminate sanitation & garbage problems

Take home message: Pests need food and water to survive. Take away their access to these things, and you're taking away their diet!

Eliminate standing water, clogged sinks & leaking faucets

Store food & art supplies in sealed containers

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PREVENTION: REMOVE PESTS' SHELTER

Replace cardboard boxes with plastic containers with lids

Take Home Message: Without shelter, pests will pack their bags and find a new home outside of your ECE facility.

Organize! Clutter provides hiding spots for pests and covers up their evidence

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INSPECTION

Use the IPM Checklist to look for:

- pests
- signs of pests and their damage and
- conditions that might attract pests.

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IDENTIFICATION

- The next step is to identify what kind of pest you have.
- Use Health & Safety Notes to understand pests' lifecycle, food and shelter.
- The statewide IPM program is a great resource:
<http://www.ipm.ucdavis.edu>

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MONITORING

- Regularly inspect the facility for pests and pest damage.
- Identify sources of food, water and shelter that might attract pests.
- Identify signs of living and breeding.
- Determine if and when treatment is needed.
- Assess whether current actions are working.

Take Home Message: Monitoring is an ongoing process!

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MANAGEMENT

Often you can manage pests without using chemicals. IPM-recommended techniques include:

Prevention

Vacuum to remove pests

Take Home Message: Keeping things clean and in good repair is key to IPM!

Wash areas with soap and water

Place traps

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MANAGEMENT: CHOOSING THE LEAST-RISK PESTICIDE

Less risk of exposure ← → More risk of exposure

Take Home Message: Use pesticides as a last resort! If needed, choose the least-risk application methods.

Gel bait in a crevice (Exempt) sprays that broadcast pesticides (Nonexempt)

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IMPLEMENTING IPM IN YOUR CENTER

1. Write an IPM policy.
2. Designate an IPM Coordinator.
3. Provide training for staff and parents.
4. Obtain information for any outside contractors.
5. If needed, hire a PMP that has IPM experience and knows about the HS A requirements.

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IMPLEMENTING IPM IN YOUR CENTER (II)

6. If you have a pest problem, inspect buildings and grounds for sources of infestations and contributing conditions.
7. Establish pest monitoring procedures.
8. Identify any pests found and create an IPM Action Plan for each pest you find in your environment.
9. Establish record keeping.
10. Evaluate the program on a regular basis.

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HOW TO HIRE A PMP

- 1) Identify a PMP with experience in ECE facilities.
- 2) Call several PMPs and ask specifically if they are aware of the Healthy Schools Act and practice IPM.
- 3) Ask what services are included in the PMP's IPM approach.
- 4) Confirm that the PMP understands which services require an ECE director's explicit permission.
- 5) Ask whether they use indoor or outdoor sprays.
- 6) Ask about the qualifications, training and experience of anyone who will work on your site.
- 7) Ask for references from other clients.

If you already have a PMP, talk with him to make sure he's using IPM methods.

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SCENARIO

You enter a child care facility and note that there is evidence of mice and mold in the kitchen. The staff say that they can't get rid of them and ask you for suggestions. They don't want to spray pesticides around the children.

What would you suggest?
(Hint: think about access, food, water and shelter)

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IPM NUTS & BOLTS

1. **Prevention**
 - Keep Pests Out
 - Remove Pest's Food, Water & Shelter
2. **Inspect and Monitor**
3. **Identify Pests**
4. **Manage Existing Problems**

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RESOURCES

<p>CALIFORNIA CHILDCARE HEALTH PROGRAM www.ucschildcarehealth.org • Fact Sheets for Families www.ucschildcarehealth.org/html/pandf/factsheets/main.htm • Health and Safety Notes www.ucschildcarehealth.org/html/pandf/handnotesmain.htm • Forms www.ucschildcarehealth.org/html/pandf/formsmain.htm • Training Curricula www.ucschildcarehealth.org/html/pandf/trainingcurmain.htm</p> <p>AB 405 List of Pesticide Products Prohibited from Use in Schools apps.cdpr.ca.gov/schoolipm/school_ipm_law/prohibited_prods.pdf</p> <p>California Department of Pesticide Regulation Childcare IPM: Growing Up Green www.cdpr.ca.gov/schoolipm/schoolipm.htm</p>	<p>California Department of Pesticide Regulation. Pest Prevention: Maintenance Practice and Facility Design apps.cdpr.ca.gov/schoolipm/managing_pests/71_pest_prevention.cfm</p> <p>California laws and regulations on pesticide use apps.cdpr.ca.gov/schoolipm/school_ipm_law/main.cfm</p> <p>Collaborative on Health and the Environment, Endocrine Disrupting Chemicals www.healthandenvironment.org/?module=uploads&func=download&fileid=773</p> <p>Ecologo www.ecologo.org</p> <p>Ecowise www.ecowise.com</p> <p>EPA, Design for the Environment www.epa.gov/dfe</p>
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RESOURCES (II)

<p>EPA, <i>Integrated Pest Management for Schools: A How-to Manual</i> www.epa.gov/epa00001/ipm/schoolipm</p> <p>eXtension: <i>Pest Management In and Around Structures</i> www.extension.org/urban%20integrated%20pest%20management</p> <p>Green Seal www.greenseal.org</p> <p>Green Shield Certified www.greenshieldcertified.org</p> <p>GreenPro www.certifiedgreenpro.org</p> <p>IPM Institute of North America, Inc. www.ipminstitute.org</p> <p>Maryland Department of Agriculture, <i>Action Thresholds in School IPM Programs. Pesticide Regulation Section, Annapolis, MD.</i> schoolipm.fras.umd.edu/tp.htm</p>	<p>National Pesticide Information Center npic.orst.edu</p> <p>National Pest Management Association (NPMA) www.pestworld.org</p> <p>Our Water, Our World www.ourwaterjournal.org</p> <p>Pest Control Operators of California www.pcoc.org</p> <p>The Safer Pest Control Project www.spccweb.org</p> <p>University of California Statewide Integrated Pest Management Program www.ipm.ucdavis.edu</p> <p>US Pest Control Regulatory Agencies by State www.pestnetwork.com/us/agencies/bystate.html</p>
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APPENDIX IB. MANEJO INTEGRADO DE PLAGAS PARA LOS PROGRAMAS DE CUIDADO Y EDUCACIÓN TEMPRANA DE NIÑOS




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DINÁMICA

1. ¿Cuales su nombre?
2. ¿Cuales es la plaga que le molesta más?
3. ¿Qué le gustaría aprender hoy día?



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MANEJO INTEGRADO DE PLAGAS PARA LOS PROGRAMAS DE CUIDADO Y EDUCACIÓN TEMPRANA DE NIÑOS



Este proyecto fue realizado gracias a los fondos provenientes de forma total o parcial, de una subvención otorgada por el Departamento de Normas de Pesticidas de California (DPR). El contenido de este documento no refleja necesariamente las opiniones o normas de DPR. La mención de nombres comerciales o marcas de productos no constituye un aval o recomendación para el uso de los mismos.



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¿POR QUÉ ESTAMOS HOY AQUÍ?

Objetivo: Proteger la salud de los niños, personal y del medio ambiente.




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AL FINAL DE HOY USTED PODRÁ:



1. Identificar los requerimientos para los centros del cuidado de niños, como esta especificado en la Ley de Escuelas Saludables de California
2. Definir que es una plaga, que es un pesticida, y que es el manejo integrado de plagas
3. Explicar por qué los niños son vulnerables a los riesgos de salud de los pesticidas
4. Describir los efectos en la salud de los niños y el personal expuesto a pesticidas y plagas comunes



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AL FINAL DE HOY USTED PODRÁ:



5. Desarrollar e implementar medidas y prácticas de IPM en su programa
6. Identificar métodos simples y baratos de IPM para prevenir o controlar plagas comunes
7. Inspeccionar su centro de cuidado de niños por la presencia de plagas; o por las condiciones que pueden atraer plagas usando la lista de IPM
8. Compartir la información y los recursos de IPM con el personal y los padres.



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CALIFORNIA CHILDCARE HEALTH PROGRAM

RESUMEN

A. Ley de Escuelas Saludables

B. Historial

- o Plagas
- o Pesticidas
- o Los riesgos para la salud de los niños y el medio ambiente por causa de los pesticidas

C. Manejo Integrado de Plagas




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LEY DE ESCUELAS SALUDABLES (HSA)

La Ley de Escuelas Saludables requiere que todos los centros del cuidado de niños:

- **Mantengan registros** acerca del uso de pesticidas;
- **Mantengan registros de personas que se tiene que avisar** cuando se usan pesticidas
- **Avisen** a los padres y al personal antes de usar pesticidas y
- **Coloquen señales de advertencia** en las áreas donde los pesticidas se van, o han sido aplicados/usados




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LEY DE ESCUELAS SALUDABLES (II)

La HSA promueve que los centros:

Usen métodos de IPM

- ¡Mantener las plagas afuera!
- Quitar el acceso a comida, agua, y refugio

Usen pesticidas aprobados por HSA

- Trampas
- Tapar aberturas y grietas
- Materiales aprobados (aceite de menta)
- Limpiadores/ desinfectantes

Eviten usar pesticidas NO aprobados

- Sprays
- Nebulizadores



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¿ QUÉ ES LO QUE HSA MANDA?

Dueños de Propiedad
Si el dueño de una propiedad donde hay un centro de cuidado de niños usa pesticidas, éste debe proveer una notificación escrita al centro ECE al menos con 120 horas de anticipación antes de rociar el pesticida.

Profesional del Control de Plagas (PMP)
Si un centro de cuidado de niños contrata un PMP, el personal debe informar al PMP que el centro debe cumplir con HSA. El PMP debe notificar al centro 120 horas antes de aplicar pesticidas NO aprobados.

Si el dueño de una propiedad contrata un PMP, el dueño debe notificar al PMP que un centro de cuidado de niños se encuentra en la propiedad.

Para una lista completa de sus responsabilidades, fíjese en la Nota de Salud y Seguridad de CCHP en la Ley de Escuelas Saludables.




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¿QUÉ ES UNA PLAGA?



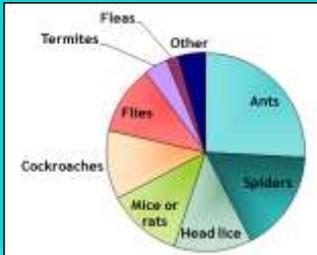
Una plaga es cualquier organismo vivo que produce daño o malestar, o transmite o produce enfermedades.



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¿CUÁLES SON LAS PLAGAS MÁS COMUNES DENTRO DE LOS CENTROS DE CUIDADO DE NIÑOS EN CALIFORNIA?



Bradman, A., Dobson, C., Leonard, V., & Messenger, B. (2010). *Pest Management and Pesticide Use in California Child Care Centers*. Center for Children's Environmental Health Research, School of Public Health, UC Berkeley. http://apps.cdcpr.ca.gov/schooltoolkit/childcare/pest_mgmt_childcare.pdf



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¿CUÁLES SON LAS PLAGAS MÁS COMUNES EN LAS AFUERAS DE LOS CENTROS DE CUIDADO DE NIÑOS EN CALIFORNIA?

Small text at the bottom: Bradman, A., Dobson, C., Leonard, V. & Messenger, B. (2010). *Pest Management and Pesticide Use in California Child Care Centers*. Center for Children's Environmental Health Research, School of Public Health, UC Berkeley at apps.cdpr.ca.gov/schoolpm/childcare/pest_mng_childcare.pdf.

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¿QUÉ PROBLEMAS CAUSAN LAS PLAGAS?

- Problemas de salud
 - Esparcen bacterias
 - Alergias
 - Provocan asma
- Dañan los edificios
 - Las ratas comen alambres
 - Termitas y moho destruyen edificios
- Padres y personal se molestan cuando ven plagas

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¿QUÉ SON LOS PESTICIDAS?

Ejemplos:

- Spray para cucarachas y hormigas
- Bombas para pulgas
- Veneno para ratas
- Herbicidas
- Naftalina
- Tiza insecticida

Los pesticidas son **venenos** diseñados para matar o controlar seres vivos.

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PREOCUPACIONES EN EL USO DE PESTICIDAS

- Salud
 - Inmediatas**
 - Síntomas como gripe
 - Sarpullido en la piel
 - Problemas respiratorios
 - Largo Plazo**
 - Asma
 - Cáncer
 - Daño al cerebro y sistema nervioso
 - Daño al sistema inmunológico
 - Interrupción del sistema endocrino
- Poblaciones vulnerables
- Daño ambiental
- La resistencia de las plagas

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PREOCUPACIONES EN EL USO DE PESTICIDAS

- Salud
- Poblaciones vulnerables
 - Niños
 - Mujeres embarazadas
 - Personas mayores
 - Personas con problemas respiratorios
- Daño ambiental
- La resistencia de las plagas

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PREOCUPACIONES EN EL USO DE PESTICIDAS

- Salud
- Poblaciones vulnerables
- Daño ambiental
 - Contaminación del agua y aguas subterráneas
 - Envenenamiento de animales acuáticos
- La resistencia de las plagas

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PREOCUPACIONES EN EL USO DE PESTICIDAS

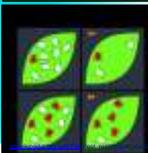
Salud

Poblaciones vulnerables

Daño ambiental

La resistencia de las plagas

• Las plagas pueden ser resistentes





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LO QUE SABEMOS ACERCA DE LOS EFECTOS A LARGO PLAZO DE LOS PESTICIDAS



El uso de pesticidas se hizo popular en los 1940's. Muchos pesticidas son nuevos, y no han estado en el mercado por mucho tiempo; por ello no sabemos sus efectos a largo plazo.

Physicians for Social Responsibility, Los Angeles
Physicians for Social Responsibility, Los Angeles (2003). In Harm's Way at www.psjla.org/in-harms-way/



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¿POR QUÉ SON LOS NIÑOS MÁS VULNERABLES?

1. Altas exposiciones

- Contacto frecuente con la tierra o el piso, donde los pesticidas se juntan o combinan
- Actividades boca a boca
- Dietas poco variadas
- Comen, beben, y respiran más por cada Kg.
- Pasan gran parte de su tiempo en espacios cerrados



vs.



niño

adulto

Un niño promedio come **6.9** veces más manzanas diariamente que un adulto.

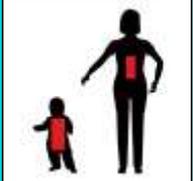


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- Actividades boca a boca
- Dietas poco variadas
- Comen, beben, y respiran mas por cada Kg.
- Pasan gran parte de su tiempo en espacios cerrados



Si un pesticida está presente en el aire, comida o agua; una cantidad mayor será absorbida por un niño que por un adulto; en proporción a la talla y peso del niño.



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¿POR QUÉ SON LOS NIÑOS MÁS VULNERABLES?



2. Metabolismo

- Vías metabólicas no desarrolladas
- Reacción al medio ambiente todavía no se encuentra presente

3. No reconocen peligros

- No pueden leer etiquetas
- Se meten en todo

En el 2008, el Centro de Control de Venenos de los Estados Unidos reportó 43,526 casos de posibles envenenamientos en niños menores de 6 años por causa de pesticidas.

Bronstein, A. C., Spytke, D. A., Castilena, L. R., Green, J. L., Rumack, B. H., & Gilin, S. L. (2009). 2008 Annual Report of the American Association of Poison Control Centers'™ National Poison Data System (NPDS). 28th Annual Report. Clinical Toxicology, 47(10), 911-1084.



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¿DÓNDE SE ENCUENTRAN LOS PESTICIDAS?



Campos de Agricultura
Esparcimiento de pesticidas



Frutas y vegetales



Productos domésticos



Viviendas públicas



Agua contaminada



Centros de cuidado de niños y escuelas

Sariborn et al. Identifying and Managing Adverse Environmental Health Effects: 4 Pesticides. CMAA, May 26, 2002. 166 (11): 1421-1430



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¿CUÁLES SON LAS VÍAS DE EXPOSICIÓN EN LOS NIÑOS?



1. Por la comida
2. Por la respiración
3. A través de la piel
4. A través de la placenta (en el útero)




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¿QUÉ TAN COMÚN ES EL USO DE PESTICIDAS?

Informe del Control de Plagas en Centros de Cuidado de Niños en California

Existencia de plagas

- Usan cualquier pesticida
- Usan spray o nebulizadores
- Usan al menos una técnica de IPM
- Saben de IPM

Bradman, A., Dobson, C., Leonard, V. & Messenger, B. (2010). Pest Management and Pesticide Use in California Child Care Centers. Center for Children's Environmental Health Research, School of Public Health, UC Berkeley at apps.cdpr.ca.gov/schoolform/childcare/pest_mgmt_childcare.pdf



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¿QUÉ ES EL MANEJO INTEGRADO DE PLAGAS?

Es un enfoque de sentido común para:

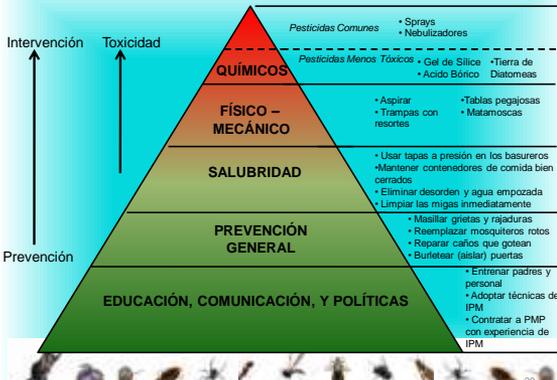


Prevenir el ingreso de plagas
Controlar plagas sea necesario y cuando sea necesario.

1. Manteniendo a las plagas fuera
2. Inspeccionando y supervisando
3. Identificando plagas
4. Controlando plagas cuando sea necesario y cuando sea necesario.



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QUÍMICOS

- Pesticidas Comunes: Sprays, Nebulizadores
- Pesticidas Menos Tóxicos: Gel de Silicio, Acido Bórico, Tierra de Diatomeas

FÍSICO – MECÁNICO

- Aspirar, Trampas con resortes, Tablas pegajosas, Matamoscas

SALUBRIDAD

- Usar tapas a presión en los basureros, Mantener contenedores de comida bien cerrados, Eliminar desorden y agua empozada, Limpiar las migas inmediatamente

PREVENCIÓN GENERAL

- Masillar grietas y rajaduras, Reemplazar mosquiteros rotos, Reparar caños que gotean, Burletear (aislar) puertas

EDUCACIÓN, COMUNICACIÓN, Y POLÍTICAS

- Entrenar padres y personal, Adoptar técnicas de IPM, Contratar a PMP con experiencia de IPM



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INFORMACIÓN BÁSICA DE IPM

1. **Prevencción**
 - Mantener las plagas afuera
 - Quitar la comida, agua y el potencial refugio de plagas
2. **Inspección y Supervisión**
3. **Identificación de Plagas**
4. **Control y Manejo de problemas existentes**



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PREVENCIÓN: MANTENGA LAS PLAGAS AFUERA



Selle o bloquee los espacios entre las puertas. Instale burletes.

Mensaje a recordar: Cierre vías de acceso para que las plagas no ingresen a sus instalaciones.

Selle aberturas alrededor de caños

Parche huecos en las mallas



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PREVENCIÓN: QUITA EL AGUA Y COMIDA DE LAS PLAGAS

Limpie lo que quede de comida antes que las plagas estén atraídas a las sobras

Elimine problemas de salubridad y de basura

Mensaje a recordar: Las plagas necesitan agua y comida para sobrevivir. Elimina su acceso a éstos; y les estará quitando su alimentación!

Elimine agua empozada, lava atorados y caños que goteen

Guarde comida y materiales de arte en envases sellados

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PREVENCIÓN: QUITA EL REFUGIO DE LAS PLAGAS

Reemplace cajas de cartón con contenedores de plástico con tapas

Mensaje a recordar: Sin un refugio, las plagas hacen maletas y se van a su nuevo hogar fuera de su centro de cuidado de niños.

¡Organice! El desorden les da a las plagas lugares para esconderse y para encubrir su presencia

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INSPECCIÓN

Use la Lista de Control de IPM buscando:

- plagas
- señales de plagas y el daño que ocasionan y
- condiciones que puedan atraer plagas.

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IDENTIFICACIÓN

- El siguiente paso es identificar qué clase de plaga tiene.
- Use las Notas de Salud y Seguridad de CCHP para entender el ciclo de vida de las plagas, su comida y su refugio.
- El programa IPM a nivel estado es un gran recurso: <http://www.ipm.ucdavis.edu>

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SUPERVISIÓN

- Inspeccione las instalaciones regularmente por plagas y daños ocasionados por plagas.
- Identifique fuentes de alimentos, agua y condiciones que puedan atraer plagas.
- Identifique dónde se reproducen las plagas.
- Determine si – y cuándo – se necesita tratamiento (tomar acción).
- Determine si los métodos funcionan.

Mensaje a recordar: ¡La supervisión es un proceso continuo!

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CONTROL

A menudo puede controlar plagas sin usar químicos. Algunas técnicas recomendadas por IPM son:

- Prevencción
- Aspirar para eliminar plagas
- Lavar las superficies con agua y jabón
- Colocar trampas

Mensaje a recordar: ¡Mantener las cosas limpias y en buena condición es básico para IPM!

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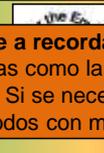
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CONTROL: ESCOGIENDO LOS PESTICIDAS DE MENOR RIESGO

Menor riesgo de exposición ← Mayor riesgo de exposición



Trampas resinas y apertura de grietas.



Pesticidas que emiten vapores.

Mensaje a recordar: Use pesticidas como la última medida! Si se necesita, escoja los métodos con menos riesgo.

Aprobados

No Aprobados



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IMPLEMENTANDO IPM EN SU CENTRO

1. Escriba una estrategia de IPM.
2. Designe/escoja un coordinador de IPM.
3. Brinde capacitación para el personal y los padres.
4. Obtenga información de algún contratista.
5. Si es necesario, contrate un PMP que tenga experiencia con IPM, y que sepa acerca de los requisitos de HSA.



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IMPLEMENTANDO IPM EN SU CENTRO (II)

6. Si tiene un problema de plagas, inspeccione los edificios y los pisos buscando fuentes de infestación y las condiciones que contribuyen a ésta.
7. Establezca procedimientos de monitoreo de plagas.
8. Identifique las plagas que encuentre y elabore un plan de acción de IPM para cada plaga que encuentre en su medio ambiente.
9. Establezca un registro.
10. Evalúe el programa de manera continua.



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¿CÓMO CONTRATAR UN PMP?

- 1) Identifique un PMP con experiencia en instalaciones de ECE.
- 2) Llame a varios PMP y pregunte específicamente si saben de HSA y la práctica de IPM.
- 3) Pregunte qué servicios están incluidos en la práctica de IPM del PMP.
- 4) Confirme que el PMP entiende qué servicios requieren autorización explícita y expresa del director del ECE.
- 5) Pregunte si utilizan sprays que se usan adentro, o los que se usan afuera.
- 6) Pregunte acerca de las calificaciones, entrenamiento, y experiencia de cualquiera que vaya a trabajar en su centro.
- 7) Pregunte por referencias de otros clientes.

Si usted ya tiene un PMP, hable con él para estar seguro que él usa métodos de IPM.



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ESCENARIO

Usted ingresa a las instalaciones de un centro de cuidado de niños y se da cuenta que hay evidencia de ratones y moho en la cocina. El personal le dice que no se pueden deshacer de ellos y le piden sus recomendaciones. Ellos no quieren rociar pesticidas cerca a los niños.



¿Qué recomendaría?

(Pista: Piense acerca del acceso de las plagas, comida, agua y refugio).



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INFORMACIÓN BÁSICA DE IPM

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RECONOCIMIENTOS

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Mark Robertson, DPR
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Illustrations: Noa Kaplan*

*some images from <http://healthyhomescollaborative.org/>



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RECONOCIMIENTOS (II)

Este proyecto fue realizado gracias a los fondos provenientes de una subvención otorgada por el Departamento de Normas de Pesticidas de California (DPR). Las Herramientas de Manejo Integrado de Plagas fueron creadas por: el Programa de Salud para Establecimientos de Cuidado de Niños perteneciente a la Facultad de Enfermería de la Universidad de California (UC) en San Francisco, el Centro para Investigación de Medio Ambiente y Salud Infantil de UC Berkeley, el Programa IPM a nivel estatal de UC y el Departamento de Normas de Pesticidas de California. El contenido de este documento no refleja necesariamente las opiniones o normas de DPR.



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FUENTES DE INFORMACIÓN

CALIFORNIA CHILDCARE HEALTH PROGRAM

www.ucsfchildcarehealth.org

• Fact Sheets for Families
www.ucsfchildcarehealth.org/html/pandir/factsheets/main.htm

• Health and Safety Notes
www.ucsfchildcarehealth.org/html/pandir/henotesmain.htm

• Forms
www.ucsfchildcarehealth.org/html/pandir/formmain.htm

• Training Curricula
www.ucsfchildcarehealth.org/html/pandir/trainingcur/main.htm

AB 405 List of Pesticide Products Prohibited from Use in Schools
apps.cdpr.ca.gov/schoolipm/school_ipm_law/prohib/bed_prods.pdf

California Department of Pesticide Regulation
Childcare IPM: Growing Up Green
www.cdpr.ca.gov/schoolipm/childcare

California Department of Pesticide Regulation.
Pest Prevention: Maintenance Practice and Facility Design
apps.cdpr.ca.gov/schoolipm/managing_pests/71_est_prevention.cfm

California laws and regulations on pesticide use
apps.cdpr.ca.gov/schoolipm/school_ipm_law/main.cfm

Collaborative on Health and the Environment,
Endocrine Disrupting Chemicals
www.healthandenvironment.org/?module=uploads&func=download&fileid=773

Ecologo
www.ecologo.org

EcoWise
www.ecowise.com

EPA, Design for the Environment
www.epa.gov/dfe



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FUENTES DE INFORMACIÓN (II)

EPA, *Integrated Pest Management for Schools: A How-to Manual*

www.epa.gov/gg2000/1/schoolipm

eXtension: *Pest Management In and Around Structures*
www.extension.org/urban%20integrate%20pest%20management

Green Seal
www.greenseal.org

Green Shield Certified
www.greenshieldcertified.org

GreenPro
www.certifiedgreenpro.org

IPM Institute of North America, Inc.
www.ipminstitute.org

Maryland Department of Agriculture, *Action Thresholds in School IPM Programs. Pesticide Regulation Section, Annapolis, MD.*
schoolipm/fas/uf/0601p.htm

National Pesticide Information Center
npic.orst.edu

National Pest Management Association (NPMA)
www.pestworld.org

Our Water, Our World
www.ourwaterourworld.org

Pest Control Operators of California
www.pcooc.org

The Safer Pest Control Project
www.sppcwab.org

University of California Statewide Integrated Pest Management Program
www.ipm.ucdavis.edu

US Pest Control Regulatory Agencies by State
www.pestnetwork.com/usagencies/bystate.html



Appendix. J.
Pre-Post IPM Workshop Forms

Please circle the letter with the correct answer.

1. Integrated Pest Management (IPM) is a process that
 - a. Gets rid of pests quickly
 - b. *Focuses on long-term prevention or suppression of pest problems through prevention, monitoring and the use of least toxic methods*
 - c. Can only be carried out by a pest management company
 - d. Doesn't work as well as regular application of pesticides by a pest control company

2. Pesticides may have effects on children's health, including
 - a. Cancer
 - b. Learning disabilities
 - c. Asthma
 - d. *All of the above*

3. Monitoring is one component of IPM and involves
 - a. Watching children to make sure that they don't get near areas where pesticides have been applied
 - b. Observing children to make sure they don't leave food in outdoor areas
 - c. *Observing the program's buildings and grounds for pest problems early on when it is easier to manage them*
 - d. Designating an IPM coordinator who looks for pests in the environment

4. Young children are more vulnerable to the effects of pesticides than adults because
 - a. They have immune systems that are not well-developed and do not protect them completely from toxic chemicals
 - b. They put their hands and other objects into their mouths frequently
 - c. They are closer to the ground where pesticides collect in the dust
 - d. *All of the above*

5. All child care centers in California are required by the Healthy Schools Act to
 - a. Provide a way for parents and staff to sign up to be notified each time a pesticide is used in the program
 - b. Post warning signs around each area where pesticides will be applied
 - c. Keep records of what pesticides have been used at the facility site for the past four years
 - d. *All of the above*

6. Integrated Pest Management is an approach that never uses any pesticides at all
 - a. True
 - b. *False*

7. The Healthy Schools Act applies to California's K through 12 schools and
 - a. *Licensed child care centers only*
 - b. Licensed family day care homes only
 - c. Child care center, family day care homes, and informal care

8. Once pesticides are approved by the Environmental Protection Agency, they are not dangerous to our health.
 - a. True
 - b. *False*

9. How do we know if a pesticide is legal to use?
 - a. If it doesn't smell too toxic when I spray it, then it's legal and safe
 - b. All pesticides are that I can buy at in the market are legal and safe
 - c. *I will see the EPA registration number on the container*
 - d. All of the above

10. The following are IPM strategies on how to prevent pests in the child care center:
 - a. *Pest proofing the building and having good sanitation*
 - b. Use pesticides regularly
 - c. Use baits regularly
 - d. All of the above

Dear <Center> staff and directors,

Thanks you for your cooperation in letting a representative from the California Childcare Health Program come to your facility to perform an integrated pest management checklist. On the whole, your center is in good repair, clean, and organized – keep up the good work! Based on our walk through, we have a few suggestions:



1. Make sure garbage receptacles seal properly and that area around receptacle is free from spilled liquids or garbage

Garbage cans and dumpsters that don't seal properly, or can be gnawed through by rats, provide access to food for rodents, birds, flies and other pests. Overflowing containers indicate the need for more containers or more frequent garbage pickup. Spilled liquids and garbage attract pests.

2. Repair damage to walls and replace rotting wood



3. Screen vents and pipes with ¼ inch hardware cloth & caulk around outside



Vents and large openings covered with ¼-inch hardware cloth will keep rodents, birds and yellowjackets out and make it harder for them to burrow back through the hole.

4. Put doorsweeps and weatherstripping on front and east doors to outside



If light is visible under doors this indicates that mice, crawling insects and spiders can enter the building. All doors need sweeps, weatherstripping or similar barriers, especially doors near the garbage receptacle area.

5. Caulk around cracks, crevices, and gaps between pipes and walls
(bathrooms, building exterior, storage area)



Pests commonly enter a building through holes, cracks, gaps and crevices in between pipes, vents, roofs, floors, windows, walls, baseboards, cabinets and mirrors. If you can fit a dime or pencil into the hole, then a mouse or rat can fit through the gap, too.

6. Continue to monitor for and manage cockroaches (kitchen and specialist room)

Put files into plastic bins. Caulk and fix leak in adult bathroom to prevent source of water. Put more monitoring traps around the school and find out what Isotech does to manage the cockroaches.



7. Fix leak on pipe under sink (adult bathroom on south side of building)

Even small leaks or sources of water keep the wood or soil underneath a building continuously moist. These are ideal conditions for termites. Pests require water to survive. Moisture allows mold and mildew to grow and provides water necessary for pests to survive.

8. Hang mops upside down to dry

Keeping mops and buckets dry prevents mold and mildew growth.

9. Fix sink so that it drains properly (kitchen)



Appendix L.

Director Interview: Workshop Quotes

Interview questions:

If you could design the training workshop, what would you have done differently?

Why do you think IPM is important?

1. "I thought your workshop was very effective. I think people that went really appreciated it. I like the way that you had to be doing, bouncing back and forth with the information. You did some games that engaged people and made them think about the answers. I thought the workshop was good. It was interactive and informative and that was good."

2. "We saw a lot of, she had a lot of examples of the different pesticides, and she talked about their potential risks, yeah it was a lot of information, a lot of useful information, and I think the main thing that we, that I came away with, and I can probably say a few of the other staff as well, was that to recognize when we have an infestation problem, and then who to turn to in order to solve that problem or manage that problem."

3. "Yeah, it was really educational, regarding how we could manage to get rid of whatever pests that we have here, but so far I really didn't have any serious problem except that one time regarding the mouse, but now I don't see anymore. I don't see anymore. And also a guy from the pest control that is being hired by the < >, I mean by this Complex came here, gave us a visit, because they really remember I called you, they really want to put this mousetrap there, so he came here one day to visit and there were some mouse trapped. I said no, no, your mousetraps are not being used now, I said, because I don't see any more. Oh, then he said just let it stay there. It's still there in the kitchen, but so far, I don't have any problem, not even ants, not even cockroach, I don't see. Especially the mouse, I don't see anymore."

4. "Oh well, actually, because this has been the first time that I attended a workshop on pest management, we never had it here before, so it, your project is the first one that we have and we really appreciate the workshop that you gave us because it enlightened us on the disadvantages of not paying attention to those little things that needs to be done. So now it created awareness on the importance of pest control."

Appendix M.

Director Interview Quotes: Changes and Challenges

Some of the Interview Questions:

What changes did you note after you and your staff participated in the IPM Workshops and received the feedback from the IPM Checklist?

Tell me how the experience has been when implementing IPM in your child care setting?

1. "I think it's a really good idea because you're really focusing on cleanliness and using things besides chemicals or pesticides to solve the issue, so you're looking at the structural integrity of your buildings and how they might be getting in and I think it's, it gives everybody, it seems much safer and much more effective way when you focus that way rather than just calling our pest man to come out and solve our issues. So it gets the team involved in a different way, not being an outside person's job to come in and solve this. It gets the team involved in thinking that they can do, how they're handling their site. Cleaning things off shelves, those are the kinds of things that have helped the clutter. Yeah. Good thing to look at."
2. "Actually when we first got [the feedback from the checklist] we had a work day and we did some things on the trees and some things outside. I took some things down. And then Sara works on facilities with Roberto, and kind of lines out what his plans are gonna be. So, and I think when people have mice or cockroaches or things like that they call Sara, and she works with a pest control company, so after this, we sort of rethought that a little bit and what could we do and we used your supplies a little bit, those mice-cockroach traps."
3. "Oh yeah, during our staff meeting, I usually remind them of these pests and I told them that they have to keep the area clean, especially over there and in the kitchen area where you have the food although we don't prepare the food here, the food is being brought to us. But still, we prepare them to give to the children, so washing the hands of the staff and also the area is clean. We usually inspect, I inspect, I visit each room just to see, and also reminders to the staff. Every now and then I have to remind them."
4. "I think we've become much more aware of how to deal with any kind of pest infestation that we have, and then also how and what we could do about it, I think, so we were aware that there were certain products that we weren't able to use, but I think that we did, I think there were some things that we did discover that were helpful for us

to handle some smaller-scale problems on our own. And then of course leave the larger infestations to professionals.”

5. “Oh I think so, I think so because we are all now aware. We are all now aware of it. So if there is a sign of something like that, then I told them, if you see something if you see any sign of it here, let me know right away. So I will be informed right away. Once they see something inside the room. In fact, when I ask them all, do you see anything cockroach or? No no no, nothing, we don't have any problem now. That is good.”

What are the barriers to implementing the IPM Practices?

1. “I think initially we looked at some things and when Sara was putting the work orders in, and there were budget issues, and so what could we do and what couldn't we do. There were some very simple things that I worked in, and having people come and work on the trees and things like that, and the caulking, and thank you for that caulking you left us. Having that toolkit was really fun. It was like someone would say we need to do this and I'd pull that out and there it was, and that was really nice, so we had a direction to go. There were some things that were a little more complex, and how do we solve that, and so we set it aside and I think those are a few of the things that haven't been taken care of. I think you saw things that we hadn't really seen.”
2. “Of course money is always an issue. We don't do any of the purchasing of any of the products for pest management. Of course time, we just integrate that into our day. I mean, if it's, if it can be a learning experience for the children, we think about that as well, so what can we, what are we going to learn from this situation, and the children, are they going to get anything out of this, and how can we use that to our advantage? We look at things that way. With any occupation, I guess time is a factor, I mean when can you do it, you know? We have only a certain amount of time that we can really devote to this.”
3. “Well, one problem would be if the staff is not going to cooperate with it. If the staff is not aware of the importance of pest control, that could be a barrier, and a problem with the implementation. Because if you want implementation to be effective, then everyone has to work together. That's what I've been telling them. We have to work together. I said, I cannot be working alone. We all have to work together for the sake of the children. I said it's not for the sake of anybody, it's for the children that we are working for, and that we are giving care.”

Appendix N.
IPM Checklist: Observations Compares Time 1 to Time 2

- Conducted pre- and post-IPM workshops
- Observations completed by E. Kalmar, RA
- Pictures were taken to document IPM problems identified when completing the pre-workshop Checklist versus post-workshop Checklist
- Pictures taken after pre-workshop Checklist was completed were shared with directors

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Pre-Workshop



STORAGE AREA
 #62. Clean, organized and free of clutter.
 #66. Items are stored in plastic bins with sealed lids.

Post-Workshop:
 The center organized storage closet, and replaced cardboard boxes with sealed plastic ones when possible.



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Bathroom. # 48. Gaps between pipes, vents, and walls are sealed.
 Pre-Workshop Post-Workshop with caulking






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Kitchen. #49. Gaps between pipes, vents, walls are sealed.
 Pre-Workshop Post-Workshop: Sealed gaps around sink




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Storage Area: #62. Clean, organized and free of clutter.
 #66. Items are stored in plastic bins with sealed lids.
 Replaced eroded cabinet (left) with new wooden shelf in storage closet (right).




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Bathroom #48. Gaps between pipes, vents, and walls are sealed.
 Pre-Workshop: gap between wall and pipe Post-Workshop: Caulked gap around pipe




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Storage #62. Clean, organized and free of clutter.

Pre-Workshop



Post-Workshop: Organized storage shed. Used plastic, sealed bins.



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Garbage Storage. #3. Are located on hard, cleanable surfaces such as concrete.

Pre-Workshop



Post-Workshop: Moved dumpsters to cement area.



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Outdoor Area. #10. Window trim is free of cracks.

Pre-Workshop: Rotting window sill.



Post-Workshop: Replaced window sill (top) and caulked gap (below).




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9

Kitchen. #38. Faucets and pipes do not drip or leak.

Pre-Workshop: Sink was clogged.



Post-workshop: Fixed drain and there is no standing water in sink.



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Staff Area. Store food separate from pesticides.

Note: Janitor's closet had Raid, medication, and food stored together.



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INTEGRATED PEST MANAGEMENT IN EARLY CARE & EDUCATION PROGRAMS



UC Berkeley Center for Environmental Research and Children's Health

Funding for this project has been provided in full or in part through a grant awarded by the California Department of Pesticide Regulation (DPR). The contents of this document do not necessarily reflect the views and policies of DPR nor does mention of trade names or commercial products constitute endorsement or recommendation for use.



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CALIFORNIA CHILDCARE HEALTH PROGRAM

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OUTLINE OF PRESENTATION

- Survey results
- IPM Toolkit project goals and collaborative work
- What is the IPM Toolkit?
- Key messages
- Dissemination of IPM Toolkit
- IPM Checklist and Director Interview
- Preliminary results
- Lessons learned



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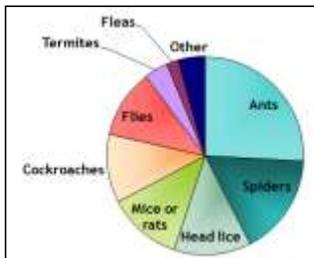
SURVEY: METHODS

- In 2008, the Center for Environmental Research and Children's Health (CERCH), in collaboration with the Department of Pesticide Regulation and UCSF California Childcare Health Program, conducted a study to identify pest problems and pest management practices in California's licensed child care centers.
- 2,000 randomly selected child care centers were mailed the survey.
- 637 centers completed the survey (32% response rate).



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WHAT ARE THE MOST COMMON INDOOR PESTS IN CALIFORNIA CHILD CARE CENTERS?

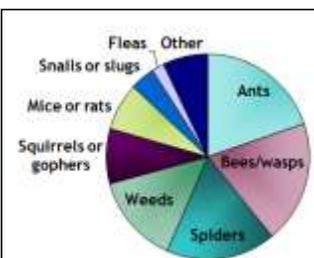


Bradman, A., Dobson, C., Leonard, V. & Messenger, B. (2010). Pest Management and Pesticide Use in California Child Care Centers. Center for Children's Environmental Health Research, School of Public Health, UC Berkeley at apps.cdpr.ca.gov/isthooipm/childcare/pest_mng_childcare.pdf.



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HOW COMMON IS PESTICIDE-USE?

California Child Care Pest Management Survey	
Pest problem present	90%
Using any pesticides	55%
Using spray or fogger	47%
Using at least one IPM approach	65%
Aware of IPM	25%

Bradman, A., Dobson, C., Leonard, V. & Messenger, B. (2010). Pest Management and Pesticide Use in California Child Care Centers. Center for Children's Environmental Health Research, School of Public Health, UC Berkeley at apps.cdpr.ca.gov/schoolipm/childcare/pest_mgt_childcare.pdf.

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PROJECT GOALS

- Develop an IPM Toolkit for Early Care and Education (ECE) centers in English and Spanish.
 - Informed by the DPR Child Care Survey
 - Support implementation of the Healthy Schools Act
- Conduct workshops in centers, present at statewide conferences, and disseminate to child care community.
- Develop an IPM Checklist and complete assessment in 10 centers before and after the workshops.

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COLLABORATIVE WORK

- Management Team
 - Project Goals
 - Outline of IPM Toolkit
 - Key messages and terms
 - Review drafts of Curriculum, Notes, Fact Sheets, Posters
 - Coordinate text with illustrations and layout
- Alliance Team
 - Discuss key messages and content in IPM Toolkit
 - Elicit suggestions on format, key tables, terms
 - Review final drafts of Curriculum

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IPM TOOLKIT

- IPM curriculum
- Complimentary materials
 - Health and Safety Notes (11)
 - Fact Sheets for Families (2)
 - Laminated Posters (4)
 - IPM Checklist
- Training presentation

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IPM CURRICULUM: SECTIONS

- What is IPM?
- The Healthy Schools Act
- Pests: What you need to know
- Pesticides: What you need to know
- Understanding IPM Practices
- Implementing IPM in your ECE Program
- How to hire a pest management professional
- Glossary, Resources, Forms



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COMPLIMENTARY MATERIALS

CCHP Health and Safety Notes

Ants	Mosquitoes
Cockroaches	Molds and Mildew
Rodents	Head Lice
Slugs and Snails	Sanitize Safety
Yellowjackets	Green Cleaning
Spiders	

Fact Sheets for Families

Head Lice	Ants
-----------	------

Laminated Posters

- Steps to a Pest-Free Indoor Environment
- Steps to a Pest-Free Outdoor Environment
- How to Read a Pesticide Label
- How to Choose a Safer Pesticide to Manage Pests

IPM Checklist




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WORKSHOPS AT CENTERS: FORMAT

- Introduction/ Pre-Test
- Icebreaker
 - Puzzle: "Find Your Match"
 - What you want to learn today
- Skit: "Adventures of Super IPM"
- Slide presentation on curriculum
- 'Show and Tell': Giftbox of IPM tools
- Wrap-up: "Curious Cabbage"
- Questions/ Post-test




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IPM WORKSHOP OBJECTIVES



1. Explain California's Healthy Schools Act.
2. Define what is a pest, what is a pesticide and what is integrated pest management.
3. Explain why children are vulnerable to the health risks of pesticides.
4. Describe the health effects for children and staff exposed to pesticides and common pests.



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OBJECTIVES:



5. Identify simple and inexpensive IPM methods to prevent or manage common pests.
6. Inspect your child care facility for the presence of pests or conditions that attract pests using the IPM Checklist.
7. Develop and implement IPM policies and practices in your program.
8. How to hire a Pest Management Professional
9. Share IPM information and resources with staff and parents.



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HEALTHY SCHOOLS ACT (HSA)

The HSA requires that all child care centers:



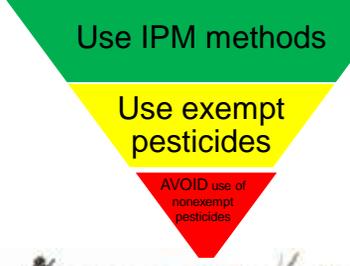
- **Keep records** about pesticide use;
- **Maintain a registry** of people to notify when pesticides are used;
- **Notify** parents and staff before pesticides are applied and
- **Post warning signs** in areas where pesticides will or have been applied.



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HEALTHY SCHOOLS ACT

The HSA encourages centers to:



- Keep pests out!
- Remove their access to food, water and shelter

- bait stations
- gel/paste in cracks/crevices
- exempt materials (e.g. mint oil)
- cleaners/sanitizers

- sprays
- foggers

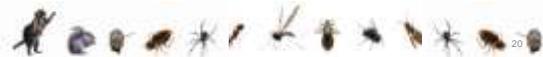


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WHAT IS A PEST?



A pest is any living organism that causes damage or discomfort, or transmits or produces disease.



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WHAT ARE PESTICIDES?



Examples:

- Roach and ant spray
- Flea bombs
- Rat poison
- Weed killer
- Mothballs
- Insecticide chalk

Pesticides are **poisons** that are designed to kill or control living things.

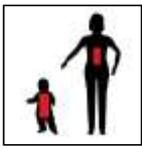


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WHY ARE CHILDREN MORE VULNERABLE?

Higher exposures

- Frequent contact with the ground or floor, where pesticides collect
- Hand-to-mouth activity
- Eat, drink, and breathe more per kg
- Less varied diet
- Spend most of their time indoors



If a pesticide is present in the air, food or water, a greater amount will be taken in by a child in proportion to their body size or weight than by an adult.



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WHAT ARE THE PATHWAYS OF EXPOSURE FOR CHILDREN?



1. By eating
2. By breathing
3. Through skin
4. Across the placenta (in the womb)





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WHAT IS INTEGRATED PEST MANAGEMENT (IPM)?

A "common-sense" approach to:



- **Preventing pest problems** by
 1. keeping pests out and
 2. getting rid of their food, water, and shelter.
- **Managing pest problems** by
 1. using non-chemical approaches;
 2. using least-toxic pesticides when necessary and
 3. reducing the use of harmful pesticides.



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IPM NUTS & BOLTS



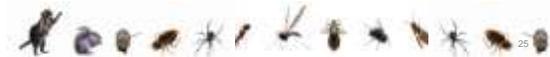
1. Prevention ★

- Keep Pests Out
- Remove Pest's Food, Water & Shelter

2. Inspect and Monitor

3. Identify Pests

4. Manage Existing Problems



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PREVENTION: KEEP PESTS OUT



Seal or block gaps around doors
Install doorsweeps



Seal gaps around pipes



Patch holes in screens



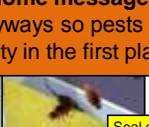
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PREVENTION: KEEP PESTS OUT



Seal or block gaps around doors

Take home message: Close off entryways so pests can't get into your facility in the first place!



Seal gaps around pipes



Patch holes in screens



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PREVENTION: REMOVE PESTS' FOOD & WATER



Clean up food before pests are attracted to leftovers



Eliminate sanitation & garbage problems



Eliminate standing water, clogged sinks & leaking faucets



Store food & art supplies in sealed containers



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PREVENTION: REMOVE PESTS' FOOD & WATER



Clean up food before pests are attracted to

Take home message: Pests need food and water to survive. Take away their access to these things, and you're taking away their diet!



Eliminate standing water, clogged sinks & leaking faucets



Store food & art supplies in sealed containers



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INSPECTION




Use the IPM Checklist to look for:

- pests;
- signs of pests and their damage and
- conditions that might attract pests.

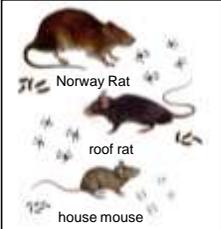


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IDENTIFICATION



- The next step is to identify what kind of pest you have.
- Use Health & Safety Notes to understand pests' lifecycle, food and shelter.
- The statewide IPM program is a great resource:
<http://www.ipm.ucdavis.edu>



Norway Rat
roof rat
house mouse



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MONITORING

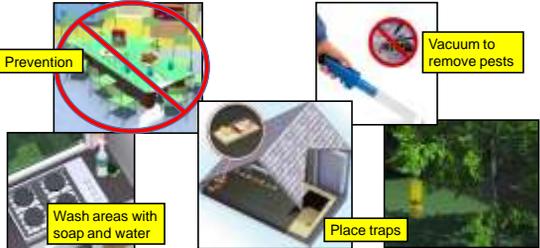
- Regularly inspect the facility for pests and pest damage.
- Identify sources of food, water and shelter that might attract pests.
- Identify where pests are living and breeding.
- Determine if and when treatment is needed.
- Assess whether current actions are working.




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MANAGEMENT

Often you can manage pests without using chemicals.
IPM-recommended techniques include:



Prevention
Vacuum to remove pests
Wash areas with soap and water
Place traps

<http://news.washpost.com/2011/mar/14/47245/kecia>
<http://www.bhg.com/2011/03/14/pest-control-tips/>



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IMPLEMENTING IPM IN YOUR CENTER

1. Write an IPM policy.
2. Designate an IPM Coordinator.
3. Provide training for staff and parents.
4. Obtain information for any outside contractors.
5. If needed, hire a PMP that has IPM experience and knows about the HS A requirements.



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IMPLEMENTING IPM IN YOUR CENTER (II)

6. If you have a pest problem, inspect buildings and grounds for sources of infestations and contributing conditions.
7. Establish pest monitoring procedures.
8. Identify any pests found and create an IPM Action Plan for each pest you find in your environment.
9. Establish record keeping.
10. Evaluate the program on a regular basis.



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DISSEMINATION

- Child Care Center Workshops (n=10)
- Child Care Professional Conferences
 - Statewide Resource and Referral Conference, Oct, 2010
 - Head Start Health Institute, April, 2010
 - CAEYC, April, 2010
 - NAEYC, Nov., 2010
- CCHP Website
 - Curriculum page
 - English and Spanish
- Direct Mailings
 - Resource and Referral Agencies (n=56)
 - Centers




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CHECKLIST: INDOOR (N=6 CENTERS #YES/#NO)

Kitchen

- Food stored in tightly sealed containers (n=4/5)
- Trash containers have lids (n=5/6)
- Evidence of **cockroaches** (n=1/6)
- Evidence of **flies** (n=1/6)



Bathrooms

- Gaps between pipes, vents, walls sealed or screened (n=3/6)
- Cracks, crevices around cabinets, mirrors sealed or plugged (n=3/6)



Storage Area

- Clean, organized, free of clutter (n=1/6)
- Mops and buckets clean, dry or hung upside down (2/5)



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WORKSHOP: KNOWLEDGE CHANGE

10 Items	Pretest	Posttest
# participants	72	75
# sites	6	6
% Correct		
Total	71%	71%
English	79%	82%
Spanish	52%	47%



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KNOWLEDGECHANGE: HSA

The Healthy Schools Act applies to California's K through 12 schools and

- Licensed child care centers only
- Licensed family day care homes only
- Child care center, family day care homes, and informal care

Improved knowledge from pre-test (28%) to post-test (48%)*

* p < .05



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FEEDBACK FROM CENTER DIRECTORS

Workshop feedback: Head Start director said "... we are all just really impressed and grateful for the insight that was shared. I wanted to talk to you about an opportunity at the CA Head Start Association ... Thank you so very much, we're still talking about the great work that came out of this and interested in connecting around this more..."

IPM Checklist: "Thank you for your thorough check of our facility. I have made a hard copy of the information sent. I will share it with the staff."



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LESSONS LEARNED: CHILD CARE

- Literacy level of written materials, presentations, and pre-post- tests
- Lack of knowledge about IPM
- New area of interest for child care providers, directors
- Directors do not know a lot about building and maintenance issues
- Enthusiasm for learning and want to know more



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WHAT WE NEED TO DO

- Workshops (n=2)
- Spanish Translation of IPM Toolkit
 - Back translation
 - Formatting and printing
- Checklist: Final Formatting
- Post-workshop: Checklists and Director Interviews (n=8)
- Follow-up: Review Post-Workshop Checklist Findings
- DPR Final Report

