

# Environmentally Healthy Child Care *Partnerships for Environmental Public Health (PEPH)*

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# Research and Educational Programs for Environmental Health in Child Care

- Integrated Pest Management for Family Child Care Homes, funded by CA Dept. of Pesticide Regulation (DPR)
- Healthy Children & Environments Study - Reducing pesticide exposures to preschool-age children in California child care centers, funded by National Institute of Environmental Health Sciences (NIEHS)
- Alameda County Green Child Care Program, Alameda County Early Care and Education Program

# Background

- Young children are more vulnerable to the harmful effects of pesticides than adults
- Children may spend over 50% of waking weekday hours in child care
- California mixed-delivery system:
  - Center-based
  - Family child care homes
  - License-exempt
- State licensing requires frequent use of EPA-Registered antimicrobials
- California Healthy Schools Act



# IPM in FCCH Project

**Goal:** To reduce the exposure of pesticides for young children attending licensed family child care homes (FCCHs) by providing an Integrated Pest Management (IPM) program for FCCH providers.

## Objectives:

- Identify the needs of FCCHs to modify the IPM Toolkit developed for child care centers.
- Develop an IPM Toolkit for FCCHs in English and Spanish.
- Conduct and evaluate a pilot IPM intervention program in 20 FCCHs.
- Disseminate the FCCH IPM Toolkit.



# Project Partners

## UCSF Staff

- Abbey Alkon
- Kimberly Hazard
- Bobbie Rose

## Child Care Health Consultants

- Dana Cox
- Debra Moser
- Michelle Stephens

## Alliance Team

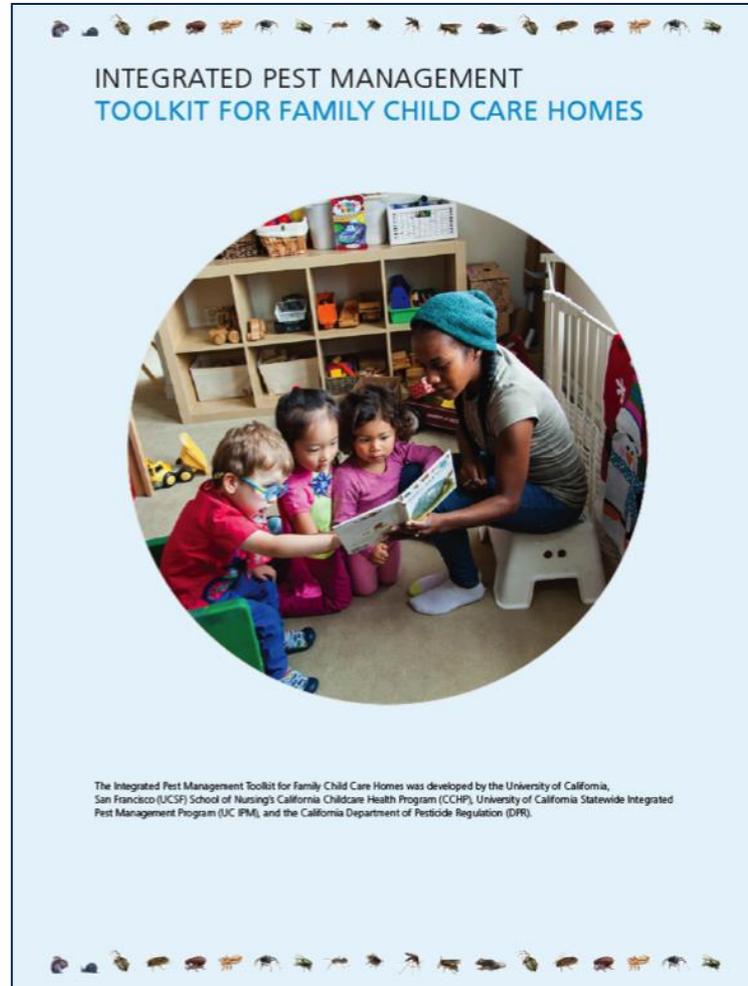
- Nita Davidson, DPR Grant Manager
- Belinda Messenger, DPR
- Andrew Sutherland, UC IPM

## Team Partners

- UC Berkeley Center for Environmental Research and Children's Health, CA Resource and Referral Network, Alameda County Healthy Homes Department, Alameda Family Child Care Network



# IPM Toolkit Development



## INTEGRATED PEST MANAGEMENT GUIDE FOR FAMILY CHILD CARE HOMES

**STEPS TO INTEGRATED PEST MANAGEMENT**

California Childcare Health Program, University of California, San Francisco School of Nursing • [cchp.ucsf.edu](http://cchp.ucsf.edu)

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

## INTEGRATED PEST MANAGEMENT CHECKLIST FOR FAMILY CHILD CARE HOMES

California Childcare Health Program, University of California, San Francisco School of Nursing • [cchp.ucsf.edu](http://cchp.ucsf.edu)

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## INTEGRATED PEST MANAGEMENT: ANTS

Columns of ants marching through playgrounds, kitchens, and bathrooms in family child care homes are a common problem. Don't panic! There are safe and effective ways to reduce the number of invading ants. Integrated pest management (IPM) is a strategy to prevent ant invasions and deal with ants without spraying pesticides.

**Are ants a problem?**  
They're a nuisance in our house but rarely are they a health problem. Few ants in California threaten human health. Ants are actually beneficial when they're outdoors. They add oxygen to the soil and attack insects such as fleas, caterpillars, and termites.

**What is the most common ant in California?**  
The common ant is the Argentine ant. They're dark brown and about 1/4-inch long. They have colonies that blend together into a huge ant community with hundreds of queens and millions of worker ants. With those kinds of numbers, no wonder ant infestations can seem never-ending.

**What do Argentine ants eat?**  
Outdoors, Argentine ants eat insects for protein, but they usually prefer honeydew, which is a sweet liquid produced by aphids and other insects. You'll often find Argentine ants in bushes and trees that are infested with honeydew-producing insects. Ants often come indoors to find food during late summer and fall when honeydew is no longer available. They gather food and then return to the nest to feed others mouth to mouth. Ants find food using their sense of smell, which is why it's so important to clean food off counters and wipe spills with soapy water.

**Where do Argentine ants live?**  
Outdoors, you'll find ants living in the soil next to buildings along sidewalks, and under stones, tree stumps, plants, boards, or in other protected places. If it's really wet or dry outdoors, ants sometimes move their colonies inside into potted plants or under sinks. They prefer to live outside.

**Why do baits work?**  
Ants feed each other by transferring food mouth to mouth. Slow-acting baits work better than sprays because the food-gathering ants (workers) share the poisoned bait with other workers and the queens.

- Colonies begin to shrink soon after the bait kills the queens.
- Both sugary and protein-containing baits may be necessary to manage Argentine ants.

**IPM Strategies**

**1. DON'T SPRAY!**

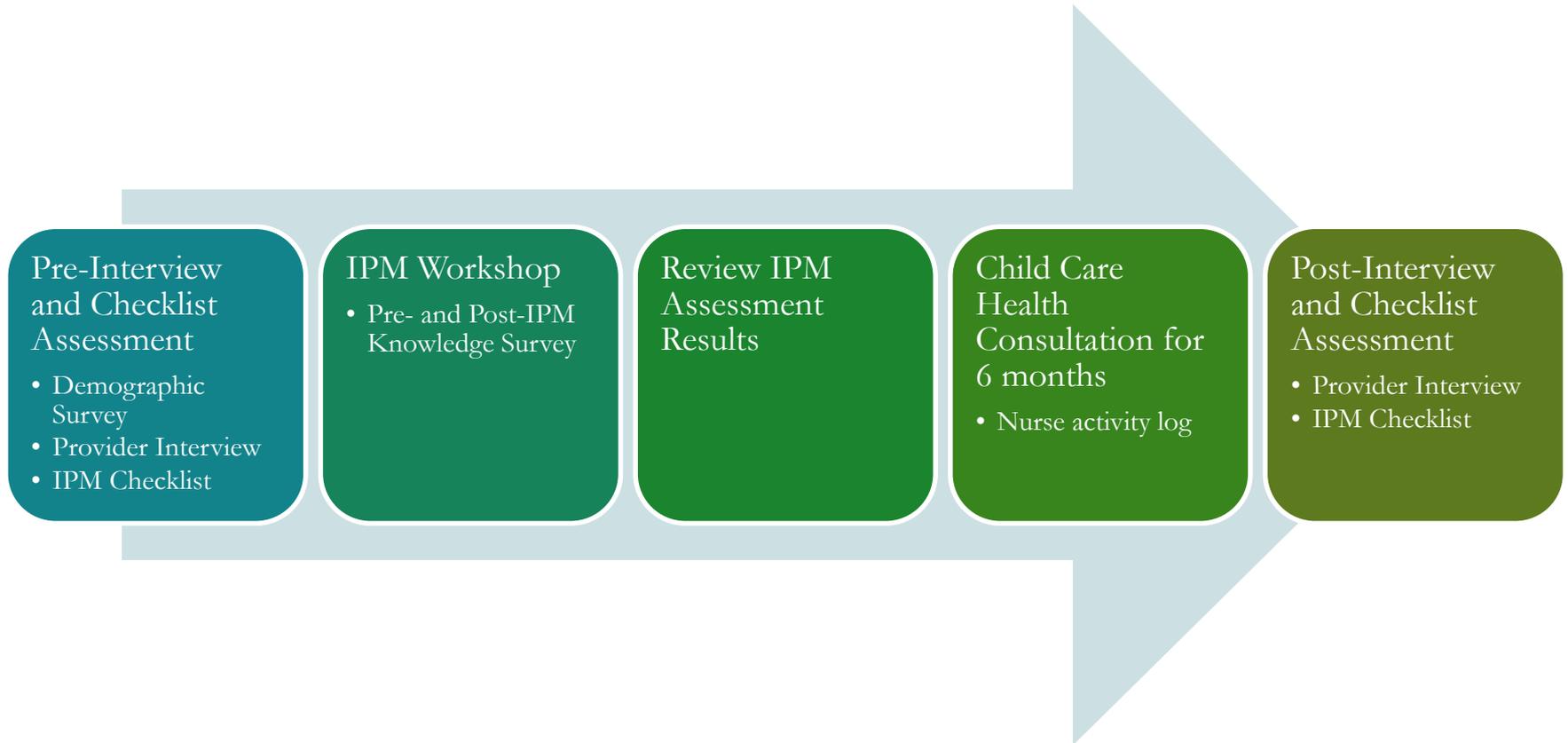
- Spraying pesticides will expose staff and children to harmful chemicals. Sprays kill only the ants you see, which are only about one percent of the colony. If you kill ants with a fast-acting spray, thousands more will soon replace them. This is why it's important to use baits (food mixed with a slow-acting poison) that reach the queens through mouth-to-mouth feeding of the workers.
- Ant management should focus on good sanitation and maintenance, not on spraying pesticides. If you still have ants coming in, use baits outdoors, not sprays, to reduce the number of ants inside the home, not to completely eliminate ants from outdoor areas.

**2. KEEP ANTS OUT**

- When you see ant trails in or around your building, follow the ants to their entry point. Caulk cracks around foundations or openings that provide entry from outside.
- Note where wires and pipes enter the building, where ants often come in.
- Keep plants and mulch at least 12 inches from foundations of buildings because they provide nesting sites for ants.

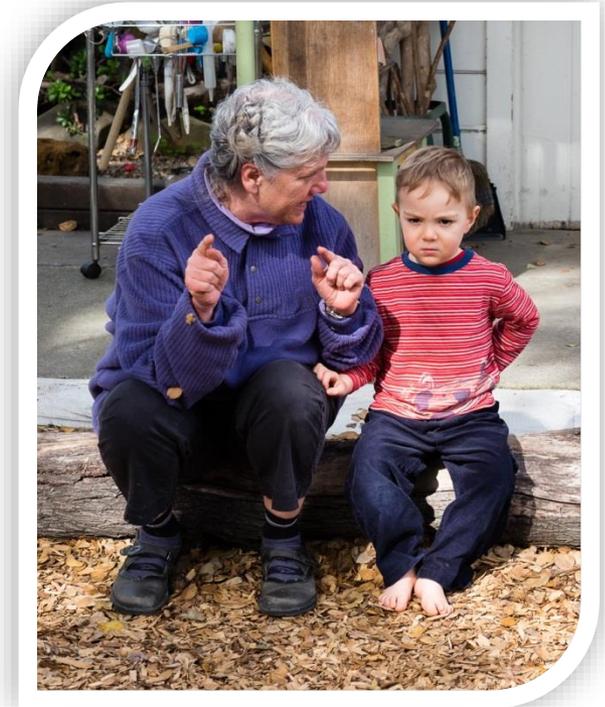
Photo: iStock, Getty

# Pilot Intervention: Study Design



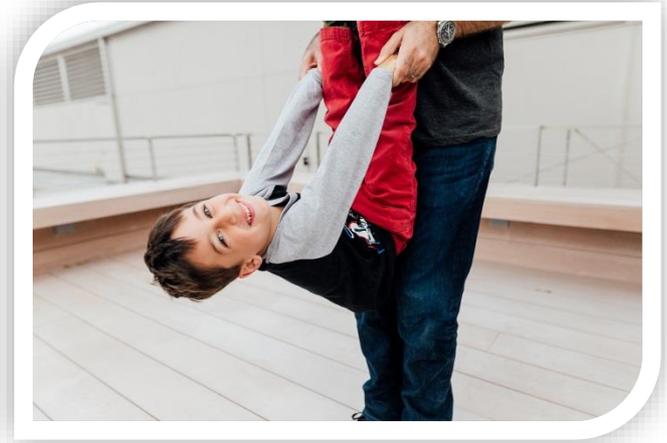
# Participant Characteristics

Demographic Characteristic	N (%), N=20
<b>Gender</b>	
Female	20 (100%)
<b>Race/Ethnicity</b>	
White	9 (45%)
Black, Asian, or Multi-racial	5 (25%)
Latino	6 (30%)
<b>Education</b>	
Some college/ Associates Degree	13 (65%)
	<b>Mean (SD)</b>
Age	47.4 (14.6)
Years worked in child care	15.65 (11.2)
Hours worked per week	53.9 (8.2)
Months worked per year	11.6 (1.3)

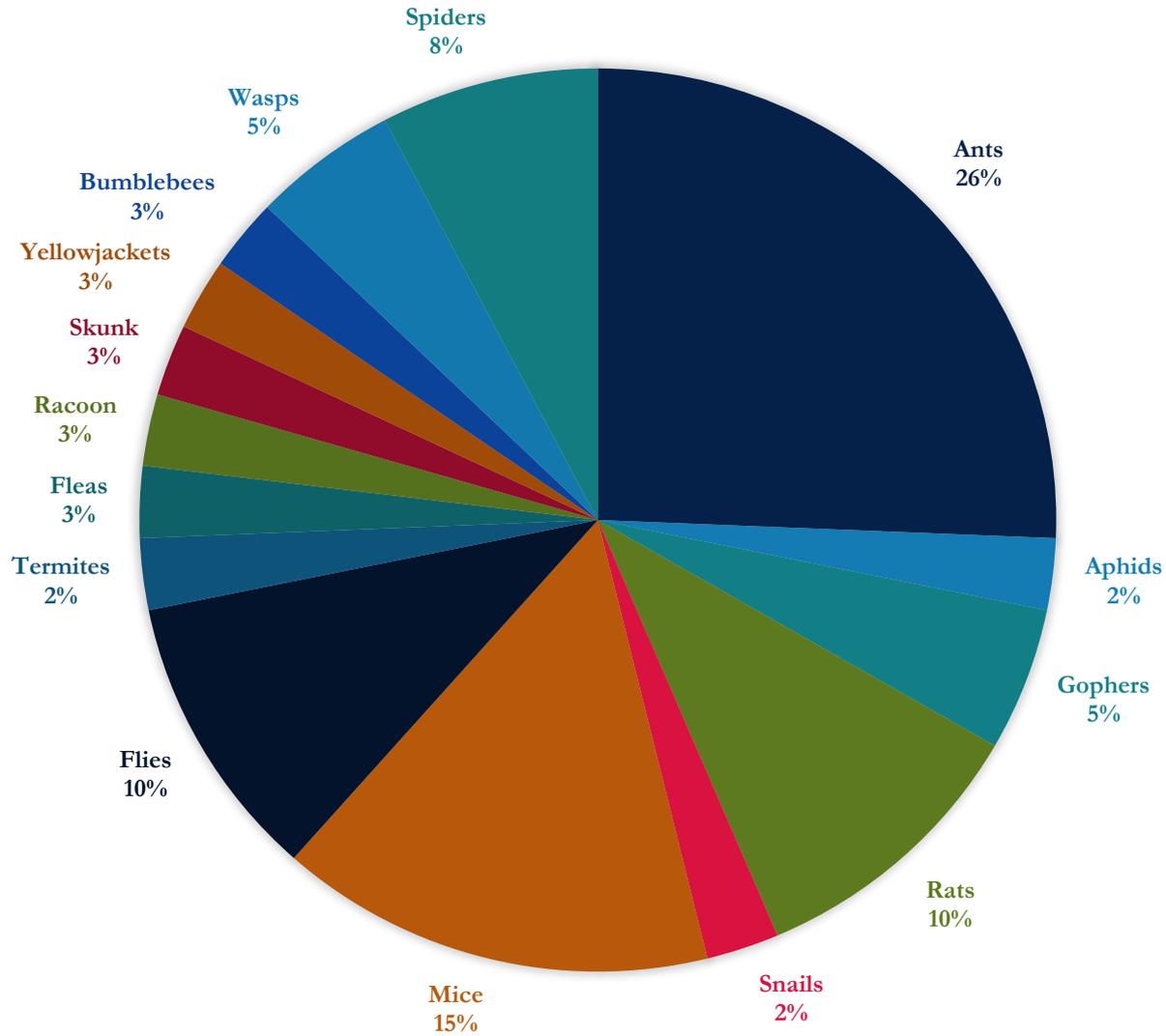


# Child Demographics

Demographic Characteristic	Mean (SD) N=20
Number of children	10.8 (4.3)
Children receiving subsidy	8.2 (6.0)
Full-time children	6.7 (3.7)
Part-time children	4.8 (4.4)
Children living in home	1.7 (0.6)
Children < 1-year-old	1.0 (0.6)
1-year-old	1.9 (1.0)
2-year-old	2.9 (2.4)
3-year-old	2.6 (1.9)
4-year-old	2.6 (1.2)
4-years-old through Pre-K	3 (2.7)
School-age	10.8 (4.3)



# MOST COMMON PEST PROBLEMS



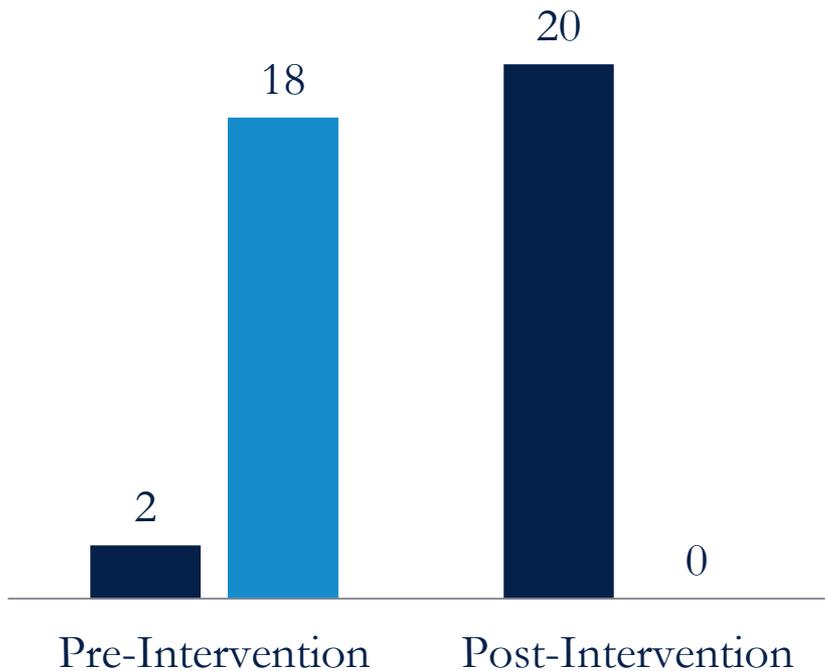
# Results: IPM Knowledge

IPM Knowledge Survey Item	Pre-Workshop (% correct)	Post-Workshop (% correct)
1. IPM keeps pests out while reducing the use of pesticides	90%	95%
2. Pests need food, water, and shelter to survive	85%	100%
3. Mold can trigger asthma	75%	95%
4. Bait stations are the pesticide with least health risk	75%	100%
5. Cockroaches can live in cardboard boxes	95%	100%
6. Keep food in containers with tight-fitting lid - IPM indoor practice	90%	100%
7. Prevent pests from entering FCCH by sealing cracks and crevices	85%	100%
Mean (SD), N t(df) = 2.55(19), p = 0.02	5.95 (1.7), 20	6.9 (.31), 20

# Results: IPM Awareness

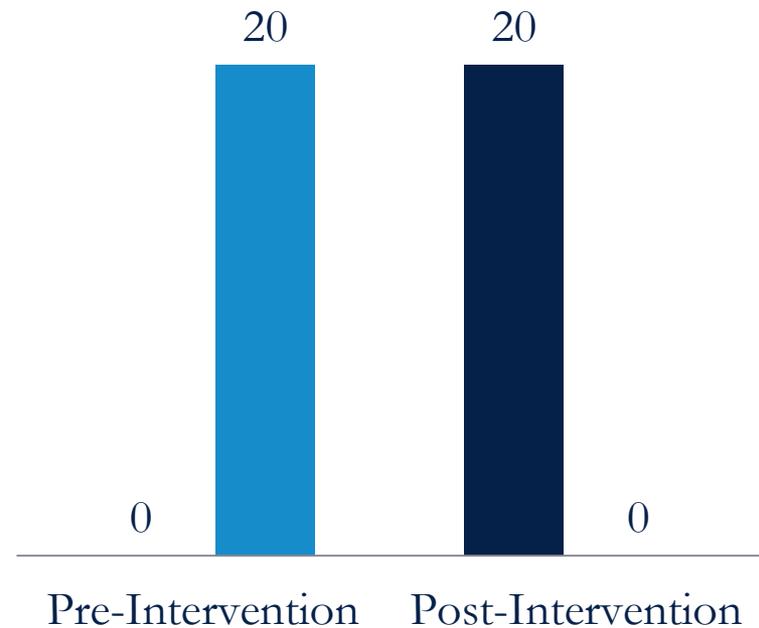
Do you know what IPM is?

■ Yes ■ No



Have you attended an IPM training?

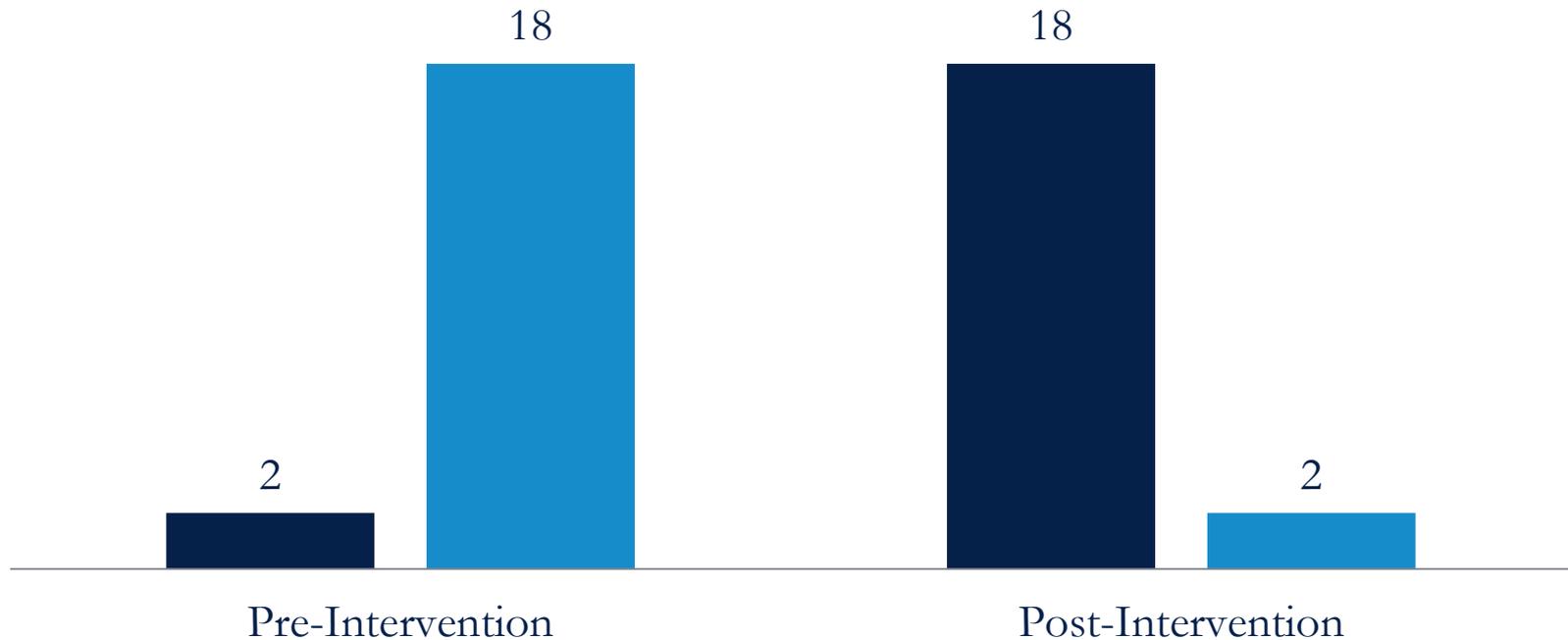
■ Yes ■ No



# Results: IPM Policies

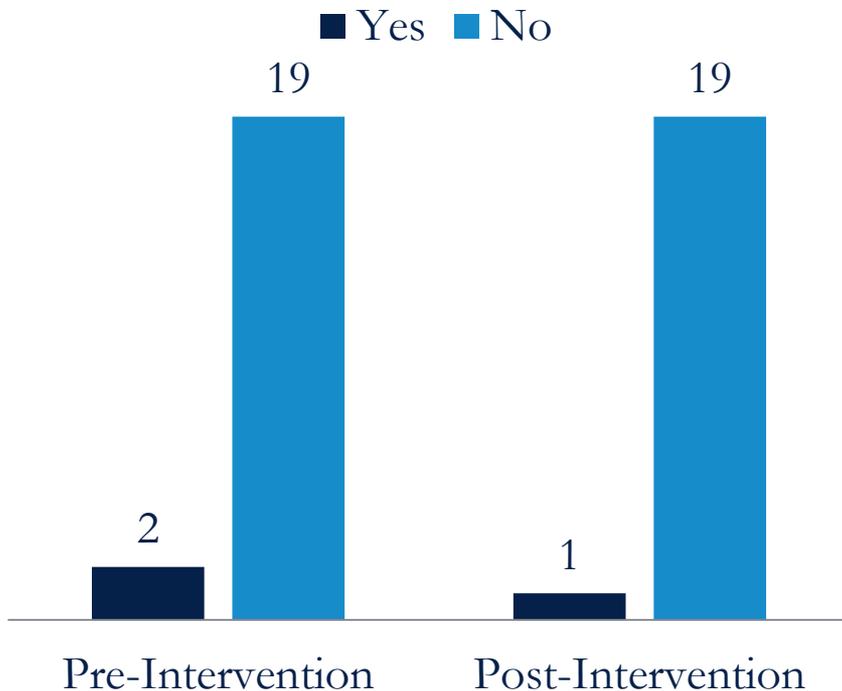
Do you have a written policy for the use of pesticides?

■ Yes ■ No

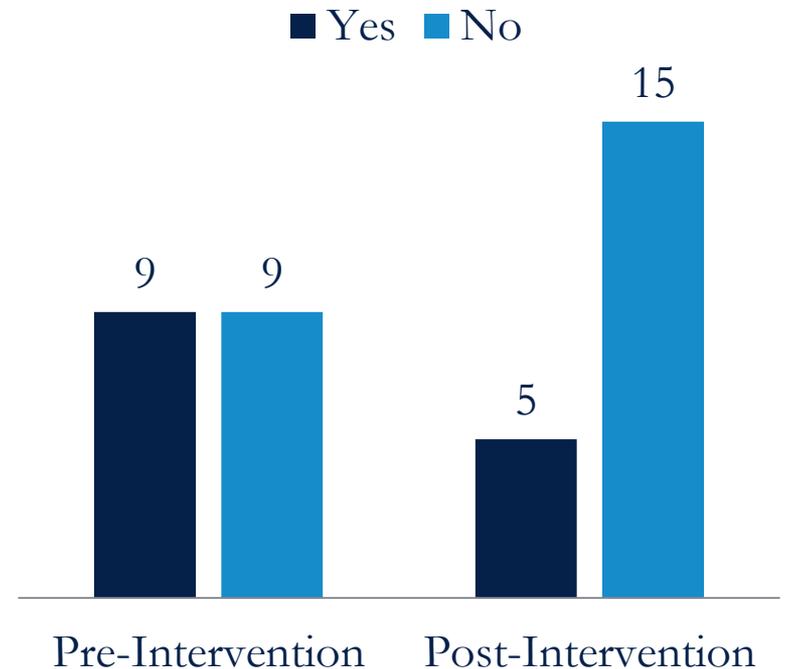


# Results: Pesticide Use

Did you use pesticides  
**INDOORS** in the last 6 months?



Did you use pesticides  
**OUTDOORS** in the last 6  
months?



# Results: Improved IPM Practices

Subscales	PRE- Intervention	POST- Intervention
	Mean	Mean
<b>OUTDOOR</b>		
Garbage, Recycling, and Compost	86%	98%
Buildings: Structure, Landscaping, and Play Area	72%	86%
<b>INDOOR</b>		
Kitchen and Eating Area	83%	95%
Bathroom	95%	98%
Living and Play Areas	91%	97%
Storage Areas: Attic, Basement, Garage, or Shed	69%	91%
<b>Total Checklist Score</b>	<b>82%</b>	<b>93%</b>

# Most improved IPM practices

- *Wood chips and mulch are at least 6 inches away from buildings.*  
(Buildings: Structure, Landscaping, and Play Area )
- *Gaps between pipes, vents, and walls are sealed or screened.* (Kitchen and Eating Area)
- *Cardboard boxes are not used for storage* (Storage Areas: Attic, Basement, Garage, or Shed)



# Results: Pest Presence

Pest	Total # PRE	Total #POST	% $\Delta$
Ants	7	2	71%
Cockroaches	0	0	-
Fleas	0	0	-
Flies	5	0	100%
Spiders	21	3	86%
Mosquitoes	0	0	-
Yellowjackets	3	0	100%
Rats/Mice	5	0	100%
Snails/Slugs	1	0	100%
Other	2	0	100%
<b>Total</b>	<b>49</b>	<b>5</b>	<b>90%</b>

# IPM in FCCH Conclusions

The IPM pilot intervention led to:

- An increase in IPM knowledge, awareness, policies and practices.
- A decrease in pest presence and evidence of pests.



# New: Healthy Children & Environments Study

- **Goal:** reduce children's exposure to pesticides in child care centers to improve their long-term health.
- Randomized-control trial in four northern California counties will compare changes in pesticide exposure among child care centers assigned to an IPM intervention versus an attention control intervention on physical activity.



# Project partners

- UCSF School of Nursing, California Childcare Health Program
- UC Berkeley School of Public Health, Center for Environmental Research & Children's Health
- Lab Partners:
  - Oregon State University, silicone wristbands
  - Southwest Labs, dust samples
- Advisory team
  - IPM experts: DPR, UC Statewide IPM
  - Child care community contacts: CA R&R Network, local R&R agencies, local planning councils, First 5 agencies
  - Child care physical activity expert



# Project Area: Four Northern CA Counties

Counties matched based on:

- Adjacent counties
- % families at federal poverty level
- % of children under 5 years of age
- Pesticide Use Report Data (collected by Dept. of Pesticide Regulation)



Source: diymaps.net (c)

# Healthy Children & Environments: Study Design

20 centers per county over five years

## Baseline (Fall)

- Dust samples
- 5 children per center wear silicone wristbands
- Interviews
- Observations
- Checklists

## Intervention (7 months – either IPM or Physical Activity)

- Workshop with pre- and post-knowledge survey
- Review results of checklists
- Monthly consultation with nurse child care health consultant

## Post-intervention (Spring)

- Dust samples
- Wristbands
- Interviews
- Observations
- Checklists
- Alternate workshop

# Alameda County Green Child Care Program



[http://acgov.org/ece/green\\_childcare.htm](http://acgov.org/ece/green_childcare.htm)



Thank you!

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