INTEGRATED PEST MANAGEMENT:

A CURRICULUM FOR EARLY CARE AND EDUCATION PROGRAMS

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

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INTRODUCTION

This *Integrated Pest Management Toolkit for Early Care and Education Programs* presents practical information about using integrated pest management (IPM) to prevent and manage pest problems in early care and education programs.

The Toolkit includes:

- **A curriculum booklet,** *Integrated Pest Management: A Curriculum for Early Care and Education Programs*, which includes general information about IPM, the Healthy Schools Act, what you need to know about pests and pesticides, how to implement IPM, and appendices with sample policies, forms and letters.
- **Complementary materials**
  - Laminated posters
  - Health and Safety Notes on individual pests
  - Fact Sheets for Families
  - IPM Checklist

The *Toolkit* and additional materials, including a slide presentation, are available in both English and Spanish on the California Childcare Health Program website: **www.ucsfchildcarehealth.org/html/pandr/trainingcurrmain.htm.**
To order the *IPM Toolkit,* complete and return the form available at:
www.ucsfchildcarehealth.org/pdfs/forms/ipm_toolkit.pdf.

Target Audience

The *IPM Toolkit* is intended for use by early care and education staff, directors, family child care providers, building maintenance personnel, early care and education health and safety educators, child care health consultants, child care health advocates, child care licensing analysts, pest management professionals, parents and others interested in the health and safety of children in child care.

Learning Objectives

After using the IPM Toolkit, 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.
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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Background

In a 2009 survey of California child care centers, 90% reported at least one problem with indoor and/or outdoor pests and more than half reported using pesticides to control pests.[1] Pesticides, while sometimes helpful, also pose risks. This curriculum will help you learn how to keep pests out of early care and education (ECE) facilities and reduce the use of pesticides by adopting integrated pest management (IPM). The curriculum will explain what IPM is and how to start an IPM program in your ECE facility. The Healthy Schools Act, a California law that was extended to child care centers in 2007, encourages ECE centers to use IPM and requires all California child care centers to keep records and notify parents if certain pesticides are used.

When there are pests in an ECE facility, many people try to get rid of them as quickly as possible by using pesticides; for instance, spraying pesticides in the building and outdoor areas to get rid of ants. However, pesticides may cause harm to children, staff and the environment. The harm caused by pesticides may be worse than the harm caused by the pests. More than one billion pounds of pesticides are used every year in the U.S.[2] In California almost half are used in urban and residential areas, and pesticide residues can be found where people work, live and go to school.

Some of the health effects caused by pesticides may include:

- Immediate illness, such as poisoning, asthma and flu-like symptoms.
- Long-term developmental and health problems in children, and health problems in ECE staff.

Curriculum Overview

This curriculum will help you create a healthy and safe ECE environment and provide information on:

- The California Healthy Schools Act
- Why children are at higher risk for pesticide exposure and poisoning
- How to use IPM to
  - keep pests out.
  - manage pest problems.
  - use least-harmful practices.
  - eliminate use of the most toxic pesticides.

1 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 (apps.cdpr.ca.gov/schoolipm/childcare/pest_mgt_childcare.pdf).

2 U.S. EPA, 2000-2001 Pesticide Market Estimates: Usage, www.epa.gov/oppbead1/pestsales/01pestsales/usage2001.htm

WHAT IS INTEGRATED PEST MANAGEMENT (IPM)?

IPM is a common-sense approach to managing pests while reducing the use of harmful pesticides. IPM programs focus on preventing pest problems by getting rid of the food, water and shelter that pests need to survive. When pest management is needed, IPM uses a combination of common-sense, least harmful practices. IPM works because combined (integrated) approaches for pest management are more effective in the end than a single approach, like spraying pesticides. IPM in a facility is always a team effort between the program staff, janitorial staff, parents, and the building manager, landlord and pest management professional. Everyone has a role to play and must communicate and cooperate.

Why use IPM?

IPM targets the conditions in your facility that allow pests to become a problem rather than simply treating the symptoms (pests). Therefore, IPM:

- **is more effective at eliminating pests.**
- **prevents pest infestations in the future.**
- **is less likely to cause harm to children, staff and the environment.**
- **can save time, money and energy.**
- **will lead to fewer pest problems.**
- **is encouraged in California by the Healthy Schools Act (see page 5).**
- **reduces short and long-term health problems associated with pesticide use.**

Steps to Successful IPM:

1 PREVENTION

- Keep pests out of areas where you don't want them.
- Remove pests' access to food, water and shelter.

2 INSPECTION

- Carefully inspect your indoor and outdoor areas for evidence of pests, damage by pests or the pests themselves.

3 IDENTIFICATION OF PESTS

- Identify which pests are present in and around your facility. Positive identification will help you to determine the best plan of action. For example, do you have Norway rats or roof rats? They must be dealt with differently.
- Learn the signs of their presence such as droppings or damage, even when pests are out of sight.
- Identify pests' characteristics and habits: what are their food, water and shelter needs and what is their life cycle?

4 MONITORING

Look for signs of pests in the buildings and grounds to:

- identify pest problems early.
- determine if and when treatment is needed.
- determine whether current strategies are working.

5 MANAGEMENT

If pests become a problem, you will need to do something to manage or suppress them.

- Use materials and practices that maximize effectiveness, safety and reduce pesticide exposure to children and staff.
- Often you can manage pests with nonchemical steps.
- If you use pesticides, choose least harmful pesticides such as bait stations or gels. Combine them with preventive practices so pests won't come back.

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EXAMPLE OF HOW TO USE IPM

What to do if you see cockroaches

Before you develop a plan to get rid of the cockroaches, ask yourself: are there nearby tenants who should be involved? Consider your building's location, neighbors and ownership. Are you in a separate building or shared space? Are you renting or leasing? If you focus on only your part of the building, the cockroaches may move away for a short time and return later. If you have cockroaches, your neighbors probably do too. If you're renting or leasing space, the landlord or building owner should work with all tenants in your building.

What to do in an emergency

If you discover cockroaches behind a large appliance, such as a refrigerator, do not spray! Work with another staff person and get a canister vacuum cleaner and hair dryer. One person will use the hair dryer to flush out the cockroaches and the other person will vacuum them up with the canister vacuum cleaner. Vacuum their hiding place twice, five minutes apart. During the first pass the cockroaches will scatter. They'll resettle by the time you vacuum again.

Then use the steps described on the right. If you want to hire an expert, hire a Pest Management Professional (PMP) who is knowledgeable about IPM (see page 28, How to Hire a PMP*).*

DO

1. **Find out where the cockroaches are coming from; for example, by setting and monitoring sticky traps next to the walls behind cabinets and in corners near food and water sources.**
2. **Seal cracks and crevices, gaps around pipes, and other areas to reduce hiding and breeding places and to keep them out of the building. Also, inspect packages and boxes for other sources of cockroaches.**
3. **Routinely clean up food residues so cockroaches don't have food. Keep food in sealed containers. Fix leaky faucets so cockroaches don't have water.**
4. **Keep garbage in lined, covered containers.**
5. **Eliminate clutter. Take supplies out of boxes and store in cupboards or open metal shelving.**
6. **Put out sticky traps to find out early if roaches return.**
7. **Use bait stations or gels for managing existing roach problems.**

DON'T

8. **Don't react immediately by spraying, putting out poison, or using foggers. These methods can be dangerous. If you can't handle the problem yourself, hire a PMP who practices IPM.**

Remember, unless you are only using baits or gels which are exempt from the requirements of the Healthy Schools Act, you need to notify concerned staff and parents when you apply a pesticide. Note – not everybody needs to be notified, just those who requested notification.

For more information on specific pests, see the *CCHP Health and Safety Notes*. A list of these *Notes* is available in the *Appendix*.

THE HEALTHY SCHOOLS ACT

In 2007, California Law AB 2865 extended the Healthy Schools Act to child care centers. The Healthy Schools Act now applies to all K–12 schools as well as public and private child care centers, but not to family child care homes.

The Healthy Schools Act (HSA) encourages ECE centers to use IPM and requires centers to:

1. **notify parents of pesticide use.**
2. **maintain registry of parents and staff.**
3. **post warning signs.**
4. **keep written records of pesticide use.**
5. **designate an IPM coordinator.**

HSA also requires the Department of Pesticide Regulation to collect information on pesticide use in child care centers.

The Healthy Schools Act applies to some pesticides, like sprays and foggers.

What does the law require?

- **Notification.** Every year, each ECE center must provide written information for parents and staff that:
  - describes which pesticides it expects center staff or a PMP to apply in the upcoming year.
  - provides the Internet address to *DPR's School IPM Program* website: **apps.cdpr.ca.gov/schoolipm**
- **Registry.** Each ECE center must maintain a voluntary registry of parents and staff who choose to be notified before a nonexempt pesticide (e.g. spray or fogger) is used in the center. The HSA regulates the use of "nonexempt" pesticide application methods in child care settings; that is, broadcast methods such as spray or fogger applications. The use of pesticides contained in baits, gels, or traps are exempt from the law.
- **Notice of Pesticide Applications.** Those who enroll in the registry must be notified of nonexempt individual pesticide applications at least 72 hours before the application. The notice should include the name of the pesticide, active ingredient(s) in the product, and date the pesticide will be applied *(see Sample Notification Letter* in the *Appendix)*.
- **Warning Signs.** Every ECE center must post warning signs around each area where nonexempt pesticides will be applied. These signs should be in place 24 hours before and stay in place 72 hours after pesticides are used. These signs should be large enough to prevent any adult from accidentally entering areas where pesticides have been used. See *Sample Warning Sign* in the *Appendix.*
- **Record Keeping.** Every ECE center must keep records of which pesticides have been used in the past four years. The records must be available to anyone who asks to see them.
- **Pesticide Prohibition.** Some pesticides are never allowed to be used in ECE centers. For a list of these pesticides, see the link under *Resources, AB 405 List of Pesticide Products Prohibited from Use in Schools*. **apps.cdpr.ca.gov/schoolipm/school_ipm_law/prohibited_prods.pdf**

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Post warning signs where nonexempt pesticides will be applied.

- **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.
- **Information.** The Department of Pesticide Regulation (DPR) must provide information to ECE programs on the least harmful practices for getting rid of pests, such as this IPM Toolkit. Licensed pest management businesses must report yearly to DPR on pesticide applications they make to ECE centers. If a child care center hires a Pest Management Professional (PMP), the PMP must notify the center 120 hours before applying nonexempt pesticides. In California, PMPs are usually called Pest Control Operators or exterminators.
- **Notification Responsibilities of Property Owners.** If a property owner hires a PMP, then the property owner must notify the PMP that a child care facility is present on the property. The PMP then must follow notification requirements required by the Healthy Schools Act.
- **ECE Responsibilities to a PMP.** The child care staff must inform the PMP that the facility must comply with the Healthy Schools Act.

The Healthy Schools Act regulates the use of pesticides on center buildings or structures, playgrounds, lawns, vehicles, or any other area of the property visited or used by children.

The Healthy Schools Act applies to pesticides that are in the form of:

- Sprays.
- Foggers.
- Pellets or powder, if uncontained.

These pesticides are referred to as nonexempt in the Healthy Schools Act.

Exempt Pesticides

Products that use pesticides in a bait, trap, or gel or are used to kill germs (antimicrobials), such as sanitizers and disinfectants, are exempt (not covered by the law). This means that parents and staff do not need to be notified when these pesticide products are used, and records do not have to be kept of their application.

For more information on exempt pesticides, see the DPR publication *Pesticides Exempt from the School Posting, Notification, and Record Keeping Requirements of the Healthy Schools Act of 2000 (HSA)* available online at: **apps.cdpr.ca.gov/schoolipm/school_ipm_law/26_exempt_text5.pdf**

Who is responsible for helping to implement the Healthy Schools Act?

DPR is responsible for helping schools and child care centers implement IPM practices. You may request information from DPR about starting an IPM program in an ECE facility by contacting DPR's Growing Up Green Program. Contact information is available online at: **apps.cdpr.ca.gov/schoolipm/childcare/**

PESTS – WHAT YOU NEED TO KNOW

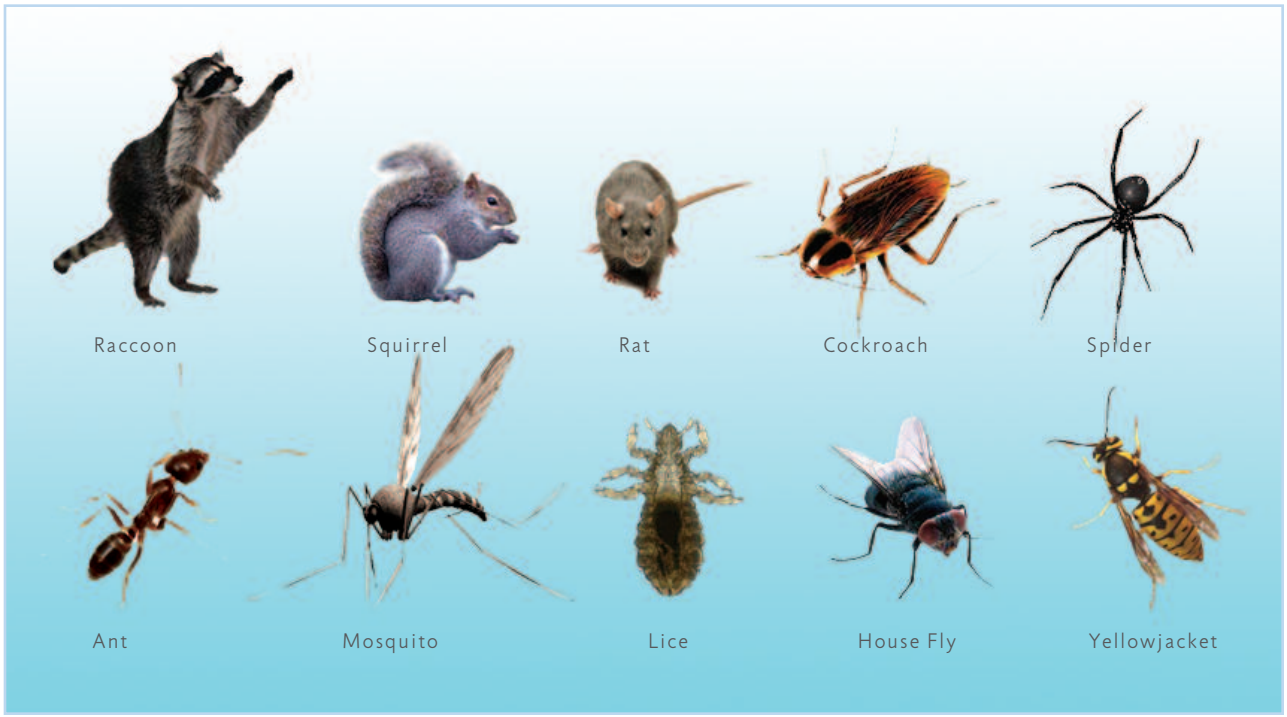
What are pests?

A pest is any living organism that causes damage or discomfort, or transmits or produces disease. Pests can be animals, plants or bacteria. A pest can also be something that is simply where it is not wanted, such as clover in a grass play area. Rats, mice, cockroaches, house flies, raccoons, squirrels, ants, weeds and bacteria are all examples of different types of pests. Make sure something is really a pest before you remove it.

Hazards of pests for young children

Some pests are merely annoying, but others can cause serious harm to children. For example:

- Rodents, such as rats and mice, can contaminate food, food preparation areas and other surfaces with their urine, feces and stray hairs. They carry diseases or fleas into areas where people are present. They can also trigger asthma.
- Cockroaches are a common trigger of asthma and can carry diseases.
- Stinging pests, such as yellowjackets, hornets and some ants and bees, can cause severe reactions that can be life threatening for some people.
- Flies can spread disease when they walk on food.



Most Common Pests in Child Care Centers

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PESTICIDES – WHAT YOU NEED TO KNOW

What are pesticides?

A pesticide is a poison that is designed to kill or control living things such as weeds, bugs, spiders or anything that you do not want to live in your child care facility or yard. Roach and ant spray, flea bombs, rat poison, weed killer or mothballs are all examples of pesticides. All pesticides are potentially harmful. Pesticides should be used as a last resort. Pesticide sprays and foggers are especially harmful and should be avoided in child care programs.

What types of pesticides are there?

There are many types and trade names of pesticides that are marketed to kill specific pests. For example, an herbicide, which kills weeds, is a pesticide. Here is a list of pesticides and the type of pests they are designed to kill.

PESTICIDE	PEST
1. Insecticides	Insects and related pests such as spiders
2. Herbicides	Weeds or other unwanted plants
3. Rodenticides	Mice, rats and other rodents
4. Fungicides	Mold, mildew and other fungi (mushrooms)
5. Bactericides	Bacteria
6. Algicides	Algae (used in swimming pools and other water storage)
7. Insect Repellents	Mosquitoes or other insects or ticks
8. Molluscicides	Snails and slugs

Where are pesticides used?

Pesticides are often used outside, such as on lawns and in gardens. They are also commonly used in and around buildings such as homes and classrooms.

- Indoor levels of pesticides may be higher than outdoor levels because pesticides settle into carpets and on other inside surfaces, and build up in dust. Pesticides used indoors, or tracked inside on shoes, can remain for weeks, months or even years.

WHAT ARE THE HEALTH HAZARDS?

Even though pesticides are registered with the U.S. EPA, they can still be dangerous to children and adults. Typically, the harmful effects of a pesticide depend on:

- how poisonous the pesticide is. Some are more poisonous than others.
- how long a person is in contact with the pesticide (this is called exposure).
- how much of the pesticide gets inside the body of the person exposed.
- how a person comes into contact with the pesticide. Pesticides can be swallowed, breathed in through the lungs or absorbed through the skin.

Exposure to some pesticides can cause acute poisoning or acute health effects. In 2008, United States (US) Poison Control Centers reported 43,526 cases of possible pesticide poisoning in children younger than six.[3] The signs of acute, sudden pesticide-related sickness that happen soon after exposure can be mistaken for the flu or other illnesses. See the table *Acute and Chronic Health Effects* on page 9 for more information.

3 Bronstein, A. C., Spyker, D. A., Cantilena, L. R., Green, J. L., Rumack, 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.

Exposure to pesticides over a long time may also cause sickness or affect development. New studies show that children regularly exposed to low levels of pesticides may not be poisoned or get sick right away, but they may suffer from health problems that don't show up for many years.[4]

Studies still need to be completed to know more about the health hazards of pesticides.

The best way to avoid these health hazards is to avoid using pesticides.

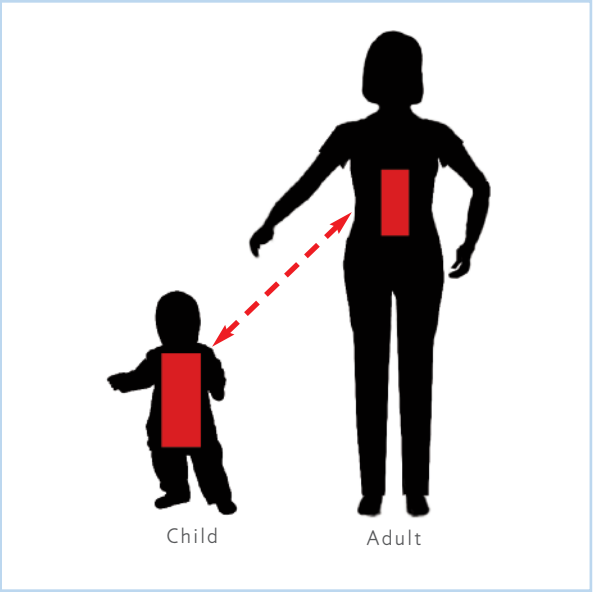
Some of the acute and chronic health effects of pesticides are:

ACUTE HEALTH EFFECTS (SUDDEN EXPOSURE)

- Cough or difficulty breathing
- Nausea or vomiting
- Stomach pain
- Diarrhea
- Headache
- Blurred vision or irritated eyes
- Dizziness
- Rash or other skin irritation
- Confusion

POSSIBLE LONG-TERM HEALTH EFFECTS

- Asthma
- Low birth weight and length
- Birth defects
- Genetic syndromes
- Learning disabilities
- Cancers
- Hormonal changes (disruption of the endocrine system)



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.

Children are more vulnerable to pesticides in their environment than adults because they:

- eat and drink more per pound of body weight than adults. If a pesticide is present in food or drink, a greater amount will be taken in by a child in proportion to their body size or weight than by an adult.
- breathe more air per pound of body weight than adults.
- put their hands in their mouths a lot and roll on and touch floors and other surfaces where pesticide residues or contaminated dust are commonly found.
- have more skin surface area relative to their body weight than adults. Thus, children absorb more pesticides through their skin than adults.
- are still developing. Some pesticides that children are exposed to can interfere with a child's developing brain.

4 Marks, A. R., Harley, K., Bradman, A., Kogut, K., Barr, D. B., Johnson, C., et al. (2010). Organophosphate pesticide exposure and attention in young Mexican-American children. *Environmental Health Perspectives*. Advance online publication. doi: 10.1289/ehp.1002056.

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Other hazards of using pesticides

Pesticides are poisonous to pests, but they are also poisonous to people, animals and the environment. Pesticides enter the environment through water and air. Pesticides can enter storm drains, seep through the ground or run off of sidewalks or soil into streams and lakes that provide drinking water to humans and animals.

Pesticides can also sometimes make pest problems worse.

- Over time, pests often become resistant to pesticides so the pesticides stop working, and stronger ones are needed to manage pest problems.
- While pesticides kill pests, they can also kill valuable insects, such as predators that keep pests in check.

Choosing safer pesticide products

IPM practices that don't use any pesticides at all are often effective and eliminate pest problems. If nonchemical approaches are not effective by themselves, you may need to use pesticides.

Here are the key points about choosing a safer pesticide product:

Use pesticides that are exempt from the Healthy Schools Act requirements

Products that are exempt from reporting under the Healthy Schools Act such as baits and gels have all been determined to be safer for use around children than other pesticide products. They are safer either because they have very low toxicity or are used in a form, such as a bait station, that makes them less hazardous because there's reduced risk of exposure to the pesticides. Exempt products should be used and stored out of children's reach.

For more information on choosing safer pesticides for individual pests, review the *CCHP Health & Safety Notes* included in this *Toolkit* on individual pests common in ECE programs. These *CCHP Health and Safety Notes* provide information about nonchemical and safer options appropriate for individual pests that should be tried before resorting to nonexempt pesticides. These *CCHP Health and Safety Notes* can also be found on CCHP's website: **www.ucsfchildcarehealth.org/html/pandr/hsnotesmain.htm**

Use pesticides registered for use by the EPA and DPR

Except for a few products that are made from food-grade substances, all pesticides must be **registered** by the U.S. EPA and the California Department of Pesticide Regulation (DPR) to be sold or used in California. Be sure you only use registered products. Some unregistered products that are illegal in California are very dangerous.

Examples of illegal pesticides that are highly toxic and dangerous to use:

- **Naphthalene moth repellents** are made from naphthalene and are white or colorful balls that look like candy or toys to children.
- **Illegal insecticide chalk (ant and cockroach chalk),** also called Miraculous Chalk or Chinese Chalk, is usually imported from China and is not expensive. It looks like simple blackboard chalk.

Illegal insecticide chalk.

- **Tres Pasitos** is a colorful pesticide that looks like candy. It is used to kill rats.

Use caution when choosing organic, green or natural products

Choosing safer pesticide products can be hard because there is a lot of conflicting information available on the Internet and in the media. Some pesticides are advertised as *organic, green* or *natural* to make them seem safer than traditional pesticides, but some may also have significant hazards, especially if the directions on the label are not followed.

The terms *green* or *natural* should be viewed with suspicion. Of the terms *green*, *natural* and *organic*, only the term organic has an official definition.

Use pesticides registered for use by the EPA and DPR

Organic pesticides:

- must be derived from natural sources, such as plants, animals, microorganisms or minerals.
- cannot be synthesized using chemical reactions.
- can have adverse effects on people, animals and the environment even though many of these products may be less toxic than conventional chemical pesticides. An example is the insecticide pyrethrin, which is made from chrysanthemum daisies. It is organic because it only comes from plants, yet pyrethrins are very toxic to fish, and can cause allergic reactions in people.
- can cause problems if used in areas with poor ventilation. Some organic sprays are made with essential oils and may smell good at first, but they can cause children and staff to cough or suffer eye irritation and trigger asthma. For example, thyme oil can irritate the skin, eyes and lungs and cause allergic reactions.

Pesticides, including organic or so-called green pesticides, should only be used as a last resort. Try alternate ways to get rid of pests and resist using sprays even if they are labeled organic or green products.

Use safer products to protect against bacteria and viruses

The prevention of diseases caused by bacteria and viruses is a priority in ECE settings. California Community Care Licensing requires that certain surfaces in ECE settings be sanitized or disinfected. Sanitizing and disinfecting (antimicrobial) products that kill bacteria and viruses are pesticides. All products used to sanitize or disinfect must be registered by the EPA. Bleach is the most commonly used product for sanitizing and disinfecting in ECE. It has a short killing time and it does not need to be rinsed since it breaks down quickly. But there are increasing concerns about the health effects of bleach, particularly for children with asthma. Many ECE providers are looking for alternatives to bleach for sanitizing.

The EPA's Design for the Environment (DfE) Antimicrobial Pesticide Pilot Project is a new program that identifies disinfectants that are at the safer end of the disinfectant spectrum. DfE scientists have screened disinfectant ingredients for potential human health and environmental effects. They have identified the following as least-toxic active ingredients in disinfectants:

- Stabilized hydrogen peroxide
- Lactic acid
- Citric acid

Products containing these ingredients that pass the DfE tests for safety and efficacy will be listed on their website, www.epa.gov/dfe/. If you see the DfE logo on an EPA-authorized antimicrobial pesticide label, you can be assured that, based on the best currently available information, the product contains only ingredients that pose the least health and environmental concerns. Using sanitizing/disinfecting products with the DfE logo can protect the health of children and staff as well as the environment.

For more information, see the CCHP Health and Safety Notes, *Green Cleaning* and *Sanitizing Safely and Effectively.* Also see the Resources section on page 31.

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UNDERSTANDING IPM PRACTICES

In this section, we provide more detail about IPM. IPM is typically described in five categories:

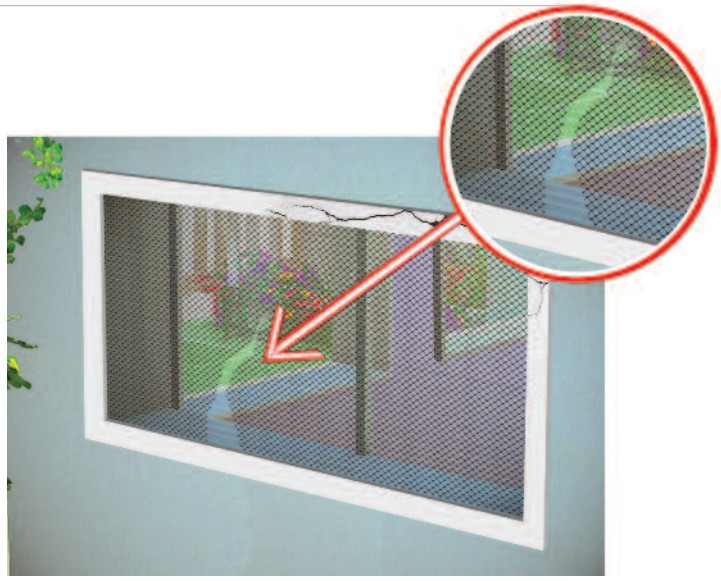
1. PREVENTION
2. INSPECTION
3. IDENTIFICATION
4. MONITORING
5. MANAGEMENT

In practice, many of the strategies we describe below are used in more than one category of IPM.

PREVENTION

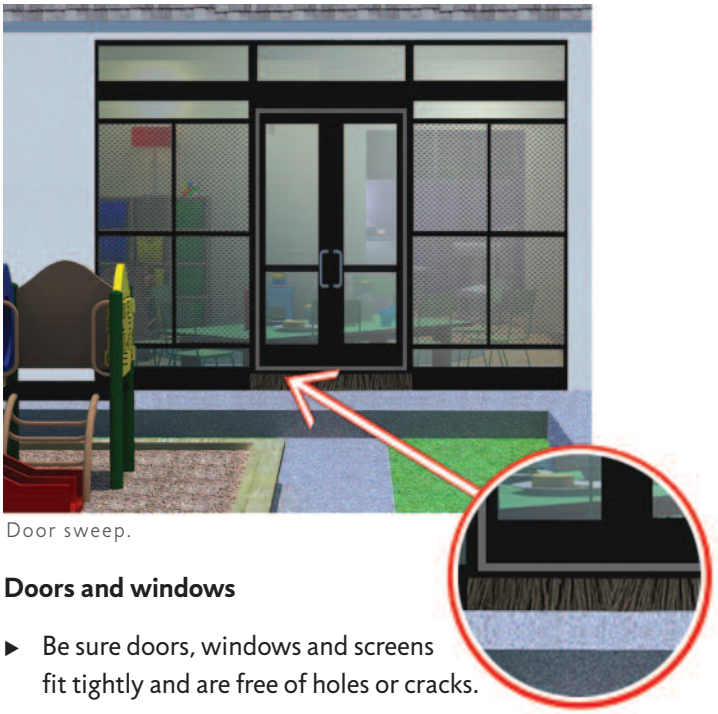
Prevention is always the preferred way to manage pests in an IPM program. Many pests are attracted to food and water, and find shelter and hiding spots in cracks and crevices or cluttered places. Taking steps to keep pests from getting into your ECE facility is important and can be done by following the strategies in this section (see also the *IPM Checklist* in the *IPM Toolkit*). Practicing good sanitation will reduce the availability of food, water and shelter to pests.

Install door sweeps.



Make sure window screens are free of damage.

Create physical barriers on the outside of the building so pests cannot enter the facility.



Door sweep.

Doors and windows

- Be sure doors, windows and screens fit tightly and are free of holes or cracks.
- Make sure window screens and panes are free of damage.
- Put door sweeps underneath doors and wrap weather-stripping around the door's top and sides.
- Keep doors closed when not in use.

Cracks, crevices, gaps and holes

- Seal cracks and crevices in walls, roof, foundation, floors, and around electrical conduits, heating ducts and plumbing pipes where they enter the building.
- Caulk cracks and crevices around cabinets, baseboards or mirrors.
- Screen vents or other large openings with ≤ ¼-inch hardware cloth.
- Use wire mesh to fill bigger holes where pipes go through a wall, the ceiling or the floor so that pests cannot re-enter the building by burrowing.

Maintain good sanitation to reduce availability of food, water and shelter outside.

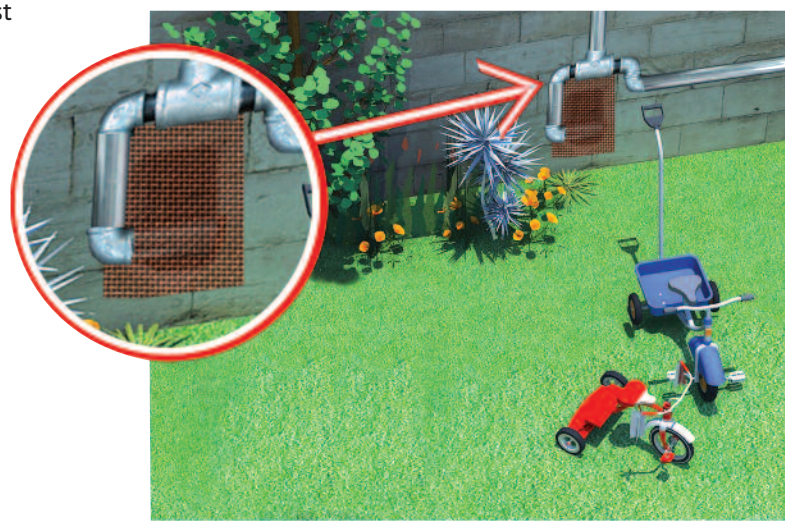
Landscape

Many pests that come indoors and bother children and staff originate in outdoor areas. These include ants, yellowjackets, flies, mosquitoes, spiders, mice and rats. You can reduce their numbers by maintaining a landscape that does not allow them to thrive or invade indoor spaces:

- Keep plants, mulch and moisture at least 12 inches away from the building.
- Trim branches regularly and keep them at least 3–4 feet from the building.
- Remove ivy, vines, wood, debris, garden produce, compost piles and thick mulch around the perimeter of building.
- Clean gutters.
- Plant flowers that don't attract bees, such as zinnias.

A clogged gutter can become a home for pests and prevents proper drainage away from the building.

Openings are entrances for pests.



Screen vents or other large openings with hardware cloth.

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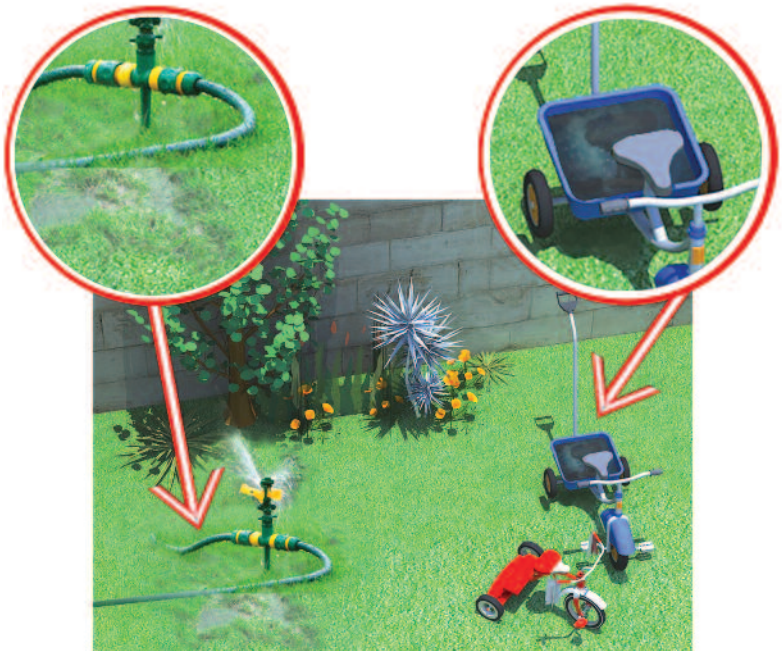


Make sure equipment and toys don't contain standing water.

Remember that a pest in one situation may not be a pest in another. Evaluate carefully whether something is, in fact, a pest before looking for ways to get rid of it. For example, many people dislike sowbugs or pillbugs, yet they do little harm in the landscape; and a few snails or slugs are not pests if they are not bothering your plants.

Water

- Prevent sprinklers from wetting stucco or siding.
- Fix any dripping faucets or sprinklers.
- Eliminate any standing water that collects from faucets, sprinklers or after rain.
- Make sure equipment and toys do not contain standing water.
- Prevent shrubbery from blocking vents in the foundation.
- Keep plants and mulch 12 inches from the building to allow air and light to circulate.
- Common pests to look for in moist places include mold and mosquitoes.

Garbage storage area (large dumpsters/cans collected by trucks)

- Make sure garbage receptacles and dumpsters are at least 50 feet away from entranceways of the building or play yard and are on pest-proof pavement such as concrete.
- Keep the area free from spilled liquids or garbage.
- Make sure that receptacles and dumpsters have lids that fit snugly to form a seal.
- Rinse and clean recyclables.
- Make sure composting bins and receptacles are properly sealed.
- Common pests to look out for here include cockroaches, ants, yellowjackets, flies, mice and rats.

Dirty garbage storage area.

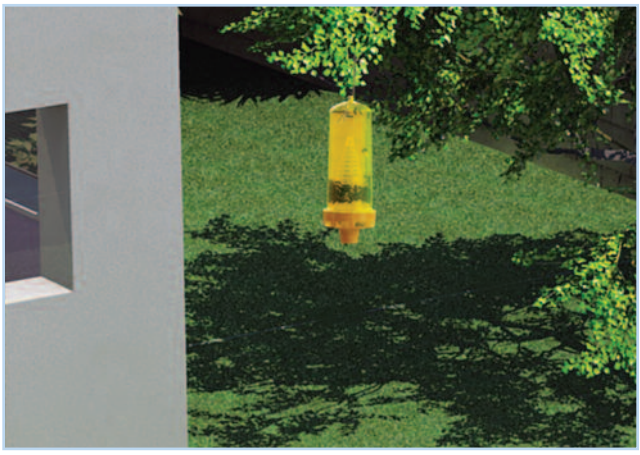
Clean garbage storage area.

Remove conditions that will attract pests, like spilled drinks and uncovered, overflowing garbage bins.

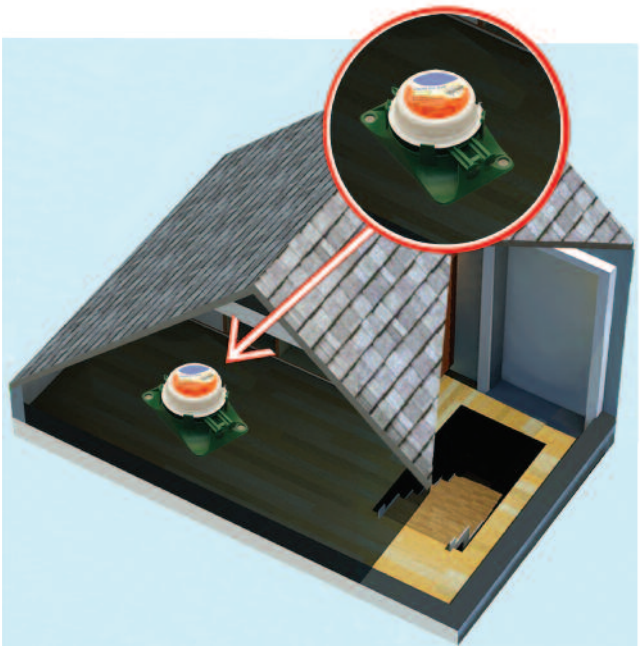
Garbage in play area (garbage containers)

- Make sure garbage containers have dome lids and linings.
- Common pests to look for near garbage include cockroaches, ants, yellowjackets, flies, mice and rats.
- If rodent bait stations or yellowjacket traps are used, make sure you place them out of children's reach! Place yellowjacket traps at least 20 feet away from outdoor eating and play areas to avoid attracting yellowjackets.

Use dome lids to cover garbage, a food source for pests.



Place yellowjacket traps at least 20 feet away from eating and play areas.



Place bait stations out of children's reach.

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Maintain good sanitation to reduce availability of food, water and shelter inside.

Sanitation

- Eliminate food scraps.
- Remove standing water and water-damaged materials.
- Regularly sweep, vacuum and dust.
- Keep areas free from clutter.
- Properly dispose of garbage.

Remember that sealing and repairing any cracks, crevices, gaps and holes inside the building is another way to prevent pests from invading your building.

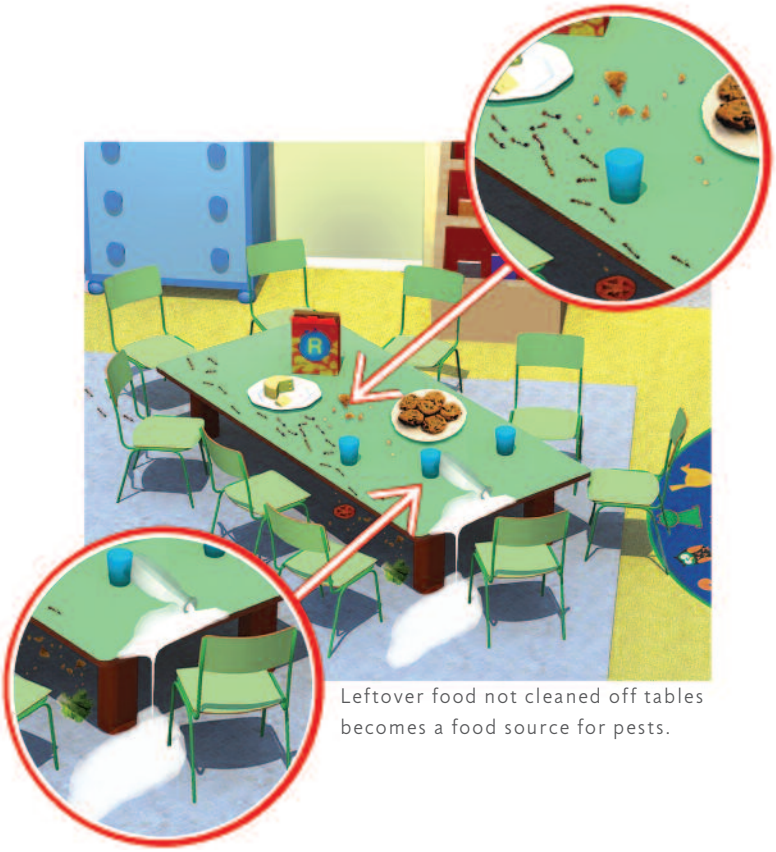
Put away leftovers and take out trash before they attract pests.

Routine cleaning

Routinely clean all areas in the ECE facility:

- Clean and dry countertops, shelves, cabinets and drawers.
- Remove food scraps, grease and sugar from stoves, floors and molding.
- Clean areas under furniture that is not moved often such as tables, couches, shelves and refrigerators.
- Dust, mop, vacuum and wipe to keep indoor areas clean.
- Clean food-contaminated dishes, utensils and surfaces by the end of each day.
- Dry and store mops and buckets properly (i.e., mops should be hung upside down and buckets emptied). or, better yet, use lightweight microfiber mop heads made from specially woven fibers that attract dirt, germs and dust.
- Remove cobwebs.

Store food in clear, tightly-sealed containers.



Leftover food not cleaned off tables becomes a food source for pests.

Food

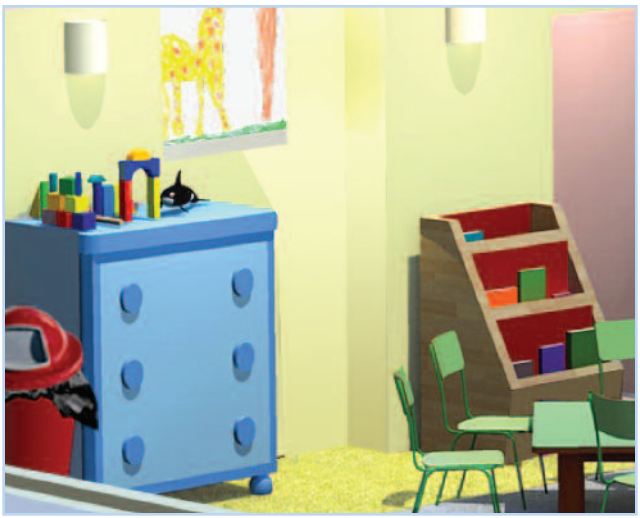
Maintaining a clean environment is the key strategy for preventing pests in food preparation and storage areas.

- Make sure food is not left out for pests to eat or land on.
- Use food storage containers with tight sealing lids.
- If your ECE program uses food items such as pasta for arts and crafts, make sure these are also sealed in plastic or glass containers when not in use.
- Only allow food and beverages in designated areas.
- Clean up spills and crumbs.
- Common pests that like our food include ants, cockroaches, yellowjackets, flies, mice, rats and pantry pests such as flour moths and beetles.

Garbage

Regularly removing garbage at the end of each day from the ECE site can prevent many pest infestations.

- **Garbage containers should:**
  - be equipped with plastic liners.
  - have lids that fit snugly to form a seal.
  - be emptied and cleaned daily.
- Promptly recycle any boxes or bags to avoid more clutter.
- Rinse drink or food containers before putting in recycling bins.
- If you must keep cardboard boxes, store them away from moist areas and direct contact from walls or floors.
- If you have on-site composting, be sure to properly cover and contain it.
- Common pests that like garbage include ants, cockroaches, flies, yellowjackets, mice and rats.



Garbage containers should be equipped with plastic liners and have lids that fit snugly to form a seal.

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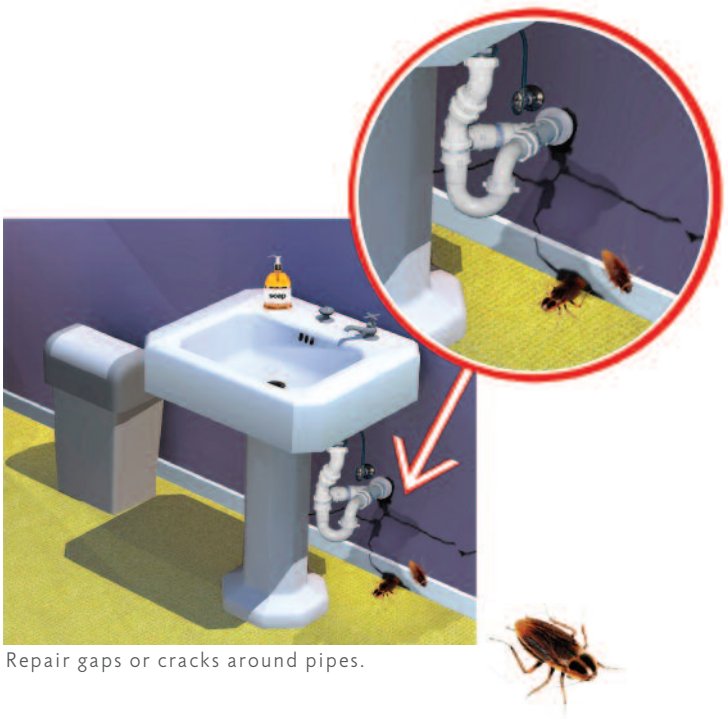
Water

Eliminate accumulated water anywhere around the building or grounds.

- Fix leaky plumbing.
- Eliminate excess water in trays or saucers under indoor houseplants or under the refrigerator.
- Cover or put water away so that it doesn't sit out overnight.
- Drain milk or juice cartons before throwing them in the garbage to avoid excess moisture.
- Dishwashers and refrigerators usually collect extra water so make sure drainage bins are kept clean and dry.
- Keep bathrooms as dry as possible because mold tends to grow there.
- Common pests that like water and moist environments include ants, cockroaches, mosquitoes, gnats and mold.

Keep bathrooms as dry and clean as possible.



Repair gaps or cracks around pipes.

Fix leaky plumbing.

Storage, shelter and hiding places
Pests love clutter. It gives cockroaches and mice a place to breed and hide. Pests also thrive where they have hiding places such as cracks, crevices, wall voids, spaces behind pictures or hanging art work, gaps behind molding and spaces between furniture and walls. Where possible, eliminate these hiding places by caulking, covering gaps with screens or filling holes and voids with copper wool.

In places where eliminating hiding places is not possible, clean regularly and monitor for the presence of pests. If you have pets on-site remember to properly store their food and water. Also keep earthquake supplies properly stored so that pests cannot get into them.

To minimize the level of clutter:

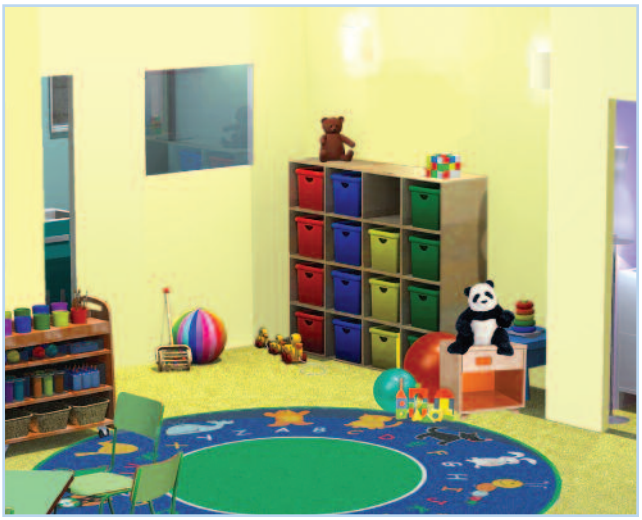
- organize equipment and toys.
- clean regularly.
- avoid storing stacks of newspapers, magazines or cardboard boxes because these provide an excellent shelter for roaches, rodents and other pests. If you need to store items, use plastic bins with sealed lids.

Common pests that like clutter include cockroaches, spiders, mice and rats.

For specific pest prevention strategies for individual pests, see the *CCHP Health and Safety Notes* included in this *IPM Toolkit* or online at: **www.ucsfchildcarehealth.org/html/pandr/hsnotesmain.htm**

For information on pest prevention strategies for birds, termites and other potential pests not covered in this *Toolkit,* see the University of California IPM Program website: **www.ipm.ucdavis.edu** or **www.ipm.ucdavis.edu/PMG/menu.homegarden.html**

Clutter provides hiding places for roaches, rodents and other pests.



Use plastic bins with sealed lids to store equipment and toys. Avoid clutter.

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INSPECTION

The first step in starting an IPM program is a thorough inspection of your program's indoor and outdoor areas. For help with your inspection and a list of the tools that you will need, see the *IPM Checklist* that is part of this *Toolkit*. An inspection can be done by the IPM Coordinator in your program or by a Pest Management Professional who is familiar with IPM. During an inspection, you are looking for:

- evidence of pests (or their damage): what kind, how many and where
- how they may be entering the building
- their possible sources of food, water and shelter

IDENTIFICATION

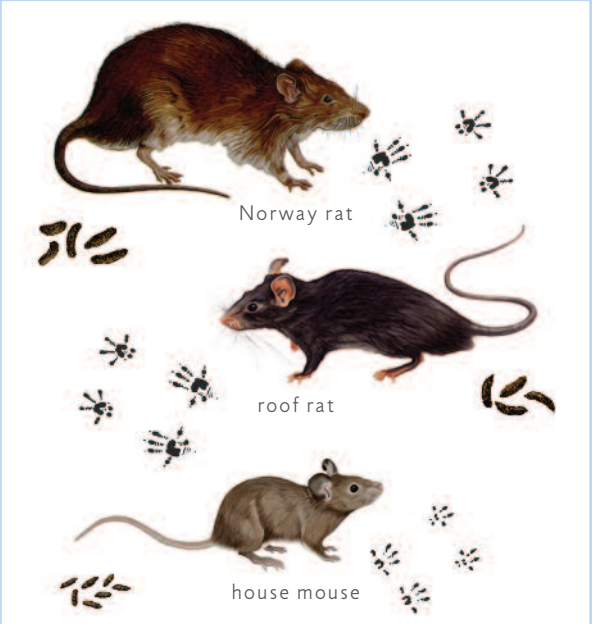
Identify your pests

When you practice IPM, you have to identify the pests in your facility and know their characteristics and life cycles. If you don't know which pests are present, you may use the wrong management approach, choose the wrong pesticide, or treat too often or at the wrong time and do more harm than good.

- For help identifying pests, see the *CCHP Health and Safety Notes* contained in this *Toolkit* on IPM for individual pests or the *University of California Statewide Integrated Pest Management Program Pest Notes*, **www.ipm.ucdavis.edu/PDF/PESTNOTES/index.html**
- Learn the signs of pests' presence such as droppings or damage caused by gnawing or chewing, even when pests are out of sight.
- Make sure that you correctly identify something as a pest that requires action. Most insects are not pests.

Identify pests' characteristics and habits

- **Access:** How do they get inside? Do they enter the building on cardboard boxes or in food?
- **Food:** What foods do they eat?
- **Water:** What are their sources of water?
- **Shelter:** Where do they hide?
  - Do they burrow or find their way into existing cracks and holes?
- **Damage:** What damage do they cause?
- **Life cycle of pests:**
  - How long does it take them to grow to adulthood and reproduce?
  - At what stage of their life cycle do they cause the most problems?
  - How fast do they reproduce?



Identify which types of pests are present in and around your facility.

MONITORING

If you successfully prevent pests or eliminate them from your facility, your IPM efforts aren't over! Monitoring for pests is an ongoing process that is very important in an IPM program. Monitoring involves systematic inspections that you conduct at regular intervals to identify pest problems early when management is easiest. Monitoring helps you identify how serious your pest problems are and where they are located.

Monitoring pests involves:

- regularly inspecting the facility for pests and pest damage.
- identifying sources of food and water that could attract pests.
- assessing the effects of your pest management strategies.

STEPS OF EFFECTIVE MONITORING

1. **Decide who will do the monitoring.**
2. **Choose effective tools, including:**

- monitoring traps (for example, sticky traps for monitoring many insects); check them regularly.
- flashlight with a halogen bulb; get into a squatting position to check under cabinets and furniture for signs of pests.
- small knife or screwdriver to collect pest droppings or probe wood for dry rot.
- camera to document pest damage to plants or structures before and after IPM practices have been used (optional).

3. **Keep good written records** each time you do a visual inspection (see the *IPM Checklist* in the *Toolkit* and *Pest Monitoring Form* on page 39). Make sure these include:

- date and time the inspection took place.
- which pests were present, where they were present, how many and their stage of growth.
- evidence of pest damage and where seen.
- when pesticides such as gels or pastes were last used.

Keeping good records will:

- give you information for your pest management decisions.
- make sure that information is documented and not lost when employees leave the program.
- allow for the evaluation of pest management from year to year.

Check under cabinets and furniture for signs of pests.

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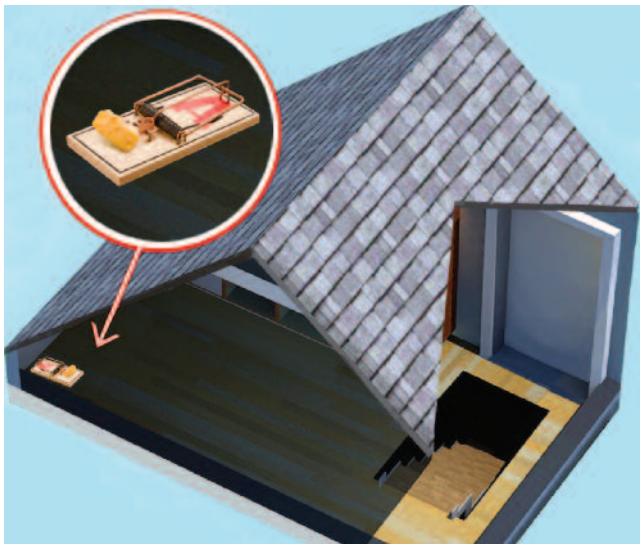
MANAGEMENT

If pests become a problem, you will need to manage or suppress them. IPM encourages use of materials and practices for managing pests that maximize safety and reduce exposure of children and staff to harmful chemicals. To manage pests in an IPM program, choose practices that are:

- least harmful to human health and to other non-pest organisms.
- most likely to be permanent and prevent the pest problem from coming back.
- easiest to carry out safely and effectively.
- most cost-effective in the short and long-term.
- matched to the particular pest and coincide with the stage of the pest's life cycle when the pest is most vulnerable.

Often you can manage pests with nonchemical steps such as:

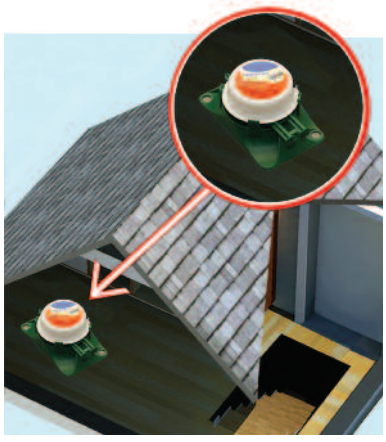
- keeping pests out and eliminating their food, water and shelter.
- washing the area with soap and water.
- using a vacuum to remove them:
  - A high efficiency particulate air (HEPA) vacuum with a filter fine enough to screen out insect feces and insect parts.
- using traps:
  - Place traps out of children's reach, such as in closets or locked cupboards, or in outdoor areas that are inaccessible to children.
  - Some traps are used mainly for monitoring pest presence. These include cockroach traps and various pheromone (insect sex attractant) traps, although if the infestation is small, these traps can sometimes be used to manage the pest.
  - Other nonchemical traps include:
    - snap traps for mice and rats, properly placed where rodents will find them.



Place traps out of children's reach.

    - flypaper and ultraviolet light traps for flies.
    - cone traps for yellowjackets or flies.
    - box traps for skunks, raccoons and opossum.

If nonchemical steps don't work, use the least-harmful pesticides to manage a pest problem. Least-harmful pesticides are:



  - contained in bait stations (not sprayed or broadcast.)
  - effective against the target pest.
  - have a low acute and chronic toxicity to people, animals and the environment.
  - biodegrade rapidly.
  - kill a narrow range of target pests.
  - have little or no impact on other organisms, especially the pest's predators.

These are examples of least-hazardous pesticides registered in California.

- **Baits** are pesticides mixed with materials that attract pests looking for food. They are a key tool for managing ants (worker ants carry small portions of the bait back to the nest where it is transferred to ants in the colony, eventually killing the entire colony). Ant bait products must be slow-acting so that the foraging ants have time to make their way back to the nest and feed other members of the colony before they are killed. When properly used, baits are more effective and safer than sprays. Ant baits are available in prepackaged containerized bait stations or as products that can be placed in refillable bait stations or dispensers.
- **Borates** for use in bait stations for ants or cockroaches.
- **Desiccating dusts** are powders that kill insects by drying out their waxy coating, causing them to die of dehydration. They do not act by poisoning the nervous systems of pests. They are often applied behind wall voids, under light switches and other hard-to-reach places pests like to hide. Examples are diatomaceous earth and silica gel.
- **Gels** are another form of bait. They are insecticides mixed with materials that attract pests. Instead of being placed in bait stations, gels are squeezed into cracks and crevices where pests commonly hide using a syringe type applicator.
- **Insect growth regulators (IGRs)** interfere with insect growth.
- **Pesticidal soaps and oils** also act by suffocating insects, usually those attacking plant surfaces. These come in liquid and spray forms and would not commonly be used for structural (indoor) pests.
- **Pheromones** and other attractants prevent mating.
- **Repellents** send pests somewhere else.
- **Some botanical pesticides** which are derived from plants. However, this does not mean they are "safe." They can be as diverse as all other pesticides and must be chosen on a case-by-case basis. (see section *Use caution when choosing organic, green, or natural products,* on page 11.)

When choosing a pesticide, it's a good idea to obtain a Material Safety Data Sheet (MSDS) for the product. These documents contain information on potential hazards and safety precautions for a product. MSDS forms are available online and from pesticide suppliers. Keep the MSDS with your IPM records.

DPR's School HELPR Web page is a guide to choosing the best pest management action, depending on the situation. You can access it online at: **apps.cdpr.ca.gov/schoolipm/health_issues/main.cfm?#usehelper**
This guide can also help you choose baits that contain less harmful pesticides. Use pesticides only when and where needed; for example, it is rarely necessary to treat an entire building or landscape area to solve a pest problem. If you use pesticides, combine them with preventive practices so pests won't come back. Determine the causes of pest problems, and develop a pest management plan to address these causes with primarily nonchemical solutions.

SAFE STORAGE AND DISPOSAL OF PESTICIDES

All pesticides, including containerized baits, organic or other exempt pesticides and some disinfectants must be stored and disposed of appropriately:

- Store all pesticides in locked cabinets out of children's reach.
- Store pesticides in their original containers with complete label information.
- Try not to purchase more pesticide than you'll use in a short time to avoid problems with storage and disposal.
- Dispose of leftover pesticides at a hazardous waste disposal site. To find the hazardous waste disposal site closest to you check **www.earth911.org** or call the California Environmental Hotline at: **800-253-2687.**
- If you employ a pest management company, they are responsible for storage and disposal of extra pesticides.

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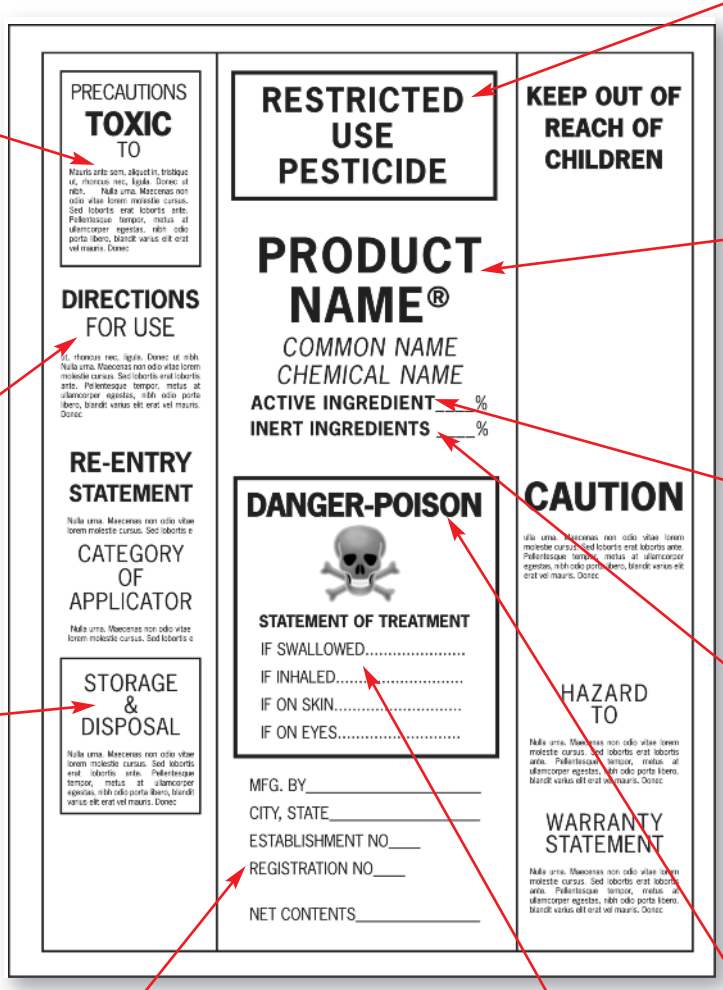
HOW TO READ A PESTICIDE LABEL

Read the label of any pesticide to identify the name, ingredients, directions, and potential harmful effects on children and staff. The following is a quick overview of key things to look for on the label:

The **precautionary statements** describe potential harmful effects to people, animals or the environment.

The **directions for use** tell you where, when and how to use the pesticide safely. Follow these directions precisely. This section also tells you what kind of pest this product was designed to kill.

The **storage and disposal** instructions tell you how to store and dispose of leftover pesticides.



The **Environmental Protection Agency Registration number** ensures that the pesticide has been reviewed by EPA.

The **first aid section** tells you what to do if the product is swallowed, breathed in (inhaled), or has made contact with the skin or eyes.

The **Restricted Use Pesticide** tells you only certified pest management professionals may use this product.

The **product** or **brand name** is prominently displayed on the front label. Brand names are different from active ingredients.

The **active ingredient** is the chemical that kills the pest.

Inert or other ingredients do not directly kill the pests, but instead help the active ingredients work.

The **signal words** such as **Caution, Warning, Danger, or Danger–Poison** refer to the short-term or acute effects of the active ingredient.

For more information on reading a pesticide label, see the EPA "Read the Label First" website: **www.epa.gov/pesticides/label/**

Source: **www.epa.gov/pesticides/label/index.html**

IMPLEMENTING IPM IN YOUR ECE PROGRAM

The best way to comply with the Healthy Schools Act and protect the health of children, staff and the environment is to implement an IPM program. Here are the steps to start your IPM program:

1. **Write and include an IPM policy in your center's policy manual.** (See *Sample IPM Policy for Child Care* in the *Appendix*).
   This policy should:
   - state how the ECE center will comply with the Healthy Schools Act.
   - identify how the program will manage pests inside the facility and in outdoor play areas.
   - establish a procedure to notify parents and staff if pesticides that are not exempt from the Healthy Schools Act rules must be used.
   - identify minimum qualifications for a Pest Management Professional (PMP) hired to work at your center (see *How to Hire a Pest Management Professional* on page 28).

2. **Designate an IPM Coordinator.**
   This person coordinates and leads the day-to-day IPM activities and acts as a liaison with staff, a pest management company (if used), and parents. Often, the program director or facility manager acts as the IPM Coordinator. The IPM Coordinator:
   - assures that staff members report pest sightings using the *Pest Monitoring Log* (see page 39).
   - communicates recommendations from the PMP for cleaning or repairs to staff and administrators, and confirms that they have been carried out.
   - takes responsibility for regular monitoring if there isn't a PMP.
   - assures that the pest management plan for the facility is carried out.
   - is responsible for storage, safe use and disposal of pesticides.
   - facilitates staff training on IPM.
   - does not have to be a pest management expert, but should have good organizational skills and an interest in IPM.

3. **Provide training for facility and child care provider staff and parents about your IPM program.**
   IPM is a team effort, requiring cooperation among the director, teachers, custodian, maintenance staff, children and parents.
   - Use the *IPM Toolkit* and *CCHP Health and Safety Notes* to train staff.
   - For further information on educating staff and parents, see the *DPR Child Care IPM-Growing Up Green* website: **www.cdpr.ca.gov/schoolipm/childcare.**
   - **Education of staff and parents should focus on how to implement the three steps of pest prevention.** These three steps are ongoing tasks that require everyone's participation.
     - **Keep pests out.** Make repairs as needed to prevent pests from getting into buildings.
     - **Remove food and water.** Review sanitation practices. Sanitation includes waste disposal and kitchen cleaning. Repair leaking pipes and eliminate standing water wherever possible.
     - **Remove shelter.**Clutter offers shelter for many pests, especially rodents, spiders and cockroaches. Organize clutter and eliminate cardboard. Use lidded plastic bins instead, particularly in food areas. Seal openings such as gaps commonly between equipment and floors.

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4. **Get names and contact information for any outside contractors** the program uses, such as garbage disposal, building maintenance or pest management professionals.

5. **If your program requires the services of a PMP, hire one that has IPM experience and knows about the Healthy Schools Act requirements.**
   - PMPs can help maintain a pest-free, pesticide-free facility (see *How to Hire a Pest Management Professional* on page 28 for more information on interviewing PMPs).

6. **If you have a pest problem, inspect buildings and grounds for sources of infestations and contributing conditions.**
   - Staff should know how to look for and remove conditions that increase pest problems.
   - Your PMP or IPM coordinator will inspect regularly and record evidence of infestations and conditions that contribute to your pest problem.
   - Follow up on inspection results by fixing conditions that could lead to pest problems such as sealing pest entry points, reducing clutter, improving sanitation and making repairs.

7. **Establish pest monitoring procedures.**
   - Regularly carry out all inspections identified in your pest management plan.
   - When needed, place (or ensure that PMP places) monitoring traps in appropriate areas where children and pets cannot find them.
   - Staff should be instructed not to move or throw away the traps.
   - Maintenance staff or the IPM Coordinator should monitor traps regularly.
   - Report pest sightings to the IPM Coordinator.
   - Track your program's response to pest sightings–when, where and how often.

8. **Identify any pests found.**

9. **Create an IPM Action Plan for each pest you find in your environment.**
   Spraying pesticides rarely eliminates pests and isn't a part of an IPM approach except as a last resort when all other strategies haven't been effective.
   - Management strategies may include improved sanitation, sealing cracks and moisture leaks, nonchemical management and, if pests are still present, pesticide baits.
   - The action plan should state how you will prevent invasions, how you will detect problems and how you will manage them if they occur. You should have a plan for each pest in your environment (see *Sample Action Plan for Cockroaches* on page 27). For help in making your action plans, see the *CCHP Health and Safety Notes* for individual pests. By establishing an action plan for each pest, you'll resist the urge to spray and respond in a safer, more environmentally healthy manner. You'll also be able to demonstrate to your licensing analyst that you are in compliance with the Healthy Schools Act.

10 Establish record keeping.
Keep the following records:

- A registry of all parents and staff who want to be notified of any pesticide applications in the facility and a protocol for how they are to be notified (required).
- Inspection reports of the facility (if ECE staff members are doing inspections, use the *IPM Checklist* in the *Toolkit*).
- Pest Monitoring Log (see page 39).
- Records of all pesticides used in the facility for four years (required).
- IPM recommendations and service reports from the PMP.
- Material Safety Data Sheets (MSDS) for all nonexempt pesticides used inside the facility.
- Work orders for fixing maintenance problems that contributed to pest problems.

11 Set up a filing system for all the paperwork you will generate and keep it in a convenient location.

12 Set up an IPM area in your facility where you can:

- provide information on IPM that staff members can access at their leisure.
- post important reminders and communicate with staff when there is a pest problem or an IPM issue such as a housekeeping problem.

13 Evaluate the program on a regular basis.

- Work with the program's staff and parents to improve understanding of IPM and identify areas for improvement of the IPM program.
- Review the effectiveness of your tracking system.

14 Remember that implementing an IPM program is an ongoing process, and requires attention and consistency.

AN EXAMPLE OF AN ACTION PLAN FOR GERMAN COCKROACHES

LOCATION/SITUATION	WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LEAST HARMFUL PESTICIDE	LAST RESORT
Food Preparation Areas	Cockroaches breed very fast! If you see one cockroach there are probably more and you should start baiting and monitoring efforts. If there are many cockroaches, consider a complete review of sanitation efforts and possibly a more aggressive treatment strategy.	▶ Caulk and seal potential hiding places around water and food prep sites. ▶ Keep all food cleaned up or in sealed containers. ▶ Clean on a schedule, including less accessible areas. ▶ Use sticky traps to monitor populations. ▶ Use a HEPA vacuum to remove heavy infestations before treatment.	Containerized baits, or gel baits applied to cracks and inaccessible void areas.	Insect growth regulator sprays applied to areas where cockroaches are hiding. Boric acid dusts applied to dry, inaccessible areas behind walls.

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HOW TO HIRE A PEST MANAGEMENT PROFESSIONAL [PMP] WHO DOES IPM

A PMP can help your ECE program implement an effective IPM program. Find out if the PMP you hire is knowledgeable about IPM practices. Many PMPs have not had the training or experience required to practice IPM effectively. Below are some questions that can help guide you as you look for a pest control company that can partner with you in starting your IPM program.

1. **Identify a PMP with experience in ECE facilities.**
   Ask colleagues for the names of PMPs who practice IPM and have experience in ECE. Consider hiring only PMPs who have been certified by Ecowise, Green Shield Certified or GreenPro. See *Resources* on page 31 for their websites.

2. **Call a few PMPs and ask specifically if they practice IPM.**

3. **Ask what services are included in the PMP's IPM approach.**
   Services should include:
   - a thorough inspection of the facility, indoors and outdoors
   - written recommendations that show ways to prevent pests from entering the facility, or how to exclude pests that have become a problem
   - periodic monitoring
   - use of traps or least-toxic pesticides when prevention has failed
   - written service reports

4. **Confirm that the PMP understands which services require an ECE director's explicit permission** (i.e., application of any pesticides).

5. **Ask whether they use indoor or outdoor sprays** as part of their IPM services. Routine spraying of pesticides is not part of IPM, except, with your permission, in an emergency situation. Some PMPs assume their customers want routine spraying, so make sure your PMP knows you don't want them to spray.

6. **Ask about the qualifications, experience and training of anyone who will work on your site.**
   All personnel should be trained in IPM practices and must be licensed as PMPs by the State of California. Call DPR for information regarding the status of pest management companies. You can also verify whether a company or an individual has a license issued by the Structural Pest Control Board **www.pestboard.ca.gov.**

7. **Ask for references from the PMP's other clients.**

8. **Ways to know if your PMP is NOT using IPM. He/she:**
   - does not carry a flashlight.
   - is not responsive or communicative.
   - does not use monitoring traps or does not check them.
   - sprays routinely on a regular schedule, whether there are pests present or not.
   - does not ask you where you have seen pests.
   - does not include regular inspections and monitoring as part of the service.
   - does not include recommendations for preventive practices such as sealing or sanitation as part of the services. (It is best if they can help provide some of these services as well.)

GLOSSARY

DPR = Department of Pesticide Regulation
FIFRA = Federal Insecticide, Fungicide, and Rodenticide Act
IPM = Integrated Pest Management
MSDS = Material Safety Data Sheet
PCO = Pest Control Operator
PMP = Pest Management Professional
U.S. EPA = United States Environmental Protection Agency

Active ingredient. The ingredient in a pesticide product that kills the pest. Some products contain two or more active ingredients.

Allergen. A substance, such as cockroach droppings or pet dander, that can cause an allergic reaction. When the immune systems of sensitive individuals recognize these substances as foreign or dangerous, they may have an allergic reaction.

Allergic reaction. An overreaction of the body's defense or immune system to an allergen. Allergic reactions can include hives, breathing difficulties, sneezing, itchy and watery eyes, rapid loss of blood pressure or loss of consciousness.

Acute toxicity. See **Toxicity** on page 30.

Antimicrobial pesticide. A pesticide used to kill microbial pests such as viruses, bacteria, algae and protozoa. Antimicrobials are used to disinfect or sanitize. Fungicides are pesticides that target fungal diseases of plants.

Asthma trigger. Allergens and irritants that can initiate an asthma attack. Triggers include pollen, mold, house dust mites and cockroach particles.

Beneficial organism. A living thing that provides benefits to humans—for example, an insect that reduces pests by feeding on them (otherwise known as a predator). A ladybeetle reduces pests by feeding on them. Honeybees are also beneficial because they provide honey and help pollinate foods that we eat.

Broadcast. To broadcast a pesticide is to cover a large area with sprays or granules. Spot spraying is a more restrictive way to apply a pesticide than broadcast spraying.

Chronic toxicity. See **Toxicity** page 30.

Endocrine disruption. Changes or disruption of the endocrine system of humans and wildlife caused by certain chemicals. Endocrine disruptors are chemicals that disrupt the endocrine system of humans and wildlife.

Exempt pesticide. Certain requirements of the Healthy Schools Act (record keeping, written notification and posting) do not apply to products used as self-contained baits or traps; gels or pastes used as crack-and-crevice treatments; pesticides exempted from regulation by U.S. EPA; or antimicrobial pesticides, including sanitizers and disinfectants.

Exempt pesticides by U.S. EPA. Under the Federal Insecticide, Fungicide, and Rodenticide Act **[FIFRA]** Section 25(b), the U.S. EPA exempts pesticides from registration if they contain certain active ingredients. These are primarily food-grade materials such as mint oil, clove oil and sodium lauryl sulfate (derived from coconut and commonly found in shampoos and detergent). Types include: bait stations and sticky traps.

Exposure. Contact with a substance through different routes such as the skin or eyes, inhalation or swallowing.

FIFRA. The Federal Insecticide, Fungicide, and Rodenticide Act is administered by the U.S. EPA and a corresponding agency in each state. (In California, the U.S. EPA equivalent is DPR.) FIFRA is the framework from which pesticides are regulated nationally and in every state.

Hardware cloth. Stiff metal screening often used to seal house vents. It resembles chicken wire, except that the holes of hardware cloth are smaller and square, and the wire used is a thicker gauge.

Healthy Schools Act. In January 2001, the Healthy Schools Act put into place right-to-know requirements such as notification, posting and record keeping for pesticides used at public schools and child care facilities. In January 2007, the law expanded to protect children in private child care facilities.

Illegal pesticide. A pesticide that's either not registered in California, or is registered but repackaged. It's best to purchase pesticide products in stores, not at flea markets or on the Internet. Avoid using a pesticide that's been stored for a long time. It may have lost its registration, meaning that it's now illegal to use.

Inert ingredient. An ingredient in a pesticide product that does not contribute to killing the pest. Inert ingredients can include water, clay and solvents.

Infestation. The presence of pests such as rodents or cockroaches. Sometimes the pests themselves cannot be seen, but you'll notice the damage they cause (e.g., gnawing) or evidence they've left (e.g., droppings).

High Efficiency Particulate Air (HEPA) vacuum cleaner. A special vacuum cleaner that can remove very small particles from floors, window sills and carpets.

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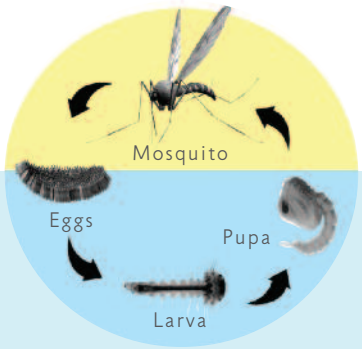

Mosquitoes take about seven days to complete their life cycle. The first three stages, eggs , larva, and pupa, are aquatic. Therefore, the best way to prevent mosquito breeding is to remove stagnant water .

Life cycle. The different stages of growth and development of a living organism. Individual life stages may be spent in different environments or feeding on different resources. For example, immature mosquitoes live in water and feed on bacteria and algae, while adult female mosquitoes fly around looking for blood. Knowing this about mosquitoes can help you focus on managing the immatures so very few of them develop into adults. Understanding the life cycle of a pest will help you develop an effective management strategy.

Material safety data sheet (MSDS). A form that contains information about the properties of a particular substance, intended to provide workers and emergency personnel with ways to handle or work with that substance in a safe manner. The MSDS includes information on the substance's health effects, toxicity, first aid, storage, disposal, protective equipment and how to handle accidental spills. The Occupational Safety and Health Administration (OSHA) requires that the MSDS for any potentially harmful substance handled in the workplace must be available to employees.

Microfiber. A fine synthetic fiber woven into cleaning cloths and lightweight mops that are ultra absorbent and use less cleaning solution. Microfibers have a positive charge. Dust, dirt and microbes are not only attracted to the microfiber's positive charge, but are held tightly and not redistributed around the room.

Monitoring. Checking the status of a pest infestation on a regular basis, often done with sticky traps. For example, you might monitor a cockroach infestation with special sticky traps for roaches and look at them every few days. You can then note numbers and whether you're catching immature roaches (see 39 for a sample *Pest Monitoring Log*). As an essential part of IPM, monitoring helps you know when to treat or whether you should treat at all.

Neurotoxic. Poisonous to the brain, nerves or nerve tissue.

Nonexempt pesticide. Sprays, foggers, and pellets or powder (if uncontained) are nonexempt pesticides. If these types of pesticides are used, centers must comply with the Healthy Schools Act by record keeping, providing written notification and postings.

Pest Management Professional (PMP). The people formerly known as exterminators. For several years they've gone by the title of Pest Control Operator or PCO, and many still use that name. More recently there's been a national trend to change the job title to Pest Management Professional.

Pesticide resistance. When pests survive exposure to a pesticide, they may pass this ability on to their offspring. Over time, pests often become resistant to a pesticide and different pesticides must be substituted to kill the pest.

Registered pesticide. Pesticide products are thoroughly reviewed by the federal government (U.S. EPA) before being sold or used. In California, pesticide products must go through a strict approval process with DPR, including review of the product's toxicology, how it behaves in the environment, its effectiveness against targeted pests, its hazards to nontarget organisms, fish and wildlife, and how it affects workers. Pesticides that pass this scientific, legal and administrative process are granted a license (that is, are registered), which permits their sale and use according to requirements set by DPR to protect human health and the environment.

Confused about the term exempt pesticide? See **Exempt pesticide** on page 29.

Risk. A combination of how toxic (poisonous) a substance is and one's exposure to it. (Risk = toxicity x exposure.) Exposure to a pesticide usually depends on its placement and how likely it is to cling to surfaces or evaporate.

Toxicity. The quality or degree of being poisonous. Your reaction to a toxic substance depends on the dose of the toxin, and your exposure and susceptibility (sensitivity). When a substance has **acute toxicity,** it causes harmful effects within a short period following a dose or exposure, usually 96 hours or less. Effects include sudden eye irritation, breathing problems, stomach pains and rashes. With **chronic toxicity,** the effects are delayed, possibly for years. Examples include birth defects, cancer and hormonal disruption. Allergic effects (see **Allergic reaction**) are sometimes considered a separate category, and they include asthma, lung irritation and rashes.

Trade name. A product name. There are many types of pesticides that manage specific pests. Each pesticide can have different trade, or product, names.

RESOURCES

California Childcare Health Program
www.ucsfchildcarehealth.org

- Fact Sheets for Families:

www.ucsfchildcarehealth.org/html/pandr/factsheetsmain.htm

- Health and Safety Notes:

www.ucsfchildcarehealth.org/html/pandr/hsnotesmain.htm

- Forms:

www.ucsfchildcarehealth.org/html/pandr/formsmain.htm

- Training Curricula:

www.ucsfchildcarehealth.org/html/pandr/trainingcurrmain.htm

AB 405 List of Pesticide Products Prohibited from Use in Schools
http://apps.cdpr.ca.gov/schoolipm/school_ipm_law/prohibited_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*
http://apps.cdpr.ca.gov/schoolipm/managing_pests/71_pest_prevention.cfm

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

Collaborative on Health and the Environment, *Endocrine Disrupting Chemicals*
http://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

EPA, *Integrated Pest Management for Schools: A How-to Manual*
www.epa.gov/oppooo01/ipm/schoolipm

eXtension: *Pest Management In and Around Structures*
www.extension.org/urban%20integrated%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.
http://schoolipm.ifas.ufl.edu/tp.htm

National Pesticide Information Center
http://npic.orst.edu

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

Our Water, Our World
www.ourwaterourworld.org

Pest Control Operators of California
www.pcoc.org

The Safer Pest Control Project
www.spcpweb.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

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APPENDICES

FORMS

- Sample IPM policy for ECE programs
- Sample letter explaining annual written notification requirement
- Individual Parent/staff application to be enrolled in the notification registry
- Sample letter to parents and staff re: Annual notification of planned pesticide use
- Sample 72 hour notice of specific pesticide application
- Sample warning signs to be displayed on property
- Sample Pest Monitoring Log

LIST OF TOOLKIT'S COMPLEMENTARY MATERIALS

- **CCHP Health and Safety Notes**
  The following *CCHP Health and Safety Notes* on individual pests can be found online at: **www.ucsfchildcarehealth.org/html/pandr/hsnotesmain.htm**
  - IPM for Ants
  - IPM for Cockroaches
  - IPM for Head Lice
  - IPM for Molds and Mildew
  - IPM for Mosquitoes
  - IPM for Rodents
  - Green Cleaning in Child Care
  - Sanitizing Safely and Effectively
  - IPM for Slugs and Snails
  - IPM for Spiders
  - IPM for Yellowjackets
- **Fact Sheets for Families**
  The following *CCHP Fact Sheets for Families* can be found online at: **www.ucsfchildcarehealth.org/html/pandr/factsheetsmain.htm**
  - IPM for Ants
  - IPM for Headlice
- **Posters**
  - IPM in Indoor Early Care and Education Environment
  - IPM in Outdoor Early Care and Education Environment
  - How to Read a Pesticide Label
  - Exempt and Nonexempt Pesticides
- **IPM Checklist for Early Care and Education Programs**

SAMPLE IPM POLICY FOR ECE PROGRAMS*

[NAME OF PROGRAM] [DATE]

Purpose

This policy supports the use of an integrated pest management (IPM) approach in our ECE Program to comply with the 2007 California Law that extends the Healthy Schools Act to child care centers.

Policy

[NAME OF PROGRAM], will implement and practice IPM to manage pests in the buildings and grounds to minimize the exposure of children and staff to pesticides. California state law encourages licensed ECE centers to practice IPM and requires centers to notify all parents and staff before pesticides are applied inside or outside the facility (see *Sample 72-Hour Notice of Specific Application on page 38*). In accordance with the Healthy Schools Act, the center will:

- **notify** parents and staff in writing every year
  - What pesticides are expected to be applied by center staff or a PMP in the upcoming year.
- **provide parents and staff with the website** address of the California Department of Pesticide Regulation's School IPM Program, **apps.cdpr.ca.gov/schoolipm/**
- **maintain a registry** of parents and staff who want to be notified, ahead of time, each time a pesticide is used.
- **notify parents of pesticide applications.** Parents and staff who enroll in the registry will be notified of individual pesticide applications on the program site at least 72 hours before the application, which will include the name of the pesticide, active ingredient(s) in the product, and date the pesticide is to be applied.
- **post warning signs.** Warning signs will be posted around each area where pesticides will be applied. These signs will be in place 24 hours before and stay in place 72 hours after pesticides are used. These signs will be large enough that they prevent any adult from accidentally entering areas where pesticides have been used. (See *Sample Warning Sign* on page 39.)
- **keep records** of which pesticides have been used at the program site for the past four years and the records will be available to anyone who asks to see them.

Pests

Our IPM policy is to actively work at reducing the presence of harmful pests in the facility. Pests can pose hazards to human health and the environment and damage property.

Pesticides

Our IPM policy is to minimize potential exposure of children, staff and visitors to pesticides in our environment. Exposure to pesticides can pose a health risk to children, staff, and others. Regularly scheduled applications of harmful pesticides are not permitted under this IPM policy.

Integrated Pest Management (IPM) Program

Our IPM program will include the following:

- Regular monitoring to identify pest problems.
- Preventive actions to reduce future pest problems.
- Preference for the use of nonchemical management practices to address pest problems.
- When necessary, use of least-hazardous pesticides after nonchemical management practices have failed.
- Training for staff and parents on IPM practices.
- Designating an IPM Coordinator for our site who will be responsible for overseeing the implementation of IPM practices.
- Use of the *CCHP Health and Safety Notes* and UC Davis IPM website (see *Resources*) for action plans on individual pests.
- Assess the ECE center's environment using the IPM Checklist annually.

Pest Management Professionals (PMP)

Any PMP hired to provide pest management or other services must comply with this IPM program and notification policy and be knowledgeable about IPM practices, the requirements of the Healthy Schools Act and use of IPM. PMPs must refrain from routine pesticide spraying, provide detailed service reports with each visit and give recommendations for pest prevention.

*This policy reflects the best practices on IPM as of April 2010.

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SAMPLE LETTER EXPLAINING ANNUAL WRITTEN NOTIFICATION REQUIREMENT

[DATE]

[ECE CENTER NAME] is required by the Healthy Schools Act to provide information to parents and guardians about nonexempt pesticides we expect to use in the coming year. This notification will include the pesticide name, active ingredient(s), and information on pesticides and their alternatives.

[ECE CENTER NAME] uses an integrated pest management (IPM) approach to managing ants, rodents and other pests. Our goal is to protect the health of our children and staff and the environment by reducing pesticide use. Prevention is critical to this approach, and we work hard to keep pests out of our building, and remove their access to food, water and shelter.

When pests enter our facility, our staff tries to use nonchemical and least-harmful methods to deal with them. Occasionally, we use pesticides to manage these pest problems. Pesticides are only used as a last resort. Certain pesticides, such as self-contained baits or traps, and gels or pastes used in cracks and crevices, are exempt from the requirements of the Healthy Schools Act. They are applied in ways that limit children's exposure and contain non-toxic or least harmful substances.

Parents and guardians may also request to be notified about individual pesticide applications throughout the year. Beginning [DATE], parents and guardians who choose to be included in this registry will be notified at least 3 days before nonexempt pesticides (such as sprays and foggers) are applied. If you would like to be notified every time a nonexempt pesticide is applied, please complete and return the attached form and return it to [NAME OF ECE CENTER IPM COORDINATOR, ADDRESS].

For more information on pesticides and integrated pest management see The Department of Pesticide Regulation's School Integrated Pest Management Website at: **apps.cdpr.ca.gov/schoolipm/childcare** or
The California Childcare Health Program's IPM Toolkit for Early Care and Education Programs at:
www.ucsfchildcarehealth.org/html/pandr/trainingcurrmain.htm

If you have any questions, please contact [NAME OF ECE CENTER IPM COORDINATOR] at [PHONE NUMBER].

Sincerely,

[POSITION AT ECE CENTER]

[NAME OF ECE CENTER]

[CONTACT PHONE NUMBER AND EMAIL]

PARENT/STAFF APPLICATION TO BE ENROLLED IN THE NOTIFICATION REGISTRY

REQUEST BY PARENT TO SUBSCRIBE TO REGISTRY IN ORDER TO RECEIVE NOTIFICATION OF INDIVIDUAL PESTICIDE APPLICATION

[NAME OF ECE CENTER]

I understand that, upon request, the child care center listed above is required to supply information about individual pesticide applications at least 72 hours before application. I would like to be notified before each pesticide application at the site listed above.

I would prefer to be contacted by (circle one): **U.S. Mail** **Email** **Phone**

Please print neatly:

Date:_____

Child's name:_____

Name of Parent/Guardian:_____

Address:_____

Day Phone: ( )_____**Evening Phone: ( )**_____

Email:_____

Return to:_____

[NAME OF ECE CENTER]

[IPM COORDINATOR]

[ADDRESS]

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SAMPLE LETTER: ANNUAL NOTIFICATION OF PLANNED PESTICIDE USE

[DATE]

Dear Parent or Guardian of [INSERT CHILD'S NAME],

The Healthy Schools Act of 2000, as amended in 2007, requires all California child care centers to notify parents and guardians of nonexempt pesticides that they expect will be applied during the upcoming year. We want to notify you that the following pesticides will be used at your child's center this year:

Name of Pesticide Product	Active Ingredient(s)
1	
2	
3	
4	
5	
6	

You can find more information regarding these pesticides and pesticide use reduction at DPR's Child Care IPM—Growing Up Green website at: **www.cdpr.ca.gov/schoolipm/childcare**

If you have any questions, please contact [ECE CENTER IPM COORDINATOR,_____] at [PHONE_____].

Sincerely,

[POSITION AT ECE CENTER]

[NAME OF ECE CENTER]

[CONTACT PHONE NUMBER AND EMAIL]

SAMPLE 72 HOUR NOTICE OF SPECIFIC PESTICIDE APPLICATION

[DATE]

Dear Parent or Guardian of [INSERT CHILD'S NAME],

At your request, we are writing to notify you about a specific pesticide application(s) at your child's child care center, _____. Please see below for detailed information. If you would like to see the Material Safety Data Sheet for this chemical, it is available at [ECE PROGRAM LOCATION]. If you have any questions, please contact [NAME OF ECE PROGRAM, IPM COORDINATOR] at [PHONE].

Sincerely,

[POSITION AT ECE CENTER]

[NAME OF ECE CENTER]

[CONTACT PHONE NUMBER AND EMAIL]

NOTICE OF PESTICIDE APPLICATION

Date Form Completed: _____

Name of Child Care Center: _____

Location of Planned Pesticide Application: _____

Building Name/Number: _____

Playground or Grounds Area: _____

Name of Pesticide Product to Be Applied: _____

Active Ingredient(s): _____

Planned Date/Time of Pesticide Application: _____

For more information regarding these pesticides and pesticide use reduction, visit the Department of Pesticide Regulation's School Integrated Pest Management (IPM) website at: **apps.cdpr.ca.gov/schoolipm.**

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WARNING

Pesticide Treated Area

Name of Pesticide Product(s)	Manufacturer & Registration Number	Application Date	Treated Areas & Reason Why

Child Care Center Name: _____

For More Information Ask For: _____
NAME TITLE

Do not play on the treated area. Wash your hands and exposed skin if you touch the treated area.

SAMPLE PEST MONITORING LOG

DATE AND TIME	PEST SEEN AND NUMBER	PERSON WHO SAW PEST	LOCATION (ROOM #)	RECOMMENDED ACTIONS	DATE ACTIONS COMPLETED

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California Childcare Health Program, University of California, San Francisco School of Nursing
www.ucsfchildcarehealth.org

INTEGRATED PEST MANAGEMENT:

A CURRICULUM FOR EARLY CARE AND EDUCATION PROGRAMS

California Childcare Health Program is a program of the University of California, San Francisco School of Nursing.
www.ucsfchildcarehealth.org