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

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WHAT IS INTEGRATED PEST MANAGEMENT (IPM)?

Integrated pest management, or IPM for short, is an approach to managing pests that focuses on preventing infestations, monitoring pests, reducing the use of harmful pesticides, and minimizing health risks to people and the environment. An IPM program prevents pest problems by getting rid of the food, water, and shelter that pests need to survive. When you need to manage pests, you use a combination of least hazardous practices such as pest-proofing your house or fixing leaky faucets. IPM works because combined (or integrated) approaches are more effective than a single approach, such as spraying pesticides.

Why use IPM?

IPM targets the causes of the problem rather than simply killing pests.

IPM:

- Is more effective at getting rid of pests than spraying.
- Prevents pest invasions in the future.
- Can save time, money, and energy.
- Reduces short and long-term health problems from pests and pesticide use.

Where is IPM practiced?

IPM can be used to manage all kinds of pests anywhere, such as in urban, agricultural, and wildland or natural areas. IPM is especially important in family child care homes, child care centers, and schools. Family child care providers can use IPM whether they own or rent a house, apartment, condo or other type of housing unit.

Steps to successful IPM:

❶ PREVENT PESTS

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

❷ INSPECT YOUR HOME

- Carefully look around your indoor and outdoor areas for signs of pests, such as droppings, damage by pests, or the pests themselves.

❸ IDENTIFY PESTS

- Identify which pests are present in and around your home. This will help you determine the most effective way to deal with the pests. For example, do you have Norway rats or roof rats? You will deal with them differently.

(See Integrated Pest Management: Rats and Mice handout*).*

- Learn the signs of the pests' presence such as droppings or damage, even when pests are out of sight.
- Learn about pest habits and traits. What are the pests' food, water, and shelter needs? What is the pests' life cycle?

❹ MONITOR FOR PESTS

Look for signs of pests around your home and yard to:

- Identify pest problems early.
- Decide if and when you need to manage pests.
- Determine if your management plan is working.

❺ MANAGE PEST PROBLEMS

- If pests become a problem, you'll need to do something to manage or get rid of them.
- Use materials and practices that are effective, safe, and reduce pesticide exposures.
- You can manage pests without spraying any pesticides.
- If you must use pesticides, choose the least hazardous pesticides such as bait stations or gels. Baits and gels are pesticides mixed with materials that attract pests. Because these pesticides are hidden and don't evaporate, people are not exposed to them. Combine them with preventive practices so pests won't return.

PESTS

What is a pest?

A pest is any living organism that:

- Causes visual damage, structural damage, or discomfort.
- Spreads disease.
- Is a nuisance or simply exists where it is not wanted.

Most insects are not pests. Make sure something is really a pest before you remove it!

Why are pests a health hazard for young children?

Some pests are simply annoying, but others can cause serious harm to children by triggering asthma attacks, spreading diseases, or contaminating food and surfaces with urine, feces (droppings), or stray hairs.

What do you need to know about pests?

The health concerns for common pests are listed below. For more details and for information on how to manage these pests, see the corresponding *IPM Handout for Family Child Care Homes* on individual pests.

PEST IMAGE	PEST	HEALTH CONCERNS
	Ants	The most common ant in California is the Argentine ant. Most ants in California are not a health risk and they even help control other pests. Harvester ants and fire ants are species that bite or sting in California. Fortunately, they live outdoors. The most aggressive stinging ant is the red imported fire ant, mostly found in southern California.
	Bed Bugs	Bed bugs don't spread disease, but their bites can cause swelling, redness, and itching (although some people don't react at all). Bites can be found singly or in groups and can get infected from frequent scratching.
	Cockroaches	There are several species of cockroaches. Some live indoors and others live outdoors. German cockroaches are the most common indoor cockroach in California. Saliva, shed skins, and droppings from roaches can trigger asthma attacks, especially in young children. Some cockroaches also spread bacteria as they crawl through sewers and then over food preparation and dining areas.
	Fleas	Fleas on cats or dogs in California are most likely cat fleas. Flea bites may appear as a small red spot surrounded by a red halo, usually without too much swelling. Cat fleas can serve as hosts of tapeworms. Cats, dogs, and occasionally children, can get tapeworms if they swallow adult fleas that contain a cyst of the tapeworm. Cat fleas can spread cat flea rickettsiosis, a flu-like illness, as well.
	Flies	Of the thousands of species of flies, only a few are common pests in and around the home, including the house fly, fruit fly, and filth fly. Flies breed in animal waste and rotting materials and can spread disease when they walk or feed on people's food. Some flies associated with livestock, such as stable flies, also bite humans.
	Gophers	Pocket gophers can damage lawns, plants, plastic water lines, and sprinkler systems. The openings of their burrows can create a tripping hazard.

PEST IMAGE	PEST	HEALTH CONCERNS
	Ground Squirrels	Ground squirrels can spread diseases harmful to humans. A major concern is bubonic plague, which can be transmitted by fleas that live on infected squirrels. If you find unusual numbers of dead squirrels or other rodents, notify public health officials. Do not handle dead squirrels.
	Head Lice	Head lice are bloodsucking insects that are commonly spread among young children. Head lice don't transmit infectious diseases, but they're bothersome and cause itching.
	Mosquitoes	Mosquito bites can cause allergic reactions, pain, irritation, redness, and itching. Children who scratch their bites with dirty fingernails may also develop infections. In some areas, mosquitoes spread serious diseases such as West Nile virus and Western equine encephalomyelitis virus. These diseases are rare but can be serious in young children and can lead to death.
	Pinworms	Pinworms are tiny, irritating worms that commonly infect children and live in the lower intestine. Although not dangerous, pinworms are contagious and require treatment by a health care provider.
	Rats and Mice	The most common urban rodents are the house mouse, roof rat, and Norway rat. Rats and mice can cause direct damage by gnawing, urinating, defecating, and nesting. Because they gnaw on hard objects such as plastic electrical boxes and electrical wires, they can cause fires. Rats bite more than 4,000 people a year, mostly young children. The urine, droppings, saliva, and dead skin cells of rats and mice may also cause asthma attacks. House mice may spread diseases or cause salmonellosis, a form of food poisoning.
	Scabies	Scabies is a skin infection caused by mites, which are tiny relatives of spiders that burrow into the skin and cause an itchy, allergic rash. Scabies is contagious and requires treatment by a health care provider.
	Slugs and Snails	Snails and slugs are harmless to humans, but they can be pests in the garden.
	Spiders	Most spiders are harmless and are beneficial predators. They do not transmit diseases. Only a few have jaws strong enough to bite through skin, and even fewer, such as the black widow, can inject toxin that may cause illness. Brown recluse spiders do not live in California.
	Yellowjackets	Yellowjackets – sometimes called meat bees, although they aren't bees – can be persistent and aggressive when searching for food in late summer and fall. They're more likely to sting when swatted or if their nest is threatened. They can sting repeatedly, unlike honey bees, which sting only once.

PESTICIDES

What is a pesticide?

A pesticide is a poison that kills, repels, or prevents living things such as weeds, insects, rodents, germs, or anything that you do not want to live in your home or yard. Roach and ant spray, flea bombs, rat poison, weed killer, and mothballs are all examples of pesticides. Most pesticides are potentially harmful to human health and should be used as a last resort. However, some forms of pesticides, such as baits and gels, are safer than sprays and foggers because they are used in protected places where children aren't exposed to them. ***Pesticide sprays and foggers are especially harmful and should be avoided in child care programs.***

Where are pesticides used?

Pesticides are used inside homes and outside on lawns and gardens. Pesticides used indoors, or tracked inside on shoes, can remain for weeks, months, or even years inside because pesticides settle into carpets and collect in dust.

What types of pesticides are there?

There are several types of pesticides sold under different trade names to kill specific pests. For example, an herbicide, which kills weeds, is a pesticide, even when combined with fertilizers (weed and feed products). Sanitizers and disinfectants are also considered pesticides because they kill bacteria and viruses. For more on pesticides and the type of pests they kill, see the table at the end of the *Glossary.*

Why are pesticides a health hazard for young children?

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

- Eat, drink, and breathe more per pound of body weight, compared with adults.
- Have more skin surface relative to size and their skin is more absorbent.
- Spend most of their time indoors.
- Have frequent contact with the ground or floor where pesticide residues settle.
- Have a still developing brain and some pesticides can interfere with a child's developing brain.

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

- **How poisonous** or toxic 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.
- **How a person is exposed** to the pesticide. Pesticides can be swallowed, breathed in through the lungs, or absorbed through the skin.

Exposure to some pesticides can cause immediate poisoning or health effects. Exposure to pesticides over a long time may cause illness or affect development. ***The best way to avoid these health hazards is to avoid using pesticides.***

What are the acute and chronic health effects of pesticides?

ACUTE HEALTH EFFECTS (Short-Term 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 CHRONIC HEALTH EFFECTS (Long-Term Exposure)

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

OTHER HAZARDS OF USING PESTICIDES

- Pesticides are poisonous not only to pests, but to people, animals, and the environment. Pesticides can get into the soil and drain into streams, rivers, and lakes that provide drinking water to humans and animals.
- Pesticides can 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 beneficial insects and mites that keep pests in check.

How do I store pesticides?

All pesticides, including baits, organic pesticides, and disinfectants must be stored and disposed of appropriately:

- Store all pesticides in locked cabinets out of children's reach.
- Keep pesticides in their original containers with complete label information. Do not pour leftover pesticides into your own bottles or jars!
- Try not to purchase more than you'll use in a short time to avoid problems with storage and disposal.
- Dispose of leftover pesticides at your local household hazardous waste disposal site.
- If you hire a pest management professional (PMP), he or she will store or dispose of any leftover pesticides.

How do I choose a safer pesticide?

Some pesticides have less risk of exposure than others do. Pesticides that are contained have lower risk than pesticides that are sprayed.

Use pesticides registered for use by the U.S. EPA and DPR

Except for a few products that are made from food-grade materials, all pesticides must be registered by the U.S. Environmental Protection Agency (EPA) and the California Department of Pesticide Regulation (DPR) to be sold or used in California.

Be sure you only use registered products that have a U.S. EPA registration number on the label.

Always avoid illegal pesticides which are pesticide products that are sold or distributed without a valid U.S. EPA registration (other than certain minimum risk products that are exempt from registration). Illegal pesticides may be sold on the street or in small neighborhood stores.

Illegal pesticides:

- Are often very toxic
- Have not undergone the strict safety testing required for U.S. EPA-approved (registered) pesticides.
- Can be counterfeit or copy-cats made to look like U.S. EPA-approved products.
- Often do not have important safety information, such as warnings about keeping children and pets away from the product.

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

- **Illegal naphthalene moth repellents,** or mothballs, are white or colorful balls that look like candy or toys to children.
- **Illegal insecticide chalk,** also called Miraculous Chalk or Chinese Chalk, is usually imported illegally from China and looks like simple blackboard chalk.

- **Tres Pasitos** is a colorful pesticide used to kill rats and is often illegally imported from Mexico and other Latin American countries.

Use safer sanitizers and disinfectants

Use safer products to protect against bacteria and viruses. Sanitizing and disinfecting products that kill bacteria and viruses are antimicrobial pesticides. All products used to sanitize or disinfect must be registered by the U.S. EPA. For more information on choosing safer sanitizing and disinfecting products, see *Green Cleaning, Sanitizing, and Disinfecting* handout.

Choose the least-risk pesticide

LESS RISK OF EXPOSURE	MODERATE RISK	HIGHER RISK OF EXPOSURE
▸ Baits, gels, and traps placed out of reach of children ▸ Safer U.S. EPA-registered sanitizers and disinfectants	▸ Desiccating or drying dusts, such as diatomaceous earth or boric acid, applied out of reach of children ▸ Insect growth regulators ▸ Bleach poured with a funnel	▸ Sprays and foggers ▸ Illegal pesticides such as mothballs, insecticidal chalk, and Tres Pasitos ▸ High concentration bleach and other disinfectants

What about an organic, green, or natural product?

Use caution when choosing organic, green, or natural products. Pesticide products may be advertised as such to make them seem safer. Only *organic* has an official definition. All pesticides, including organic or so-called green pesticides, should only be used as a last resort.

Organic pesticides:

- Must be derived from natural sources and cannot be synthesized using chemical reactions.
- Can still have adverse effects on people, animals, and the environment.
- Can cause respiratory problems if used in areas with poor ventilation.

How do I learn more about the safety of pesticides?

- If you decide to use a pesticide, obtain a safety data sheet (SDS) for the product. These documents contain information on potential hazards and safety precautions for a product. SDS forms are available from pesticide suppliers or found through an internet search.
- You can also look up the pesticide's health effects on the user-friendly web site of the National Pesticide Information Center (NPIC) npic.orst.edu where you can search by the active ingredient of the pesticide, which you can find on the product label.

STEPS TO INTEGRATED PEST MANAGEMENT (IPM)

❶ PREVENTION

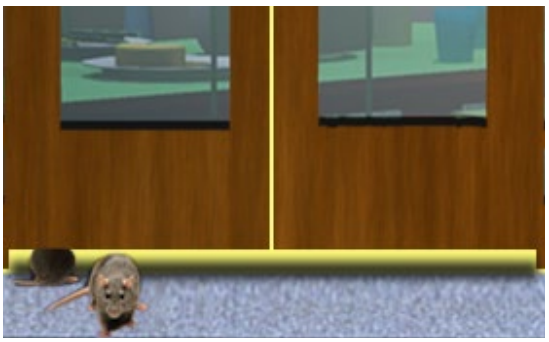
Keep pests out

Close off entryways so pests cannot get into your home. Keeping pests out is always the best way to manage them.

How to keep pests out:

- Make sure window screens and panes are free of damage.
- Seal cracks and crevices around the bases of cabinets and baseboards.
- Screen vents or other large openings with ≤ ¼-inch hardware cloth.
- Use wire mesh in combination with sealant to fill bigger holes where pipes go through the wall, ceiling, or floor so that pests cannot re-enter by chewing through the sealant.

PROBLEM

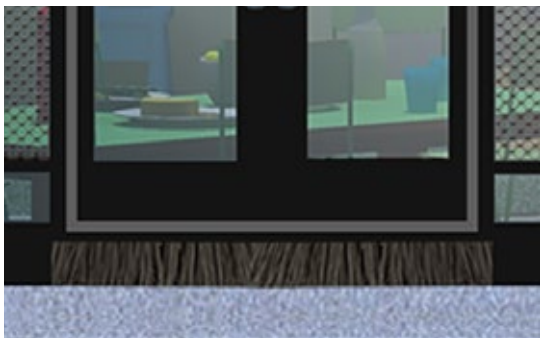


Space between the door and floor invites pests like cockroaches, mice, and rats to visit.

Pests can crawl in through tiny gaps, such as around pipes.

Remove food scraps. grease, and sugar.

SOLUTION



Install door sweeps on exterior doors.

Seal gaps around pipes in interior and exterior walls.

Store food in sealed containers.

Prevention (continued)

Remove pests' food, water, and shelter
Without food, water, and a place to live in your home, pests will go elsewhere to survive.

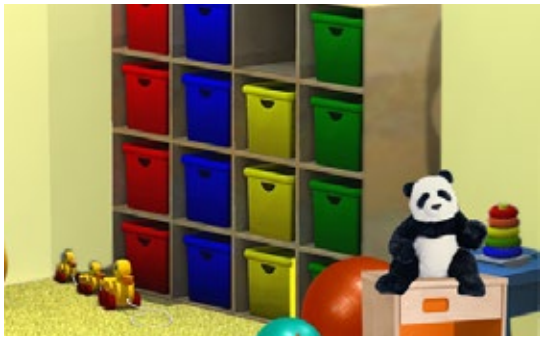
How to remove pests' food, water, and shelter:

- Drain standing water, unclog sinks, and fix leaking faucets.
- Avoid stacks of papers and cardboard.
- Take out garbage and recyclables regularly.
- Indoor garbage cans should have a tight-fitting lid and a liner.
- Clean and dry off countertops, shelves, cabinets, and drawers regularly.
- Remove food scraps, grease, and sugar from stoves, floors, and molding.
- Sweep, vacuum, dust, and remove cobwebs regularly. Use a flashlight to check for cobwebs under furniture and appliances.

PROBLEM

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

SOLUTION



Use rigid containers with tight-fitting lids instead of cardboard boxes.

❷ INSPECTION

After you make sure you are preventing pests as best as you can, inspect your home's indoor and outdoor areas.

Use the *IPM Checklist* to identify where you may find:

- Pests.
- Signs of pests and their damage.
- Conditions that might attract pests regularly.

❸ IDENTIFICATION

Identify exactly what kind of pest you have. If you don't know which pests are present, you may use the wrong management approach, choose the wrong treatment, treat too often, or treat at the wrong time.

Once you know what kind of pest it is, learn a bit about how they live. How do the pests get inside? Where do the pests like to hide? What do the pests like to eat? It is also helpful to learn the pests' life cycle, especially for pests that reproduce quickly.

To understand pests' lifecycle, food and shelter, use the *Family Child Care Home Handouts* or the *University of California Statewide Integrated Pest Management Program Pest Notes:* www.ipm.ucdavis.edu/PDF/PESTNOTES/index.html.

❹ MONITORING

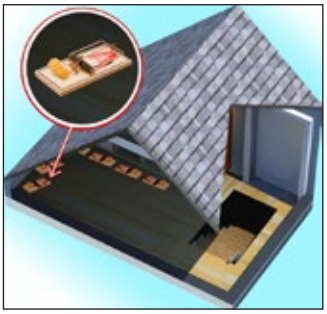
Use observation and pest-specific traps to monitor so that you can find pests before they become a problem. For example, if you had a cockroach infestation, you would place sticky traps in strategic places and note where you caught them. You would continue to monitor their presence and absence on a regular basis until they were no longer a problem. When monitoring, ask:

- Are there any pests or damage?
- Are there sources of food, water, and shelter that might attract pests?
- Where are pests living and breeding?
- Is treatment necessary? If it is, when and what needs to be done?
- Are current actions working?

Place baits or traps where pests are present and create a schedule to check and replace them. Use the *IPM Checklist* to keep track of when you do inspections and what pest evidence you find.

❺ MANAGEMENT

If pests become a problem, you need to get rid of them without exposing children and staff to pesticides. Choose practices that are long-term, easy to carry out safely, and cost-effective. Make sure the practice is matched to the particular pest and its lifecycle.



1. Manage pests with non-pesticide practices:

- Keep pests out and remove their food, water, and shelter (see *IPM Step 1: Prevention* on page 7).
- Wash the area with plain soap and water.
- Vacuum with a high-efficiency particulate air (HEPA) or HEPA-equivalent filter.
- Use non-pesticide traps. Always place out of children's reach. Non-pesticide traps include:
  - ▷ Sticky traps for cockroaches and other crawling insects.
  - ▷ Snap traps or electrocution devices for mice and rats.
  - ▷ Fly paper and ultraviolet light traps for flies.
  - ▷ Cone traps for yellowjackets or flies.

2. If non-pesticide practices don't work well enough, choose the least hazardous pesticides. Use pesticides only where necessary and combine them with preventive practices so pests won't come back. Least hazardous pesticides are contained in a bait station or applied in cracks or gaps rather than sprayed. They should be effective against the target pest and have little or no impact on other living things, especially humans and the pest's predators.

Examples of least hazardous pesticides registered in California are:

- **Baits and Gels** are formulations of pesticides mixed with pest food or other materials that attract pests. Baits are a key tool for managing ants and cockroaches. Baits are available in prepackaged stations or in refillable bait stations. Gels are squeezed into cracks and crevices using a syringe-type applicator.
- **Desiccating dusts** are pesticide powders that kill insects by dehydration. Apply these behind wall voids, inside light switches, and other hard-to-reach places.
- **Pheromones** (insect sex attractant) and other attractants prevent mating and are incorporated into sticky traps for pests such as pantry moths.
- **Repellents** send pests away temporarily.

3. Department of Pesticide Regulation (DPR) School "HELPR" Web Page
This is a guide to choosing the best pest management action, depending on the situation. This guide can also help you choose products that contain less harmful pesticides. You can find it online at: apps.cdpr.ca.gov/schoolipm/health_issues/main.cfm?#usehelper.

4. Hire a pest management professional (PMP)
A pest management professional (PMP) can help you implement an effective IPM program.

Management (continued)

HIRING A PMP WITH IPM TRAINING

1. All pest management professionals (PMPs) must be licensed by the State of California. You can verify whether a company or an individual has a license issued by the Structural Pest Control Board at www.pestboard.ca.gov.
2. PMPs should be trained in IPM for schools and child care. The UC Statewide IPM Program offers a free online course for PMPs titled *Providing IPM Services in Schools and Child Care Settings.* Ask your PMP to take the course, which can be found here: www.ipm.ucanr.edu/training/school-and-child-care-ipm.html.
3. Consider hiring a PMP with a third party certification, such as EcoWise, GreenPro, or Green Shield. See the *Resources* handout for web sites and information.

DON'T BE AFRAID TO ASK A PMP:

- Specifically if they practice IPM.
- If they include inspection, monitoring, and written recommendations on prevention.
- Whether they routinely use baits, gels, and traps rather than sprays.
- If they have worked in family child care programs, child care centers, or schools.
- For references from other clients.

EASY WAYS TO TELL IF YOUR PMP IS PRACTICING IPM CORRECTLY

He or she:

- Is responsive and communicative about IPM.
- Carries a flashlight.
- Uses traps and checks them regularly.
- Asks where you have seen pests.
- Includes recommendations for preventive practices.

WHAT FAMILY CHILD CARE PROVIDERS CAN EXPECT FROM PMPS:

- Know the IPM policy, and develop an action plan using IPM principles.
- Manage pests as well as pesticides.
- Recognize that family child care homes are unique and usually care for infants, the most vulnerable children.
- Communicate what is done, seen, and recommended on a regular basis.
- Educate family child care providers on pest management options.
- Be dependable, trustworthy, and professional.

WHAT PMPS CAN EXPECT FROM FAMILY CHILD CARE PROVIDERS:

- Learn about IPM and show active interest and participation. Remember IPM is a cooperative effort.
- Look for more than the lowest bid in hiring a PMP.
- Recognize that not all PMPs can do IPM. Check licensing and IPM certifications, references, and experience.
- Help educate your staff, teachers, and families about the IPM program.
- Log pest sightings, and act on PMP recommendations.
- Understand that inspecting and monitoring is pest management. PMPs practicing IPM will only spray pesticides as a last resort.

DPR = Department of Pesticide Regulation

HSA = Healthy Schools Act

IPM = Integrated Pest Management

NPIC = National Pesticide Information Center

PMP = Pest Management Professional

SDS = Safety Data Sheet (formerly MSDS, or Material Safety Data Sheet)

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.

ACUTE HEALTH EFFECTS. 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.

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.

ANTIMICROBIAL PESTICIDE. A pesticide used to kill microbial pests such as viruses, bacteria, algae, and protozoa. Antimicrobials are used to disinfect or sanitize.

BENEFICIAL INSECT. An insect that provides benefits to humans—for example, an insect that reduces pest numbers by feeding on them (otherwise known as a predator). A lady beetle reduces pests by feeding on them. Honey bees are also beneficial because they provide honey and help pollinate foods that we eat.

CHRONIC HEALTH EFFECTS. Long-term health effects that are delayed, possibly for years. Examples include birth defects, cancer, and hormonal disruption.

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

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 centers. Family child care homes are exempt.

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.

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 OR HEPA-EQUIVALENT. A vacuum cleaner with a special filter that can remove very small particles from floors, window sills, and carpets. To qualify as HEPA by U.S. government standards, an air filter must remove from the air that passes through, 99.97% of particles that have a size of 0.3 µm.

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 immature so very few of them develop into adults. Understanding the life cycle of a pest will help you develop an effective management strategy.

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 cockroaches and look at them every few days. You can then note numbers and whether you're catching immature roaches. 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.

ORGANIC PESTICIDE. Pesticides derived from natural sources, such as plants, animals, microorganisms, or minerals and not synthesized using chemical reactions.

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.

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.

SAFETY DATA SHEET (SDS). A form, formerly known as a Material Safety Data Sheet (MSDS), 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 SDS 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 SDS for any potentially harmful substance handled in the workplace must be available to employees.

WEED. A wild plant growing where it is not wanted and in competition with cultivated plants.

TYPES OF PESTICIDE	PURPOSE
Algaecides	Control algae in swimming pools, water tanks, and cooling towers.
Antimicrobials	Kill microorganisms (such as bacteria, fungi, and viruses). They include sanitizers, disinfectants, and sterilants.
Attractants	Traps containing a pesticide and food to lure insects or rodents inside.
Baits	Pesticides mixed with materials that attract pests looking for food. They are a key tool for managing ants and cockroaches.
Borates	Used in bait stations for ants and cockroaches.
Desiccating Dusts	Powders that kill insects by drying out their waxy coating, causing them to die of dehydration.
Disinfectants	Kill 99.999% of disease-producing microorganisms (bacteria and viruses) on hard, non-porous surfaces such as in the kitchen and bathroom.
Fumigants	Produce gas or vapor intended to destroy pests in the house or in the ground.
Fungicides	Kill fungi (including blights, mildews, molds, and rusts).
Gels	Insecticides mixed with materials that attract pests (another form of baits). Gels are squeezed into cracks and crevices using a syringe type applicator.
Herbicides	Kill weeds.
Insect Growth Regulators	Interfere with insect growth.
Insecticides	Kill insects and other arthropods.
Miticides	Kill mites that feed on plants and animals.
Microbial Pesticides	Microorganisms that kill or inhibit pests, including insects or other microorganisms. Sometimes microorganisms get rid of pests simply by growing larger in numbers, using up the pests' food supply, and invading the pests' environment.
Molluscicides	Kill snails and slugs.
Nematicides	Kill nematodes (microscopic, worm-like organisms that feed on plant roots).
Pesticidal Soaps & Oils	Act by suffocating insects, usually those attacking plant surfaces. These come in liquid and spray forms and would not commonly be used on indoor pests.
Pheromones	Biochemicals used to disrupt the mating behavior of insects.
Repellents	Repel pests, including insects (such as mosquitoes) and birds.
Rodenticides	Kill mice, rats, and other rodents.
Sanitizers	Reduce, but do not necessarily eliminate, microorganisms (bacteria and viruses) to levels considered safe as determined by public health codes or regulations.

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INTEGRATED PEST MANAGEMENT
CHECKLIST FOR FAMILY CHILD CARE HOMES

California Childcare Health Program, University of California, San Francisco School of Nursing • cchp.ucsf.edu

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INTEGRATED PEST MANAGEMENT (IPM)
HOW TO USE THE IPM CHECKLIST

The ***Integrated Pest Management Checklist for Family Child Care Homes (referred to as the IPM Checklist)*** will help you inspect your family child care home and yard so you can find pests, identify where pests enter, and where pests find food, water, and shelter.

Before you use the IPM Checklist, read the two sections below, ***Instructions*** and ***Helpful Tools for an IPM Inspection.*** The page ***Integrated Pest Management (IPM) How to Find Evidence of Pests*** will aid you in identifying pests and noting them on the IPM Checklist.

You'll notice that the IPM Checklist is divided into indoor and outdoor areas, where you'll inspect different locations. The ***Integrated Pest Management (IPM) Checklist Items Explained*** section provides details on the rationale for the items and instructions on how to complete them. The ***Integrated Pest Management (IPM) Action Plan Worksheet*** page can be used to identify the things you can change or improve easily versus structural problems, that may require more time or money. Oftentimes, making repairs seem costly, yet you may actually be saving money by preventing pest problems that destroy property and cause damage and harm.

Instructions

1. Collect the helpful tools to complete the IPM Checklist (see the box to the right).
2. Complete the IPM Checklist.
   - Check ***Yes, No,*** or ***N/A*** (not applicable) beside each item. ***Yes*** means that you don't have to take further action. ***No*** means you should follow the suggestion–for example, you need to buy an outdoor garbage bin or indoor garbage can with a tight-fitting lid.
   - Do not check ***Yes*** unless the item applies in every instance. For example, item #10 states "Window screens have no holes or gaps." But, if one window doesn't have a screen, you should check ***No*** even if all other windows have screens. In the ***Comments*** section (the line after each item), record where the window without the screen is located.
   - The ***Comments*** section can include follow-up notes, things that need to be fixed or changed, and things to be discussed with your staff or other members of the household.
   - There is a ***Pests*** item at the end of each section. Check the pest item if you see ***evidence of the pest, damage, or the pest itself.*** Note the number of pests for each type of pest seen.
3. Review the completed IPM Checklist, and refer to ***Integrated Pest Management (IPM) Checklist Items Explained*** if you have questions about any of the items.
4. Complete the ***Integrated Pest Management (IPM) Action Plan Worksheet*** as a guide to helping you make the changes needed in your home.

Helpful Tools for an IPM Inspection

1. **Map of the house or floor plan** to mark areas that may need follow-up management or regular inspection.
2. **Standard flashlight and an ultraviolet (UV) flashlight** (good for detecting rodent urine stains that light up under UV light).

3. **Knife or flat spatula** to poke into narrow cracks and crevices to reveal where pests like to hide and where they seek shelter and food. If a spatula fits in a crack in concrete, baseboards, or wallboards, pests can hide there.
4. **Hand lens** or magnifying glass for pest identification.
5. **Vial** for collecting pests you want to identify (for example, if you want to know exactly what kind of cockroach you found in the bathroom).
6. **Telescoping mirror** that lengthens from around 6 to 36 inches. These are helpful for seeing behind or under hard-to-reach places.

7. **Measuring tape** of at least 6 feet length.
8. **Quick Tips** at www.ipm.ucdavis.edu/QT/index.html offers quick advice related to pests and environment-friendly gardening practices.

INTEGRATED PEST MANAGEMENT (IPM)
HOW TO FIND EVIDENCE OF PESTS

- **Ants:** Look for large trails of ants or just a few of them. Look for ant trails around windows, electrical or plumbing lines, and home edges. Look for holes or cracks at the base of your home or along the walls that provide entry points to your home. Straggling ants are usually scouts randomly searching for food or nesting sites. When you spot ant trails, try to follow the ants to where they're entering the home and, if possible, to the nest.
- **Cockroaches:** Look for signs of cockroaches such as droppings (dark spots or smears), cast skins, and dead roaches. Cockroaches like warm (70°– 75°F), damp areas close to food and waste found in kitchens, bathrooms, and food preparation and storage areas. Place traps in several spots and check traps often. You'll need to name the cockroach species you have to treat effectively.
- **Fleas:** If you think you have a flea problem indoors, put on some light-colored knee socks and walk around. Fleas will hop on to the socks. Then, use a vacuum cleaner with a HEPA filter and vacuum the area 2–3 times a day until the fleas are gone.
- **Flies:** Look for house flies around windows and maggots in rotting food and garbage.
- **Mold:** Look for mold in indoor places that smell musty and in areas that are often wet or damp, such as bathrooms, laundry, utility rooms, and basements. Damp odors should be noted because they suggest that water may be present and mold growth is likely. Also, note symptoms of allergy like sneezing, runny nose, watery eyes, coughing, or wheezing, Mold comes in many colors, not just black, and does not need light to grow. It can grow in dark areas and on hidden surfaces, such as the backside of drywall, wallpaper and paneling, the top side of ceiling tiles, and the underside of carpets and pads.
- **Mosquitoes:** Where is there standing water? Water tends to accumulate in blocked gutters, buckets, and toys left outside. Look for mosquitoes resting on walls or flying near people.
- **Rats and mice:** Look at garbage bins and cans for droppings, chewed spots, or holes. Look at packaged food, doors, windows, baseboards, and electrical cords for chewed spots, tooth marks, woodchips, or shavings. Check near walls, food supplies, and pathways for droppings. Old droppings are hard, gray, and rigid. Fresh droppings are dark and soft, possibly a sign of a current rat/mouse problem. Check for freshly dug earth near holes around foundations and walls. Check for rub marks along walls. Rub marks are dark smears where dirt and oil from rodent fur mark pipes, beams, hallways, edges of stairs, or around gnawed holes. Fine, shredded paper or similar materials are common nest-building materials.
- **Snails and slugs:** Look for irregular holes with smooth edges in leaves and flowers. Look for their silvery trails to confirm slugs or snails caused the damage and no other garden pests.
- **Spiders:** Look for cobwebs and spiders in dark areas of your home. Spiders are usually harmless. If you find a black widow spider, you can swat it with a rolled-up piece of paper and then step on it.
- **Yellowjackets:** Look for yellowjackets. Their nests can be found in holes in the ground outside and holes in the walls or ceilings inside your home.
- **Weeds:** Look for lawn weeds such as clover, that attracts honey bees. The bees could pose a problem if children play on the lawn.
- **Other:** Look for signs of other pests, often in the form of droppings (for example, raccoons, gophers, pigeons, and squirrels).

INTEGRATED PEST MANAGEMENT (IPM)
CHECKLIST FOR FAMILY CHILD CARE HOMES

PERSON COMPLETING FORM DATE

Outdoor Areas

Garbage, Recycling, and Compost

Comments

1. Bins have tight-fitting lids without cracks, holes, or rust. YES NO N/A
2. Bins are located away from doors. YES NO N/A
3. Bins are located on hard, cleanable surfaces such as asphalt or concrete. YES NO N/A
4. Area around bins has no spills or garbage. YES NO N/A
5. All recyclables are empty and rinsed. YES NO N/A

Pests (evidence of the pest, damage, or the pest itself)

☐ ANTS ☐ COCKROACHES ☐ FLEAS ☐ FLIES ☐ SPIDERS ☐ MOSQUITOES
☐ YELLOWJACKETS ☐ RATS/MICE ☐ SNAILS/SLUGS ☐ OTHER (SPECIFY) _____

Buildings: Structure, Landscaping, and Play Area

6. Walls, foundation, and electrical boxes have no gaps, holes, or cracks. YES NO N/A
7. Foundation comes up at least 12 inches above the soil. YES NO N/A
8. Window trim has no cracks or gaps. YES NO N/A
9. Windows close completely. YES NO N/A
10. Window screens have no holes or gaps. YES NO N/A
11. Vents and other large openings are screened with ¼-inch hardware cloth. YES NO N/A
12. Doors that open to the outside have sweeps or weather-stripping. YES NO N/A
13. Plants are at least 12 inches away from buildings. YES NO N/A
14. Tree and shrub branches are at least 6 feet away from buildings. YES NO N/A
15. Grass is cut down and weeds are pulled. YES NO N/A
16. Sides of buildings are free of ivy and other vines. YES NO N/A
17. Wood chips and mulch are at least 6 inches away from buildings. YES NO N/A
18. Wood piles are stored off the ground and several feet away from buildings. YES NO N/A

Buildings: Structure, Landscaping, and Play Area (continued)

Comments

19. Standing water and puddles are cleared from yard, play equipment, and toys. YES NO N/A
20. Faucets, hoses, and sprinklers have no drips or leaks. YES NO N/A
21. Play structures are clean without droppings, garbage, spider webs, or debris. YES NO N/A
22. Sandbox is clean and dry without droppings, garbage, or debris. YES NO N/A
23. Bait stations and traps are out of children's reach. YES NO N/A
24. Yellowjacket traps are 20 feet away from play and eating areas. YES NO N/A

Pests (evidence of the pest, damage, or the pest itself)

☐ ANTS ☐ COCKROACHES ☐ FLEAS ☐ FLIES ☐ SPIDERS ☐ MOSQUITOES
☐ YELLOWJACKETS ☐ RATS/MICE ☐ SNAILS/SLUGS ☐ OTHER (SPECIFY) _____

Indoor Areas

Kitchen and Eating Area

25. Areas around and under dishwasher, washing machine, and refrigerator are clean and dry. YES NO N/A
26. Countertops, shelves, cabinets, and drawers are clean and dry. YES NO N/A
27. Food is stored in tightly sealed containers made of plastic, glass, ceramic, or metal. YES NO N/A
28. Bulk products are stored off the floor and do not touch the walls. YES NO N/A
29. Stoves and ovens are cleaned of food scraps or spills. YES NO N/A
30. Floors and molding are cleaned of food scraps or spills. YES NO N/A
31. Meal and snack tabletops are free of food scraps, crumbs, and spills, if not in use for eating. YES NO N/A
32. Cardboard boxes are not used for storage. YES NO N/A
33. Faucets and pipes do not drip or leak. YES NO N/A

Kitchen and Eating Area (continued)

		Comments
34. Gaps between pipes, vents, and walls are sealed or screened.	YES NO N/A	
35. Cracks and crevices around cabinets and molding are sealed or filled.	YES NO N/A	
36. Garbage, recycling, and compost storage areas are cleaned of food scraps or spills.	YES NO N/A	
37. Bait stations and traps are out of children's reach.	YES NO N/A	
Pests (evidence of the pest, damage, or the pest itself)	☐ ANTS ☐ COCKROACHES ☐ FLEAS ☐ FLIES ☐ SPIDERS ☐ MOSQUITOES ☐ YELLOWJACKETS ☐ RATS/MICE ☐ SNAILS/SLUGS ☐ OTHER (SPECIFY) _____	

Bathroom

38. Walls, tile, grout, and other surfaces are free of mold.	YES NO N/A	
39. Indoor garbage cans have plastic linings.	YES NO N/A	
40. Faucets and pipes do not drip or leak.	YES NO N/A	
41. Toilet, sink, shower, and tub do not drip or leak.	YES NO N/A	
42. Walls, floors, and tiles do not have holes, gaps, or cracks.	YES NO N/A	
43. Gaps between pipes, vents, and walls are sealed or screened.	YES NO N/A	
44. Cracks and crevices around cabinets and mirrors are sealed or filled.	YES NO N/A	
45. Lotions and creams, such as toothpaste, diaper cream, and sunscreen, are covered.	YES NO N/A	
Pests (evidence of the pest, damage, or the pest itself)	☐ ANTS ☐ COCKROACHES ☐ FLEAS ☐ FLIES ☐ SPIDERS ☐ MOSQUITOES ☐ YELLOWJACKETS ☐ RATS/MICE ☐ SNAILS/SLUGS ☐ OTHER (SPECIFY) _____	

Living and Play Areas

46. Furniture moves easily for vacuuming.	YES NO N/A	
47. Areas are free of clutter.	YES NO N/A	
48. Play things are stored on shelves or in containers made of plastic, glass, ceramic, or metal with tight-fitting lids.	YES NO N/A	
49. Furniture, flat surfaces, and floors are free of dust.	YES NO N/A	

Living and Play Areas (continued)

			Comments
50. Walls and baseboards have no holes, gaps, or cracks.	YES	NO	N/A
51. Windows close completely with no gaps between the sill and window.	YES	NO	N/A
52. Walls, windows, and ceilings are dry without mold, and there is no water damage.	YES	NO	N/A
53. Fresh air is provided by windows or a ventilation system.	YES	NO	N/A
54. Food items used for arts and crafts, such as macaroni or beans, are in tightly sealed containers.	YES	NO	N/A
55. Arts and crafts made with food are not on display.	YES	NO	N/A
56. Garbage cans have plastic linings.	YES	NO	N/A
57. Garbage cans have tight-fitting lids.	YES	NO	N/A
58. Bait stations and traps are out of children's reach.	YES	NO	N/A
Pests (evidence of the pest, damage, or the pest itself)	☐ ANTS ☐ COCKROACHES ☐ FLEAS ☐ FLIES ☐ SPIDERS ☐ MOSQUITOES ☐ YELLOWJACKETS ☐ RATS/MICE ☐ SNAILS/SLUGS ☐ OTHER (SPECIFY)		

Storage Areas: Attic, Basement, Garage, or Shed

59. Areas are clean, organized, and free of clutter.	YES	NO	N/A
60. Paper products are stored off the floor on shelves.	YES	NO	N/A
61. Cardboard boxes are not used for storage.	YES	NO	N/A
62. Areas are free of beverage containers, crumbs, and garbage.	YES	NO	N/A
63. Food items are stored in tightly-sealed containers made of plastic, glass, ceramic, or metal.	YES	NO	N/A
64. Buckets are rinsed and dry and mops are hung up to dry.	YES	NO	N/A
65. Areas are free of standing water, leaks, and water droplets.	YES	NO	N/A
66. Cracks and crevices around cabinets are sealed or filled.	YES	NO	N/A
Pests (evidence of the pest, damage, or the pest itself)	☐ ANTS ☐ COCKROACHES ☐ FLEAS ☐ FLIES ☐ SPIDERS ☐ MOSQUITOES ☐ YELLOWJACKETS ☐ RATS/MICE ☐ SNAILS/SLUGS ☐ OTHER (SPECIFY)		

INTEGRATED PEST MANAGEMENT (IPM)
CHECKLIST ITEMS EXPLAINED

Questions about an item?
Look for the corresponding number below for the reasons the items are included in the Checklist.

Outdoor Areas

Garbage, Recycling and Compost

1. **Bins have tight-fitting lids without cracks, holes, or rust.**
   WHY? Bins that don't seal properly or can be gnawed through by rats can provide access to food for rodents, birds, flies, and other pests.
2. **Bins are located away from doors.**
   WHY? Bins located too close to doors can attract flies and yellowjackets, that can then enter the building. This is especially a problem near kitchen doors.
3. **Bins are located on hard, cleanable surfaces such as asphalt or concrete.**
   WHY? Hard, cleanable surfaces such as concrete or asphalt pads help prevent rats from digging burrows beneath them. Spills are easier to clean off of hard surfaces. Flies, yellowjackets, and other pests are attracted to spills.
4. **Area around bins has no spills or garbage.**
   Overflowing bins indicate the need for more carts or more frequent garbage collection.
   WHY? Spilled liquids and garbage attract pests.
5. **All recyclables are empty and rinsed.**
   WHY? Food or drink left in bottles or cans can attract pests.

Building: Structure, Landscaping, and Play Area

6. **Walls, foundation, and electrical boxes have no gaps, holes, or cracks.**
   WHY? Pests enter through gaps in electrical and plumbing service, roofs, windows, and under doors.
7. **Foundation comes up at least 12 inches above the soil.**
   WHY? Elevated building foundations provide a barrier to keep pests from entering.
8. **Window trim has no cracks or gaps.**
   WHY? Pests commonly enter a building through holes, cracks, gaps, and crevices between pipes, vents, roofs, floors, windows, walls, baseboards, cabinets, and mirrors.
   If you can fit a dime or pencil into the hole, then a mouse or rat can fit through the gap too.
9. **Windows close completely.**
   WHY? See answer #8.
10. **Window screens have no holes or gaps.**
    WHY? See answer #8.
11. **Vents and other large openings are screened with ¼-inch hardware cloth.**
    WHY? Vents and large openings covered with ¼-inch hardware cloth will keep rodents, birds, and yellowjackets out. Rodents will be unable to squeeze through the hole.
12. **Doors that open to the outside have sweeps or weather-stripping.**
    If you can see light coming in under or around doors, you should install sweeps or weather-stripping.
    WHY? If light is visible under doors mice, crawling insects, and spiders can enter the building. All exterior doors need sweeps, weather-stripping, or similar barriers, especially doors near garbage cans.
13. **Plants are at least 12 inches away from buildings.**
    WHY? Keeping plants away from buildings (such as houses, apartment complexes, sheds, or garages) increases light, increases air circulation, and reduces moisture.
14. **Tree and shrub branches are at least 6 feet away from buildings.**
    WHY? Pests, such as roof rats, can jump far distances from branches to your roof. Keeping branches away from buildings increase light, increase air circulation, and reduce moisture.
15. **Grass is cut down and weeds are pulled.**
    WHY? Lawn weeds such as clover can attract honey bees. Bees could pose a problem if children use the lawn as a play area.
16. **Sides of buildings are free of ivy and other vines.**
    WHY? Ivy is a favorite shelter for rats.

Building: Structure, Landscaping, and Play Area (continued)

17. **Wood chips and mulch are at least 6 inches away from buildings.**
WHY? Rodents and some insects, such as ants, often live in wood piles, debris, and thick mulch. You should be able to see the building foundation to inspect for pests. Avoid termite infestations by keeping wood-container mulch at least 6 inches away from buildings with wooden siding.

18. **Wood piles are stored off the ground and several feet away from the buildings.**
WHY? Stacking firewood off the ground aids in drying and makes it more difficult for insects, such as carpenter ants, to crawl into the woodpile.

19. **Standing water and puddles are cleared from yard, play equipment, and toys.**
WHY? Standing water in lawns, toys, and containers provides ideal conditions for mosquitoes to breed.

20. **Faucets, hoses, and sprinklers have no drips or leaks.**
WHY? Moisture encourages mold to grow and provides water necessary for pests to survive.

21. **Play structures are clean without droppings, garbage, spider webs, or debris.**
WHY? Garbage, debris, and droppings attract pests such as flies or rats. Clear spider webs to reduce the chance of a child being bit by a spider.

22. **Sandbox is clean and dry without droppings, garbage, or debris.**
WHY? Open sandboxes can attract pests, and children may touch or inhale droppings and germs in the sand. Sandboxes should be covered during non-operating hours.

23. **Bait stations and traps are out of children's reach.**
WHY? Bait stations contain pesticides and traps may have sharp edges or snapping devices that can harm children.

24. **Yellowjacket traps are 20 feet away from play and eating areas.**
WHY? The traps attract yellowjackets that fly around before they reach the trap.

Indoor Areas

Kitchen and Eating Area

25. **Areas around and under dishwasher, washing machine, and refrigerator are clean and dry.**
WHY? Spilled liquid and food crumbs can attract pests. Moisture allows mold and mildew to grow and provides water necessary for pests to survive.

26. **Countertops, shelves, cabinets, and drawers are clean and dry.**
WHY? See answer #25.

27. **Food is stored in tightly sealed containers made of plastic, glass, ceramic, or metal.**
WHY? Food that's left out attracts ants, cockroaches, flies, mice, rats, and other pests.

28. **Bulk products are stored off the floor and do not touch the walls.**
WHY? Allows inspection under and behind containers and reduces pest shelters and available food.

29. **Stoves and ovens are cleaned of food scraps or spills.**
WHY? See answer #25.

30. **Floors and molding are cleaned of food scraps or spills.**
WHY? See answer #25.

31. **Meal and snack tabletops are free of food scraps, crumbs, and spills, if not in use for eating.**
WHY? See answer #25.

32. **Cardboard boxes are not used for storage.**
WHY? Cardboard provides a hiding place for pests, especially cockroaches.

33. **Faucets and pipes do not drip or leak.**
WHY? See answer #20.

34. **Gaps between pipes, vents, and walls are sealed or screened.**
WHY? See answer #8.

Kitchen and Eating Area (continued)

35. **Cracks and crevices around cabinets and molding are sealed or filled.**
WHY? See answer #8.

36. **Garbage, recycling, and compost storage areas are cleaned of food scraps or spills.**
WHY? See answer #4.

37. **Bait stations and traps are out of children's reach.**
WHY? See answer #23.

Bathroom

38. **Walls, tile, grout, and other surfaces are free of mold.**
WHY? Mold gets into the air and irritates some children's lungs, triggers asthma, and could cause other health problems.

39. **Indoor garbage cans have plastic linings.**
WHY? Plastic linings keep garbage cans clean so they're less attractive to pests. They also make garbage easier to toss into larger bins.

40. **Faucets and pipes do not drip or leak.**
WHY? See answer #20.

41. **Toilet, sink, shower, and tub do not drip or leak.**
WHY? See answer #20.

42. **Walls, floors, and tiles do not have holes, gaps, or cracks.**
WHY? See answer #8.

43. **Gaps between pipes, vents, and walls are sealed or screened.**
WHY? See answer #8.

44. **Cracks and crevices around cabinets and mirrors are sealed or filled.**
WHY? See answer #8.

45. **Lotions and creams, such as toothpaste, diaper cream, and sunscreen, are covered.**
WHY? Some of the ingredients in toiletries can attract pests and can also be hazardous to children's health.

Living and Play Areas

46. **Furniture moves easily for vacuuming.**
WHY? Crumbs may collect under furniture. If you have a roach or flea infestation, you'll need to vacuum thoroughly.

47. **Areas are free of clutter.**
WHY? Cockroaches and mice can hide in cluttered spaces. Roaches feed on cardboard glue. Store play things such as puzzles, blocks, and dress-up clothes on shelves or in plastic containers with lids.

48. **Play things are stored on shelves or in containers made of plastic, glass, ceramic, or metal with tight-fitting lids.**
WHY? See answer #47.

49. **Furniture, flat surfaces, and floors are free of dust.**
WHY? Dust mites trigger asthma and allergies. Harmful toxins such as pesticides, lead, and flame retardants collect in dust.

50. **Walls and baseboards have no holes, gaps, or cracks.**
WHY? See answer #8.

51. **Windows close completely with no gaps between the sill and window.**
WHY? See answer #8.

52. **Walls, windows, and ceilings are dry without mold, and there is no water damage.**
WHY? These can be areas where mold grows and pooled water can attract pests.

53. **Fresh air is provided by windows or a ventilation system.**
WHY? Air circulation can decrease mold growth and improve indoor air quality.

54. **Food items used for arts and crafts, such as macaroni or beans, are in tightly sealed containers.**
WHY? See answer #27.

Living and Play Areas (continued)

55. **Arts and crafts made with food are not on display.**
    WHY? See answer #27.
56. **Garbage cans have plastic linings.**
    WHY? See answer #39.
57. **Garbage cans have tight-fitting lids.**
    WHY? Indoor garbage without a lid can attract pests and can pose a health and safety risk to children.
58. **Bait stations and traps are out of children's reach.**
    WHY? See answer #23.

Storage Areas: Attic, Basement, Garage, or Shed

59. **Areas are cleaned, organized, and free of clutter.**
    WHY? See answer #47.
60. **Paper products are stored off the floor on shelves.**
    WHY? Some pests eat paper and use it for hiding.
61. **Cardboard boxes are not used for storage.**
    WHY? See answer #32.
62. **Areas are free of beverage containers, crumbs, and garbage.**
    WHY? See answer #5.
63. **Food items are stored in sealed, rigid containers made of plastic, glass, ceramic, or metal.**
    WHY? See answer #27.
64. **Buckets are rinsed and dry, and mops are hung up to dry.**
    WHY? Keeping mops and buckets dry prevents moisture and mold growth.
65. **Areas are free of standing water, leaks, and water droplets.**
    WHY? See answer #19.
66. **Cracks and crevices around cabinets are sealed or filled.**
    WHY? See answer #8.

INTEGRATED PEST MANAGEMENT (IPM)
ACTION PLAN WORKSHEET

Instructions for completing the table

1. Write out the number and item marked NO on the IPM Checklist.
2. List the action steps you can take to change the item from NO to YES. If an item cannot be changed, you can note that here. Keep in mind barriers to change such as cost, time, personnel, etc.
3. Set a target date for each item you can change in the next 6 months. Prioritize items that are the easiest and least expensive to change by setting short-term target dates.

ITEM #	IPM CHECKLIST ITEM TEXT	ACTION STEPS	TARGET DATE
Outdoor Areas			
Indoor Areas			

INTEGRATED PEST MANAGEMENT: ANTS

Columns of ants marching through playrooms, 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 ⅛-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

❶ 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.

❷ 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 credit: Orkin

[IPM Strategies continued]

3 REMOVE ANTS' FOOD, WATER, AND SHELTER

- Store food such as snacks, sugar, syrup, honey, and pet food in containers with tight-fitting lids.
- Wipe spills and clean counters, tables, and floors with a microfiber cloth or paper towel.
- Remove garbage from the kitchen at the end of each day.
- Repair leaky sinks and pipes.
- Seal indoor cracks and crevices.
- Outside, remove food sources for ants next to buildings such as ripened fruit on trees. Use soap sprays, sold as insecticidal soap, on bushes and trees to reduce aphid numbers.

ACTION PLAN FOR ANTS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LEAST HARMFUL PESTICIDE	LAST RESORT
▸ If you see a few Argentine ants inside, there are likely to be more soon.	▸ Clean up ants using a microfiber cloth or paper towel with soapy water (in a labeled spray bottle combine one tablespoon dish soap and one quart water). ▸ Fill ant entryways with caulk or petroleum jelly. ▸ Remove infested potted plants. ▸ Clean up food sources.	▸ Eliminate leaks or water sources. ▸ Use baits. Baits combine a food attractive to ants with a slow-acting poison such as boric acid. Baits shrink the colonies because workers feed them to the egg-laying queens.	▸ If ants continue to be present indoors, work with a pest management professional (PMP) who practices IPM to create a management plan. ▸ Insist that the PMP uses baits rather than spraying around the perimeter of your building.

LESS COMMON SITUATIONS

Only a few ants sting. Stinging ants include the native southern fire ant and California harvester ant, which live outdoors. One aggressive stinging ant that isn't native, the red imported fire ant, is found in a few locations in southern California and occasionally in farming areas throughout the state. If you think you have the imported red fire ant on your property, call the Fire Ant Hotline at (888) 434-7326.

A few other ants can become pests.

- **Pharaoh ants** are about half the size of Argentine ants and honey colored. They love protein, so watch for them around pet food.
- **Pavement ants** look like Argentine ants, but are chunkier. They usually live outdoors around lawns or under sidewalks and sometimes come in when the weather is dry.
- **Odorous house ants** live outdoors in soil or debris or indoors in wall voids or around water pipes or heaters. They're about the size of Argentine ants and also like sweets. When crushed, they smell like blue cheese or coconut.
- **Carpenter ants** are large ants—up to ½-inch long—that can bite. Because they tunnel through wood to build nests, they can damage buildings.

RESOURCES

- University of California Statewide IPM Program: *Ants* www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7411.html
- The Department of Pesticide Regulation, Safely Managing An Argentine Ant Infestation www.cdpr.ca.gov/docs/pestmgt/pubs/childcare/ants_color_eng.pdf
- Our Water, Our World – Ants www.ourwaterourworld.org/Portals/0/documents/pdf/Ants2-11.pdf

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INTEGRATED PEST MANAGEMENT: BED BUGS

Common before the 1950s, bed bugs are back, showing up in homes, apartment buildings, dorm rooms, hotels, child care centers, and family child care homes. Adult bed bugs are flattened brownish-red insects, about ¼-inch long, the size of an apple seed. They're fast movers, but they don't fly or jump. They feed only on blood and can survive several months without a meal.

When are bed bugs a problem?

Thankfully, bed bugs do not spread disease. However, when people think they have bed bugs, they may sleep poorly and worry about being bitten.

Bed bug bites:

- Can cause swelling, redness, and itching, although many people don't react at all.
- Are found in a semi-circle, line, or one-at-a-time.
- Resemble rashes or bites from other insects such as mosquitoes or fleas.
- Can get infected from frequent scratching and may require medication prescribed by a health care provider.

How do bed bugs get in a Family Child Care Home?

They usually arrive with a child who has an infestation at home by attaching to clothing, blankets, backpacks, or soft toys. Bed bugs will infest spotlessly clean rooms as well as messy or dirty ones. Since bed bugs are so good at hiding, the more clutter you have, the harder it is to find them and the more likely their numbers will increase.

Bed bug life cycle

Young bed bugs, called nymphs, look like small versions of adult bed bugs. The youngest nymphs are the size of a poppy seed and turn dark red after they feed. As a nymph grows to the next stage, it sheds its skin. The skins accumulate where the bugs hide. Bed bugs live in groups. Once females mate, they often wander away to lay their eggs somewhere else. This is sometimes how the bugs end up in other rooms. Eggs are tiny, pale, see-through, and hard to find. Eggs stick to surfaces, especially wood, cardboard, and fabric which is why you should check furniture, cardboard boxes, and clothing for bugs, their droppings, shed skins, and eggs. You'll find bed bugs year-round. Bed bugs usually move around and feed at night, but visit daytime nappers.

How to check for bed bugs

- Prepare an inspection kit that includes a good flashlight and magnifying glass to look for bed bugs, eggs, droppings, bloodstains, or shed skins.
- Inspect the nap area regularly. Use a flashlight to examine nap mats, mattresses (especially seams), bedding, cribs, and other furniture in the area.
  - Check under buttons of vinyl nap mats.
  - Roll cribs on their side to check the lower portions.
  - Scan the walls and ceiling and look behind baseboards and electrical outlet plates for bugs, eggs, droppings, bloodstains, and shed skins. The dark spots or bloodstains may look like dark-brown ink spots.
  - Examine upholstered furniture and wall-mounted items such as clocks, pictures, and mirrors.
- Collect any suspicious insects or shed skins for an expert to identify. Bring samples to your local UC Cooperative Extension or agricultural commissioner's office. Use a small pill vial or clear packing tape for this purpose. Photographs of suspicious bloodstains may also help identify the bugs.

IPM Strategies

❶ DON'T SPRAY!

If you're worried that your home has bed bugs, resist the impulse to spray pesticides. Setting off foggers and bug bombs will not prevent infestations. The pesticides will not reach places where the bugs are hiding.

- Do not try to take on bed bugs yourself. This is a job for an expert.
- Avoid spraying pesticides on bed linens, pillows, stuffed animals, clothing, or people. Don't use pesticide-containing mattress covers; instead, use a mattress encasement.

Photo credit: Orkin

[IPM Strategies continued]

2 HIRE A PEST MANAGEMENT PROFESSIONAL (PMP)

Make sure you actually have bed bugs before any treatment starts. Be prepared to work closely with your PMP, who will explain how you can prepare for treatment by reducing clutter, vacuuming, cleaning, and laundering. Mention what you've seen, collected, or photographed. If you don't have a PMP and you're concerned about bed bugs, hire a PMP who is licensed, insured, and has experience working with bed bugs. (See www.pcoc.org to find qualified PMPs in your area). Many PMPs prefer treating bed bugs with heat rather than spraying pesticides because heat reaches places where bed bugs hide. Expect 2-4 visits to be sure the bed bugs are gone.

3 KEEP YOUR THINGS

Don't throw anything away, even nap mats and mattresses. You can easily clean these, especially if you've caught the infestation early.

- Mattresses. Vacuum thoroughly, especially around seams and anywhere a small, flat bug could hide. Enclose the mattress in a high-quality mattress encasement. Encasements are machine-washable covers that snugly wrap around mattresses. Good encasements have bug-tight zippers and are made of strong but flexible fabric that won't easily tear.
  - If bed bugs already live in a mattress, the encasement will trap them inside so they won't bite the sleeper.
  - Bed bugs can live on top of an encasement, but they'll be easier to find. (They can still live elsewhere in the room and bite sleepers).
  - The following encasements have bed bug-proof fabric and zippers: Allergy Luxe©, National Allergy© BedCare Elegance, and Mattress Safe©. All come in crib mattress size.
- Nap mats. Vinyl mats: vacuum and then wash with soapy water, especially along seams and under buttons. Soft, washable mats: machine-wash and then place in a hot dryer for at least 20 minutes.
- Soft items. Pillows, linens, blankets, and stuffed animals: machine wash and then place in a hot dryer for at least 20 minutes. If the item isn't washable, tumble in a hot dryer for 20 minutes.

4 PREVENT

- Reduce clutter! Store toys, stuffed animals, and dress-up clothes in plastic boxes with tight-fitting lids.
- Seal cracks and crevices to eliminate hiding places for bed bugs and other pests. Caulk and paint wooden baseboards or molding around ceilings.
- Vacuum the nap area frequently using a crevice tool around molding, the area between wall and ceiling, and the seams of mattresses. Vacuuming is the most important thing you can do to catch stray bed bugs.
- Wash bedding frequently. Every few days, toss pillows and blankets into a hot dryer for 20 minutes. Enclose crib mattresses in high-quality mattress encasements.

ACTION PLAN FOR BED BUGS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LAST RESORT
▸ When you see bed bugs, eggs, droppings, bloodstains, or shed skins.	▸ Vacuum. ▸ Clean mattresses, nap mats, bedding, and other soft items. ▸ Seal cracks and crevices.	▸ Hire a pest management professional.

RESOURCES

- Centers for Diseases Control and Prevention, Emerging Infectious Disease www.cdc.gov/ncidod/EID/
- California Childcare Health Program (CCHP), *Bed Bugs – What You Need To Know* cchp.ucsf.edu/BedBugs-FAM
- California Department of Pesticide Regulation, Bed Bugs are Back! www.cdpr.ca.gov/docs/pestmgt/pubs/childcare/bedbugs_color.pdf
- U.S. Environmental Protection Agency, Bed Bugs: Get Them Out and Keep Them Out www2.epa.gov/bedbugs

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INTEGRATED PEST MANAGEMENT: COCKROACHES

Cockroaches can live any place that has food preparation or storage areas including homes, schools, restaurants, and offices. They can contaminate food, utensils, and paper products, and destroy fabric. Cockroaches are active at night, so if you see one during the day, you probably have a large infestation.

Why are cockroaches a problem?

Saliva, shed skins, and droppings from cockroaches can trigger asthma attacks, especially in young children. Cockroaches can spread bacteria and cause illness when they crawl over food or food preparation areas. Cockroaches can also leave stains and unpleasant odors.

What is the most common cockroach in California?

German cockroaches are the most common and troublesome indoor cockroach in California. One female German cockroach and offspring can produce thousands of roaches in a year. German cockroaches are attracted to moist areas in or near kitchens and bathrooms and can fit into spaces 1/16-inch wide, or about the width of a quarter. They avoid open spaces and scurry into hiding places when they sense noise, movement, and light.

IPM Strategies

1 DON'T SPRAY!

Sprays or bug bombs may kill a few cockroaches but won't reach hiding places or kill their eggs. Pesticide sprays can harm people, pets, and the environment.

2 KEEP COCKROACHES OUT

German cockroaches can enter buildings hidden in grocery bags, lunch bags, back packs, diaper bags, and cardboard boxes. In apartment buildings, cockroaches sometimes slip under doors or through wall voids. Outdoor cockroaches can sneak in through narrow gaps in windows and doorways.

- Install tight-fitting weather stripping, screens on windows, and door sweeps.
- Take supplies out of cardboard boxes and store them in cupboards, containers with tight-fitting lids, or on open metal shelving. Cockroaches hide in cardboard boxes, eat the glue, and lay their eggs in the tight spaces.
- Seal cracks and crevices in walls and floors.

3 REMOVE COCKROACHES' FOOD, WATER, AND SHELTER

- Clean spilled food, dirty dishes, utensils, and surfaces before leaving for the day.
- Rinse bottles and cans before placing in the outdoor recycling bin.
- Keep drains, shelves, and counters clean.
- Store food in containers with tight-fitting lids.
- Fix leaks under sinks or dripping faucets.
- Vacuum possible cockroach hiding places thoroughly. Use a HEPA-filter vacuum with a crevice attachment.
- Empty garbage at the end of each day and keep indoor garbage in lined, covered cans.
- Place outdoor garbage bins on hard, cleanable surfaces (concrete is best) and away from building entrances.

4 MONITOR FOR COCKROACHES

- Look for cockroaches behind or under cabinets and appliances. Check behind bulletin boards, mirrors, and other wall fixtures. Look for cockroach droppings, shed skins, and dead cockroaches.
- Locate hiding places by placing sticky traps under sinks and on the floor next to walls and appliances. When traps become clogged with cockroaches, throw them away and replace with new ones.

Photo credit: Orkin

[IPM Strategies continued]

- Once you find where cockroaches hide, focus your efforts there. Put monitoring traps in that area.
- Keep monitoring traps in the same places (don't move them around). Keep traps out of children's reach.
- Monitor daily during a severe infestation. Note how many cockroaches you have per trap. A lot of young cockroaches (smaller and wingless) indicate you have an active infestation.

5 GET RID OF COCKROACHES

Don't spray or use bug bombs because the cockroaches will scatter and return later. Instead, use bait stations and gels.

Bait stations are:

- Small plastic containers with a mixture of insecticide and bait inside.
- Placed where cockroaches have been found.
- Effective for several months.

Gels are:

- Applied with a syringe inside cracks and crevices where cockroaches have been found.
- Effective for a few days to a few weeks, depending on formulation.

Boric acid powder is:

- Effective when applied to crevices, behind electrical outlets, appliances, or other undisturbed hiding places.
- Effective for years, as long as it stays dry.
- Lower in toxicity if eaten or if it contacts skin as compared to some other insecticides. Always follow label instructions and take steps to minimize exposure, especially to children. If exposure happens, be sure to follow the first aid instructions on the product label carefully.

ACTION PLAN FOR COCKROACHES

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LEAST HARMFUL PESTICIDE	LAST RESORT
▸ If you see a few cockroaches or evidence of them (such as dark spots or smears).	▸ Monitor with sticky traps. ▸ Caulk and seal hiding places. ▸ Clean all surfaces and store food in sealed containers. ▸ Remove clutter. ▸ Vacuum with a HEPA-equivalent vacuum. ▸ Fix water leaks.	▸ Cockroach bait stations or gel applied to cracks and areas out of children's reach. ▸ Apply boric acid powder to dry, inaccessible areas. ▸ Apply insect growth regulators to areas where cockroaches are hiding. Keep out of children's reach.	▸ If you can't get rid of roaches or have a serious infestation, hire a PMP who uses IPM practices.

LESS COMMON SITUATIONS

Outdoor cockroaches (that can come inside)

- **Oriental cockroaches** (sometimes called water beetles are relatively large insects (up to 1¼ inches in length) that commonly live outdoors in damp places such as drains, water meter boxes, sidewalk voids, woodpiles, and compost areas. They sometimes enter garages or homes in search of food or water.
- **Field cockroaches,** like their relative the German cockroach, are small (up to ½-inch). Unlike German cockroaches, however, field cockroaches prefer to live outside in leaf litter and plant debris. They are more olive in color than Germans and have a black stripe between their eyes.
- **American cockroaches** are large (up to 2 inches) and fast-moving. They prefer very warm and moist habitats and are commonly found in California within sewers and underground storm drains. They sometimes invade parking structures and basements.
- **Turkestan cockroaches** are closely related to oriental cockroaches and share many of their habits and habitats. Female Turkestans look like oriental cockroaches, while the males resemble American cockroaches. In Southern California, Turkestan cockroaches are gradually replacing oriental cockroaches.

RESOURCES

- University of California Statewide IPM Program: *Cockroaches* www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7467.htm
- The Department of Pesticide Regulation, Safely Managing a Cockroach Infestation www.cdpr.ca.gov/docs/pestmgt/pubs/roach_color.pdf

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INTEGRATED PEST MANAGEMENT: FLEAS

Fleas are tiny, wingless insects that are famous for their jumping ability. The most common flea in California is the cat flea. Cat fleas can live on cats or dogs. Many animals, both wild and tame, can have fleas, but most fleas in homes are cat fleas brought in by cats and dogs.

How do I know if there are fleas in my home?

You might notice flea bites before you see the fleas themselves. Fleas bite their hosts and suck blood for food. Flea bites usually cluster around people's ankles. The bites look like small red spots surrounded by pinkish halos. You may see fleas crawling through your pet's fur or notice dark brownish-red particles on your pet or in the area where your pet sleeps. You may even see fleas hopping around your house.

When are fleas a problem?

Some people and pets have allergic reactions to flea bites and experience intense itching for days. Fleas can spread tapeworms if a pet swallows fleas when they lick their fur. Children can also get tapeworms by swallowing flea eggs, but this is not common. Cat fleas can also spread a flu-like illness to people.

Flea life cycle

Fleas have four life stages. Before laying eggs, female fleas gorge themselves on blood. The tiny eggs can land in carpeting, upholstered furniture, and bedding, hatching into tiny wormlike larvae. Within a week or two they transform into pupae protected by a silk cocoon. Fleas emerge at different times to look for a blood meal when they sense movement or body heat. At any given time, most fleas are in the egg and larval stage.

IPM Strategies

1 DON'T SPRAY! VACUUM INSTEAD

Spraying pesticides or using bug bombs may kill a few fleas, but they won't touch the fleas on your pet, the eggs or many of the larvae in carpeting or on furniture, and especially the cocoons. Don't sprinkle flea powder on carpeting where children play.

Vacuum carpeting and furniture frequently and thoroughly, even if you only see a few fleas. A vacuum cleaner is your best weapon if you think you have fleas in your home. Use a high-efficiency particulate air (HEPA) or HEPA-equivalent vacuum cleaner.

Use the vacuum's crevice tool on furniture every few days and go back and forth over carpeting. As you suck the fleas up, they'll die in the vacuum cleaner bag from being knocked around, so don't worry that they'll jump out of the bag. If you're using a bagless vacuum, carefully empty the cup outdoors into a plastic bag, seal the bag, and throw into an outdoor garbage bin.

2 CHECK YOUR PET

If you have a pet, do the following:

- Use a metal flea comb daily on cats or dogs.
- Use washable pet bedding that you can launder frequently.
- Check for fleas when you bathe your dog. Use a mild soap, never soap with added insecticide. The fleas will fall off your wet, soapy dog and drown in the water.
- Do not use sprays, powders, or flea collars on your pets.

3 MONITOR FOR FLEAS

Try the following to find out if you have fleas:

White socks. Walk through your home wearing white socks. The fleas are attracted to warmth and movement and will jump on to the socks.

Flea traps. You can purchase these at home improvement centers or pet stores. They plug into an outlet and have a light bulb above sticky paper. Since fleas are attracted to heat (from the bulb) and light, they jump right onto the sticky paper. You can also find online directions for making your own inexpensive traps out of pie tins filled with soapy water.

Photo credit: CDC

[IPM Strategies continued]

You either float a tea light in the center or plug in a desk lamp and face the light bulb over the water. The fleas hop toward the light source and drown in the soapy water. Keep traps out of children's reach.

Flea combs for pets. These combs are available at pet stores and have closely spaced teeth. Fleas get stuck as you comb through your pet's fur. Fill a small container with water and add a few drops of dish soap. Comb your pet and when you see fleas getting caught, plunge the comb in the water. The fleas will drown and sink to the bottom.

ACTION PLAN FOR FLEAS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LAST RESORT
▸ When you see fleas. They could be crawling in your pet's fur or hopping on carpeting or around pet bedding. ▸ When you notice particles of dried blood on your pet's skin or around pet bedding. ▸ When you see fleas hopping around in a sandbox. ▸ If you or children in your program have flea bites.	▸ Use a HEPA or HEPA equivalent vacuum cleaner on floors, carpeting, and furniture daily. ▸ Wash pet bedding often. ▸ Use a metal flea comb on your pet daily. ▸ Use flea traps to check for fleas. ▸ Get a tight-fitting cover for the sandbox. Replace infested sand with new sand.	▸ Talk to your veterinarian about the safe use of liquid pesticide spot-on treatments for your pet. Always follow label instructions. ▸ Hire a pest management professional and request that he or she use insect growth regulators but not pyrethroid insecticides.

LESS COMMON SITUATIONS

Fleas that live on squirrels and other rodents can transmit plague to people. See *IPM Handout for Family Child Care Homes* on *Integrated Pest Management: Ground Squirrels* and *Integrated Pest Management: Rats and Mice* for information on managing these pests that can carry plague-carrying fleas. Keep other wild animals such as feral cats, possums, skunks, and raccoons away from your house. Patch vents or openings with ¼-inch hardware cloth.

RESOURCES

- University of California Statewide IPM Program: *Fleas*
  www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7419.html
- Center for Disease Control and Prevention, Healthy Housing Reference Manual, Chapter 4: Disease Vectors and Pests
  www.cdc.gov/nceh/publications/books/housing/cha04.htm

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INTEGRATED PEST MANAGEMENT: FLIES

Are house flies buzzing around your face and landing on your food? Are fruit flies in the kitchen circling the bananas on the counter? There are safe and effective ways to keep fly numbers down and prevent them from bothering you. Integrated pest management (IPM) is a strategy to prevent fly invasions and reduce pesticide use.

When are flies a problem?

Although there are thousands of different flies, only a few are pests, and even these serve a useful purpose by breaking down and recycling dead plants and animals. **House flies** and related **filth flies** land on pet waste, garbage, and rotten fruit, and then walk on your food. Filth flies land on your food when you're eating outdoors. **Fruit flies** feed on tiny yeasts present on ripe and rotting fruits and food scraps. They breed outdoors and around overripe fruit or compost piles. These flies can spread germs to our food directly from garbage, rotten meat or fruit, dead animals, animal waste, or even dirty floors.

Fly life cycle

All flies have four life stages. The female house fly lays several batches of eggs in manure or garbage. The eggs hatch into maggots, which are pale and wormlike. Each maggot transforms into a cocoon-like pupa and from these emerge adult flies. During the hottest summer months, flies go from egg to adult in just a week. Outdoors, the shiny, metallic green or blue filth fly also develops from egg to adult in a week, which is why your garbage should be picked up by a collection service every week even if the outdoor bin isn't full.

IPM Strategies

❶ DON'T SPRAY!

Spraying pesticides or using no-pest strips treated with pesticides won't kill the thousands of maggots outdoors hiding in garbage or soil. Both will expose staff and children to harmful chemicals.

❷ KEEP FLIES OUT

House and filth flies

If flies are getting into your house, repair screens and keep unscreened outdoor kitchen doors and windows closed.

Fruit flies

It's hard to keep fruit flies out because they're so widespread outdoors and will find their way to your kitchen through open doors, or they will come in as eggs from fruit and vegetables you pick from your garden or buy at grocery stores.

❸ REMOVE FLIES' FOOD AND SHELTER

House and filth flies

- Clean dirty dishes, utensils, and surfaces at the end of each day.
- Keep indoor garbage in covered waste cans that you empty every night.
- Keep outdoor garbage in tightly covered waste bins. If food residues collect and you notice maggots, wash the bin out with soap and water.
- Move outdoor garbage as far away from the kitchen as possible.
- Pick up pet waste frequently, place in plastic bag, seal with a tie, and place in outdoor waste bin.

Fruit flies

- Keep ripe fruit and vegetables refrigerated.
- Use mesh food tents for ripening bananas or tomatoes on counter.
- Keep food scraps for compost in a covered container that you empty every night.
- Cover outdoor compost heaps.

Photo credit: Orkin

[IPM Strategies continued]

❹ MANAGE FLIES WITH TRAPS

House and filth flies

- Purchase a wall sconce fly trap. These light fixtures, commonly seen at grocery stores and restaurants, have a light to attract flies and sticky paper to capture them.
- Use a fly ribbon or fly paper, which both use fly attractant and a strong adhesive to trap flies. Note: these are different from no-pest strips containing dichlorvos, a highly toxic pesticide.
- Use an ultraviolet light trap.

Fruit flies

- Use cone traps. You can make your own by pouring some apple cider vinegar in a jar and adding a bit of dish soap. Make a cone out of paper and stick it in the jar. You don't want the paper to touch the liquid.

ACTION PLAN FOR FLIES

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES		LAST RESORT
▸ When you see flies indoors, especially in the kitchen. ▸ When you see a lot of flies around garbage bins outdoors.	**House and filth flies** ▸ Fix broken door and window screens and remove garbage daily. ▸ Use a fly swatter in your house. ▸ Hang sticky fly paper or fly ribbons. ▸ Use a store-bought or homemade fly trap.	**Fruit flies** ▸ Use a store-bought or homemade vinegar trap indoors. ▸ Outside, don't let fruit rot on the ground.	▸ If you suddenly see a lot of flies indoors, contact a pest management professional and consider asking them to look for a dead animal such as a mouse or rat.

LESS COMMON SITUATIONS

Fungus gnats feed on organic matter in soil and appear indoors when house plants are overwatered. They can be annoying when they buzz around your face.

- Don't overwater potted plants.
- Repot plants that get infested. Pour infested soil into your garden, wash out the pot, let it dry, and then replant with fresh potting soil.

Drain flies, also known as moth flies, gather on bathroom or kitchen walls. The maggots feed on the slime inside sewers and shower and sink drains. When the slime builds up, some of the adult flies fly out, gather around the drain, and sometimes fly to kitchen counters. They can carry germs from the slime to the counter.

- Use screened traps on bathroom drains to prevent buildup of hair.
- Keep kitchen drains clear with baking soda and vinegar followed by boiling water.
- Use drain cleaners once a month that contain special enzymes. (You'll find enzyme-containing drain cleaners at hardware stores. They're very effective and less toxic than drain cleaners that contain lye or bleach).

RESOURCES

- University of California Statewide IPM Program: *Flies*
  www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7457.html

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INTEGRATED PEST MANAGEMENT: GOPHERS

Pocket gophers, often just called gophers, are rodents that get their name from their cheek pockets, used for carrying food.

Why are gophers a problem?

Gophers often invade yards and gardens and feed on garden plants, vines, shrubs, and trees. One gopher can build up several mounds of soil in a day from its burrowing activities. These mounds are a tripping hazard for children.

What do gophers do?

Gophers live in a tunnel system that they dig. They're active year-round and at all hours of the day. They usually live alone in their tunnels, except when females are caring for their young or during the breeding season (late winter to early spring).

IPM Strategies

The sooner you detect gophers and do something about them, the better.

1 PROBE FOR BURROWS

Successful trapping or baiting depends on accurately locating the gopher's main burrow. To locate the main burrow, use a gopher probe. You can buy or make one using a pipe and metal rods. To find burrows, locate fresh mounds that are visible above ground. These are the plugged opening of cross tunnels.

You'll find the main burrow about 8 to 12 inches from the plug side of the mound, it's usually 6 to 12 inches deep. When the probe hits the gopher's burrow, you'll notice a sudden drop of about 2 inches. You may have to probe repeatedly to locate it.

2 USE TRAPS

Several types of gopher traps are available. The most common is a two-pronged, pincher trap. To set traps, first locate the main tunnel (see above). Then, use a shovel to open the tunnel wide enough to set traps in pairs facing opposite directions. Check traps often and reset as needed. If you haven't captured a gopher within two days, reset the trap in a different location.

3 PROTECT PLANTS WITH UNDERGROUND FENCING

Lay hardware cloth or ¾-inch poultry wire under raised beds or lawns before planting.

4 MANAGE

Monitor regularly for re-infestation. If you need to use a rodenticide, contact a pest management professional.

ACTION PLAN FOR GOPHERS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES		LAST RESORT
▸ When you notice gophers or mounds. Gopher mounds are horseshoe shaped and the entrance is usually off to the side.	▸ Create buffer around perimeter of yard by removing weedy areas. ▸ Use traps.	▸ Underground hardware cloth or poultry wire, buried at least 2 feet deep.	▸ Contact a pest management professional.

RESOURCES

- University of California Statewide IPM: *Gophers*
  www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7433.html
  www.ipm.ucdavis.edu/QT/gopherscard.html
- Gopher IPM at School Video
  www.youtube.com/watch?v=pxezCNILlP8&index=8&list=PLgU4sA8HrUfrRUcWS-r1ZcXrZL9zXsrJ0e

INTEGRATED PEST MANAGEMENT: GROUND SQUIRRELS

Ground squirrels are brownish-gray rodents that forage above ground near their burrows. Ground squirrels are 9 to 11 inches long, not counting their bushy tail, which adds another 5 to 9 inches.

Why are ground squirrels a problem?

Ground squirrels damage garden plants and fruit and nut trees. They can also cause damage to building foundations, fences, and levee systems. Their burrows create tripping hazards.

Ground squirrels can carry diseases harmful to humans. A major concern is bubonic plague, transmitted to humans from the fleas that the squirrels carry. If you find squirrels or other rodents dead for no reason, notify public health officials.

What do squirrels do?

Ground squirrels live in colonies in burrow systems where they sleep, rest, rear young, store food, and avoid danger. They are active during the day, mainly midmorning through late afternoon, especially on warm, sunny days.

IPM Strategies

1 USE TRAPS

Traps work best between February and October when ground squirrel numbers are low to moderate.

Use a trap that kills since it's illegal to release trapped squirrels elsewhere.

Types of kill-traps include:

- **Box traps**—place box-type traps in a covered box with a 3-inch diameter entrance to reduce hazards to children and pets.
- **Tunnel traps**—place on the ground near squirrel burrows or runways and bait them with walnuts, almonds, oats, barley, or melon rinds.
- **Conibear traps**—Place the trap directly in the burrow opening, so the squirrel must pass through it, tripping the trigger.

Inspect traps once a day and remove dead squirrels with protective gear. You can use plastic bags slipped over your arms as gloves. Hold the animal with one hand and slip the plastic bag inside out over the animal and off your hand.

2 HIRE A PEST MANAGEMENT PROFESSIONAL (PMP)

A PMP will know how and when to use toxic baits and fumigants (gas cartridges). While these products are available at local hardware and home improvement stores, they can still seriously harm or kill children when not handled by PMPs.

ACTION PLAN FOR GROUND SQUIRRELS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LAST RESORT
▸ When you notice ground squirrel burrows. Burrows are about 4 inches in diameter and are not plugged.	▸ Remove brush piles and debris. ▸ Destroy old burrows. ▸ Use traps.	▸ Hire a pest management professional to use baits or fumigate.

RESOURCES

- University of California Statewide IPM: *Ground squirrels*
  www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7438.html

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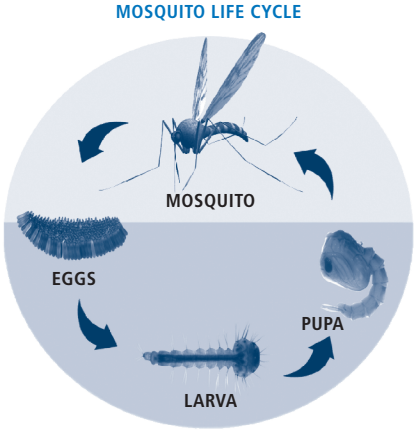
INTEGRATED PEST MANAGEMENT: MOSQUITOES

Mosquitoes are small flying insects. The females bite because they need blood to nourish their eggs. While mosquitoes can carry diseases and their bites are annoying, they also provide food for fish, birds, and bats.

When are mosquitoes a problem?

Mosquito bites can cause allergic reactions, pain, irritation, redness, and itching. Mosquito bites can get infected when children scratch them with dirty fingers. Mosquitoes can also carry diseases such as dengue fever, malaria, and West Nile virus.



Mosquitoes go through several stages. Female mosquitoes lay their eggs in or near standing water in puddles, neglected swimming pools, tree holes, and even old tires (such as those used for tire swings). The mosquito larvae, or wigglers, swim in this water and soon develop into pupae. The pupae then transform into winged adults, which fly away and live for about a week.

How do mosquitoes find you?

Female mosquitoes bite people, pets, and livestock. They detect chemicals in your sweat and heat from your body. Most mosquitoes come out at dusk, although some are active during the day.

IPM Strategies

It's impossible to completely eliminate mosquitoes. The goals are to keep mosquitoes from coming indoors and prevent them from biting us. Sprays and bombs don't necessarily keep mosquitoes away and they expose children and staff to pesticides and solvents.

1 KEEP MOSQUITOES OUT TO PREVENT MOSQUITO BITES

- Cover windows and doors with mesh screens.
- Avoid being outdoors at dusk or when mosquitoes are active.
- Wear long sleeves, long pants, and socks when you're outdoors.
- Try keeping mosquitoes away using an electric fan outdoors or a ceiling fan under enclosed porches. Keep fans and cords out of children's reach.

2 REMOVE STANDING WATER AND SHELTER

Cut down tall grass and pull weeds where mosquitoes rest during the day. Drain anything that can hold water immediately after use or rain. Empty water that collects in cinder blocks, flower pot saucers, toys, old tires, crotches of trees, and other objects.

- Drain standing water (puddles) after a rainstorm.
- Change water in pet dishes, watering troughs, and bird baths every few days.
- Avoid overwatering lawns and gardens, which leads to puddles.
- Clean rain gutters at least once a year to remove debris.
- Fill open tree holes with sand or mortar.

Photo credit: Orkin

[IPM Strategies continued]

❸ ASSESS YOUR RISK

Check with a health care provider or your local public health department about the risk for illnesses spread by mosquitoes where you live. You can use repellents if mosquitoes are biting and you have to be outdoors. Follow the label directions. Keep away from eyes and the mouth. Get signed consent from parents before applying insect repellents on children. For a sample consent form: cchp.ucsf.edu/InsectPermissionForm

Some effective repellents are:

Picaridin (20% concentration) is odorless, doesn't feel greasy or sticky, and rarely irritates skin.

Oil of lemon eucalyptus (30% concentration) has a eucalyptus scent and is somewhat oily. Don't use it on children younger than 3 years.

IR3535 (20% concentration) is derived from natural materials. Does not last as long as picaridin or lemon eucalyptus.

Products containing DEET are also effective, but may be more toxic at high doses. If you decide to use DEET, stick to products that have a concentration between 10% to 30%. Always follow the directions on the label. Do not use DEET on children under 2 months.

ACTION PLAN FOR MOSQUITOS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LEAST HARMFUL PESTICIDE	LAST RESORT
▸ When mosquitoes bite. ▸ When you notice standing water.	▸ Keep window screens in good repair. ▸ Wear long pants and sleeves. ▸ Eliminate standing water. ▸ Use a fly swatter or newspaper to individually kill mosquitoes.	▸ Use insect repellents safely, according to label directions.	▸ Contact your vector control district (see below).

LESS COMMON SITUATIONS

If you have a lot of mosquitoes, they are best managed by vector control districts. In California, there are more than 50 districts, all of which provide free services. Call the California Mosquito and Vector Control Association at (916) 440-0826 to find your local district. You can report a mosquito problem, potential mosquito breeding source, or ask a professional to visit.

RESOURCES

- University of California Statewide IPM Program: *Mosquitoes* www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7451.html
- Mosquito and Vector Control Association of California www.mvcac.org
- U.S. EPA: All About Mosquitoes www2.epa.gov/mosquitocontrol
- American Academy of Pediatrics, Healthychildren.org, Choosing an Insect Repellent for Your Child, 2012 www.healthychildren.org/English/safety-prevention/at-play/Pages/Insect-Repellents.aspx

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INTEGRATED PEST MANAGEMENT: RATS AND MICE

The most common rodent pests are the roof rat, Norway rat, and house mouse. To protect the health of children and your family, you need a strong IPM program to manage rats and mice.

When are rats and mice a problem?

Rats and mice can damage buildings, food, clothing, and documents by gnawing, urinating, defecating, and nesting. Because they gnaw on hard objects, such as plastic electrical boxes, they can cause fires. Rats bite more than 4,000 people a year, mostly young children. The urine, droppings, saliva, and dead skin cells of rats and mice may also trigger asthma attacks.

What do rats and mice do?

Rats often live in packs, so if you see one, there are likely to be more around. Rats and mice reproduce often. If not properly managed, a rodent infestation will rapidly increase. Mice are 10 to 20 times more common than rats in indoor environments. Rats and mice are most active at night. If you see them during the day, you probably have a serious infestation.

IPM Strategies

Many people use poisons to get rid of rodents, but this won't solve a rodent problem without a comprehensive IPM plan. If rodents are killed, but food, water, and a place to live are still available, it's likely that other rodents will soon appear.

❶ KEEP RATS AND MICE OUT

Rodents enter buildings through holes in walls, around pipe entries, through sewer outlets, and under doors. Mice can fit through a hole as small as ¼-inch. Rats fit through a hole as small as ½-inch.

- Use metal flashing, hardware cloth, copper wool, and escutcheons to seal floor drains, vents, holes, and gaps around pipes.
- Install a doorsweep under each exterior door.
- Seal cracks in the foundation and openings to keep rodents from entering the building.

❷ REMOVE FOOD

In most areas, garbage is the main source of food for rats.

- Discard food waste in indoor and outdoor eating areas in tightly covered, indoor garbage cans lined with plastic bags.
- Clean indoor garbage cans frequently to prevent the build-up of food waste.
- Keep outdoor garbage bins on hard concrete surfaces away from the building.

❸ MONITOR

Look for:

- rodent droppings,
- burrows in the ground,
- nests in ivy or around cluttered areas,
- fruit or nuts that have been gnawed or damaged food in pantry.

❹ IDENTIFY WHAT KIND OF RODENT YOU HAVE

Norway rats are the best burrowers and stay in the basement or ground floor.

Roof rats are clever climbers and like enclosed elevated spaces in attics, walls, and false ceilings.

House mice can run up any rough, vertical surface and nest in enclosed places such as drawers and boxes.

 Photo credit: Orkin

[IPM Strategies continued]

5 GET RID OF RATS AND MICE

Traps

- Use snap or electrocution traps with bait.
- Keep traps away from children's reach.
- Always wear gloves when handling traps to protect yourself.
- Read directions and watch instructional videos about using the traps.

Snap traps

- Place traps parallel to the wall so rodents will be caught coming from either direction.
- Use a lot of traps to make the trapping period short. Empty and reset traps daily until there are no more rodents.
- Rats: Put the traps out for one or two days so the rats are used to them and then use baits, such as peanut butter.
- Mice: Place mouse traps no more than 10 feet apart in areas where mice have shelter and food.

Electrocution traps

- They are easy to use, battery-operated, shoebox-sized traps that electrocute the rodent as it crawls in.
- Place dried fruit in the back of the trap, press a switch, and go away. A blinking light will alert you that a rodent's been electrocuted.
- Dispose of the dead rodent in an outdoor garbage bin.
- One trap can be reused indefinitely.

6 CLEAN UP AFTER RATS AND MICE

- Don't sweep or vacuum rodent droppings, urine, or nesting materials; they can carry diseases. Sweeping or vacuuming will stir up dust and increase your chance of inhaling viruses.
- Wear gloves and disinfect the urine and droppings. (If using bleach, spray with a mixture of 1 part bleach to 10 parts water. Let soak 5 minutes.) See *Green Cleaning, Sanitizing, and Disinfecting* handout for safer alternatives to bleach.
- Use a paper towel to pick up the urine and droppings and dispose of them in the garbage.
- Mop floors with a disinfectant.
- Remove and dispose of gloves and wash hands.

ACTION PLAN FOR RATS AND MICE

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES		LAST RESORT
▸ If you see a rodent, or any evidence of rats and mice such as droppings or chewed wires.	▸ Clean up cluttered areas. ▸ Sanitize and keep things clean. ▸ Seal all cracks and openings that are bigger than ¼-inch.	▸ Identify rodent pathways by looking for rub marks or trails of urine. ▸ Use snap or electrocution traps (such as a Raticator™) and make sure they're out of children's reach.	▸ Contact a pest management professional to help with traps. Do not use rodenticide baits.

LESS COMMON SITUATIONS

House mice may spread lymphocytic choriomeningitis, a viral disease that causes inflammation of the membrane that surrounds the brain and spinal cord. The disease can be transmitted from pregnant women to their unborn infants, and is an under-recognized cause of hydrocephalus (a buildup of fluid in the brain) in newborns. Mice can also cause salmonellosis, a form of food poisoning.

RESOURCES

- DPR Pest Management & Licensing Branch–Frequently Asked Questions about Rodents and Rodenticides www.cdpr.ca.gov/docs/dept/factshts/faq_rodents_rodenticides.pdf
- University of California Statewide IPM Program: *Rats* www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74106.html
- DPR Pest Info, IPM for Schools—Preventing Mice and Rats from Invading Your School www.cdpr.ca.gov/docs/pestmgt/pubs/rats_color.pdf
- eXtension Integrated Pest Management Action Plan for Rodents www.extension.org/pages/63911/ipm-action-plan-for-rodents#.VfIA1flVg4k

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[IPM Strategies continued]

❸ GET RID OF YELLOWJACKETS

Traps can reduce yellowjackets, but won't eliminate them if other food sources are available. Trapping needs to start in the spring and continue into summer and fall. Place traps at least 20 feet away from children and staff to avoid attracting yellowjackets to eating and play areas.

- Lure traps can be purchased and are easy to use. They work best as queen traps in late winter and early spring. In spring there is a 30 – 45 day period when new queens first emerge before they build nests. Each queen trapped at this time represents one less nest of 500 – 5,000 yellowjackets in the summer and fall. Lure traps contain chemical bait. Meat can be added to the lure traps to improve trapping.
  - ▷ Change bait in lure traps every 6 to 8 weeks in spring and every 2 to 4 weeks in summer.
  - ▷ Change bait more frequently when temperatures are high.
  - ▷ Meat baits must be replaced more frequently because yellowjackets are not attracted to rotting meat.
  - ▷ Periodically check the trap to remove trapped yellowjackets and make sure yellowjackets are still attracted to the trap.

❹ REMOVE YELLOWJACKETS' NEST

If the yellowjacket population persists after trapping and removing attractive food, it may be necessary to locate and treat the nest. Call for professional help to treat a yellowjacket nest. In some areas, the Mosquito and Vector Control District may be available to treat nests. To find out, call the California Mosquito and Vector Control Association at (916) 440-0826. If this service is not available, call a pest management professional (PMP).

ACTION PLAN FOR YELLOWJACKETS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LAST RESORT
▸ When you see five or more wasps hovering around garbage receptacles or food, or when you see one known colony within 30 feet of the children's play area or building.	▸ Make sure garbage receptacles have lids that properly seal. ▸ Keep food covered and indoors. ▸ Eliminate sugary drinks. ▸ Remove ripe fruit that drops from trees. ▸ Use yellowjacket traps.	▸ Find nearby yellowjacket nests. ▸ Hire a PMP to treat the nest directly with an appropriate residual insecticide and then remove the nest afterwards.

RESOURCES

- University of California Statewide IPM Program: *Yellowjackets* www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7450.html
- Our Water, Our World: Controlling Yellowjackets Around Your Home http://ecologycenter.org/wp-content/uploads/2013/02/Yellowjackets-09.pdf
- eXtension Integrated Pest Management Action Plan for Yellowjackets www.extension.org/pages/20998/ipm-action-plan-for-yellowjackets#.VfIAgPlVg4k

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INTEGRATED PEST MANAGEMENT: SNAILS AND SLUGS

Snails have an outside spiral shell that protects their bodies, while slugs don't have a shell. Both can vary in size from a small speck to a few inches long. They move by gliding and leaving a slime trail where they've been.

When are snails and slugs a problem?

Snails and slugs are harmless to humans, but they can be pests in the garden. They feed on plants by making holes in the leaves, and eating seedlings and low-growing fruit such as strawberries. In childcare programs, children may find them in the garden or on the sidewalks, pick them up, play with them, and even eat them. Eating snails is not a health concern, however snail baits that contain metaldehyde are.

Where are snails and slugs found?

Snails and slugs hide during the day and come out at night to eat since they don't like heat and bright light. They're also active on cloudy or foggy days. They hide under boards, stones, garden debris, grassy or weedy areas, and leafy branches close to the ground or in any other cool, moist area. In cold weather, they hibernate in the soil. During hot, dry periods, snails seal themselves off and attach themselves to fences, tree trunks, or walls.

IPM Strategies

You may have snails and slugs if seedlings suddenly disappear, leaves develop irregular holes, slime trails cover walls and walkways, or you see snails or slugs gliding across lawns or sidewalks early in the morning.

❶ KEEP SNAILS AND SLUGS OUT OF GARDENS

- Eliminate daytime hiding places by turning over boards or rocks.
- Grow vegetables and flowers in the sunniest place possible to avoid snails and slugs hiding in shady areas.
- Use copper barriers around planting beds and trees to give snails and slugs an electric shock. Snails' slime creates a small electrical shock. They'll stop in their tracks and turn around rather than cross the copper to food. You can buy copper stripping at hardware and garden stores.

❷ REMOVE SNAILS' AND SLUGS' FOOD, WATER, AND SHELTER

- Plant some snail-proof plants such as:
  - Impatiens, geraniums, begonias, lantana, and nasturtiums.
  - Plants with stiff leaves such as sage, rosemary, and lavender.
- Use drip irrigation instead of sprinkler irrigation to reduce humidity and moisture. Drip irrigation reduces excess water by bringing water directly to the roots of plants and lawns.

❸ REDUCE THE POPULATION

- Handpick snails and slugs:
  - Water the infested area in the late afternoon.
  - Once dark, put on gloves and use a flashlight to find snails or slugs.
- Discard snails or slugs:
  - Place them in a plastic bag and dispose of them in the trash.
  - Drown them in a bucket with soapy water and dispose of them in your compost pile once dead.
  - Crush them and leave them in the garden.
  - Remove snails from undersides of wooden decks, meter boxes, or low ledges on fences.

Take live snails to a duck pond. Snails are much better for ducks than bread. Make sure you haven't baited the snails—you wouldn't want to poison the ducks.

Photo credit: Noa Kaplan

INTEGRATED PEST MANAGEMENT: SPIDERS

Spiders are arachnids that have eight legs and two body parts, the head and abdomen. Spiders are beneficial predators (see *Glossary*) of pests such as mosquitoes and house flies. Most spiders are harmless. The few spiders that might hurt humans, such as black widows, spend most of their time hidden under woodpiles or in crevices. Brown recluse spiders do not live in California.

When are spiders a problem?

Children are very curious, and typically play on the floor or ground, which puts them at a higher risk for rare encounters with spiders. Spiders usually leave people alone unless provoked, and almost all supposed spider bites are actually from mosquitoes, biting flies, or fleas.

Spiders do not transmit diseases. Only a few have jaws strong enough to bite through skin, and even fewer can inject toxins that may cause illness. Certain spider bites can sicken young children due to the children's small body size and weight. A serious infection, Methicillin-resistant *Staphylococcus aureus* (MRSA), is not a spider bite but is often mistaken for one. Only a health care provider can diagnose MRSA.

Where are spiders found?

Most spiders, such as the cellar spider and common house spider, are harmless and often found in corners of a house, basement, or garage where they make their cobwebs.

Black widow spiders

Black widow spiders are common in California. The female has a shiny black body with an orange-red hourglass shape on the bottom of her abdomen. Her body is usually less than ½-inch long, about the size of your thumbnail. Male black widow spiders are smaller than females and lighter in color. Their mouthparts are too small to bite humans.

Black widows are most active in the warmer months. They live in dark, warm, dry, and sheltered areas such as garages, sheds, wood piles, stone piles, and hollow wood stumps. They're found under play structures, in hollow areas of children's toys, and under picnic tables and benches, especially in corners.

Black widow bites are painless or may feel like a pinprick. They can cause flu-like symptoms for a few days, or in some cases, painful muscle spasms. If someone is bitten, apply an ice pack, and contact a health care professional or the California Poison Control System at (800) 222-1222. If your symptoms are severe, seek immediate care from a health care provider.

IPM Strategies

Most spiders are beneficial and harmless to humans. Since spiders eat other pests, try to leave them alone, especially if you find them outdoors. If you need to remove a spider indoors, use an empty container and slide a stiff piece of paper over the container's top or use a vacuum to remove a spider and its web.

❶ KEEP SPIDERS OUT

- Install or fix screens and keep doors closed.
- Minimize hiding places by having moveable furniture and cleaning up clutter.
- Seal cracks in the foundation and install door sweeps to keep spiders from entering.

❷ REMOVE SPIDERS' FOOD, WATER, AND SHELTER

- Use yellow light bulbs outdoors. Yellow light is slightly less attractive to flying insects that are food for spiders.
- Vacuum, dust, and sweep regularly.
- Keep vegetation, especially ivy, at least 12 inches away from the building's foundation.

Photo credit: Orkin

[IPM Strategies continued]

❸ MONITOR

- Indoors, spiders are commonly found in undisturbed areas such as dark corners and crevices where they make webs. Indoor cobwebs are an indication of where spiders are hiding.
- Not every web houses a spider. Once a web is abandoned, another spider doesn't move in.
- Check outdoor playground equipment, benches, and picnic tables for spiders and webs.

❹ GET RID OF SPIDERS

- Traps and insecticides don't work to manage spiders. Spraying is not recommended because it leaves residues that may harm children and the environment. Spraying will only work if you are able to directly spray the spider.
- A less toxic way to manage spiders is simply to move them outside, vacuum them up, or crush them with your shoe or a rolled up piece of paper.
  - ▷ To remove individual spiders, place a container over them and slip a stiff piece of paper underneath to seal off the opening. Then, take the spider outside.
  - ▷ To remove cobwebs from ceilings and corners, use a vacuum, duster, or a cobweb brush (such as a Webster which extends to over 5 feet long).

ACTION PLAN FOR SPIDERS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LAST RESORT
▸ When you see spiders or webs in your home.	▸ Keep your home clean. ▸ Trap individual spiders in a jar or container and release outside. ▸ Use a cobweb brush or vacuum to remove the spiders and cobwebs. ▸ Screen windows. ▸ Seal cracks and openings.	▸ Consult with a pest management professional (PMP) if spiders are a concern after regularly using a cobweb brush and vacuum cleaner. A PMP can spray spiders directly only as a temporary solution. PMPs can also apply dusts containing silica gel and pyrethrins, which may be useful in certain indoor situations.

RESOURCES

- University of California Statewide IPM Program: *Spiders*
  www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7442.html
- Our Water, Our World: Living with Spiders, The Helpful Hunters
  www.cleanwaterprogram.org/uploads/Spiders101.pdf

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INTEGRATED PEST MANAGEMENT: YELLOWJACKETS

Yellowjackets are wasps that are sometimes called "meat bees," although they aren't bees at all. Yellowjackets are important in nature because they eat large numbers of caterpillars, house flies, and other pest insects.

When are yellowjackets a problem?

Yellowjackets are a problem for children and adults when they sting while searching for food or defending their nests. They are more likely to sting when swatted or when their nest is disturbed. If their nest is threatened, yellowjackets will defend it fiercely, and can sting repeatedly, unlike honey bees which sting only once.

If a child is stung by a yellowjacket:

- Move the child to a safe area to avoid more stings.
- Watch for allergic reactions (swelling, redness, or difficulty breathing) to yellowjacket stings which can develop anywhere on the body. Life-threatening allergic responses require immediate emergency care.
- Stings start with a quick, painful jab, which leads to swelling, tenderness, and itching.
- Other reactions to the sting may include hives, nausea, vomiting, abdominal cramps, and headaches.
- Symptoms begin immediately after a sting or may take longer to appear. They can last for several hours.
- To treat a sting:
  - Wash with soap and water.
  - Apply ice to the area immediately to reduce the pain and swelling.
  - Apply a baking soda–water paste to reduce itchiness.
  - Call 911 if the person shows signs of a severe allergic reaction such as difficulty breathing or dizziness.

Unlike honey bees, yellowjackets rarely leave a stinger embedded in the skin.

Yellowjackets and their nests

Yellowjackets are yellow and black. Yellowjacket nests:

- look like papery gray balls.
- are commonly built in holes in the ground, like rodent burrows.
- may be attached to eaves of buildings, undersides of decks, tree branches, or electrical junction boxes found around pools, spas, and sprinklers.
- may be in empty spaces in walls or ceilings of buildings.
- are started in the spring by the queen.

When is yellowjacket season?

From spring to midsummer, young yellowjackets are growing in the nest, and many of the new adults are out foraging for insect prey. By late summer, yellowjackets have switched from craving insect protein to sugar as adults. They scavenge for sweet food around garbage bins, outdoor eating areas, and where ripe or overripe fruit is present. In mild climate areas, of California, some yellowjacket colonies survive for several years and become quite large.

IPM Strategies

1 ELIMINATE NESTING SITES

- Plug up or seal rodent burrows with soil.
- Seal holes and cracks in foundations, walls, roofs, eaves, and electrical boxes.

2 REMOVE YELLOWJACKETS' FOOD

- Remove attractive foods such as sugary drinks, ripe fruit, meat, pet food, or garbage. Keep food covered and indoors. Once yellowjackets find food they will continue to hunt around the area even after the food is removed.
- Use liners in indoor garbage cans.
- Use garbage cans with spring-hinged, domed top lids (these are wasp-proof) in outdoor eating areas.
- Empty garbage daily and replace liners.
- Tightly cover recycling cans and clean daily.

Photo credit: Orkin

[IPM Strategies continued]

4 TRAPS

- Sugar water and yeast mixed together in a plastic container will also attract snails and slugs. Make sure to have deep, vertical sides to keep snails and slugs from crawling out. Scrape off and remove them daily.

If you have a lot of snails or slugs, repeat this daily. After a few days, most will be gone, then monitor weekly.

5 BAITS

- Never use baits that contain metaldehyde—they are extremely poisonous to children, dogs, and birds. Instead, use baits that contain iron phosphate, which are relatively safe. Be sure to follow label directions.
- Water before applying baits and apply in warm evenings when snails and slugs are active.
- Spread bait around moist areas where snails and slugs travel.

ACTION PLAN FOR SNAILS AND SLUGS

WHEN TO TAKE ACTION	NONPESTICIDE PRACTICES	LEAST HARMFUL PESTICIDE	LAST RESORT
▸ When you see snails or slugs, their slime trails, or leaves with a lot of irregular holes.	▸ Eliminate daytime hiding places. ▸ Grow plants that snails and slugs like to eat in sunny areas where they are less likely to travel. ▸ Use copper barriers. ▸ Eliminate moisture by using drip irrigation. ▸ Grow plants that snails and slugs don't like to eat. ▸ Build wooden traps.	▸ Use iron phosphate baits.	▸ Consult with a gardener familiar with IPM.

RESOURCES

- University of California Statewide IPM Program: *Snails and Slugs*
  www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7427.html
- Our Water, Our World: Controlling Snails and Slugs in Your Garden
  www.recyclenow.org/pdf/snails_and_slugs_ipm_09.pdf

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GREEN CLEANING, SANITIZING, AND DISINFECTING

A clean and sanitary home is less inviting to pests and an important part of practicing integrated pest management (IPM). Cleaning, sanitizing, and disinfecting also prevent the spread of illnesses. Unfortunately, many cleaning, sanitizing, and disinfecting products have irritating fumes and toxic chemicals. Green cleaning practices and products are safer for your health and the environment and reduces the number of germs that cause illness.

What are cleaning, sanitizing, and disinfecting?

These terms can be confusing because they are often used interchangeably, but they are not the same.

It's important to understand the difference when choosing products and making policies for your family child care home.

- **Cleaning** means to physically remove dirt, germs, and debris from the surface by scrubbing, washing, and rinsing. It is done using soap or detergent and water.
- **Sanitizing** means to apply heat or chemicals needed to kill most of the germs on a surface to a point that they do not pose a risk to health. Sanitizers are used on food surfaces such as dishes, utensils, cutting boards, high chair trays, mouthed toys, and pacifiers.
- **Disinfecting** means to apply chemicals that kill nearly 100% of germs identified on its label. Disinfectants are used on diaper changing tables, bathroom sinks and toilets; high risk areas such as door knobs, cabinet handles, and drinking fountains; and surfaces that are contaminated with body fluids like vomit or blood. A disinfectant must stay on the surface for the recommended dwell time or it will not kill all of the germs.
- **Always clean a surface first before sanitizing or disinfecting.**

Why go green?

By going green, you can reduce the risk of spreading germs without exposing people to harsh chemicals or fumes. Many products leave behind chemical residues that can build up over time in your home. Young children spend more time on the floor and explore their world by touching and mouthing. They may breathe, absorb, and swallow these chemicals.

GREEN CLEANING PRACTICES

- Proper handwashing. Use plain soap and running water to remove dirt and germs.
- Use a vacuum cleaner with a high efficiency particulate air (HEPA) or HEPA-equivalent filter.
- Use microfiber mops and cloths which trap dirt and germs instead of spreading them around. Microfiber products are reusable and machine washable.
- Place floor mats at building entryways and teach children to wipe their feet when entering the building. This reduces the amount of dirt to clean up. Consider a policy that encourages people to remove their shoes when they come indoors. Ask staff and families to provide a pair of indoor shoes or slippers.
- Use sanitizers and disinfectants only when and where it is necessary.

[Green Cleaning continued]

Choosing products for your family child care home

SHOULD I USE BLEACH?

Bleach is widely used in child care; however, using bleach in your home can be a problem for children and household members with asthma. Bleach fumes get into the air and can irritate the lungs, eyes, and the inside of the nose. For staff who mix bleach solutions, the fumes are even stronger and contact with full strength bleach can damage skin, eyes, and clothing. There are safer alternatives to bleach for keeping your family child care home clean and sanitary.

GREENER CLEANERS

Plain soap and water is effective for cleaning most surfaces. Choose soap without added antibacterial ingredients or fragrances. Products such as general purpose cleaners, glass cleaners, bathroom cleaners, carpet cleaners, and floor cleaners can be certified as safer for people's health and the environment. Check product labels for U.S. EPA Safer Choice (formerly Design for the Environment), Green Seal™, and EcoLogo™ certification.

SAFER SANITIZERS AND DISINFECTANTS

Reading product labels is key to choosing safer sanitizers and disinfectants. First, make sure the label has a U.S. EPA registration number. Then look for the active ingredient, which is what kills the germs.

ACTIVE INGREDIENTS of safer sanitizers and disinfectants include:

- Hydrogen Peroxide
- Citric Acid
- Lactic Acid

You can also look for the U.S. EPA's Design for the Environment (DfE) logo. Sanitizers and disinfectants that meet U.S. EPA requirements as safer for people and the environment can display the logo on their label. For a complete list of certified products, visit: www.epa.gov/pesticides/regulating/labels/design-dfe-pilot.html.

Remember to limit cleaning, sanitizing, and disinfecting products to as few as possible. Always read product labels carefully and follow the directions listed. Provide fresh air by opening windows or using a ventilation system.

RESOURCES

- U.S. EPA, Design for the Environment Antimicrobial Pesticide Pilot Project www.epa.gov/pesticides/regulating/labels/design-dfe-pilot.html
- American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. 2011. Caring for our children, third edition, AAP http://cfoc.nrckids.org/
- Green Seal www.greenseal.org/findaproduct/cleaners.cfm
- Ecologo http://industries.ul.com/environment/certificationvalidation-marks/ecologo-product-certification
- UCSF Institute for Health & Aging, UC Berkeley Center for Environmental Research and Children's Health, Informed Green Solutions, and California Department of Pesticide Regulation. Green Cleaning, Sanitizing, and Disinfecting: A Toolkit for Early Care and Education, University of California, San Francisco School of Nursing: San Francisco, California, 2013. http://cerch.org/research-programs/child-care/greencleaningtoolkit/
- San Francisco Asthma Taskforce 2013 Update: Bleach-free Disinfection and Sanitizing for Child Care http://sfgov.org/asthma/child-care-settings
- Clean & Healthy New York, Table of EPA-registered sanitizers and disinfectants that are asthma-friendly and Eco-Healthy www.cleanhealthyny.org/#!additional-resources/c11p5

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INTEGRATED PEST MANAGEMENT: HEAD LICE

Head lice are tiny grayish-white or tan-colored insects that live and breed on the hair and scalp. Lice feed on blood. They draw from the scalp and cause itching. Adult head lice are about the size of a sesame seed. Their eggs are called nits. Anyone can get head lice, regardless of personal hygiene or family income. However, young children get head lice easily because they:

- Play together and have close physical contact.
- Nap close together.
- Hug often.
- Share play things and equipment.

When are head lice a problem?

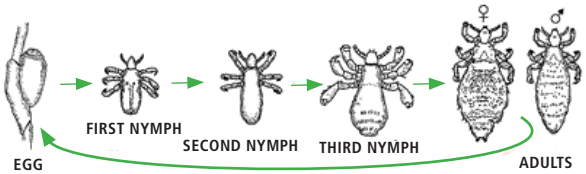
Head lice don't carry disease, but they are bothersome. Head lice cause itching and irritation of the scalp. It takes time and patience for parents to treat and remove lice and nits from their child's hair. Treatment can be an added expense, and it is extra work to wash clothing and bedding. Head lice is spread easily among children and can continue to spread until the live lice are gone.

Habits of head lice

Head lice crawl and do not hop or fly. Lice have six legs with tiny claws to grab onto hair and are difficult to see because they move quickly. Nits (tiny grayish-white eggs) are easier to see because they don't move and attach to hair shafts within ¼-inch from the scalp. Nits seen on hair farther away from the scalp have most likely already hatched. Nits can be mistaken for dandruff, but unlike dandruff, nits are hard to remove. To remove a nit, pull it along to the end of the hair shaft or use a fine-toothed metal lice comb. Head lice do not live on family pets.

Life cycle of lice

- Female adult lice produce up to 10 eggs per day.
- Nits remain on the hair shaft and hatch after 7-12 days.
- Lice can reproduce 2-3 weeks after hatching.



Should children with head lice be excluded?

Children should not be sent home early because of head lice. Children with new cases of head lice can finish the day and be treated before returning to child care the next day. No-nit policies requiring that children be free of nits before they return to child care are not recommended (American Academy of Pediatrics, 2015).

IPM Strategies

1 LIMIT THE SPREAD

- Avoid head-to-head contact during an infestation. Head lice is usually spread through direct head-to-head contact.
- Avoid sharing combs, brushes, hair-ties, ear buds or headphones, bed sheets, blankets, hats, dress-up clothes, and costumes.
- Children with an active infestation need treatment. Treating all infested children at the same time will prevent further spread and re-infestation.
- Check all children for head lice when there's a known case in your program.

2 MONITORING AND MANAGEMENT

- Talk to parents about how important it is to follow through with treatment at home.
- Household members and other close contacts of children with head lice should be checked and treated if necessary.
- Refer parents to their child's primary care provider for advice about head lice treatment and nit removal.
- Learn to recognize nits and other signs of head lice. Regularly check children's hair when there's a known case of head lice in your program.

Photo credit: Orkin

[IPM Strategies continued]

- Wash clothes (including hats and scarves) and bedding in very hot water. Soak combs and hair brushes in hot (149°F or 65°C) water for at least an hour. Vacuum carpets and upholstered furniture in rooms used by anyone with head lice. Head lice cannot survive away from humans for more than a few days.
- Communicate closely with families in your program.

ACTION PLAN FOR HEAD LICE

WHEN TO TAKE ACTION	TREATMENT	NOTIFICATION	PREVENTION
▸ Perform a well-organized and quick response to the first case of head lice. ▸ Check children for lice and nits if you notice them scratching their heads or if they complain of an itchy scalp. ▸ A child with a new case of head lice needs to be treated before returning to child care the next day.	▸ Advise parents of children with head lice to talk with their child's primary care provider about treatment. ▸ Over-the-counter louse treatments can be used according to label instructions. ▸ Lice and nits can be removed by combing wet hair with a fine-toothed metal louse comb.	▸ Notify parents about new cases of head lice. ▸ Provide information to parents about detecting and managing head lice.	▸ Avoid head-to-head contact during an infestation. ▸ Avoid sharing combs, brushes, hair-ties, hats, ear buds or headphones, bed sheets, blankets, dress-up clothes, and costumes during an infestation. ▸ Observe children for signs of head lice and communicate closely with families.

RESOURCES

- University of California Statewide IPM Program: *Head Lice* www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7446.html
- American Academy of Pediatrics (AAP), Clinical Report 2015, *Head Lice* http://pediatrics.aappublications.org/content/135/5/e1355.full.pdf+html
- Alameda County, CA Vector Control Services, *Head Lice* www.acgov.org/ehs/vector_control/head_lice/lice.htm
- The National Pediculosis Association, Inc., *Head Lice* www.headlice.org/
- California Department of Public Health, *Head Lice* www.cdph.ca.gov/healthinfo/discond/pages/headlice.aspx
- Kids Health, *Head Lice* http://kidshealth.org/parent/infections/common/head_lice.html

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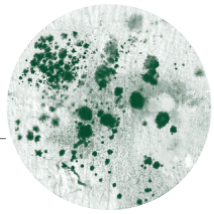
INTEGRATED PEST MANAGEMENT: MOLD



Mold and mildew are fungi found indoors and outdoors. Mold grows in moist and wet places. You need to fix the source of the moisture to get rid of mold.

Why is mold a problem?

Mold can trigger asthma, allergic reactions, and other respiratory problems for children and child care providers. These health problems can occur right away or after they are exposed to mold.

Characteristics of mold

Mold spores travel through the air and settle in moist places where they reproduce and grow. Mold can grow where there are leaks or where water collects, for example, on walls, between walls (next to the insulation) and ceilings, or around windows. Mold is common in bathrooms, around washing machines, and under sinks. Mold has a musty smell and can be white, black, or pink in color.

IPM Strategies

1 KEEP MOLD AWAY BY REMOVING MOISTURE

- Inspect regularly for water droplets collecting on walls or windows.
- Open windows to increase air circulation.
- Use exhaust fans in bathrooms and when cooking, dishwashing, and cleaning.
- Be sure that stoves and dryers vent to the outside.
- Clean regularly. Remember to clean roof gutters and air conditioning drip pans.
- Take action right away (within 24-48 hours) when you see damp or wet areas.
- Fix leaks immediately.
- Keep furniture a few inches away from exterior walls.
- Keep rugs and carpets away from moisture-prone areas.

2 MONITOR FOR MOLD

Check the following places for mold:

- Ceilings and walls, especially exterior walls.
- Walls behind furniture.
- Under carpets and pads.
- Under sinks and around pipes.
- Heating ducts.

3 MANAGE MOLD

- You can take care of small problems yourself (for example, a 3 x 3 foot patch). If a problem is too big for you to clean up, it may be best to hire a professional.
- Don't use heating, ventilation, or air conditioning systems if there is visible mold growth in the system. Follow the EPA's guide: *Should You Have the Air Ducts in Your Home Cleaned?* (www.epa.gov/iaq/pubs/airduct.html).

4 BEFORE CLEANING MOLD

- Wear a mask, such as the N-95 respirator (available at hardware stores).
- Wear gloves that cover your wrists and lower arms.
- Wear long sleeves and pants.
- If you're cleaning a ceiling, wear goggles to protect your eyes.

5 HOW TO CLEAN MOLD

- Scrub the mold off any surface with soap and water (or carefully use a disinfectant according to label directions).
- Completely dry the area.
- If mold is present in absorbent materials, like ceilings tiles and carpets, replace them.
- If mold has grown on an expensive or sentimental item, consult a specialist in furniture repair, art restoration, carpet cleaning, or water restoration.
- Make sure you fix whatever caused the moisture in the first place (for example, leaking pipes or indoor humidity). By eliminating the source of moisture, you will prevent future mold problems.

RESOURCES

- Environmental Protection Agency, *Mold Resources* www.epa.gov/mold/moldresources.html
- Center for Disease Control, *Mold* www.cdc.gov/mold

Photo credit: Noa Kaplan

INTEGRATED PEST MANAGEMENT: DUST

Household dust can lead to health problems in children. Two health-related reasons to control dust in a Family Child Care Home are:

1. To reduce dust mites that trigger asthma and allergies.
2. To reduce exposure to harmful toxins such as pesticides, lead, and flame retardants that collect in dust.

Dust mites

Dust mites are tiny insects that are too small to see. They live anywhere there is dust (for example, in carpets, bedding, upholstered furniture, and stuffed toys). Many children are allergic to the microscopic droppings of dust mites.

Chemical residues

Harmful chemical residues can settle in dust. Children are at risk of exposure since they spend more time playing on the floor where dust collects and frequently put their fingers in their mouths. The following chemicals can be found in dust:

- **Pesticides** can accumulate in dust. This can happen when pesticides are sprayed in or around the home or when people who work with pesticides (for example, farm workers) bring residues inside on their clothing and shoes. See *Integrated Pest Management Guide for Family Child Care Homes,* pages 4–5, for more information on the health hazards of pesticides.
- **Lead** can be found in dust and soil especially in homes built before 1978. Lead poisoning leads to a variety of health and learning problems in children.
- **Brominated Flame Retardants** are often found in dust. Used for three decades to slow the burning of consumer products during a fire, new research shows these chemicals are harmful to human health. They're commonly found in children's nap mats, furniture, carpeting, and electronics.

1 HOW TO REDUCE DUST

- Use doormats to reduce dust tracked in from outdoors.
- Replace upholstered furniture with furniture that can be wiped clean.
- Avoid wall-to-wall carpeting. Use washable throw rugs on hard-surface floors, such as hardwood, linoleum, or tile.
- Store toys and books in enclosed bookcases, closed cabinets, and containers.
- Choose washable stuffed toys and wash them weekly and when visibly soiled. Wash them in hot water and dry thoroughly.

2 HOW TO REMOVE DUST

- Wipe dust from surfaces and objects using a damp cloth. Dry cloths just move the dust around rather than getting rid of it.
- Clean floors with a damp mop daily, not a broom.
- Don't allow children to lay their faces or blankets directly on carpeting.
- Wash sheets, blankets, and pillows once a week in hot water and dry in a hot dryer to kill dust mites.
- Vacuum carpets and area rugs frequently. Ideally, use a high efficiency particulate air (HEPA) vacuum. If you don't have a HEPA or HEPA-equivalent vacuum, use double-lined vacuum bags to reduce the amount of dust and dirt blown into the air while vacuuming.

NOTE: Clean when children are not present and provide fresh air by opening windows or turning on your ventilation system.

RESOURCES

- California Childcare Health Program (CCHP), *Asthma Triggers and How to Reduce Them* cchp.ucsf.edu/Reduce_Asthma_Triggers
- California Environmental Protection Agency Air Resources Board, *Air pollution and contaminants at child-care and preschool facilities in California* www.arb.ca.gov/html/fact_sheets/preschool_exposure.pdf

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INTEGRATED PEST MANAGEMENT: PINWORMS

What are pinworms?

Pinworms are small, white, thread-like worms that live in the lower intestine. The female worms come out at night through the anus to lay their eggs on the skin around the opening.

What are the symptoms?

Symptoms include itching and redness around the anal or vaginal area. The itching may cause a child to squirm and scratch. You might see the small, white, thread-like worms in the toilet or in the child's underwear. Many people with pinworms have no symptoms. If you suspect a child has pinworms, suggest to parents that they use a flashlight to check for pinworms around the anus when the child is sleeping.

Who gets them and how?

Pinworms are common among preschool and school-aged children and spread easily within families. Pinworms can spread when affected children scratch their anal area and then touch objects (like toys, bedding, toilets, and playground equipment). Children can get pinworms when they touch or mouth objects with pinworms or eggs.

Pinworms can spread if either worms or eggs are present, and eggs can live for two to three weeks on surfaces. Pinworms can also spread by oral contact with the feces of an affected child.

Where should I report it?

Notify parents and staff so that they can watch for symptoms. Parents of a child with pinworms should consult their health care provider for treatment.

Should children with pinworms be excluded?

No. Pinworms are common and are not dangerous.

HOW CAN I LIMIT THE SPREAD OF PINWORMS?

- Practice good hand hygiene (children and staff).
- Wash toys, surfaces, bedding, and equipment frequently.
- Store clothing soiled with feces in plastic bags and send home for laundering.
- Clean and disinfect bathroom surfaces.
- Keep children's fingernails short.

ACTION PLAN FOR PINWORMS

WHEN TO TAKE ACTION	TREATMENT	NOTIFICATION	PREVENTION
▸ If you see pinworms or suspect pinworms because of anal itching and scratching. ▸ If a child in your program has been diagnosed with pinworms.	▸ Children with symptoms should be evaluated and treated by a health care provider.	▸ Notify parents and staff so they can watch for symptoms.	▸ Practice good hand hygiene. ▸ Wash toys and surfaces regularly. ▸ Store fecal soiled clothing in plastic bags to be sent home for laundering. ▸ Clean and disinfect bathrooms. ▸ Keep children's fingernails short.

RESOURCES

- California Childcare Health Program, UCSF School of Nursing, *What Child Care Providers Should Know About Pinworms* cchp.ucsf.edu/pinworms-ILL
- Aronson, SS and Shope, TR (editors) (2013). Managing Infectious Diseases in Child Care and Schools. A Quick Reference Guide, 3rd Edition. American Academy of Pediatrics. Elk Grove Village, IL.

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INTEGRATED PEST MANAGEMENT: SCABIES

What is Scabies?

Scabies is a skin infestation by mites, tiny relatives of spiders. The mites burrow into the skin and cause an itchy rash.

What are the symptoms?

An itchy rash occurs as an allergic reaction to the mites. Red bumps and blisters usually appear in a line on skin folds between the fingers, toes, wrists, elbows, armpits, waistline, thighs, genital area, abdomen, and lower buttocks. Infants and toddlers may have a rash on the head, neck, palms, and soles of the feet, or a light rash anywhere on the body.

A person who has never had scabies before will get a rash four to six weeks after getting scabies mites. People who have had scabies before will have an allergic rash within a few days after exposure. A person can continue to spread scabies until the mite infestation is treated.

Who gets it and how?

Anyone can get scabies, regardless of income, age, sex, or personal hygiene. Scabies is spread by direct skin-to-skin contact with another person or by sharing clothes or bedding of a person with the infestation.

Should children with scabies be excluded?

Yes, until after treatment is completed. Children with symptoms of scabies should see their health care provider for evaluation and treatment.

Household members and very close contacts are usually treated at the same time as the child. People who have had close contact with the affected child should get medical advice from their health care provider, even if no signs or symptoms are present.

Where should I report it?

Notify staff members and parents of children who may have had close contact with a person known to have scabies.

HOW CAN I LIMIT THE SPREAD OF SCABIES?

- Practice good hand hygiene.
- Look for signs of scabies, and report if you suspect a child has scabies.
- Keep children's clothing and bedding separate.
- Launder clothes, towels, and bedding worn or used by the affected person in hot water. Dry in a hot dryer, or iron with a hot iron.
- Non-washable items may be dry cleaned or sealed in a plastic bag for at least four days.
- Vacuum carpets, upholstered furniture, and car seats.

ACTION PLAN FOR SCABIES

WHEN TO TAKE ACTION	TREATMENT	NOTIFICATION	PREVENTION
▸ When someone has symptoms of scabies or been in close contact with a person known to have scabies.	▸ Young children should see a health care provider for treatment. ▸ Adults with close contact to a child with scabies should talk to their health care provider about treatment.	▸ Notify staff and parents of children who may have had close contact with a person with scabies. ▸ Anyone suspected of having scabies should be excluded until after treatment is completed (usually overnight).	▸ Practice good hand hygiene. ▸ Look for signs of scabies during the morning check. ▸ Do not share clothing, hats, towels, or bedding. ▸ Launder clothes and bedding in hot water. Dry in a hot dryer or press with a hot iron. ▸ Vacuum often.

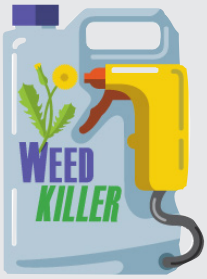
HOW TO CHOOSE A PESTICIDE TO MANAGE PESTS

CHOOSE

Traps, baits, and gels effectively manage pests because:

- Pests, such as ants and cockroaches, take the pesticide back to the nest or hiding places where it kills the whole colony.
- The pesticide is contained (doesn't evaporate) and doesn't expose staff and children.
- Last longer than sprays.

USE CAUTION



Foggers and sprays do not effectively manage pests because they:

- Evaporate quickly.
- Kill pests you can see, but do not kill the pests hiding and breeding in out-of-the-way places.
- Cause pests to run away and hide, only to return later.
- Can spread pesticides throughout your facility and expose children and staff.

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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. Remember pesticides should be used as a last resort. The following is a quick overview of key things to look for on the label:

PRECAUTIONARY STATEMENTS

The precautionary statements describe potential harmful effects to people, animals or the environment and actions you can take to reduce those effects, like wearing gloves or other personal protective equipment.

DIRECTIONS FOR USE

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

STORAGE & DISPOSAL

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

PRODUCT NAME®

COMMON NAME
CHEMICAL NAME

ACTIVE INGREDIENT____%
INERT INGREDIENTS ____%

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

FIRST AID

STATEMENT OF TREATMENT

IF SWALLOWED.....
IF INHALED.....
IF ON SKIN.....
IF ON EYES.....

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.

MFG. BY_____
CITY, STATE_____
ESTABLISHMENT NO____
EPA REGISTRATION NO____
NET CONTENTS_____

The Environmental Protection Agency registration number ensures that the pesticide and the language on the label have been reviewed by the U.S. EPA.

KEEP OUT OF REACH OF CHILDREN

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.

INDOOR SURFACES

OUTDOOR SURFACES

CAUTION

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

HAZARD TO
_____
_____

WARRANTY STATEMENT
_____
_____

For more information on reading a pesticide label, see the U.S. EPA "Read the Label First"– www.epa.gov/pesticides/label/index.html.

INTEGRATED PEST MANAGEMENT:
CARING FOR YOUR OUTDOOR ENVIRONMENT

Sandboxes

- Separate the sandbox from other play equipment such as slides or swings.
- Make sure the sandbox has adequate drainage so water does not puddle or pool.
- Use smooth-surfaced, fine pea gravel or washed sand that's labeled for sandboxes. Do not use sand that's used as construction material or collected from a site that uses harmful materials.
- When not in use, keep the sandbox covered with a lid or other covering that keeps pests out.

Garbage and Recycling

- Use the outdoor waste bins provided by your local waste hauler. Request more bins if your garbage or recycling regularly overflows.
- Set bins at least 50 feet away from entrances to home or play yard and keep on pest-proof pavement such as concrete.
- Keep the bin area free from spilled liquids or waste.
- Make sure that every outdoor waste bin has a tight-fitting lid.
- Rinse your recycling and bins regularly.
- Regularly rinse green waste bins for food scraps and yard trimmings that are collected by your waste hauler.

PESTS IN THE SANDBOX

- Don't use sprays or foggers in the sandbox. These are dangerous for children and don't kill pests hiding in the sand.
- Avoid using chemicals to clean or disinfect the sandbox.
- If you see or smell urine, feces, pests, or other hazards, replace the sand with fresh sand or fresh fine pea gravel.

PREVENT FUTURE PEST PROBLEMS

- Before each use, make sure sand play areas are free of pests and other dangers like sharp objects, cat, and other animal feces.
- Keep the play area clear of food, garbage, and standing water because these attract pests.
- Replace sand as often as necessary to keep the sand clean and free of pests, feces, and other hazards.

ON-SITE COMPOSTING

Composting provides a wonderful opportunity to teach children about environmental sustainability. Unfortunately, compost left in the open can attract unwanted pests. Instead, choose a closed compost bin.

- Closed compost systems make it more difficult for pests to access the contents and have fewer odors.
- They often come with handles that make turning the compost easy, even for children.
- As with waste bins, set the closed compost bin system on a pest-proof surface such as concrete.

PESTS IN GARBAGE AREA

- If you use rodent bait stations or yellowjacket traps, make sure they're placed out of children's reach.

[IPM continued]

- Call your local pest management professional for advice on how to treat rodents without using rodenticides.

PREVENT FUTURE PEST PROBLEMS

- Rinse and clean recyclables.
- Take out household garbage at the end of each day, or more often if needed.

Lawn and Garden

- Use mulch or landscape fabric to deter weeds. If you need to remove weeds, remove by hand and pull from the root.
- Water your lawn deeply and infrequently. Water in the early morning rather than during the hottest temperature of the day.
- Mow regularly and leave the clippings for your grass and roots to be healthier.
- Fertilizing with a slow-release product once a year between Halloween and Thanksgiving is best. Over-fertilization can lead to plant disease and polluted water ways. CAUTION: Some lawn fertilizers, such as weed-and-feed products, are mixed with pesticides. Do not use these. Read the label before purchasing any lawn-care products.
- Encourage beneficial insects such as lady beetles, crab spiders, and praying mantises by not using pesticides. Choose plants that provide beneficial insects with pollen, nectar, and shelter. Keep ants out of plants that have aphids.

PESTS IN LAWN AND GARDEN

- Don't spray! Herbicides and insecticides are dangerous for children's health.
- Identify if an organism is a pest or beneficial. Some beneficial organisms include ladybugs, dragonflies, bees, spiders, soldier beetles, and ground beetles.
- California lawns sometimes suffer from white grubs, the larval (immature) stage of several species of beetles. The best approach to grub control is to maintain a healthy lawn without using insecticides.

PREVENT FUTURE PEST PROBLEMS

- Compost added to lawns can help prevent lawn disease and increase water retention.
- If your lawn is attracting pests, consider a grass substitute such as garden chamomile, strawberry clover, caraway-scented thyme, creeping thyme, or woolly yarrow.

RESOURCES

- UC IPM Program, *Lawns and Turf*
  www.ipm.ucdavis.edu/PMG/menu.turf.html
- Our Water, Our World – *Beneficial Insects*
  http://ourwaterourworld.com/QuickLinks/BeneficialInsects.aspx

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WHAT TO KNOW ABOUT THE HEALTHY SCHOOLS ACT

The California Healthy Schools Act (HSA) applies to all K–12 schools as well as public and private child care centers, but not to family child care homes. HSA requires certain practices of schools and child care centers related to pesticides and pest management. While HSA does not apply to family child care homes, some of the practices and requirements can be helpful to implement integrated pest management (IPM) programs in family child care homes.

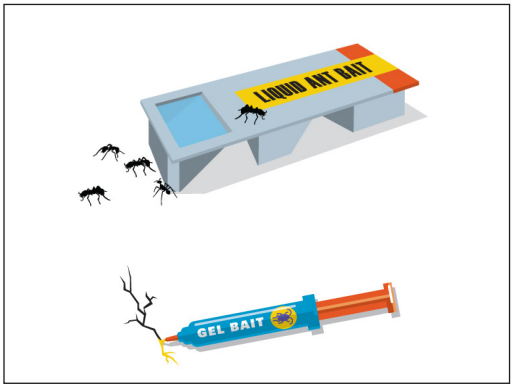
Best practices for family child care homes from HSA:

- Have an IPM policy (see *Integrated Pest Management: Policy for Family Child Care Homes* handout on the reverse side).
- Keep records of any pesticide applications.
- Notify parents of pest infestations requiring the use of pesticides.
- Use pesticides that are not regulated ("exempt") under HSA, rather than sprays or foggers.
- Take free DPR Online HSA Training Courses designed for child care providers, teachers, custodians, and food service workers: apps.cdpr.ca.gov/schoolipm/training/main.cfm.

Foggers and sprays are regulated under HSA.

Which pesticides are *not* regulated under HSA?

HSA does not require posting, notification, recordkeeping, or reporting for some less hazardous pesticide products. These HSA-exempt products are safer than pesticide products like sprays and foggers. All pesticide products, including HSA-exempt products, should still be used as a last resort.



HSA-exempt products include:

- Self-contained baits and traps.
- Gels or pastes used for crack-and-crevice treatments.
- Antimicrobials (products that kill microorganisms such as sanitizers and disinfectants).
- "Minimum risk pesticides," or products exempt from registration by the U.S. EPA.

RESOURCES

- U.S. Environmental Protection Agency, List of Minimum Risk Pesticides www2.epa.gov/minimum-risk-pesticides/active-ingredients-allowed-minimum-risk-pesticide-products
- California Department of Pesticide Regulation, Healthy Schools Act http://apps.cdpr.ca.gov/schoolipm/school_ipm_law/main.cfm
- California Childcare Health Program, The Healthy Schools Act cchp.ucsf.edu/HSA-CUR

Photo credit: Orkin

INTEGRATED PEST MANAGEMENT:
POLICY FOR FAMILY CHILD CARE HOMES

NAME OF FAMILY CHILD CARE HOME DATE

Our pest management policy is to reduce the presence of harmful pests and to minimize potential exposure of children and staff to pesticides. Regularly scheduled applications of harmful pesticides do not occur in our family child care home.

Our IPM program ensures that we:

- Regularly monitor to identify pest problems.
- Prevent pest problems by removing pest's food, water, and shelter.
- Use non-chemical management practices to address pest problems when necessary.
- Use least-hazardous pesticides as a last resort, if non-chemical management practices fail.
- Train staff, household members, and parents on IPM practices.
- Use the California Childcare Health Program IPM Toolkit and University of California (UC) Statewide IPM Program website for action plans on individual pests.
- Hire professionals to provide pest management or other services who are knowledgeable about IPM practices. Pest management professionals refrain from routine pesticide spraying, provide detailed service reports with each visit, and give recommendations for pest prevention.

Optional: Policy for parents exposed to pesticides at work

- Wash your hands before leaving work.
- Change your work clothes before picking up your child. Don't hug or carry your child until after you have changed.
- Leave your work shoes outside before you enter to pick up your child.
- Store and wash your work clothes separately from the rest of your clothes and your children's clothes.

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INTEGRATED PEST MANAGEMENT: RESOURCES

California Childcare Health Program (CCHP) Administered by University of California San Francisco School of Nursing

Includes information sheets, curricula, and posters on health and safety in early care and education programs for professionals and families in English and Spanish.

cchp.ucsf.edu

California Department of Pesticide Regulation Child Care IPM: Growing Up Green

Lists information on implementing IPM in child care settings.

www.cdpr.ca.gov/schoolipm/childcare

Videos of hands-on demonstrations of IPM practices in child care centers.

apps.cdpr.ca.gov/schoolipm/childcare/video_series.cfm

California Structural Pest Control Board

Provides a list of certified California pest management professionals.

(916) 561-8704

www.pestboard.ca.gov

Caring for Our Children: National Health and Safety Performance Standards: Guidelines for Early Care and Education Programs, Third Edition, 2011

Caring for our Children is a joint collaborative project of the American Academy of Pediatrics, American Public Health Association, and the National Resource Center for health and Safety in Child Care and Early Education. *Caring for our Children* is a collection of 686 national standards that represent the best evidence, expertise, and experience on quality health and safety practices and policies to follow in today's early care and education programs.

www.cfoc.nrckids.org

Ecologo

An independent agency that certifies green products and cleaners. Ecologo certified products are listed on their website and listed on product labels.

www.ecologo.org

Ecowise

An independent agency funded by California State Resources Control Board and the Rose Foundation. They certify companies that provide IPM services.

www.ecowisecertified.org

eXtension: Pest Management In and Around Structures

eXtension is an interactive learning environment delivering research-based information emerging from America's land-grant university system. Includes IPM action plans and resources.

www.extension.org/urban_integrated_pest_management

GreenPro
Administered by National Pest Management Association (NPMA)

The GreenPro certification means that your pest management provider provides IPM services and complies with a comprehensive set of qualifications to ensure that you hire a smart, effective, and responsible service professional.

www.certifiedgreenpro.org

Green Seal

An independent, third-party certification for safer cleaners and other products meeting life cycle-based sustainability standards.

www.greenseal.org

Green Shield Certified

An independent, non-profit certification program that promotes practitioners of effective, prevention-based pest control while minimizing the need to use pesticides. Helps you find companies providing IPM services.

www.greenshieldcertified.org

Maine School IPM Program
An Ounce of Prevention! Integrated Pest Management (IPM) For Schools and Child Care Facilities

A brochure for school and child care facility staff, parents, and pest management professionals.

www.maine.gov/dacf/php/integrated_pest_management/school/index.shtml

Midwest Pesticide Action Center

Dedicated to reducing the health risks and environmental impacts of pesticides by promoting safer alternatives. Developed toolkits, guides, and factsheets to help you reduce your exposure to pesticides.

www.midwestpesticideaction.org

[IPM Resources continued]

National Pesticide Information Center (NPIC)

Funded by a cooperative agreement between Oregon State University and the U.S. Environmental Protection Agency. Includes information on pesticide ingredients, health and safety, and Safety Data Sheets.

www.npic.orst.edu

National Pest Management Association (NPMA)

A non-profit organization that supports the pest management industry's commitment to the protection of public health, food, and property. Identify pests and get general pest control information from pest management professionals.

www.pestworld.org

New York City Department of Health and Mental Hygiene
How to Control Pests Safely – A Healthy Homes Guide

A guide to getting rid of roaches and mice safely in your home.

www.nyc.gov/html/doh/downloads/pdf/pest/pest-bro-healthy-home.pdf

Our Water, Our World

A website developed to assist consumers in managing home and garden pests in a way that helps protect our waterways and our world.

www.ourwaterourworld.org

Pest Control Operators of California (PCOC)

A non-profit trade association providing a directory of pest management companies.

www.pcoc.org

University of California Cooperative Extension County Cooperative Extension Office Directory for pest problems

Lists IPM experts in every California county who provides advice on handling specific pest problems in your home.

www.ucanr.edu/county_offices

University of California Statewide Integrated Pest Management Program

A comprehensive resource for identifying pests and finding management guidelines. Information from University of California scientists on managing pests using safe and effective practices and strategies that protect people and the environment.

www.ipm.ucdavis.edu

University of Florida National School IPM Information Source

Information on pests common in schools.

http://schoolipm.ifas.ufl.edu/tp.htm

U.S. Environmental Protection Agency (EPA)

Safer Choice (Formerly Design for the Environment)

Safer Choice certifies products that meet EPA standards and have been tested for the safety of the health of humans and the environment.

www2.epa.gov/saferchoice

Integrated Pest Management for Schools: A How-to Manual

Information on IPM in schools from the Environmental Protection Agency.

www.epa.gov/opp00001/ipm/

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