UNDERSTANDING IPM PRACTICES

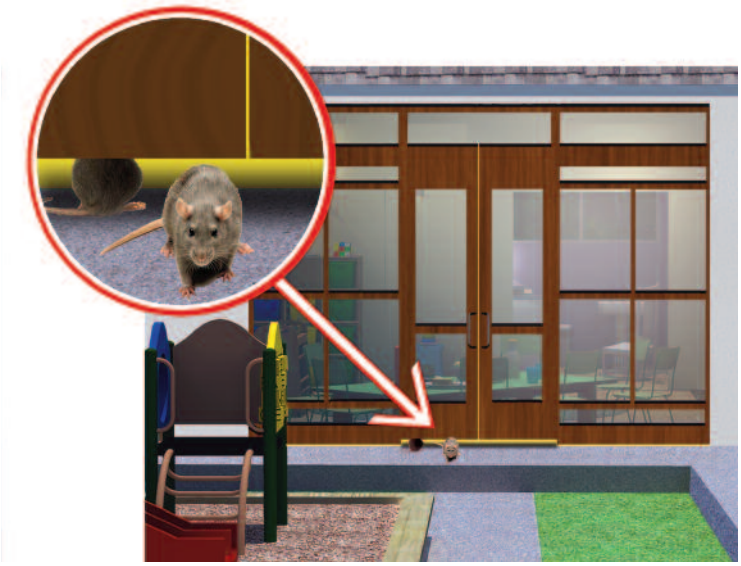
In this section, we provide more detail about IPM. IPM is typically described in five categories:

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

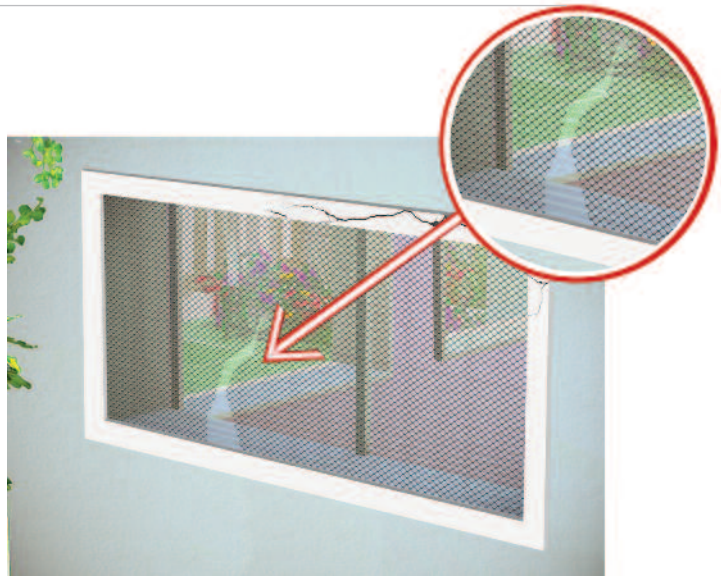
In practice, many of the strategies we describe below are used in more than one category of IPM.

PREVENTION

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

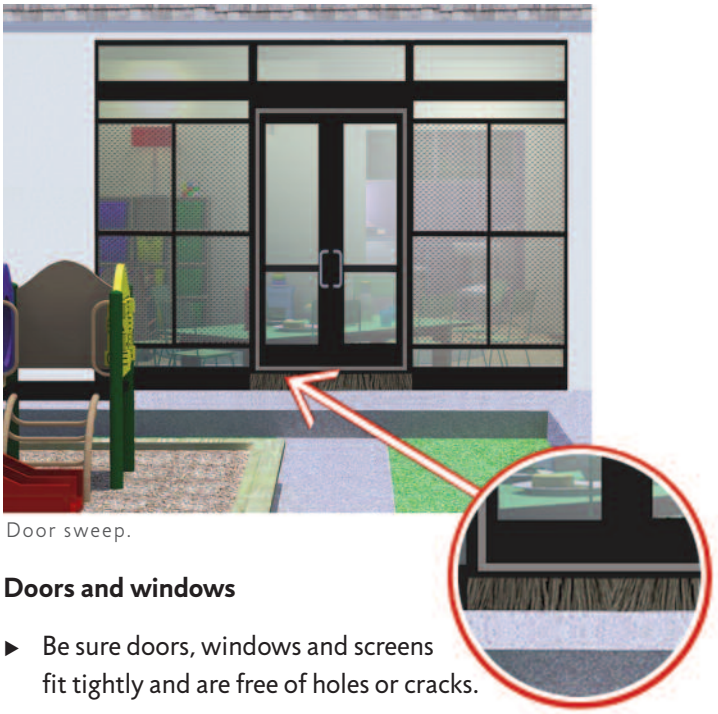


Install door sweeps.



Make sure window screens are free of damage.

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



Door sweep.

Doors and windows

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

Cracks, crevices, gaps and holes

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

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

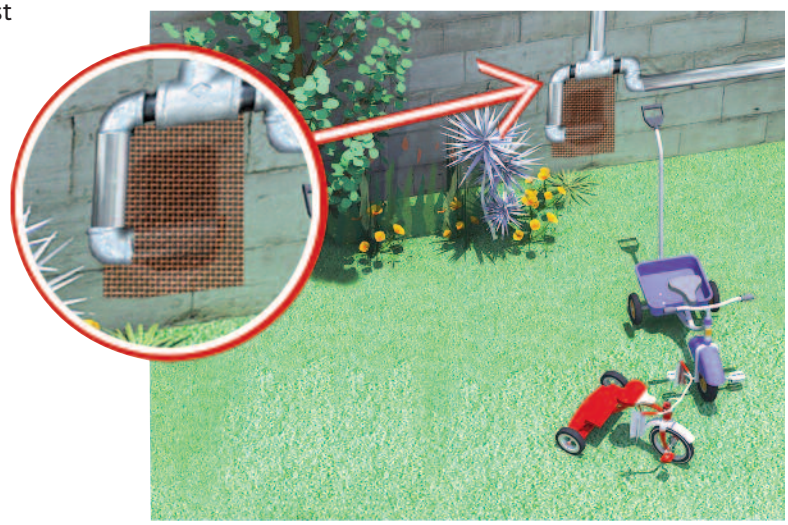
Landscape

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

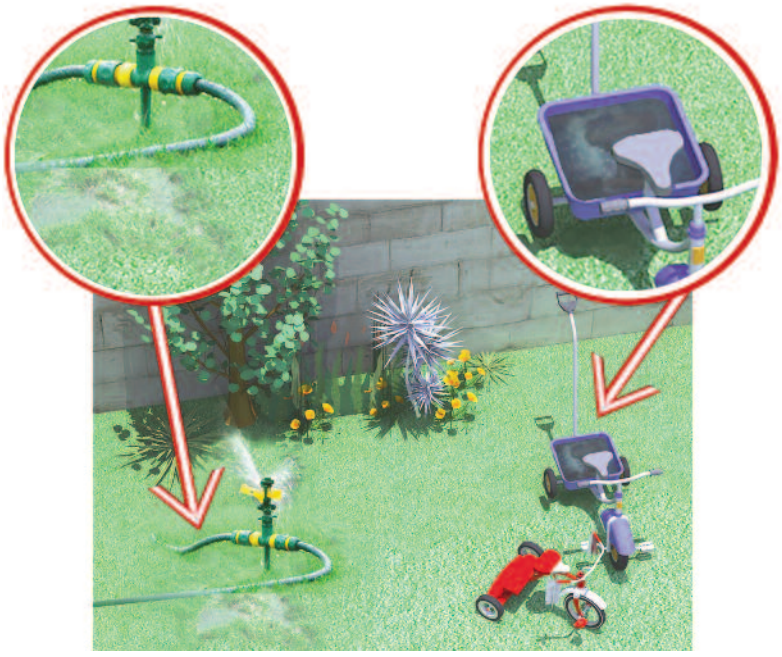
- Keep plants, mulch and moisture at least 12 inches away from the building.
- Trim branches regularly and keep them at least 3–4 feet from the building.
- Remove ivy, vines, wood, debris, garden produce, compost piles and thick mulch around the perimeter of building.
- Clean gutters.
- Plant flowers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

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

Openings are entrances for pests.



Screen vents or other large openings with hardware cloth.



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

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

Water

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

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

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

Dirty garbage storage area.

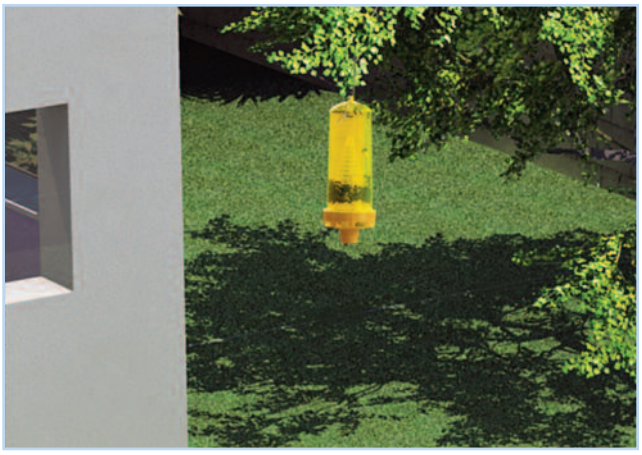
Clean garbage storage area.

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

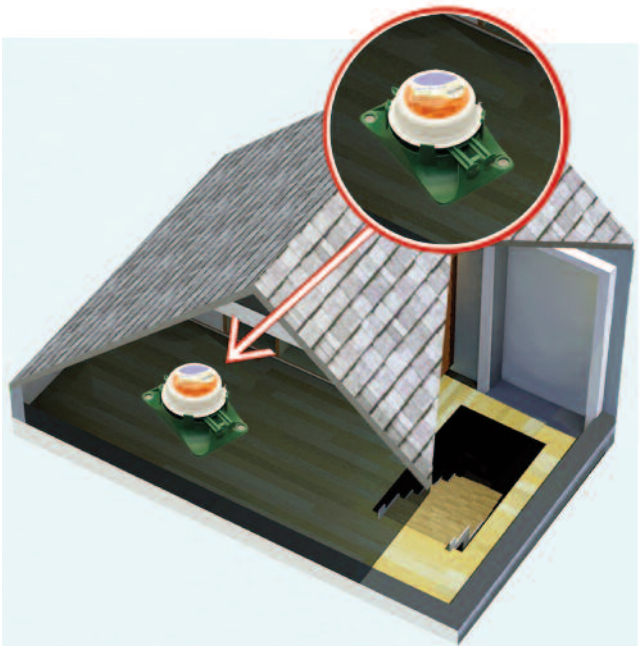
Garbage in play area (garbage containers)

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

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



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



Place bait stations out of children's reach.

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

Sanitation

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

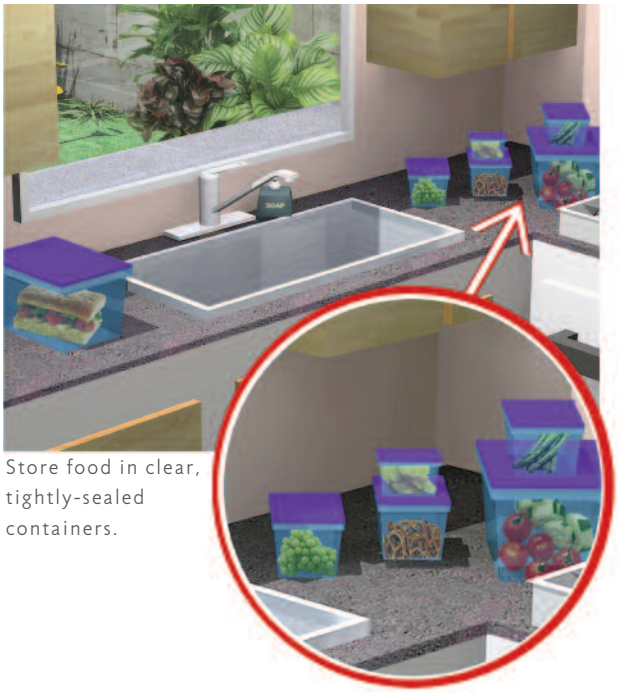
Remember that sealing and repairing any cracks, crevices, gaps and holes inside the building is another way to prevent pests from invading your building.

Routine cleaning

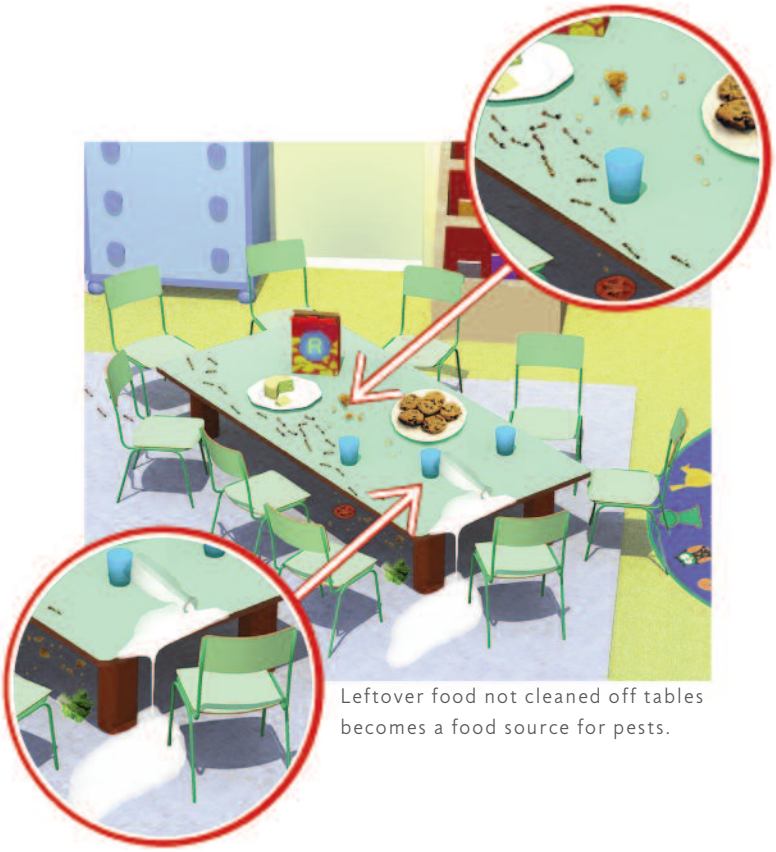
Routinely clean all areas in the ECE facility:

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

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



Store food in clear, tightly-sealed containers.



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

Food

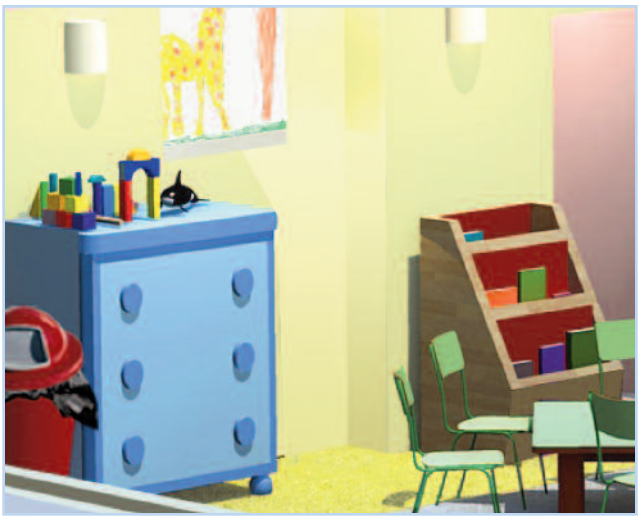
Maintaining a clean environment is the key strategy for preventing pests in food preparation and storage areas.

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

Garbage

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

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



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

Water

Eliminate accumulated water anywhere around the building or grounds.

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

Keep bathrooms as dry and clean as possible.

Repair gaps or cracks around pipes.

Fix leaky plumbing.

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

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

To minimize the level of clutter:

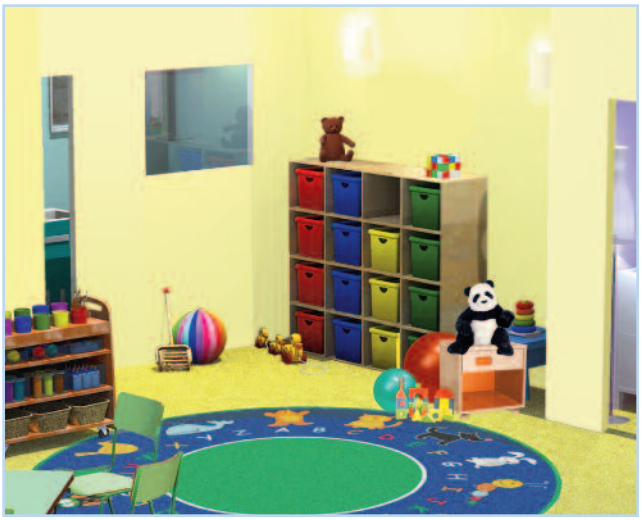
- organize equipment and toys.
- clean regularly.
- avoid storing stacks of newspapers, magazines or cardboard boxes because these provide an excellent shelter for roaches, rodents and other pests. If you need to store items, use plastic bins with sealed lids.

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

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

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

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



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

INSPECTION

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

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

IDENTIFICATION

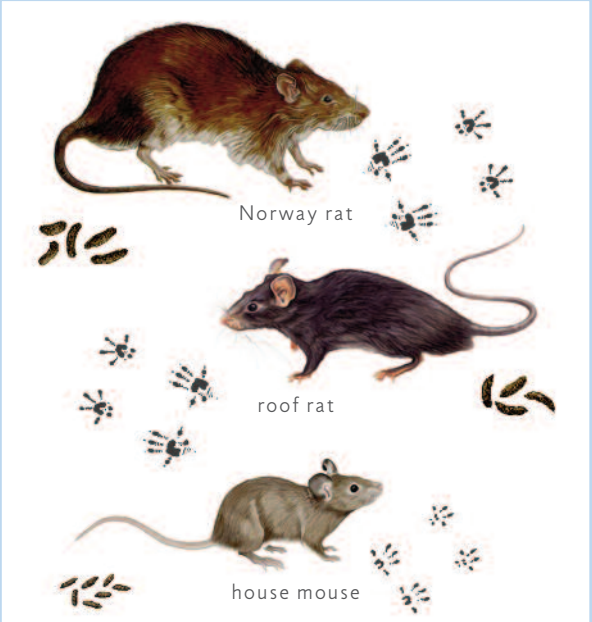
Identify your pests

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

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

Identify pests' characteristics and habits

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



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

MONITORING

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

Monitoring pests involves:

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

STEPS OF EFFECTIVE MONITORING

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

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

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

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

Keeping good records will:

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

Check under cabinets and furniture for signs of pests.

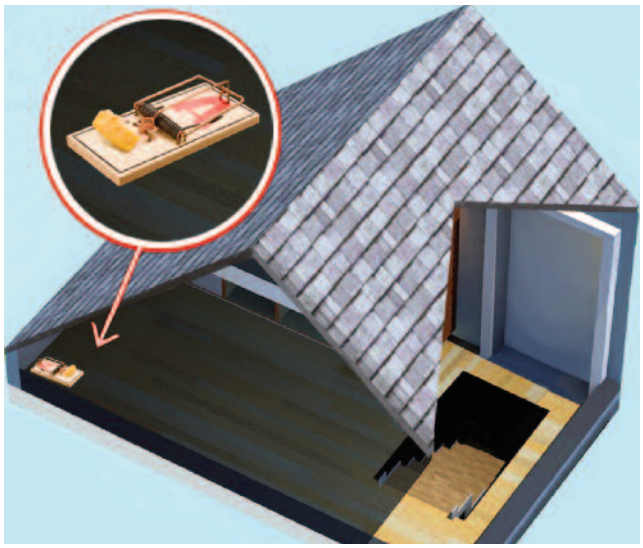
MANAGEMENT

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

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

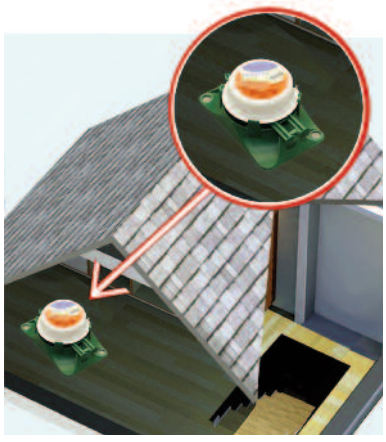
Often you can manage pests with nonchemical steps such as:

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



Place traps out of children's reach.

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



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

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

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

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

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

SAFE STORAGE AND DISPOSAL OF PESTICIDES

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

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

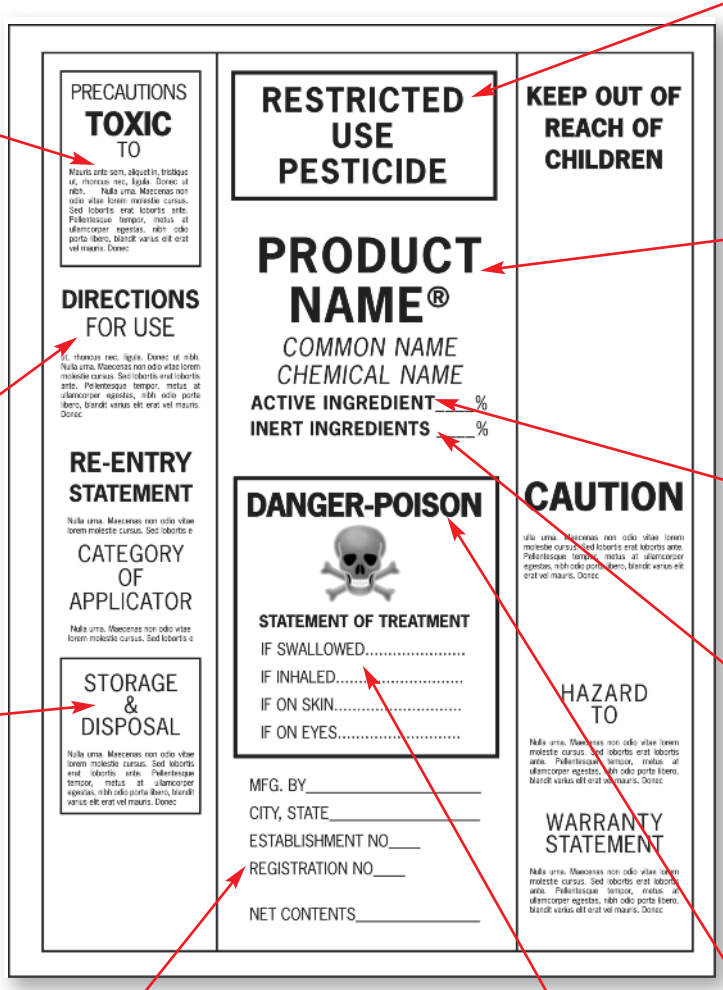
HOW TO READ A PESTICIDE LABEL

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

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

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

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



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

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

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

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

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

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

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

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

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