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Community IPM

Integrated Pest Management for School and Municipal Buildings, Step 3

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What is Integrated Pest Management (IPM)?

IPM is a proactive approach that uses a wide range of methods to solve pest problems while minimizing risks to people, property, and the environment.

IPM Step One is covered in *Integrated Pest Management for School and Municipal Buildings, Step 1.*

IPM Step Two is covered in *Integrated Pest Management for School and Municipal Buildings, Step 2.*

IPM Step Three: Inspections and Monitoring for Pests and Conditions that Attract Pests

Inspections are regular surveys for pest activity within and around a building. They evaluate the condition of structures and surrounding areas to identify present or potential issues, such as signs of active pest infestations, poor sanitation, or maintenance problems. Inspections note the presence of conditions that encourage pests to invade or thrive, such as those that provide food, water, entry, or shelter. *Monitoring* is the use of traps and other devices to determine the pest population over time. Examples of monitoring include counting the number of insects on sticky traps or the abundance of mouse droppings in an area. After a building has been mapped, a thorough inspection should be conducted to identify the following:

- leaks, both past and current
- wet or decaying wood
- gaps around pipes and utilities allowing movement within a building
- gaps around windows and doors
- torn screens
- vents with damaged screens
- unsanitary conditions, including food and drink spills
- open sewers or loose sewer covers indoors
- clogged or dirty drains
- peeling wallpaper
- grimy garbage cans, dumpsters, and garbage/recycling areas
- clutter, such as piles of wood or cardboard
- holes in the walls (inside and out), including gaps around pipe or conduit chases.
- pest damage and greasy rub marks, indicating rodent activity

Rats and mice establish pathways and will gnaw their way through obstacles, such as a drop ceiling.

Light fixtures can provide a lot of information to an inspector. Be sure to remove and clean out dead insects from the light cover so this monitoring method will continue to provide new information.

Look for and record current, past, and potential problems on the inspection form and site map. Note any damage to the building, entry holes, fecal droppings, cast skins, egg cases, runways (often seen in insulation), tracks, rub marks, urine stains, gnaw marks, food caches, nests, odors, noise (vocalizations or movements), damaged wood, infested food, evidence of past control efforts (such as empty pesticide containers, rodent bait stations, old traps or repairs), burrows, access routes, carcasses, and live animals.

Note any sites that do not currently have problems, but are vulnerable to future access or damage. Visit and inspect these sites on a regular basis. Review the building's pest sighting logs and talk to the building's occupants. The IPM coordinator may also set traps to monitor pest populations. Sticky traps and pheromone traps may reveal the presence of an otherwise undetected pest and are useful in identifying the species present.

If you are dealing with a particular pest, you may look specifically for signs of that species. For example, the presence of raccoons or squirrels can often be confirmed by an outdoor inspection; you may not need to inspect the facility's interior in this case. On the other hand, if you're concerned about mice, you'll need to look over the building inside and out, first investigating indoors, which will help you locate the entry holes on the exterior of the building. To track the origin of insect pests, like cockroaches, you may need to inspect packaging from goods brought into the building.

Rodents leave behind greasy stains on trails and pathways that they use regularly. Knowing the habits of rodents can help with trap and bait placement.

Inspection techniques

Systematically look for signs of current pest activity and for situations that might promote future pest problems. Using the site plan as a guide, decide on a strategy that will give you the best information about the building in the amount of time you have. The inspection can be thorough (longer) or take a "triage" approach (shorter). A thorough inspection will cover all portions of the building that might be affected by the target pests, while a triage approach would focus on the most vulnerable areas. Often, the first inspection or an annual inspection will be thorough; while follow-up inspections will be triage. It is important to accurately document the results of inspections. This can be done on specific inspection forms (see *Integrated Pest Management for School and Municipal Buildings, Appendix: Inspection and Monitoring Forms*); often, the inspector uses a copy of the site plan to note the presence of pest activity, evidence or pest conditions.

Information Gathering

Speaking to building occupants, especially those with facility management, maintenance, food handling, or custodial duties, can be helpful. This is particularly true if the inspector is not on the site daily. During the interview, ask either general or probing questions. A general question might be, "Please describe what you know about the problem," or "Have you noticed any problems?" This type of question provides an opportunity for staff members to give their perspective and may guide the inspection. You may want to ask specific questions, too, such as "Have you seen any cockroaches this week?" or ask if they have noticed any unusual odors or noises. (Some people may misinterpret mechanical sounds such as a smoke alarm with a low battery or a swaying utility line as animal noises, so you may need to ask more questions to be sure of what they heard).

Equipment needed for inspections

1. **Documents**: inspection forms, site map, and pest identification guides
2. **Tools:**
   - a good flashlight
   - extendable mirror (for viewing less accessible locations)
   - stepladder (for interior inspections)
   - larger ladders (for exterior inspections)
   - binoculars (useful for tall structures)
   - camera
   - ultraviolet light source (for detecting rodent urine stains)
   - respirators (preferably with a NIOSH-approved filter)
   - goggles and kneepads (for inspecting crawl spaces)
   - disposable gloves
   - safety helmet
   - bungee cords to secure ladders
   - additional safety equipment that may be needed for the job

A generic inspection form is applicable to most structures and pests. Inspection forms can also be developed that are specific to a particular location, such as a certain school building, or to a particular pest. Make sure that your equipment is in good condition. Pay attention to your equipment while you're working and stay alert to potentially harmful situations throughout the inspection. Choose ladders of appropriate construction and height for the work that needs to be done. Secure ladders carefully, and use safety helmets to prevent head injuries and possible death. When climbing steep roofs, you may need safety ropes and harnesses.

Respirators are necessary for the safe inspection of most crawl spaces. Choose one that can protect you against microscopic disease particles, such as hantavirus.

Goggles, disposable gloves, and coveralls provide additional personal protection. Consult the Occupational Safety and Health Administration (OSHA) guidelines for safety practices concerning the use of ladders, respirators, and other safety equipment. See www.osha.gov.

Conducting the inspection

Inside the facility:

Inspect the building systematically, working from the top of the facility to the bottom or vice versa. Within each room, move either clockwise or counterclockwise. Pay particular attention to corners, underneath and behind furniture. If there are suspended ceilings, push up the panels in several locations to check the space above the ceiling tiles. Inspect attics, basements, closets, cabinets, built-in drawers, areas around and underneath sinks, plumbing and utility accesses, and crawl spaces.

Outside the Facility:

Thoroughly inspect the foundation, sill plate and first floor windows and doors. Then look over the upper portions of the structure. Be sure to check areas beneath decks, crawl spaces, and dumpsters. Inspect garbage storage areas and piles of firewood, lumber, or debris. Garages, eaves, dormers, windows, vents, drip edges, soffits (the boards under the eaves), chimneys, roof corners, and roof tie-ins must also be checked (Figures 1 and 2).

Inspection and monitoring are essential to an IPM program. Spending time to understand the scope and nature of the problem will help ensure the success of your pest management efforts.

Vines growing up the outside wall of a commercial building can cause several types of pest problems. Birds nest there, rodents climb vines to gain entry to upper openings. Yellowjackets often create nests in plants on structures. Ants will use vines to find food and gain building access. Bottom line: take down the vines to prevent pests and damage to the building façade.

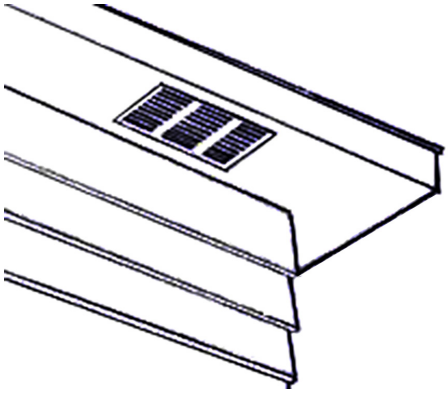

Figure 1. Underside of roof eaves showing vent. Illustration: J. Engel

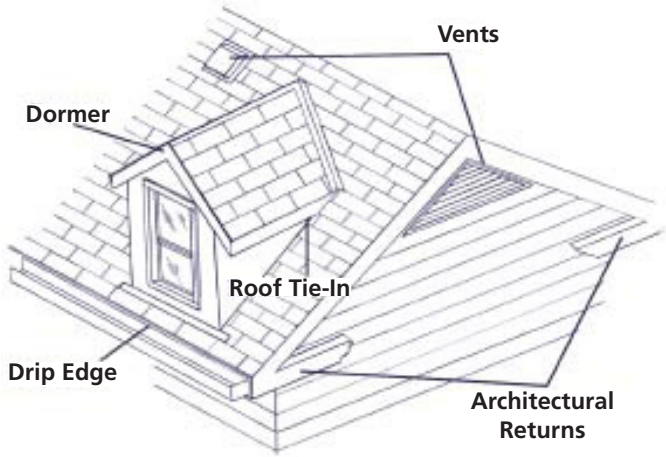

Figure 2. Features of a roof. Illustration: J. Engel

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