



An Ounce of Prevention!

Integrated Pest Management (IPM)

For Schools and Child Care Facilities

This brochure is intended for school and child care facility staff, parents, and pest management professionals.

Everyone has a role in IPM to prevent and manage pests in and around schools and child care facilities.

Follow all appropriate federal, state, and local regulations. Always read and follow label directions before buying or using a pesticide.



INTRODUCTION

What is Integrated Pest Management?

Integrated Pest Management (IPM) is a proactive approach to managing pests that focuses on preventing infestations and monitoring for pests. IPM relies on accurate identification and a basic understanding of the target pests (insects, weeds, disease-causing pathogens, etc.) This information is used to implement a management strategy where necessary measures are combined to control current pest problems and prevent or minimize recurrence. Careful and effective pest management is an integral part of safety at schools and child care facilities.

Why is IPM Important for Schools and Child Care Facilities?

While some pests are simply nuisances, others can contaminate food, affect health and damage property if left unmanaged. Stings or bites from many insect pests, such as fire ants and yellow jackets, are venomous, cause pain and can result in allergic reactions. Cockroaches and their remains, bed bugs and many weeds are known sources of allergens that are asthma triggers. Pests such as cockroaches, mosquitoes, flies, ticks, fleas, rodents, and birds can be involved in spreading disease-causing bacteria, fungi, viruses and other pathogens.

An effective IPM program begins with making schools and child care facilities less vulnerable to pest infestation, by focusing on "best management practices" (BMPs) that PREVENT pests. These practices will vary depending on the pest. Sanitation, exclusion (pest-proofing), and removing food, water, and shelter are key BMPs to prevent many indoor insect and rodent pests. A healthy lawn that is properly mowed, fertilized and watered competes well with weeds. Molds and mildews will not flourish in dry, well-ventilated conditions.

With IPM, most pesticides are not used on a calendar basis (pre-set schedule), but employed when inspection, monitoring, and/or knowledge of the particular circumstances warrant their use. However, some pesticides, such as preemergence herbicides, will be scheduled in advance, if the pest problem can be predicted and cannot be tolerated.



IMPLEMENTING AN IPM PROGRAM

There are five basic components of an IPM program:

1. Pest Identification. For pest management to be effective, corrective actions must be tailored to the pests that are actually present. There are many online resources for pest identification but in many cases visual comparisons with online images are inadequate for accurate identification. Contact an expert from your state's Extension Service, land-grant university, or pest

management association for assistance in identifying your pest problems – whether they are in the building, turf, or landscape.

2. Inspection and Monitoring. Begin with a thorough inspection of the property (both indoors and outdoors) and know where to look for different pests. Inspection helps find evidence of pests as well as conditions that encourage them. Routine inspections (monitoring) are needed because pest populations can change frequently. Since inspections can be time-consuming, tools exist to assist in monitoring for certain pests (for example, sticky traps for indoor, crawling insects and insect light traps for flying insects).

A facility inspection checklist is important when performing initial inspections and ongoing monitoring of buildings and grounds. A pest-sighting log should also be kept for everyone to document any observation of pests for the maintenance staff and/or pest management professional to take appropriate action.



3. Education. Education is a critical component of IPM.

Everyone must learn how their actions can contribute to pest problems, and what their responsibilities are in the IPM program. Some types of exclusion, sanitation, and monitoring can be done by anyone, and anyone can quickly communicate what they observed to the IPM Coordinator or maintenance staff. It is always important to distinguish between pest occurrences that do and don't require action, and what the appropriate action is, depending on the particular pest and circumstances. At its best, IPM education involves a variety of methods, such as inspection and service reports, the pest-sighting log, classroom discussions, and memos to staff and parents.

4. Action Thresholds. An action threshold is the point at which the pest reaches an unacceptable level, where some type of corrective action must be taken to reduce its numbers. Action thresholds and the corrective actions taken vary greatly, depending on the pest, site, geographical location, and time of year. For example, even a few cockroaches are not tolerated in food service areas (very low action threshold), while clover in



a regularly mowed area will not crowd out the desired turf (high or no action threshold). Some pests can have an action threshold of one sighting; other predictable and unacceptable pests may require no sighting at all to take action (for example, preemergence weed control on school athletic fields).

5. Use of Multiple Tactics. Successful IPM considers the toolbox of available tactics and uses a combination that eliminates unacceptable pests and strives to prevent future infestations. Monitoring is *always* necessary, unless the action threshold is zero. Key IPM tactics include:

Sanitation:

A primary goal of sanitation is to remove sources of food, water and shelter, which many insects, rodents and pathogens need to survive and thrive. Improperly stored food and the presence of food residues are major attractants of insects and rodents – **weekly or even daily cleanup is not as effective as prompt food storage and cleanup, whether food residues are on dishes, desks, drains, dumpsters, etc.**



Sanitation inside a building also includes clutter control in all areas (classrooms, food service areas, restrooms, lockers, etc.) The proper and practical sanitation techniques outside a building depend in part on the pest.

Exclusion:

Pest exclusion involves taking steps to “pest-proof” buildings. It begins with a thorough inspection to locate possible points of entry, both indoors and on the building exterior. Once entry points are identified, steps are taken to make it more difficult for pests to enter. Outdoors, weeds that spread by seed can be excluded from other areas by careful attention to preventing seed production and equipment contamination.

Habitat Modification:

Habitat modification involves altering the environment to make it unfavorable for the particular pest. For example, preventing and removing standing water will help avoid mosquito problems, and mulch can inhibit germination of weeds under trees and shrubs.

Physical Control:

In certain situations, physical control is highly effective. Wear gloves and a dust mask to hand-pull small populations of weeds or to scrub mold or mildew off washable surfaces. Extreme temperatures are lethal to most insect pests. Placing food items in a freezer at 0°F (-18°C) for several days will kill stored product pests. Placing clothing, backpacks, and other items in a clothes dryer on the highest setting (120°F minimum) for 30 minutes will kill all stages of bed bugs (but make sure the items will not be heat-damaged before placing them in the dryer).

Mechanical Control:

A wide variety of traps play an important role in insect and rodent pest control.

Mechanical traps are devices that often use an attractant (food or odor) to draw pests to the trap. Snap traps, insect light traps, “flypaper” and glue boards are examples of mechanical traps. Traps often



require careful installation, placement and service, and some may not be appropriate for certain areas (for example, snap traps in areas accessible to children). Directions, policies, and laws must be carefully followed. Mechanical options for control of certain weeds include regular mowing of turf areas and hoeing or cultivation of bare ground. In all cases, measures should be taken to ensure that the potential for soil erosion is minimized with mechanical weed control.

Chemical Control:

Pesticides are an integral part of most IPM programs but they are **never** intended to be a substitute for preventative measures such as sanitation and exclusion. Pesticides must be used only when needed – setting action thresholds for specific insects, weeds, etc. will define when the use of a pesticide is warranted. Always select pesticides that are effective on the target pest, and labeled for the particular indoor or outdoor use. Formulation, placement, and delivery can minimize potential exposure while still effectively controlling the pest (for example, granules, crack-and-crevice treatments, baits). Only designated persons properly trained in pesticide application should apply pesticides in and around schools and child care facilities. Always read and follow the pesticide label; the label is the law!



ROLES AND RESPONSIBILITIES IN AN IPM PROGRAM

IPM Coordinator: A coordinator must be designated to implement the written IPM program, serve as liaison with the pest management professional or in-house trained pesticide applicator, ensure that pest management decisions and actions adhere to the IPM program, and keep all required records. The IPM program must address all the necessary details, and the IPM Coordinator must be well-trained in all aspects of IPM including safe pesticide use (even if someone else makes the pesticide applications).

Administrators/Decision Makers: Superintendents, child care facility owners, maintenance directors, and others must understand the IPM program and make decisions that support its success.

Teachers, Staff, Students, and Other Children:

Everyone with access to classrooms, lockers, desks, and cubbyholes must promptly clean up food residues and seal unused food (including pet food).

Kitchen and Cafeteria Staff: Food service personnel must practice excellent hygiene in all aspects of food preparation, handling, clean-up, storage and disposal.

Facility, Maintenance and Custodial Staff: These individuals are most likely to see pests, evidence of pests, or conditions conducive to pests, as part of their normal responsibilities. They have key roles in exclusion,



sanitation, habitat modification, and monitoring.

Family Members: Parents in particular should ask to review the school or child care facility's IPM program. A good program will include the components discussed in this brochure. Any concerns should be expressed to the administrator or IPM Coordinator. Parents have an important role in teaching their children to store and discard food as instructed by the school or child care facility.

Contracted Pest Management Professional (PMP) or In-House Pesticide Applicator: Whether contracted or in-house, the individual responsible for pesticide applications must be well-trained in safe pesticide use and all other aspects of IPM, and understand and follow the school or child care facility's specific IPM plan. If contracted, the IPM Coordinator and PMP should always review the pest management contract together.

Safe Pesticide Use – A Critical Component of a Comprehensive IPM Plan

Safe pesticide use requires knowledge and diligence concerning:

- Pest identity and susceptible stages of development
- Labeled sites, pests, rates, timing, and placement
- Personal protective equipment
- Calibration, application, and cleanup procedures
- Impact of weather conditions and other environmental factors
- Signal word (e.g. Caution) and precautionary statements
- Re-entry intervals after treatment
- How to minimize spray drift, surface runoff, and other off-target movement
- Proximity of sensitive non-target organisms and sites
- Transport, storage and disposal of pesticides, service containers, empty containers, excess mixture, etc.

Use of any IPM tactic cannot substitute for other necessary IPM practices. An insecticide, for example, cannot solve an insect problem that is caused by poor food storage or ripped window screens.

Some states **require** that applicators be certified to apply pesticides in and around schools and child care facilities. Certified applicators and individuals under their supervision are trained to apply pesticides. Contact your state regulatory agency (aapco.org) to determine who is certified for your specific need.

SETTING UP AN IPM PROGRAM

Whether or not you have a state IPM law, it is important to have an IPM policy and a site-specific IPM plan. Take the following steps to help transition your school or child care facility to IPM.

1. Adopt a clear IPM policy, and an IPM plan that describes how each component of the IPM policy will be implemented at the specific school or child care facility.

Key Components of an IPM Policy

Meets All Requirements of State IPM Law (if applicable)

Contains and Requires:

- Science-Based IPM Definition
- Site-Specific IPM Plan
- Ongoing Assessment of All IPM Tactics
- Accurate Pest Identification and Monitoring
- Designated IPM Coordinator
- Appropriate Educational Outreach
- Careful Record-Keeping
- Notification/Posting/Re-Entry
- Proper Training of Pesticide Applicators
- Annual Review and Improvements
- Formal Adoption by School Board or Child Care Administrators

For example, states, schools, and child care facilities may have different requirements concerning training, supervision, notification, posting, re-entry, and other procedures related to pesticide applications, and these procedures should be included in the IPM plan.

2. Designate an IPM Coordinator. The IPM Coordinator can be the director of maintenance or any other appropriate person who is assigned this role.

3. Educate teachers, staff, students, preschoolers and parents about the IPM program. The IPM Coordinator should coordinate or assist with the educational effort, and all pest concerns should be brought to the coordinator's attention promptly.

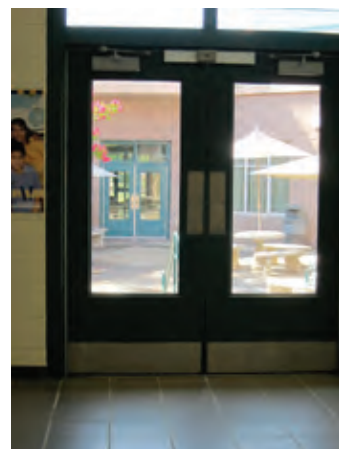
4. Implement pest preventative techniques immediately.

Sanitation, exclusion, and habitat modification can eliminate or greatly reduce future infestations of certain pests, and therefore should be employed quickly if needed.

5. Create pest-specific IPM action plans. Establish action thresholds (unacceptable levels) for each pest and an action plan to follow when thresholds are reached.

6. Treat existing pest problems promptly. When a pest reaches its action threshold, immediately initiate one or more appropriate control measures.

7. If pest control is not done in-house by a properly trained applicator, contract with a reputable pest management professional (PMP). Select a PMP based on expertise – not cost. PMPs may specialize in structural pest control, turf, ornamentals, or more than one category.



WORKING WITH A PEST MANAGEMENT PROFESSIONAL

Administrators and IPM Coordinators have key roles in selecting and collaborating with a PMP.

1. **Ask about the PMP's pesticide safe use practices and all other IPM practices.** Locate and hire a reputable PMP. Your state regulatory agency has a record of violations and complaints. You should also ask for and check references.
2. **Verify that the PMP is a certified applicator for the specific use (structure, turf, etc.) and will perform or supervise the application (even if your state does not require certification).** All certified applicators are trained in fundamental (core) principles of pesticide use – basic knowledge such as proper use of application equipment, potential application hazards, mixing instructions, protective clothing and equipment, applicable state and federal pesticide laws and regulations, interpretation of pesticide labels, other components of IPM and more. Depending on the state and product, "supervision" may mean easily available by phone, or may mean physically present.
3. **Accompany the PMP on a complete inspection at least annually, and communicate regularly about new or unresolved problems.** Discuss the target pest(s) and infestation level(s), and agree on what pests and areas will be treated and how. Discuss IPM practices that are already in use and who will be responsible for monitoring and decisions to re-treat.



4. **Maintain hard copies of (or immediate electronic access to) labels and Safety Data Sheets for every pesticide product that will potentially be used.** This includes labels for products referred to as "organic," "green," "safe" or "nontoxic," because all effective pesticides are toxic to some organisms. If you are concerned that the label directions **and** precautions cannot be followed for any product, resolve all questions before the application is made.
5. **Read the contract provided by the PMP.** It should contain the inspection and monitoring plan, pest prevention plan, non-chemical and chemical control plan, and the school's or child care facility's required roles in all contracted services. Only use PMPs that will document a comprehensive IPM approach. In some states, you can request a state inspection if you have concerns about a PMP's activities or results.

IPM – NO EXCEPTIONS

A good IPM plan will immediately implement all appropriate exclusion, sanitation and control techniques. It will accurately identify pests, establish thresholds, and monitor regularly. When thresholds are exceeded and non-chemical control techniques are known to be insufficient or not practical, chemical control will be done according to all laws – by certified professionals, persons under their supervision or in-house trained applicators who are committed to IPM. Pesticides should be used only when needed but not "as a last resort" (after every other method has failed) because some pests are serious and/or small infestations can quickly get out of hand. IPM at its best considers the exact circumstances before deciding the sequence, location and type(s) of IPM practices – from exclusion, sanitation, and non-chemical control techniques to safe use of pesticide baits, sprays, granules, etc. A wealth of resources exists to assist with all aspects of IPM in schools and child care facilities.

IS YOUR SCHOOL OR CHILD CARE FACILITY UTILIZING A VARIETY OF IPM TECHNIQUES?

IPM coordinators, administrators, teachers, staff, parents and others can easily observe whether many key components of IPM are being practiced at their school or child care facility. Remember, there are many different types of pests (insects, rodents, weeds, disease-causing pathogens, etc.), and IPM works!

Photos Courtesy of NC State University



This publication can be downloaded or ordered in the Resource sections of the following websites:

North Carolina State University:

<http://schoolipm.ncsu.edu>

Texas A&M Agrilife Extension:

<http://schoolipm.tamu.edu>

Syngenta Environmental Stewardship:

syngentacropprotection.com/Env_Stewardship/

Pesticide Environmental Stewardship (PES):

pesticidestewardship.org



Your Building

- All gaps sealed around doors and windows
- All gaps sealed where utilities enter building
- Screens with tight fit and holes repaired
- All cracks sealed in foundation, floors, walls, and roof
- Ventilation intakes and other required openings screened
- Door sweeps installed on exterior doors
- All leaks in roof, pipes, or faucets repaired
- All inside drains clean and working
- All outside gutters and drains intact and free of debris



Food

- All food (including pet food) stored in sealed, pest-proof containers
- Food stored at recommended temperature and humidity (e.g. “cool, dry” location)
- First-food-in first-food-out (FIFO)
- Expiration dates checked (not same as “best by” dates)

Food Residue and Food Garbage

- Crumbs, spills, and food wrappers cleaned up promptly
- Grease and other food residue buildup prevented in kitchens, room sinks, and drains
- Indoor and outdoor trash cans emptied at end of day
- Recyclables rinsed before storage or recycling
- Trash cans with intact plastic liners and self-closing lids
- Trash cans, recycle bins, and dumpsters not overflowing and kept clean
- Dumpsters at least 50 feet from buildings, if possible
- Only tightly closed plastic garbage bags placed in dumpsters
- Dumpster lids/doors kept closed
- Dumpsters set on concrete or asphalt surfaces – not soil or gravel



YES!

- Caulk, seal, clean, screen, and ventilate
- Mops and other cleaning supplies stored clean and off the floor
- Drains clean and screened
- Healthy lawn that is properly mowed to compete with weeds
- Baits and traps checked, maintained, and replaced as appropriate
- Baits and traps out of reach of children
- Gravel within one foot of foundation


NO!

- Exposed food, crumbs, spills, grease, or other food residues on any surface
- Empty boxes and other clutter
- Unclean pet cages
- Drips or leaks
- Evidence of presence of unwanted pests
- Standing water
- Water damage or constant dampness on wood, concrete, brick, etc.
- Mold, mildew, or diseased plant debris
- Overflowing dumpsters or trash cans
- Clogged gutters or drains
- Weeds producing seeds



OUTDOORS

- Trees, shrubs, branches, grass, and plant mulch at least one foot from building
- Weeds controlled if they cause health or safety concerns
- Ground slope and/or gutter release points divert water away from foundation



IPM Coordinator

- Regular inspections, monitoring, maintenance and service, etc. as appropriate
- Pest logbook for anyone to report, plus any action taken (what/where/when)
- Review of and decision on all reported concerns
- All required notifications and posted notices of pest control service and re-entry times
- PMP service reports and all other required records maintained