


Keeping The Bugs Out of Your School: Integrated Pest Management


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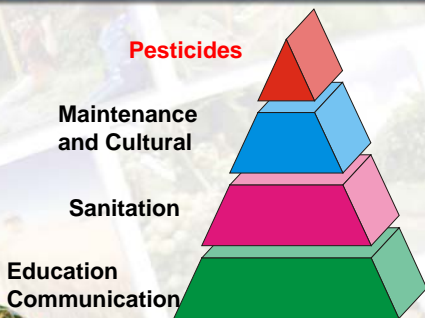
What is IPM ?

Integrated Pest Management (IPM) is a safer, and usually less costly option for effective pest management in the school community. A school IPM program employs common sense strategies to reduce sources of food, water and shelter for pests in your school buildings and grounds. IPM programs take advantage of all pest management strategies, including judicious use of pesticides when necessary.



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Defining IPM – The Pyramid




Pesticides

**Maintenance
and Cultural**

Sanitation


**Education
Communication**



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Why IPM? Healthy School Environments

- Cockroaches: Skin fragments and feces are the most common cause of asthma in urban youth.
- Ants: Fire ant stings cause several human deaths per year.
- Rodents: Deadly hantavirus is transmitted by rodent urine and feces.
- Acute Effects of Pesticides: Harmful or fatal if swallowed or inhaled.
- Delayed Effects from Pesticides: Tumors, cancer, birth defects, blood and nervous system disorders.
- Allergic Effects from both Pests and Pesticides: Asthma and skin, eye and nose irritation.




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The IPM Steps

The first steps of IPM involve sanitation to reduce access to food and addressing maintenance issues such as door sweeps and seals to prevent access to the building.

1. Pest Identification
 - Less than 5 percent of all bugs are ever considered pests
2. Monitoring and use of threshold levels
 - Some pests in schools have lower thresholds when they are tied to health concerns
3. If Necessary, take action
 - When there is a problem, ecological sound management methods are used.





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Common Pests In and Around Schools

Key Pests, typically requiring management action to prevent problems

- Structural
 - Ants
 - Brown-banded, German and Oriental cockroaches
 - Mice
- Landscape/Exterior
 - Stinging insects
 - Weeds on athletic fields, in pavement or along fence rows or under bleachers
 - Turf diseases on athletic fields






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Common Pests In and Around Schools

Other Pests often encountered in and around schools that may require action to reduce damage, injury or complaints

- Structural
 - Bats
 - Bed bugs
 - Birds
 - Carpenter ants/carpenter bees
 - crickets and grasshoppers
 - Fruit, drain and filth flies
 - Fungus gnats
 - Head lice
 - Microbial pests; mold
 - Spiders stinging wasps or bees
 - termites






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Common Pests In and Around Schools

Other Pests often encountered in and around schools that may require action to reduce damage, injury or complaints


- Landscape/Exterior
 - caterpillars
 - Mosquitoes
 - Norway rats
 - Plant-sap feeding pests: aphids, mites, scales, whiteflies
 - Weeds on school lawns
 - Turf fungal diseases on school lawns

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IPM Approaches/Tactics to Common Pests

- Building Zone: Exterior walls and grounds within several feet of the walls, roofs, attics and crawlspace of a school
 - Comprehensive inspection of all buildings focusing on moisture, pests or other damage to structural elements; termite earthen tunnels, pest fecal matter or other signs of pest activity
 - IPM Inspection Checklist
 - Legible records maintained
 - Timeline established for corrective actions



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Building Zones: Different Structures - Challenges

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IPM Approaches/Tactics to Common Pests



- Food Service: food storage, preparation and serving areas, including student stores, concession areas, staff lounges
 - Floors are cleaned daily
 - Incoming shipments of food products and paper supplies are inspected for pests and rejected if infested
 - Aisles area maintained around bulk stored products. The supplies do not have direct contact with walls or floors, allowing access for inspection and reducing pest harborage.
 - Potential pest food items used in classrooms (e.g., beans, plant seeds, pet food, etc.) are refrigerated or stored in glass or metal containers with pest-proof lids.



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Food Service: IPM Training is Essential



Knowing methods for food storage is key

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IPM Approaches/Tactics to Common Pests



- **Waste/Recyclables Handling: trash/recycling receptacles throughout the building, trash collection carts, dumpsters, compactors**
 - Trash/recycling storage rooms, compactors and dumpsters are regularly inspected and spills cleaned up and leaks repaired promptly.
 - Waste materials in all rooms within the school building are collected and removed to a dumpster, compactor or designated pickup location daily.
 - Packing and shipping trash (bags, boxes, pallets) is promptly and properly discarded and recycled.
 - Food waste from preparation and serving areas is stored in sealed plastic bags thick enough to prevent tearing and spills before removal to dumpsters. Bags should be sealed with an overhand knot, not a tow or four-corner tie.

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IPM Approaches/Tactics to Common Pests

- **Mechanical/Custodial Areas**
 - Wiping cloths are disposable or laundered daily.
 - Mops and mop buckets are properly dried and stored (e.g., mops hung upside down, buckets emptied).
 - Floor and sink drains traps are kept full of water.

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Mechanical/Custodial Area: Regular Inspections




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Mechanical/Custodial Area: Regular Maintenance



Don't forget to inspect above the ceiling tiles. Look for signs of pests that may be lurking.

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IPM Approaches/Tactics to Common Pests



- **Hallways, Classrooms**
 - Pest management roles communicated to staff and students include removing food or food wrappers from lockers and desks on a daily basis.
 - Lockers and desks are emptied and thoroughly cleaned at least three times per year (e.g., winter and spring breaks and at the end of each school year).
 - Any food items on hand in classrooms (e.g., snacks, food items used for arts/crafts) at end of year are removed.
 - Floors are cleaned and carpets vacuumed daily in areas where food is served.

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Hallways & Classrooms: Clutter #1 Issue

The clutter attracts bugs and provides them with an environment where they can flourish!

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IPM Approaches/Tactics to Common Pests

• All Managed Landscapes

- A written IPM Plan to include list of actions to prevent and avoid pest problems.
- Pest-prone plants in the landscape are removed and replaced with plants less susceptible to pest problems.
- A comprehensive inspection of all school grounds to identify cracks in walkways/driveways; food/moisture and shelter resources for pests.
- Litter is collected and properly disposed of from school grounds at least weekly.



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IPM Approaches/Tactics to Common Pests

• Pesticides

- Always adhere to the storage and directions detailed on the label.
- Pesticide inventories are maintained by the district only if personnel properly licensed or certified to apply those pesticides are on staff.
- Storage is tightly controlled to prevent unauthorized access.
- Liquids are stored on shelves below dry formulations. Shelves are non-absorbent (e.g., metal, plastic, plastic-covered wood).
- Pesticide storage is locked, in a secure location, adequately ventilated, temperature controlled, well lighted, dry and structurally sound.



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IPM Approaches - - Specific Pests

• Cockroaches: waterbugs, palmetto bugs, etc.

- Cultural and mechanical practices such as removing incoming food products from cardboard containers as soon as delivered.
- Clean drains regularly.
- Remove other water sources such as leaking pipes and faucets.
- Seal cracks and crevices in food storage, preparation and serving areas including openings around the edges of electrical boxes, bulletin boards and signage.
- Monitor and inspect; ensuring that monitoring stations are dated and numbered for effective record keeping.



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IPM Approaches - - Specific Pests

• Flies: House flies, Filth Flies

- Flies that invade cafeterias and kitchens are not only a nuisance; they also present a health hazard as they can contaminate food.
- Place trash cans or dumpsters away from building entryways; proper use of plastic bag liners in trash cans; all trash disposed in dumpsters is enclosed in sealed bags; adequate clean up of spilled food and drinks
- Properly sealed openings throughout the building exterior; tightly fitting doors, door sweeps and window seals.



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IPM Approaches - - Specific Pests

• Flies: Drain Flies, Fruit Flies, Fungus Flies

- These flies are often present in schools where food is stored, prepared or consumed. They are usually associated with decaying organic matter in drains, garbage disposals, grease traps, sewers, bird feeders/bird baths, gutters and other locations. Drain flies can carry bacteria and should not be tolerated.
- Identify and eliminate the breeding sites and entry points.
- Frequent, regular cleaning of drains or locations where fermenting materials can accumulate, inspection or incoming produce, physical removal of over-ripe fruits and vegetables and prompt clean up of spilled foods or drinks usually provides excellent results.



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IPM Approaches - - Specific Pests

• Rodents: House Mouse, Norway Rat, Roof Rat

- Rodents cause fires by gnawing on electrical wires and transmit pathogens, and are associated with allergens and asthma triggers and should not be tolerated.
- Exclusion and sanitation are very effective in eliminating rodent problems. A mouse can squeeze through a hole the size of a pencil diameter.
- Seal up entry holes, clean up clutter, store items off the floor to allow proper cleaning.
- Put glue boards, snap traps, etc. in non-visible, inaccessible areas to trap rodents.
- Clean up droppings, grease marks and urine promptly.
- When non-chemical measures are inadequate, rodenticides can be used in a manner that greatly reduces potential for non-target exposure.





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IPM Approaches - - Specific Pests



- **Ticks**
 - A major concern especial for the species that transmit diseases to humans like Rocky Mountain spotted fever, Lyme disease and Powassan encephalitis.
 - Monitor tick populations by dragging a piece of light colored soft cloth (corduroy or flannel) stapled to a dowel to which a cord is attached, across an area of grass or low brush. At fixed intervals, the cloth is examined and the number of ticks are counted. This catches about one out of every ten ticks.
 - Wear light-colored clothing with long-pants tucked into socks when going into tick-infested areas.
 - Educate students, families and school staff about ticks, tick-vectored diseases, and the proper use of repellents.
 - Wash and dry clothing at the highest temperature setting upon returning from a tick-infested area.
 - Habitat modifications: mow grass, remove leaves, trim trees, etc.



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Key to IPM: How Are Pests Getting In?



Inspect the perimeter of the school building for openings where bugs and rodents can enter. Seal these areas.



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Sealing the Cracks/Crevices

When using foam products to seal, ensure that all openings are totally sealed because rodents only need a small entrance.



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Inviting Structures for Pest



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IPM Pyramid: Training is Critical for Success

Separate training for custodians is imperative for success.



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Training is Key Component of IPM



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Education: Pest Press

- District newsletter with a focus on pests
- Distributed by e-mail to all employees and available to interested parents
- Expert content from Universities
- Local information

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Former IAQ Award Winner and IPM Champion

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Where to Start With Your IPM Program

- Adopt a School IPM Pest Management Policy
- Designate an IPM Coordinator
- Include IPM into your pest management contracts

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EPA's Role

EPA's Office of Pesticide Programs continues to support School IPM

- Regional Representatives
- Website: <http://www.epa.gov/pesticides/ipm>
- University of FL: <http://schoolipm.ifas.ufl.edu/>
- IPM Institute of NA: <http://ipminstitute.org>

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Going The Extra Mile: IPM STAR Certification

IPM STAR Verified IPM Performance

IPM STAR is a rigorous 37 point evaluation of school systems and childcare centers for Integrated Pest Management, or IPM, a common sense approach to solving pest problems with a minimum amount of pesticide use. Salt Lake City School District is the 28th district in the nation to earn this distinction.

In pilots across the country we've shown that both pesticide use and pest complaints can be substantially reduced through IPM," reports Dr. Marc Lame, who worked with the district to implement the program. In the Salt Lake City School District, both pesticide applications and pest complaints have dropped by over 90% since the program began three years ago. EPA Region 8 provided funding for the effort under the Pesticide Environmental Stewardship grants program run by Jaslyn Dobrahner, Region 8 School IPM Coordinator from her office in Denver. <http://www.epa.gov/pestwise>

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National School IPM Implementation

National School IPM Working Group -- EPA, CDC, DOD and USDA are Steering Committee Members

PRIA Grant to Implement School IPM Nationally

- Project: Several demonstration School IPM projects are being implemented throughout the U.S. By using high-level Integrated Pest Management (IPM), pest complaints and pesticide use in schools and other public buildings have been reduced by 71% to 93% with no long-term increase in costs.

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