

# INTEGRATED PEST MANAGEMENT: The Most Effective Way to Manage Pests in Your School!



Bugs @ home

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## Purpose

This publication is designed to create awareness of the need to establish Integrated Pest Management in all U.S. schools and provides a link to a Pest Management Strategic Plan that defines standards appropriate for a child's learning environment.

## What is School IPM?

IPM stands for Integrated Pest Management. IPM is an ecologically-based pest management strategy that provides long-term management of pest problems with minimum impact on human health, the environment and non-target organisms. IPM programs are educationally based and apply our knowledge of pest biology and its relationship within the environment to prevent and resolve pest problems.

IPM is a much more effective alternative to scheduled applications of chemical pesticides. Children's special vulnerability to pesticides includes both increased opportunity for exposure and increased susceptibility compared to adults (National Academy Press, 1993). IPM practices reduce student exposure to both pests and pesticides (Gouge *et al.*, 2006).

Management techniques often used as part of an IPM program:

- Deny pests access to food, water and shelter (habitat manipulation)
- Exclude pests from buildings
- Improve hygiene standards
- Use species or varieties of plants that are resistant to pests
- Select target-specific and reduced-risk pesticides with low mammalian toxicity and low environmental impact.
- IPM in the landscape includes cultivation, pruning, irrigation and fertilization practices that reduce pest problems



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When practicing IPM, pesticides are used only when necessary; when non-chemical methods will not resolve the pest problem alone, or if a rapid resolution is necessary when dealing with a public health pest. Products used are the safest and most target-specific available.


IPM steps include:

1. **Pest identification.** It is essential to identify pests and to have an understanding of pest biology. Less than 5% of all 'bugs' are ever considered pests; many organisms are essential in one environment but unwanted in another. For example, termites are essential decomposers and recyclers of wood and other cellulose-based materials in nature. In a building, termites become a pest.
2. **Monitoring and use of threshold levels.** Many organisms do not achieve pest status unless significant numbers are apparent. When agricultural pests exceed "threshold" values, the result is lost profit due to a reduction in crop quality or yield. Some pests in schools have lower thresholds tied to health concerns, but in many instances the occasional invading critter poses no significant problem.

3. **If necessary, taking action.** When the organism has been identified and is present at numbers determined to be a problem, ecologically sound management methods are used to reduce the population levels below threshold levels.

Pests in and around schools can include various kinds of insects, birds, rodents and weeds. The first IPM steps taken often involve improving sanitation to reduce access to food and addressing maintenance issues such as door sweeps and seals (pest-proofing) to prevent access to the building. IPM uses simple and effective principles that everyone can understand and use in all living, learning and working environments.

The American cockroach (*Periplaneta americana*) often gains access to school buildings through floor drains. Keeping drain traps filled with water can discourage entry.



DAWN H. GOUGE



DAWN H. GOUGE

Norway rat (*Rattus norvegicus*) problems can be avoided by improving trash handling to eliminate access to food, and by modifying landscape features to discourage nesting, or burrowing, near school buildings.

## A Key Component of IPM is Education

Programs begin with educational opportunities for school administrators, faculty, maintenance and custodial staff, students and parents.

Facility inspections and pest monitoring practices then become established. Building inhabitants are encouraged to communicate pest sightings and IPM experts check monitoring stations routinely.

Pest management intervention begins once population monitoring activities indicate a need for control. Management efforts have the goal of removing only the target organism, while maintaining health and safety, preserving beneficial organisms and safeguarding the ecosystem.

## IPM Implementation in Public Schools by 2015, a Pest Management Strategic Plan

A strategic plan to implement IPM in all U.S. public schools by 2015 was constructed by a national group of IPM practitioners. The plan is available at: [http://www.ipminstitute.org/school\\_ipm\\_2015.htm](http://www.ipminstitute.org/school_ipm_2015.htm)

The school IPM pest management strategic plan (PMSP) identifies priorities developed and ranked by a diverse group of stakeholders, lists key sectors (Pest Management Professionals, Department of Health, etc.), and roles in fully implementing IPM in all US public schools by 2015, describes a process of changing behavior on a broad scale and details key prevention practices and strategies for common pests in schools. The PMSP includes indicators for high-level IPM. A number of the indicators will be measured annually through a school IPM report card that will be completed by state lead agency contacts and reported to EPA.

A poorly maintained door is an open invitation for pests. Pest-proofing doors means they fit snugly against both the threshold and vertical post or opposing door. Exclusion effectively reduces many pests instantly.



DAWN H. GOUGE

Regulations addressing pest management in, around and adjacent to schools vary greatly between states. Requirements in some states include posting and notification of pesticide applications, re-entry periods before staff or students are permitted in treated areas, qualifications for pesticide applicators in schools, pesticide product selection, adoption of IPM policies or plans, and buffers between neighboring pesticide uses and schools. School district policies also vary widely. Many states have some legislation supportive of IPM. A summary of state laws can be found in Appendix B of the PMSP.

## Why IPM in Schools is Important

Numerous studies and surveys over recent years have documented deficiencies in pest management in schools including unnecessary and sometimes hazardous pesticide use and uncontrolled pest problems. On-site evaluations of more than 29 school systems in more than 14 states indicated that nearly half were violating legal requirements or formal



district policies related to pest management (Green *et al.*, 2007). Three of the 29 districts had outdated, unregistered pesticides in storage, including DDT (an older, chemically stable organochlorine pesticide).

Asthma is epidemic among children in the United States and other countries, affecting nearly 6 percent of school children nationally, with rates as high as 25 percent in at least one urban center (Nicholas *et al.*, 2005). Exposure to pests, pet dander, cockroach allergens, dust mites, and fungal spores can trigger asthma attacks. The US EPA and the Centers for Disease Control recommend reducing pest infestations and adopting IPM in schools as one effective strategy for addressing asthma. Schools implementing IPM often have lower pesticide residues on exposed surfaces, and lower cockroach allergen levels, while the costs of pest management were comparable to schools receiving regular pesticide applications (Nalyanya *et al.* 2009, Williams *et al.*, 2005).

### IPM Works!

Gouge *et al.* (2006) evaluated the use of the Monroe Model for establishing IPM in schools. The Monroe Model is named after the first school IPM demonstration done in Monroe County, Indiana. This model has been used in pilot programs nationally and combines social science theory about social adoption of innovations, with the science of progressive pest management. The model has resulted

Detailed sanitation is a critically important IPM component. Corner cleaning is essential to remove food sources for pests.



DAWN H. GOUGE

in improved efficiency and communication, as well as significantly better pest management and with less pesticide use and no increase in cost (Lame, 2005).

The IPM Institute of North America's IPM STAR school certification is a third-party certification program which evaluates school district IPM programs. The IPM standards are rigorous and facilitate district compliance with the national PMSP standards as well as appropriate state law. To date, the IPM Institute of North America has certified 42 school districts and US Army child development centers. For a complete list, visit [http://ipminstitute.org/IPM\\_Star/ipmstar\\_schools.htm#School](http://ipminstitute.org/IPM_Star/ipmstar_schools.htm#School)

### Get Involved!

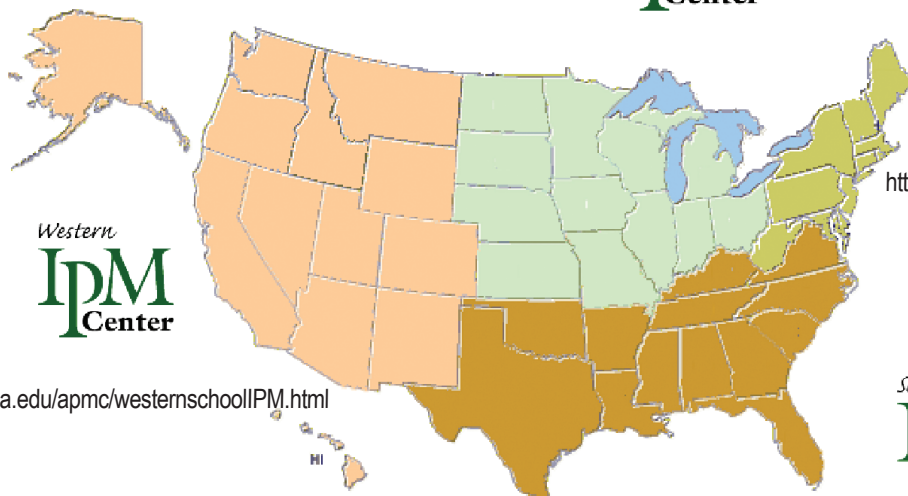
Please support the School 2015 IPM initiative. Ask your local school administrators to commit to IPM practices in all schools. Learn more about IPM and use the same principles

## Contact the Working Group in your region, and get involved!

[http://www.ipminstitute.org/NC\\_IPMIS\\_Working\\_Group/main.htm](http://www.ipminstitute.org/NC_IPMIS_Working_Group/main.htm)



[http://northeastipm.org/work\\_school.cfm](http://northeastipm.org/work_school.cfm)



<http://cals.arizona.edu/apmc/westernschoolIPM.html>



<http://www.sripmc.org/schoolIPM/>

at home. There is a National School IPM Working Group which includes Four Regional IPM Center School IPM Working Groups.

## Citations

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This information has been reviewed by University faculty.  
[cals.arizona.edu/pubs/insects/az1234.pdf](http://cals.arizona.edu/pubs/insects/az1234.pdf)

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