



## *The Nuts and Bolts of Integrated Pest Management (IPM)*

Integrated Pest Management (IPM) is a program of prevention, monitoring, and control. It offers the opportunity to eliminate or drastically reduce pesticide use in schools and to minimize the toxicity of and exposure to any products that are used. IPM mainly focuses on eliminating or reducing sources of food, water and shelter for pests, and limiting pest access into and through buildings. By minimizing the use of pesticides and the risk to human health and the environment associated with pesticide applications, IPM eliminates or decreases the economic and health damage caused by pests. Integrated methods to pest control include:

- site or pest inspections
- pest population monitoring
- evaluation of the need for pest control
- sanitation
- structural repairs
- mechanical and biological controls

If nontoxic options are unreasonable and have been exhausted least toxic pesticides are used.

A good IPM program can eliminate the unnecessary application of synthetic, volatile pesticides in and around schools. The main elements of a good IPM program include:

***Monitoring.*** This includes regular site inspections and trapping to determine the types and infestation levels of pests at each site.

***Record-Keeping.*** A record-keeping system is essential to establish trends and patterns in pest outbreaks. Information recorded at every inspection or treatment should include pest identification, population size, distribution, recommendations for future prevention, and complete information about the treatment action.

***Action Levels.*** Pests are virtually never eliminated. An action level is the population size that requires remedial action for human health, economic, or aesthetic reasons.

***Prevention.*** Preventive measures must be incorporated into the existing structures and designs for new structures. Prevention is and should be the primary means of pest control in an IPM program.

***Tactics Criteria.*** Under IPM, chemicals should be used only as a last resort, but when used, the least-toxic materials should be chosen and applied by methods that minimize exposure to humans and all non-target organisms.

***Evaluation.*** A regular evaluation program is essential to determine the success of the pest management strategies.



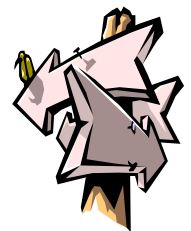
## ***The Nuts and Bolts of Executing IPM***

The key to cutting pest management costs is to look for long-term solutions, not temporary control, when addressing a pest problem. Pesticides don't solve the problems that have created the pest-friendly environment -- they only treat the symptoms of an infestation. They are often ineffective over the long term, and the most common pests are now resistant to many insecticides. Efforts need to be made to eliminate access to structures and remove food sources in order to eliminate a pest problem.

An IPM program should include a written policy guide and an acceptable/prohibited materials list. Monitoring eliminates the need for scheduled pest control visits and thus the unnecessary use of chemicals. A successful school IPM program relies heavily on good communication between all school users and personnel. Keep these elements in mind when you begin to draft your school's IPM policy...

## **The Decision-Making Process**

Create an IPM decision-making process that draws on accurate, timely information to make pest prevention and management decisions. Determine the needs of the site, and set "action thresholds;" levels of pest populations at which remedial action is necessary. This will vary depending on the site – what type of structure it is, who is using it, and how it is being used. For instance, cafeterias will need to be more pests free than the equipment room. This decision should be made



with someone knowledgeable about the pest needing control and the risks of pesticides, someone who does not have a financial interest in selling a pesticide product.

## Monitoring



Monitoring and record keeping help identify the nature and extent of a pest problem. Implement a monitoring program designed to provide accurate, timely information on pest activity – to establish whether there is in fact a pest problem and to identify its causes. Implement a schedule and a plan for monitoring pest populations and the success of pest control efforts. This will help determine acceptable pest population levels, effective reduction measures, and breach of the action threshold. The best way to monitor for many pests like cockroaches, is with sticky traps. They should be placed throughout the school structures at many different levels. Set the traps for 24 hours, and then record your results. The traps should be used on a regular schedule, such as monthly.

## Pest Prevention Practices

Next analyze the conditions causing the pest problem. Devise ways to change those conditions to prevent or discourage recurrence of the problem. Methods can include:

- modifying the environment to increase the effectiveness of the pests' breeding, feeding, or shelter habitat; and
- using pest-resistant or pest-free varieties of seed, plants and trees.
- Use practices that eliminate the need for hazardous pesticides – changing the conditions to prevent problems, including occupant education, careful cleaning, pest-proof waste disposal, and structural maintenance.
- Learn about what the specific pest needing control needs to live – food, water, and habitat.
- Reduce the sources of food and water. For instance, always clean up food and food areas, place food in airtight, sealed containers, dispose of food and food wrappers in sealed garbage containers, repair leaky

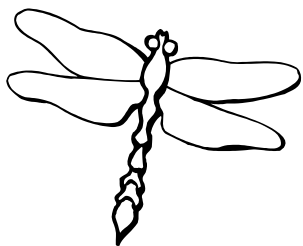


pipes and faucets, caulk up cracks and crevices, and eliminate clutter whenever possible.

- Remember that it can take some time for these methods to be effective.

## Mechanical, Biological, and Least Toxic Controls

If all other methods have failed, and monitoring shows that your pest population is still above your action thresholds, use a mix of strategies and tactics to directly suppress pest populations, focusing on introducing



mechanical traps, such as sticky traps, and living biological controls, such as pheromones, parasitic insects, predators and disease. Choose the least toxic chemical control strategies only when a mix of other strategies is shown to be inadequate, and only then through spot treatment of the least toxic pesticides. **You must weigh the risks associated with the use of a pesticide against the problems caused by the**

**pest.** Consider your options carefully, being mindful not to blindly jump at a solution that may have risks without first collecting the facts.

If you must use a pesticide, you use the least toxic pesticide available. Boric acid, formulated from a natural mineral, is an effective ant and cockroach stomach poison. When properly applied, it has a relatively low toxicity compared to other pesticides. Further, it does not evaporate into the indoor air of the structure, unlike many other pesticides. Look for **boric acid** that has less than one percent of inert ingredients, therefore you have a better idea of what you are applying and its risks than with most other pesticides. While boric acid is somewhat slower acting than other materials, it is highly effective over a long period of time. But remember, all pesticides are poisons designed to kill, and should be handled carefully and with respect. Boric acid should be applied only in areas where it will not come in contact with people – cracks and crevices, behind counters, and in baseboards. Applicators should wear protective clothing, gloves, and a filter mask.

Least-toxic control products are an ever-expanding market. New materials and devices are increasingly available to private consumers and pest control professionals. Materials to consider after exhausting non-toxic methods

include: boric acid and disodium octobrate tetrahydrate; silica gels; diatomaceous earth; nonvolatile insect and rodent baits in tamper resistant containers or for crack and crevice treatment only; microbe-based insecticides; botanical insecticides that do not contain synthetic pyrethroids or toxic synergists; biological, living control agents, such as parasites and predators; soap based products; and products that do not contain hazardous inert ingredients or contaminants listed on the pesticide label.

