

# Making the Grade in School Pest Management

*By Thomas Babb, Lyn Hawkins, and Dennis Tootelian*

The use of pesticides in and around schools has not historically been an issue that has captured the attention of the public. Traditionally, when schools and pesticides were mentioned in the same news item, the story would focus on cockroaches in the cafeteria or mold in the gym rather than pesticide use. Today, the story line would likely call for an investigation into pesticide use. Pest management in elementary and

secondary schools is receiving greater scrutiny from the public.

## The Healthy Schools Act

Concerns about pests and pest management in California schools resulted in the Healthy Schools Act of 2000 (Assembly Bill 2260). This law establishes the right of the public to know about pesticide use in schools and encourages the transition to integrated

pest management (IPM) practices.

The provisions of the act include, among other things:

- The preferred method of managing pests at schools is effective, least-toxic pest management practices.
- Each school must maintain records of all pesticides used at the school for a period of four years and make those records available to the public upon request.
- Licensed pest control businesses must report specific information on any school pesticide applications in addition to their regular pesticide use reporting requirements.
- On an annual basis, schools must provide to all staff and parents written notification addressing expected pesticide use.
- Warning signs must be posted before application of pesticides at a school.

One of the benefits of the Healthy Schools Act is that each school district will have an IPM coordinator (referred to in the law as a "school district designee"). Having all or nearly all pest management activities go through the IPM coordinator can bring more organization and coordination to a district's pest management practices. This will help reduce duplication of effort, create more consistent treatment patterns, and increase the likelihood that the district can easily distribute information on IPM.

The value of an IPM program is that it can minimize the risks to people and the environment. IPM is a pest management strategy that focuses on long-term prevention or suppression of pest problems through a combination of techniques, such as monitoring for pest presence and establishing treatment threshold levels, using nonchemical practices to make the habitat less conducive to pest development, improving sanitation, and employing



mechanical and physical controls. Pesticides that pose the least possible hazard and are effective in a manner that minimizes risks to people, property, and the environment are used only after careful monitoring indicates they are needed according to preestablished guidelines and treatment thresholds. Using IPM can maximize the benefits of pest management and minimize the risks to students, school staff, and others who frequent school grounds.

### The Safety Issues

A school is a challenging place to operate a pest management program. The typical design of most school buildings unintentionally provides ideal entry points and harborages for pest insects, rodents, and other unwelcome wildlife. Inappropriate landscape design and plant selection also encourage weeds and other pest problems. Diminishing budgets and deferred maintenance exacerbate conditions conducive to pests.

There are safety risks associated with all aspects of the pest management issue. Risks exist if pests are not controlled or eliminated, but risks also exist from the use of inappropriate pest management practices. For example, bee stings and contamination of food from ants and cockroaches create risks to the health of children and school staff. Rats, structural pests, and weeds create risks to school structures and grounds. Consequently, it would be inappropriate for IPM coordinators not to take steps to prevent or eradicate pests that can injure children and school staff and/or disrupt the educational process.

Misuse of pesticides creates potential danger for students and school staff. In 1993 the National Research Council, a committee of the National Academy of Sciences, reported that infants and children face relatively higher risks from exposure to pesticides than do adults. This is due to the rapid growth and development of children's central nervous systems and the fact that they consume more food relative to their body weight.

Another major concern with children is that they can be exposed to pesticides from multiple sources—home, school, playgrounds, and parks. While exposure from a single source may not present

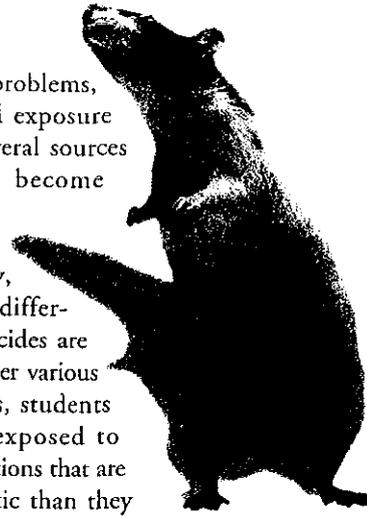
serious problems, the total exposure from several sources could become toxic. Additionally, because different pesticides are used under various scenarios, students can be exposed to combinations that are more toxic than they would be individually.

The Department of Pesticide Regulation (DPR) surveyed approximately 1,000 California school districts in 1994 to learn about IPM policies and programs in schools. About 10 percent of the respondents had a pest management policy and program, whereas 124 districts had a pest management program, but no policy. Policies can be useful since they provide guidance for making sound pest management decisions based on IPM principles.

In 2001 DPR conducted another survey of all school districts in California. One of the issues addressed was how serious a problem the districts have with particular pests. Pest problems, and the percentage of districts indicating they were "serious" or "very serious," include:

Weeds	65%
Gophers	52%
Ants	42%
Yellow jackets/Bees	42%
Other Pests	44%
Mice/Rats	32%
Termites/Structural Pests	26%
Cockroaches	23%
Spiders	22%
Flies/Gnats/Midges	12%
Mosquitoes	11%
Pests/Diseases of Landscape Plants	11%
Fire Ant	5%

Individual schools confront different types of pests, although more than half of all respondents to this survey reported that they considered weeds and gophers to be somewhat to very serious problems; nearly half felt the same about ants, yellow jackets, and bees. While only 5 percent of the districts thought fire ants posed a serious problem, this understates the pest's significance because fire ants are concentrated in the southern part of the state.



## Pest Risk Factors

The risks of some pests to humans are not universally known, or even especially obvious, and are as follows:

- **Ants:** Ants walk over many kinds of materials and sometimes feed on dead animals. They can carry disease-causing organisms to food, causing spoilage or spreading disease.
  - **Yellow jackets and hornets:** Stings from yellow jackets, bees, or hornets are the leading cause of fatalities from venomous animals. Most wounds are inflicted by yellow jackets—causing anaphylactic shock. Aside from fatalities, venomous stings cause fever, chills, hives, joint or muscle pain, and localized pain, itching, redness, and swelling.
  - **Rodents:** Mice and rats cause damage to food through their gnawing, urination, defecation, and nesting activities. They can also carry diseases such as rabies and bubonic plague. Rats bite more than 45,000 people annually, most of whom are infants and children.
  - **Cockroaches:** Cockroaches, like ants, walk through organic wastes and then over kitchen counters and other surfaces. They can contaminate food and utensils and can mechanically transmit many disease-causing organisms resulting in food poisoning, dysentery, and diarrhea. Cockroach feces may also trigger asthma attacks in children.
  - **Flies:** Flies carry bacteria and other microbes that can contaminate food, utensils, and counter surfaces.
- Damage to physical property typically comes from weeds, rodents, termites, and other structural pests.
- **Weeds:** Weeds are unsightly and can kill other landscape plants, as well as do structural damage to buildings.
  - **Rodents:** Rodents of various types damage clothing, documents, and structures through their gnawing and other activities. They also can cause fires by chewing through insulation on electrical wires.
  - **Structural pests:** Termites and other structural pests destroy wood structures.

# PEST MANAGEMENT

## The Costs of Pests and Pest Management

Pest problems can vary in cost considerably, depending on such factors as geographic location, the size and age of school premises, and the nature of the school facilities. The costs of pest management programs tend to fall into five general categories: (1) pest control services for monthly service and emergency or special services; (2) staff training to handle pesticides; (3) pesticide purchases of chemicals and devices; (4) pest control equipment such as vacuum cleaners; and (5) management for staff, liability insurance, and record-keeping.

The 2001 DPR study of school districts found that 78 percent of responding school districts hire outside businesses for pest control services. Of those districts, 32 percent contract out for all pest management, 30 percent contract on an as-needed basis, and 27 percent contract for particular pests only.

In one study conducted in 1985, the

costs of contracted services averaged \$2,400 per building. Adjusting these numbers for inflation using the Consumer Price Index, this would equate to \$3,876 in 2000 and could reach \$4,547 by 2005.

Internal pest management can be expensive also. The 2001 DPR study showed that 68.4 percent of school districts undertake at least some aspect of pest control. Costs cited in the 1985 study for internal conventional pest control were estimated to be \$513 per building for crawling insects and rodents. This would amount to approximately \$828 in 2000 and \$972 by 2005.

For management costs, the 2001 DPR study also found that 79 percent of the respondents keep records of pest treatments, 16 percent keep records of pest sightings, and 11 percent record the results of pest monitoring. Furthermore, 60 percent of the districts maintain approved lists of pesticides. While no cost statistics for these functions were available, the magnitude of record-keeping

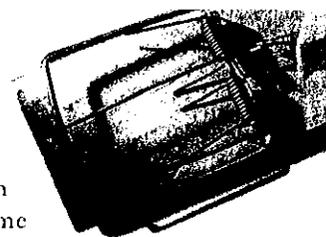
could make them substantial in some districts.

Interestingly, a 1988 follow-up to the 1985 study showed that a school that used proper IPM practices experienced significantly lower pest management expenses. Costs dropped to \$575 in 1988 under an IPM program, and outside services were not required. This cost would rise to \$844 in 2000 and \$992 in 2005, but is well below the projected \$5,519 annually per building that the district would have incurred with conventional pest management practices and outside services.

## Resources Available from DPR

DPR offers school districts several resources to help meet the requirements of the Healthy Schools Act and assist in developing an IPM program.

The California School IPM Program introduced its new, completely restructured web site at the end of last year. The



## PEST MANAGEMENT

new web site located at [www.school-ipm.info](http://www.school-ipm.info) is intended to be an inclusive resource for school employees, pest control businesses, parents, and the public.

The site resources are now organized by both subject category and audience, with a site map to help in navigation. New features include sample documents, a summary of mandatory and voluntary components of the Healthy Schools Act, a health and environmental impacts section, a managing pests section with links to fact sheets on specific pest species, links to the DPR pesticide databases, and references to legislative text applicable to IPM in schools.

Another valuable resource currently under development is the School IPM Guidebook. DPR is in the process of tailoring an existing school IPM guidebook to correspond with conditions in California. Pests to be covered include insects, mites, rodents, birds, diseases of landscape plants and turf, and weeds. The guidebook is intended for use by the school district IPM coordinators, will be included in the DPR School IPM training materials, and will be posted to the web site as well.

DPR will offer regional training specific to school situations throughout the state. The purpose is to facilitate school districts with implementation of an IPM program and least-hazardous pest management practices. The program will use a train-the-trainer approach to train school district IPM coordinators, who will then train groundskeepers and custodians in their home districts. The format will be hands-on, "walk-through," and demonstration—the format that best lends itself to the train-the-trainer approach. The DPR web site at [www.dpr.ca.gov](http://www.dpr.ca.gov) contains more information and updates about these activities.

### In Summary

Generally, prevention is considered the best method for managing pests, but pesticides do have a role in public health. As suggested in the Healthy Schools Act, the least hazardous pest management practices should be used. IPM coordinators should initially try to manage pests with the least hazardous

methods, only progressing to more hazardous methods when deemed necessary.

Pests can potentially create a multitude of problems in schools. Keeping the school environment safe, avoiding disruptions to educational processes, and preserving limited resources create significant challenges. An active IPM program can help schools prevent and manage

pests in a cost-effective manner that poses the least risks to students, school staff, and the environment. ■

*Thomas Babb and Lyn Hawkins are environmental research scientists with Call EPA's Department of Pesticide Regulation. Dennis H. Tootelian, Ph.D. is a professor in the College of Business Administration at California State University, Sacramento.*