



## Pests and Pesticides in Child-serving Facilities: An IPM Newsletter

### What's your solution?

Is your structure full of pest caves — places where pests can live undisturbed? Seldom used shelves full of clutter are ideal undisturbed spots for pests to inhabit. Have a clean out day periodically to encourage teachers to get rid of clutter. Use shelves that allow the area underneath to be inspected and cleaned; avoid gondola bases on shelves. Get rid of cardboard, use clear plastic containers that seal tightly instead.



A gondola base prevents inspection under shelves. Cluttered, undisturbed areas are perfect hiding spaces for pests. Bottom shelves should be 18" above the floor to allow for easy inspection and cleaning.

Look for pest caves outdoors as well as indoors. Dense mats of shrubbery are ideal hiding places for rodents. Partially sealing openings doesn't do much good. Any opening or gap that allows pests to enter is too big. German cockroaches prefer tight spaces a few millimeters thick — crevices where both the upper and lower surfaces of their bodies are in contact with a substrate. Mice only need a 1/4-inch gap and Norway rats a 1/2 inch. Yellowjackets and bees need only a small hole to enter a wall void where they can establish a nest.

Look for problems with drainage. Flies, including mosquitoes, can breed in clogged gutters. Puddles from leaky gutters or condensation from air conditions are a source of water for any pest.

**Take time to inspect your schools and look for conditions that need to be corrected. See if you can discover what's wrong in the pictures (A-J) on the next two pages. Answers available on pages 3-4.**

### Special Points of Interest

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- > Kudos
- > Schools & Rules of TN Dept. of Health
- > Pest Control Contracts
- > Pillbugs & Sowbugs

Newsletter edited by Karen Vail, Pat Barnwell and Jennifer Chandler, UT Entomology & Plant Pathology Urban IPM Lab.

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A



B



C



D



E



F



G



H



I



J

Photos A, D and I courtesy of Robert Corrigan, EPA webinar, Pest Prevention by Design in Schools; all other photos by University of Tennessee Entomology and Plant Pathology

### Answers

**A.** Inspection under and around these shelves would be difficult. The bottom shelves in A are less than 18 inches from the floor and blocked by clutter. Cluttered, undisturbed areas are perfect hiding spaces for pests. Cockroaches, brown recluse spiders, and rodents use cardboard for harborage. Bottom shelves should be 18 inches above the floor to allow for easy inspection and cleaning. Tight seals on plastic containers help keep pests out. Cardboard boxes



**B, C, and D.** Partially filling a gap or hole is a waste of time and effort. Pests can still enter and find harborage and travel routes. Use sealant, Stuf-fit or Xcluder, escutcheon plates, plaster or concrete patch, woven hardware cloth or 24 gauge or heavier galvanized sheet metal to make repairs depending on the location and size of the opening. Generally sealants are good for 1/4-inch gaps. A quick drying patching compound can be mixed into a metal mesh such as Stuf-fit to fix holes less than 3 inches in diameter. Any holes over 3 inches should be backed with woven hardware cloth and filled with plaster or concrete patch.

**E.** Neglected gutters accumulate organic matter that holds moisture, a perfect breeding site for mosquitoes and other flies. Periodically inspect rooftops and gutters for leaks and gaps that need repair. Moisture from leaking gutters pools next to the foundation and over the long term may cause problems. Downspouts should extend far enough away from the structure so that water drains away from the foundation with the natural slope of the soil and does not erode the soil.

**F, G and H.** Leaky pipes, air conditioning condensate, and faulty drainage can erode soil over time and form temporary pools as well as damage the structure. Pests have a ready source of water for breeding or drinking. The combination of missing mortar and water in **H** increases the chance that pests will invade.

**I.** Dense plantings of shrubbery next to the foundation of a structure are ideal hiding places for pests to burrow or hide. Trim shrubs so that the ground underneath is exposed. Leave a 12- to 18-inch unvegetated strip around the perimeter of the building so that inspections can precede smoothly.

**J.** Want to attract rodents and other pests? Then store uncovered dumpsters next to the structure and don't bother to clean up any spillage. Dumpsters with tight-fitting lids and doors should be located at least 50 ft. from the structure. Keep dumpsters and the surrounding area clean. Ask for a replacement if the dumpster leaks. One technician told us his county is really good about replacing lids, patching holes and keeping dumpsters painted. So it can be done!



### **Kudos to Those Who Helped with School IPM Technician Training**

Congratulations to all the technicians that completed the school IPM technician training classes (<http://schoolipm.utk.edu/training.html>). We want to thank Mary Kington, Gale Hamby, and William Potter of the Cumberland County School System; Jamie McAdams of the Lexington City School System; Robert Leslie and Eric Pajic of the Williamson County School System; Oscar Brown, Steve Ballou and Russ Good of the Millington School System; and George Frye and Jay Early of the Greene County School System for their help and generosity in providing a location, assistance and equipment for the training.

## Schools and Rules of the Tennessee Department of Health, Bureau of Health Services Administration, Division of General Environmental Health

School kitchens are considered food establishments under the rules of Tennessee Department of Health. Rule 1200-23-1-.07 states that rodent bait shall be placed outside and covered in a tamper-resistant bait station. During the school IPM technician training, we interpreted this rule to mean that rodent bait should not be applied in the kitchen and pantry areas of a school. After checking with Lori Lemaster, Environmental Health Manager at the Tennessee Department of Health, we learned that it is permissible to use rodent bait in a kitchen or pantry, but it must be applied by a pest management professional. We still do not recommend using rodenticides in the kitchen area even block bait placed in secured tamper-resistant stations. Why?



Rothchild Peterson Patent Model Museum, <http://www.patentmodel.org/patent-models/102133>

Rodents can nibble on bait and translocate bait into unpredictable locations. If the rodent problem seems impossible to solve without the use of bait, then once the problem is solved, the bait should be removed.

Another issue covered by these rules is dumpsters. Rules state that 1) dumpsters should have tight-fitting doors and lids, be free of leaks, and the drain hole plugged except when cleaning and 2) cleaning should be scheduled to eliminate conditions that attract pests. Plastic lids are often warped and don't close correctly. This is something that would be noted. Lids are replaceable. So if you are experiencing rodent problems and keep your dumpster and surrounding area clean, ask your service provider to supply you with a dumpster that conforms to the rules.

### Update LED Lights

According to information published in [Entomological News 125\(5\): 315-326](#) LED bulbs attracted significantly fewer insects, in particular flies and moths, than incandescent and halogen light bulbs. Bulbs were tested in an outdoor residential setting requiring low light. Both cool and warm type LED bulbs out performed the other bulbs.



## What to Consider When Choosing a Pest Management Company

Invitations to bid will soon be issued for pest control contracts. When deciding on a pest control company administrators often choose the company with the lowest bid. We recommend reviewing the section on pest control contracts available in [Suggested Guidelines for Managing Pests in Tennessee's Schools: Adopting Integrated Pest Management](#). Consider using a weighted factor bid system when deciding on a pest control company. Look for a company that is willing to spend the time inspecting the school with a checklist in hand and to make suggestions for improvements and repairs. Be willing to send a staff member with the company representative so that the representative has access where needed. Look for a company that proposes using sticky traps to monitor and applying pesticides only when pests are present. Look for a company that will use baits when cockroaches and ants are a problem and that will apply liquids or dusts in cracks and crevices.

Sample Weighted Factor Rating Form for Evaluating Pest Control Bids

FACTORS	MAXIMUM RATING	SUPPLIER (Weights)		
		A	B	C
<b><u>Technical Factors</u></b>				
IPM Plan	25	22	25	22
Technician experience/ IPM training	15	12	15	12
Previous experience in educational institutions or other public facilities	15	13	15	5
<b><u>Price Factors</u></b>				
Price	35	35	29	28
<b><u>Other Factors</u></b>				
Managerial, financial capabilities	5	3	5	3
Quality control program	5	4	5	4
<b>TOTAL SCORE</b>	<b>100</b>	<b>89</b>	<b>94</b>	<b>74</b>

Price should not be the only factor when judging bids from competing pest control firms. This weighted factor rating form can be used to help evaluate each bidder on several criteria. The above factors and weights can be modified by each school system according to its individual priorities.

Pest management professionals (PMPs) tell us if they don't spray, the school staff thinks they aren't doing their job. Inspection and investigation are major parts of solving pest problems. Pesticides are often a temporary band-aid if the conditions that are allowing the pest to enter and reproduce in a structure are not corrected. PMPs are trained to be problem solvers. They are knowledgeable about the biology of the pests. Not every pest is a threat to health or safety of the school community. Be attentive when your PMP alerts you to conditions and behaviors that are contributing to a problem. A combination of methods achieves the best control. Pest control depends upon cooperation between client and the pest management professional.

For a list of school IPM trained technicians, see <http://schoolipm.utk.edu/training.html> .

## Pillbugs and Sowbugs

Pillbugs and sowbugs are land-dwelling crustaceans closely related to shrimp and lobsters. In fact, they are the only crustaceans that have adapted to living on land. Pillbugs are able to roll into a ball for defense whereas sowbugs are not. Sowbugs have two visible tail-like appendages (uropods) at the rear of their bodies; a pillbug's uropods are too short to be visible. Both have seven pairs of legs that are equal in length; hence, the name isopods from "iso" for equal and "pod" for leg. Most are restricted



Pillbug

<https://extension.umd.edu/hgic/pillbugs-and-sowbugs>

to moist habitats because they breathe through modified gills and specialized air tubes enclosed in protective chambers on the underside of the body. Eggs develop in a water-filled marsupial chamber. Juveniles resemble adults and molt up to 10 times before reaching maturity after 2 years.

Common habitats include heavily layered mulch, compost piles, the underside of stones, boards, flower pots and planters, and ground clutter near the foundation of a structure. Occasionally, isopods may wander into structures if their population outside is abundant. Survival time indoors is short unless the isopods have invaded a damp, humid area such as a basement or crawl space. Physical removal by handpicking or vacuuming should solve the problem with a few invaders.

Isopods are valuable in creating compost and soil. As scavengers, they feed on decaying plant and animal matter. One scientist published a paper on the value of using a particular isopod for cleaning the skeletons of small birds. Some isopods may nibble on leaves, stems, and roots of bedding, vegetable and fruit seedlings and transplants. Pillbugs and sowbugs do no damage or injury to humans or structures.

To prevent pillbugs or sowbugs from gaining entry into structures make sure door thresholds, cracks and crevices, and pipe penetrations in the outside foundation wall are well sealed. Seal expansion joints between sidewalks and the foundation. Remove heavy accumulations of mulch, leaves, grass, and any ground clutter around the foundation. Any items that must be stored along the foundation should be elevated. Divert water away from the foundation. Check gutters, downspouts, and splash blocks for proper function. Repair leaky pipes, faucets, and air conditioning units near the foundation. The bottom line for preventing indoor invasions is to reduce moisture and hiding places around the foundation.



Sowbug <http://hortipm.tamu.edu/pestprofiles/OTHER/>



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For more information about IPM in Tennessee schools and other facilities, or to view past issues of *Pests and Pesticides in Child-serving Facilities*, please visit [schoolipm.utk.edu](http://schoolipm.utk.edu).

### **NATIONAL IPM INFORMATION**

eXtension's Pest Management In and Around Structures: Urban Integrated Pest Management [http://www.extension.org/urban\\_integrated\\_pest\\_management](http://www.extension.org/urban_integrated_pest_management)

National School IPM  
[schoolipm.ifas.ufl.edu/](http://schoolipm.ifas.ufl.edu/)

IPM in Schools Texas  
<http://schoolipm.tamu.edu/>

IPM Institute of North America  
[www.ipminstitute.org/](http://www.ipminstitute.org/)

School IPM PMSP—all schools IPM by 2020  
[http://ipminstitute.org/school\\_ipm\\_2020/  
SCHOOL\\_IPM\\_2020\\_V3\\_070615.pdf](http://ipminstitute.org/school_ipm_2020/SCHOOL_IPM_2020_V3_070615.pdf)

National Pest Management Association IPM  
[www.whatisipm.org/](http://www.whatisipm.org/)

EPA schools  
<http://www2.epa.gov/managing-pests-schools>

For further information about the IPM program at your school or in your county, contact your county Extension Agent or the school IPM Coordinator. For county agent contact information, please visit <https://extension.tennessee.edu/Pages/Office-Locations.aspx>

## Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

## Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

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