

Bed Bugs: What Schools Need to Know

Karen Vail, Professor, Department of Entomology and Plant Pathology
Pat Barnwell, Program Assistant, Department of Entomology and Plant Pathology



Bed Bugs: What Schools Need to Know

Karen Vail, Professor, Department of Entomology and Plant Pathology

Pat Barnwell, Program Assistant, Department of Entomology and Plant Pathology

Bed bugs living in homes and other places where people spend significant time may be unintentionally carried into schools. When this happens, school personnel should address the situation promptly and diligently to prevent bed bugs from establishing a reproducing population and to stop them from spreading. At the same time, they must cause the least disruption to the learning environment and respectfully regard all involved.

What Are Bed Bugs?



Bed bugs are small (1/25 to 1/3 inch), beige to reddish brown, flattened insects that feed on human and other animals' blood. Although the initial bite does not hurt, it may develop into an itchy welt similar to a mosquito bite. Fortunately, bed bugs are not known to transmit disease, but they can cause significant itchiness, anxiety and sleeplessness. Infestations of this pest are challenging and costly to control, so limiting their spread is critical.

Usually, bed bugs hide during the day and feed at night but may feed on a host whenever present. Unlike head lice, they do not live on a person and hide in cracks and crevices when not feeding. Their tarsal claws allow them to hitchhike from one place to another in backpacks, clothing, luggage, books and other items.

Figure 1: Adult Bed Bug. Photo Credit: CDC

Could My Classroom Be Infested?

Actual bed bug infestations in schools are rare. More commonly, a few bed bugs hitchhike to school from an infested home by hiding in a student's or staff member's clothing, backpack or other items. Early intervention is necessary to prevent the school from becoming a potential hub for bed bug spread.

If a school plans to use pesticides to control pests indoors, then the pesticide applicator must be under the direct supervision of a licensed operator as indicated in the Tennessee Code Annotated 62-21-124 and should follow the tenets of integrated pest management, or IPM, to reduce and balance risks from pests and pesticides.

The school should contact a pest management professional if a bed bug infestation is suspected, or if multiple students are bitten by a suspected bed bug(s) during class. A bed bug infestation could be defined as adult females and eggs or many bed bugs of multiple stages present. One bed bug is not considered an infestation.

What If I Find a Bed Bug on a Student?

If a confirmed bed bug is found on a student, it may indicate that the student has bed bugs at home. However, bed bugs can crawl onto or off a person (or their belongings) at any time, so it is also possible that the bed bug was brought to school by someone else. If a suspected bed bug is found on a student or a student's belongings, school districts and schools are encouraged to follow these procedures:

- Discreetly remove the student from the classroom so that the school nurse or other school-designated individual can examine — according to approved procedures — the student's clothing and other belongings. Any bugs found should be removed and collected for identification. Keep the specimens as intact as possible. The local Extension office or pest management professional can assist with identification.
- If a confirmed bed bug is found on a student, then the school-designated individual, such as the school principal or nurse, should contact the student's parents or guardian to inform them of the bed bug presence on their child. Consider sending home a bed bug inspection form. A sample is provided at the end of this document. Educational materials, such as those available from UT Extension, also should be provided to the family.

- Schools should consider notifying the affected class or classes. Notification of entire classes will be dependent on school procedures, applicable privacy and confidentiality laws, and if an infestation exists. School districts are encouraged to consult with their local board attorney regarding this matter. A sample notification letter is provided at the end of this publication.
- Students should not be excluded from school due to bed bugs. Schools should not be closed due to bed bug presence. If pest management is necessary, it will typically be targeted to certain areas of the school.
- Ongoing pest management, including the use of pesticides indoors, should be performed by a pest management professional under the supervision of a licensed operator.

What Can I Do to Eliminate Bed Bugs from My Classroom?

- Do not allow untrained staff to apply pesticides on school property. By law, only trained applicators under the direction of a licensed operator can apply pesticides (even ready-to-use products like sprays) in schools. Apply pesticides in compliance with the school's IPM plan.
- Inspect backpacks, lunchboxes and other items that travel back and forth to school daily. Seal these items in plastic containers to prevent bed bugs from getting into them at home.
- Clean hard surfaces with standard cleaning products.
- Reduce clutter and cardboard to decrease the number of hiding places for the bed bugs.
- If bed bugs have been found repeatedly in a particular classroom, have the room inspected by a pest management professional or other trained staff.
- Seek additional guidance (Table 1) if bed bugs are established.

All staff may want to follow other suggestions for detecting bed bugs early such as placing monitors under the legs of their bed, encasing mattresses and box springs and inspecting for bed bugs and their signs when they change their sheets weekly.

What If a Staff Member or One of My Students Has an Infestation at Home?

A bed bug sighting does not necessarily mean an infestation. When there is an infestation at home, it is important to approach the situation in a sensitive manner and avoid stigmatizing students or personnel who may be suspected of bringing bed bugs to school.

Although bed bugs have nothing to do with cleanliness or socio-economic status, there is still a stigma that can come with having bed bugs. As a result, parents may be hesitant to admit to having bed bugs, and a student may not want others to know he or she has an infestation at home. A student living in an infested home also may feel anxious or tired during the school day.

Schools should work with staff or the parents of students living in an infested home to develop strategies for preventing the further spread of bed bugs.

- Determine if the infested home is being treated. Home remedies and do-it-yourself treatments are usually insufficient and could cause negative health effects or produce potential hazards in the home.
- If they lack the financial resources to hire a pest management professional, he or she can reference online resources at the end of this publication.
- In an infested home, freshly laundered clothing should be stored in sealed plastic bags until they are put on in the morning. Doing so prevents bed bugs from hiding in the clothing and being carried to school. Placing dry clothes (just prior to wearing) and other appropriate items into a clothes dryer set on one of the highest settings (hotter than 122 F) for about 20 minutes should kill bed bug eggs, nymphs and adults. Observe closely to prevent shrinking or otherwise damaging clothing.
- Backpacks, lunchboxes and other items that travel back and forth to school also can be inspected daily and stored in sealed plastic containers at home to prevent bed bugs from getting into them.
- At school, consider providing the staff member or student with plastic bags or bins to store their things to prevent bed bugs from spreading to other students' belongings.
- If bed bugs find their way into the school, consider notifying the affected classes. A sample notification letter is provided at the end of this document.
- Continue to use these measures until successful treatment of the home has been verified by a parent/guardian or pest management professional.



Figure 2: *Bed bugs behind baseboard.*
 Photo Credit, Suzan Jones, OSU



Figure 3: *Bed bugs bites.*
 Photo Credit, Stephen Doggett, Westmeade Hospital

Additional Ways for Schools to Prepare for Bed Bugs

- Retain supplies to collect specimens and hold infested items: extra-sticky lint rollers, disposable gloves, trash bags, plastic tarps, plastic storage bins and tape.
- Designate areas where potentially infested items can be held temporarily.
- Keep all “Lost and Found” clothing, backpacks, etc. in closeable plastic storage bins (rather than in cardboard boxes), preferably in a central location.
- Establish a list of primary school personnel who should be notified immediately to address the problem and answer questions from parents, staff and other community members.
- Educate the school community (teachers, staff, parents and others) about bed bugs and the system’s response to bed bugs at the beginning of the school year. Plans should indicate what will happen if bed bugs are found in the school. For instance, if one bed bug is found on a child, the parent/guardian will be informed. If a room is found to be infested, the parent/guardian of all the students in the classroom will be informed.

Table 1. What actions should be taken to eliminate an established bed bug population?

Although bed bugs are often introduced into schools, they rarely establish a thriving population. Should females and eggs be detected or many bed bugs of multiple stages be in one place, an established population may exist. Below are additional strategies to help eliminate an established population. Schools can decide who (school personnel or pest management professionals) will conduct inspections and mechanically remove or physically treat the bed bugs, but pest management professionals must make any pesticide applications.

- Confirm identification (Refer to UT Extension publication SP761 for an image of all bed bug stages; submit specimens to the local Extension office or pest management professional.)
- Determine areas of bed bug activity through one or all of these options:
 - Visually inspect potential hot spots (lockers, cubbies and other areas where backpacks are stored, upholstered furniture, and other cracks and crevices near places where people spend considerable time) using a flashlight.
 - A canine scent detection team can inspect a large area quickly, but results may vary. Confirm the presence of a bed bug before taking steps to treat them.
 - Place bed bug interceptors or monitors near potentially infested items or areas. Check these regularly. Adding a chemical lure, such as SenSciActive, to the trap may increase the trap catch or reduce the time to detection. Some suggest using 10-12 unbaited monitors per classroom. For the most part, two consecutive weekends of monitoring without bed bug detections could indicate the bed bugs are no longer present.
- Mechanically remove and/or physically treat in school rooms (or vehicles, as appropriate)
 - Roll an extra-sticky lint roller over the bed bugs to quickly capture them. Place in a sealed plastic bag and dispose.

- Vacuum upholstered furniture and other areas suspected as having bed bugs with knee-hi pantyhose over the end of the tube and a crevice tool to push down and remove eggs and other stages. Remove the stocking, tie in a knot and dispose of it in a dumpster outdoors.
- Steam cracks and crevices in upholstered furniture in and near areas of bed bug activity. Heed warnings about damaging silk, microfiber and wood.
- Clothing, fabrics and similar items can be heat treated in a dryer or small heat tent. Exposing bed bugs to 122 F kills them.
- Some schools have invested in heat equipment to treat an entire room. This can be quite expensive considering the minimal risk of bed bug population establishing in the school. There are also concerns of damaging items and setting off fire protection sprinklers. Teams need to be well trained in using heating equipment to effectively control bed bugs and prevent damage to the school.
- Chemical treatment by a pest management professional
 - If inspection of the monitoring stations indicate that bed bug activity is persisting after several weeks of mechanical and/or physical treatment, pesticide treatment by a pest management professional may be needed.
 - Chemical control: A category 7 certified pesticide applicator under the supervision of a GRC (General Pest and Rodent Control) licensee can apply CimeXa or similar dusts to cracks and crevices. Bed bugs are resistant to the active ingredients in many pesticidal sprays, and often, the spray must directly contact the bed bug to be effective. Space sprays or foggers are ineffective at controlling bed bugs hidden in cracks and crevices and are discouraged from being used in schools or in vehicles.

Modified from: Merchant, M. IPM Action Plan for Bed Bugs. <https://schoolipm.tamu.edu/forms/pest-management-plans/ipm-action-plan-for-bed-bugs/>

Overlooked Items That May Harbor Bed Bugs

- Wheelchairs, walkers and canes
- Band instrument, athletic gear and other similar bags or cases
- Laptops/tablets

Left untreated, bed bugs in movement aids can be a source of repeated introductions into a classroom. If bed bugs are found in classrooms, arrangements should be made to steam, heat or otherwise treat wheelchairs, canes and walkers while ensuring that electrical components are not damaged. While backpacks are known to move bed bugs, band instruments, athletic gear and other similar bags or cases could also harbor bed bugs. Cases should be carefully inspected if bed bug reinfestations occur and no other likely source is apparent.

End-of-Year Storage of Laptops/Tablets

Bed bugs and cockroaches can take shelter in computers. While the shell on a desktop computer can be opened and the interior vacuumed, it is much more difficult for an untrained person to remove the cover on laptops and tablets without damaging them. Schools should consult their pest management professional to disinfest tablets and laptops at the end of the school year to prevent bed bugs or cockroaches from moving from one laptop to another or dispersing into the storage room and elsewhere. Some schools have experimented with a heat tent but be aware there are potential risks and a possibility for damage. Verify the heat tolerance of the electronics with the manufacturer before using this option.

Further Intervention

In the unusual instance where a child repeatedly reports to school showing evidence of bed bugs despite previous notification and education and counseling with parents, further investigation is needed. Repeated bed bug presence may be due to the following:

- Failure to effectively treat a recognized infestation, including an inability to afford pest control services
- Failure to adhere to recommended clothing and school item sanitation
- There are other sources of bed bugs

If any of the above issues are thought to be the cause, targeted intervention may be warranted:

- Increased vigilance and monitoring of suspected bed bug introduction points into the school, such as lockers, buses, common areas or other areas where students routinely congregate.
- Monitoring may result in the treatment of school facilities and property if an infestation is found in the school or on buses.
- Investigative work into the home life may be required to determine where repeated bed bug findings originate.

- Lack of financial resources to secure pest control.
- An inattentive landlord may be refusing to manage pests properly.
- Pest control companies may refuse to treat if the property hasn't been properly cleaned and organized. Low- or no-preparation bed bug control programs are becoming more popular, so homes/apartments that have not been prepared for treatment may become less of an issue. There may be an alternative source or reason that bed bug infestation persists. It is essential to identify factors that may have contributed to the infestation.

Local agencies, associations, or organizations may provide financial assistance for bed bug treatment. Residents may be unaware that pest management services are included for individuals renting in HUD-assisted multifamily housing.

There may be an alternative source or reason that bed bug infestation persists. It is essential to identify factors that may have contributed to the infestation.

- Re-infestation may occur from outside of the home (adjoining residences, places a student sleeps or visits, visitors to the home, or other family members).
- Bed bugs may be encountered where the child spends time after school, before school or with other family members.
- Cars and other modes of transportation may be infested.
- Failing to adhere to at-home procedures may contribute to the bed bugs' persistence.

Rare/Extreme Cases

In rare or extreme cases, there may be a bed bug infestation in a home that can't be remedied. These cases are difficult because a school must weigh several important factors:

- The school's responsibility is to provide a healthy, pest-free environment for students to learn.
- Providing a healthy, pest-free environment for the staff is also a responsibility of the school administrators.
- Providing a safe and healthy home living environment is a responsibility of the parent and NOT the school.

Bed bug infestations are a concern for the entire community, not only for individual families and schools. While individuals and institutions have their respective responsibilities, it is incumbent on the community to attempt to help its members, particularly those less fortunate, address an infestation.

Other options in rare or extreme cases may include:

- Helping a resident determine if they or the landlord is responsible for pest control. See information on the Healthy Homes Program website for better understanding the rights of tenants.
- Notifying the Department of Children's Services in instances of suspected neglect.
- Notifying local truancy offices if the child, due to repeated infestation, is missing an excessive amount of school.

Decisions to act through the Department of Children's Services, local truancy or prosecutor's offices should be a last resort. Before taking this action, every effort should be made to assist the family with bed bug control.

Modified from:

A. Taisey, L. Hall and F. Oi. 2015. IPM Action Plans for Bed Bugs <https://articles.extension.org/pages/61823/ipm-action-plan-for-bed-bugs>

The information in this publication does not provide legal advice and is not a substitute for consulting with a lawyer about your specific situation.

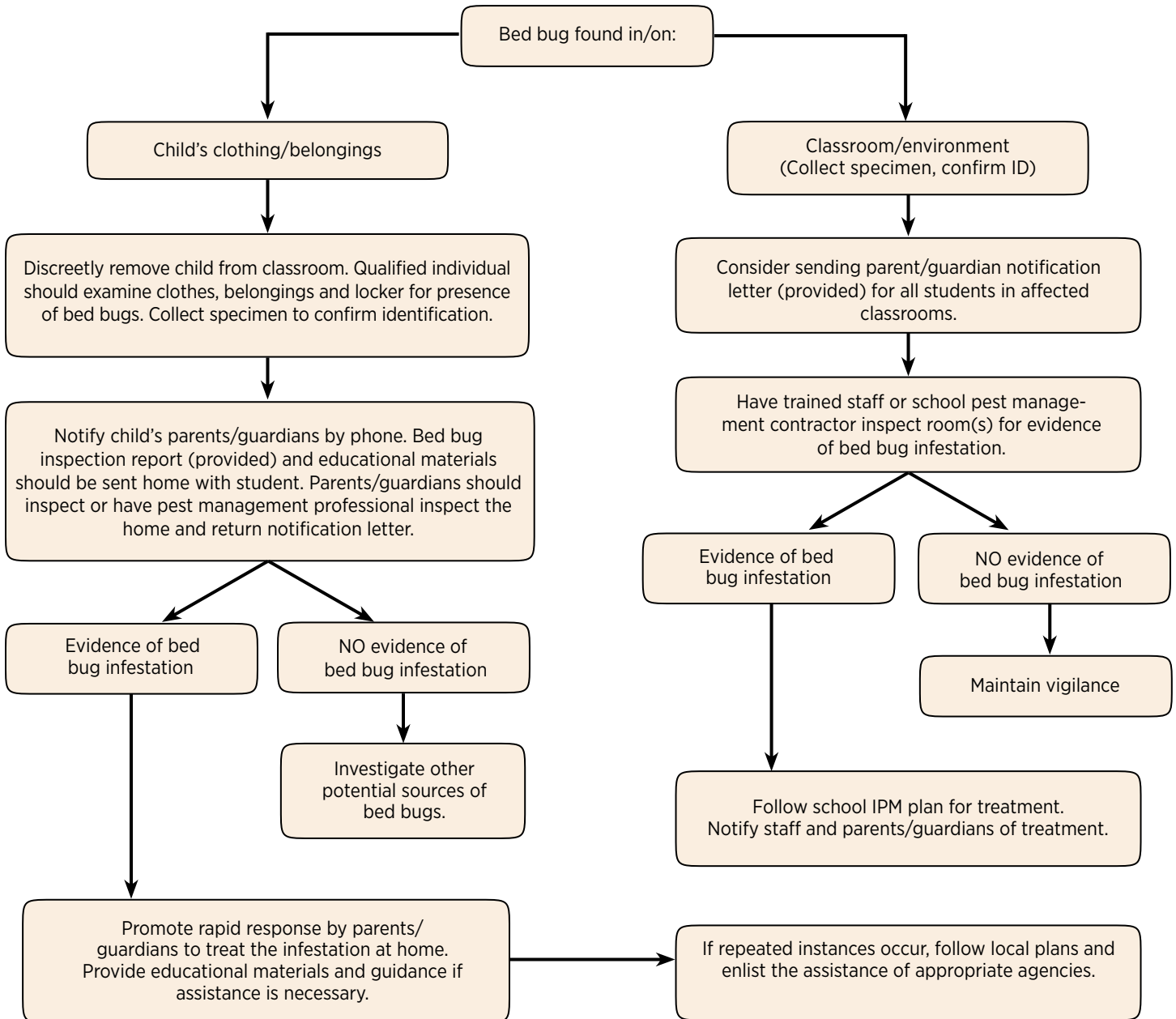
Bed Bugs: School Response Flowchart

School Responsibility:

Providing a healthy, pest-free environment in which students can excel.

Parent/Guardian/Caregiver Responsibility:

Providing a safe and healthy living environment for the student.



Sample Notification Letter

Note: Downloadable Microsoft Word versions of this letter are available online.

SAMPLE

Bed Bugs Found in School: Parent Notification Letter

(To be sent home when bed bugs are established in a classroom.)

(Use school letterhead)

Dear Parent or Guardian:

We have recently found a bed bug specimen in your child's classroom. Bed bugs are small insects that live by feeding on human blood, usually at night. The bite is painless and may or may not become swollen and itchy, much like that of a mosquito bite. While bed bugs are a nuisance, they are not known to spread disease. If you have concerns for you or your child, you should call your family doctor.

The source of bed bugs often cannot be determined, as bed bugs may be found in many places. Even though it is unlikely for bed bugs to infest a school, (fill in your school district here) will conduct an inspection and, if necessary, the area where the bed bug is found will be treated. (Fill in your school district here) will continue to work to identify bed bugs and provide thorough inspections of schools.

If you have any questions regarding bed bugs within your school, please contact Principal (fill in principal's name and contact information here). If you have any questions regarding bed bugs found in your home, please contact your pest management professional or local county University of Tennessee Extension office, or see the UT's bed bug information (<https://bedbugs.tennessee.edu/resources/>) and other comparable bed bug fact sheets.

Sincerely,

Principal or IPM Coordinator

Sample Letter Adapted from the Central Ohio Bed Bug Task Force

SAMPLE

Bed Bug Plan: Parent Notification Letter

(To be sent home at the beginning of the school year.)

(Use school letterhead)

Dear Parent or Guardian:

Bed bugs are small insects that live by feeding on human blood, usually at night. The bite is painless and may or may not become swollen and itchy, much like that of a mosquito bite. While bed bugs are a nuisance, they are not known to spread disease. A publication, "Bed Bugs: What Schools Need to Know" (<https://bedbugs.tennessee.edu/bed-bugs-what-schools-need-to-know/>), describes the details of our bed bug management procedures. This letter outlines the steps we will take if bed bugs are found on school property.

If one bed bug is found on a child, the parent/guardian will be informed. A letter will be provided describing the role the parents should take in managing the situation. If a room, area or vehicle is found to be infested, a parent/guardian of the potentially affected students also will be informed.

The source of bed bugs often cannot be determined, as bed bugs may be found in many places. Even though it is unlikely for bed bugs to infest a school, (fill in your school district here) will conduct an inspection and, if necessary, the area in which the bed bug is found will be treated. (Fill in your school district here) will continue to work to find bed bugs and provide thorough inspections of schools.

If you have any questions regarding bed bugs within your school, please contact (fill in principal's or school's designee's name and contact information here). If you have any questions regarding the biology and management of bed bugs found in your home, please contact your local county Extension office or pest management professional.

Sincerely,

Principal or IPM Coordinator

Sample letter adapted from the Central Ohio Bed Bug Task Force

Sample "Parent Bed Bug Inspection Report" for Schools

Dear Parent,

Today, a bed bug was found on your child or in your child's belongings. While this finding does not necessarily mean that the bed bug was brought to school by your child, it is important to your child's health and to the school community that you inspect your home for signs of bed bugs.

Enclosed you will find information about bed bugs and an identification guide to help you with your inspection. Once you have inspected your home, please fill out the form below and return to the school office by (insert date).

Sincerely,

School Administration

(make a line here)

I have been informed that a bed bug was found on my child at school. I understand that bed bugs pose a threat to my child's well-being and to the greater school community. I have read and understood the educational materials provided to me regarding bed bugs, and I have:

(add check box) Carefully checked my family and home for signs of bed bug infestation myself.

(add check box) Hired a pest management professional to check my family and home for signs of bed bug infestation.

Name of parent/guardian:

Name of pest control company:

After completing a careful inspection, I certify that to the best of my knowledge:

(add check box) I or a pest management professional found signs of bed bugs in my home, and I will take the following actions to eliminate this infestation: _____

(add check box) I or a pest management professional did not find signs of bed bugs in my home at this time. If I find evidence of bed bugs in the future, I will notify the school immediately and take action to address the infestation.

I understand that bed bugs can be spread to other homes if they are brought to school in backpacks, clothing and other belongings. I understand that if bed bugs are repeatedly found on my child, that the school may take additional actions to protect the school community from bed bugs.

Signature _____ Date _____

Pest management professional's signature _____

Online Resources

Child-serving Facility Integrated Pest Management (IPM) website: schoolipm.tennessee.edu/

Bed Bugs in Tennessee website: bedbugs.tennessee.edu/resources/

UT Extension publication SP761 Affordable Bed Bug Management: tiny.utk.edu/SP761

UT Extension publication SP788 Bed Bugs Sucking the Budget Out of Your Buildings?: tiny.utk.edu/SP788

Tennessee Department of Health Healthy Homes website: tn.gov/healthyhomes

This publication and the Spanish translations of the letters will be posted to the UT Child-serving Facility Integrated Pest Management (IPM) website, <https://schoolipm.tennessee.edu/>.

This publication was reviewed/approved by the following Tennessee School IPM Advisory Board Members:

David Borowski, Tennessee Department of Health
Louis Burnette, Metro Nashville Public Schools
Jennifer Chandler, University of Tennessee
Darrell Hensley, University of Tennessee
Jarvis Mimes, The Pest Guy Pest Management
Teresa Pedigo, Warren County Schools
Paul Sizemore, Tennessee Department of Agriculture
Patricia Slade, Tennessee Department of Children Services
Blake Southerland, Tennessee Pest Control Association
Allan Thacker, Oak Ridge Schools
Patrick Underwood, Etowah City Schools
Karen Vail, University of Tennessee

This fact sheet was modified from Michigan Bed Bug Working Group's "Bed Bugs: What Schools Need to Know" (https://www.michigan.gov/-/media/Project/Websites/emergingdiseases/Folder2/Bed_bugs_schools.pdf?rev=65c4dba8abd44918bad3397dfcd898b8), and the "Sample Protocol for Bed Bugs Found in NC Schools" by the North Carolina School IPM Program, N.C. State University and others as indicated.

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.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

This publication was partially funded by the USDA NIFA CPPM EIP Project (2024-70006-43505) awarded to the University of Tennessee.



U.S. DEPARTMENT OF AGRICULTURE



UTIA.TENNESSEE.EDU

Real. Life. Solutions.™