



Bed Bug Action Plan for Schools

Dini M. Miller, Ph.D., Department of Entomology, Virginia Tech

Introduction

Bed bug infestations are continuing to spread through single-family and multi-unit homes. This means that more people are living with bed bugs than ever before. When more people live with bed bugs the possibility of people transporting bed bugs to other locations increases. Children living with bed bugs at home will bring bed bugs to school. We need to accept the fact that bed bugs have the potential to be transported to school every day that school is in session. Thus, there is a great probability any particular school will experience multiple bed bug introductions every year.

In 2010, several US schools dealt with their bed bug introductions very publically. Schools were closed when administrators, teachers, and parents reacted out of panic. In one case school administrators, acting in haste, hired an inexperienced pest management company who contaminated the school building by applying a pesticide that was inappropriate (illegal) for use indoors. This, of course, resulted in a media frenzy.

Luckily, bed bugs are becoming so common that dealing with them in the future should become somewhat routine (and of no interest to the media). However, in order to get everyone (students, parents, faculty and staff) accustomed to dealing with bed bug introductions (and /or infestations) it is important to have a plan of action for dealing with bed bugs. **The first and most important step of any bed bug management plan is to remain calm.** Dealing with bed bugs is a tedious process, and having a systematic and logical plan of action is really the best way to deal with this pest.



Select an Experienced Pest Management Company Before You Have Bed Bugs

Your school district may already have a contract with a licensed and certified pest management company. However, that company may have little or no experience in dealing with bed bugs. Find out immediately. Call and ask the manager, not your technician or salesman, about the company's bed bug experience. How many bed bug jobs did they do last year? Are they familiar with integrated pest management? Do they have a printed copy of their treatment protocol? What products do they use, both chemical and non-chemical? What is their protocol for follow-up treatments? Ask them to provide you with bed bug references. If your current company does not have the expertise you need (and you need expertise) start investigating others. Find a good company by inquiring about those items listed above and call that company when the bed bugs show up. The price of a good bed bug company will most likely be higher than you have ever paid for your routine pest control. But keep in mind that time = money in bed bug control. You want your company to take the time they need to get the job done, or you risk not being satisfied with the results. Finding an expert bed bug company may take several days of investigation. You do not want to start your investigation after the bed bugs arrive. **Start looking for a bed bug control company today with the goal of having one company or maybe even two (if the first is not immediately available when you need them) identified by the end of the month.**

Bed Bug Identification Training for all Administrators, Faculty and Staff



There is no way to stop bed bugs from being brought into a school. Students arrive every day bringing their potentially infested belongings with them. The school can be bed bug free one day and have bed bugs brought in the next. So bed bug prevention for schools is really early detection. Bed bugs must be detected very quickly to stop an infestation from developing, or before they bite someone. Once you have selected your expert bed bug company, have them present a bed bug identification program to your employees. All employees need to know what live bed bugs look like (all life stages), so they can recognize a bed bug when they see one. Why everyone? Employees are located all over the school and if all eyes are looking for bed bugs, there is greater chance that they will be discovered quickly. Keep in mind that students are not the only people capable of bringing bed bugs to school. Employees can as well.

Alert Parents to the National Bed Bug Problem

People hate to be surprised. You can go a long way to stem any potential bed bug hysteria by warning parents ahead of time that bed bugs sometimes show up in schools. At the beginning of the school year, provide parents with a bed bug awareness brochure (your expert bed bug company can help you with the information). Let parents know that your school recognizes there is a national bed bug resurgence and that your district has a bed bug action plan. Let parents know what the procedure will be if an infestation, not just a single bug on a kid's sweater, is found. Let them know that the school will not close for bed bugs. Also, provide pictures of bed bugs in the brochure so parents can recognize bed bugs in their own home. It may also be helpful to provide parents with information on how to prepare their child's belongings to come to school if they already know they have an infestation at home (bagging, inspection before they leave the home, use of a hot dryer).

Bed Bug Prevention Methods

Clutter Removal. Clutter is the bed bug's best friend. With many places to hide, a bed bug population is practically guaranteed some survivors even after the most aggressive treatment. Unfortunately, some of the nation's finest school teachers have reputations for being pack rats. Quite often classrooms are loaded with stacks of papers and teaching aids that have not been used for years. With bed bugs spreading across the nation, **it is time to clean house.** If clutter is a problem at your school, next school break make it a priority to reduce unused items (anything that has not moved in the last two years) by at least half. Take into consideration that if an infestation does occur, all items may have to go anyway. So the best way to save the most precious items in the future is to eliminate potential bed bug harborages today.

Limit the Items Being Brought to School. Several recent pediatric studies have focused on the physical effects of children carrying heavy backpacks full of school supplies to and from school. Repeatedly transporting items between school and home also increases the possibility of students carrying bed bugs to school. Limiting the number of items that have to be transported back and forth would go a long way to reduce the chances of bed bugs being brought in. Are there items that students could bring to school and leave at school until the end of the school year? Are there school items that students could take home and leave at home until the end of the year? Keep in mind these items can be heat treated at the end of the year. (see page 4)

Containing Bed Bug Introductions. Although there is really no way of preventing bed bugs from being brought into school, there is the possibility of containing them once they get there. Clear plastic storage containers, like the one shown in the photograph, can be used to store backpacks, lunch containers, coats and other cold weather gear while the student is in the classroom. Labeled containers eliminate the problem of students' possessions contacting

each other in coatrooms or other storage areas where bed bugs might climb from one item onto another. The smooth interior of the container is also difficult for the bed bugs to climb so wandering bed bugs are likely to fall into the bottom of the container. When the students leave for the day, the containers should be visually inspected for any signs of bed bugs. If a bed bug is found in a container, the source of a potential infestation will be known, and the parents should be alerted to the problem. If the parents are already aware of the bed bugs, the parents and the school can work together to make sure that the student's possessions are treated in the school dryer every day before class.



Canine Scent Detection. Another proactive approach to bed bug detection is to have your school inspected at regular intervals by a bed bug sniffing dog. While some dogs (and their handlers) are better than others, any dog that has been trained correctly is far better at detecting bed bugs than a human. The dogs that have been trained to detect bed bugs are specifically trained to detect only live bed bugs (they do not respond to dead infestations) and even single bed bug eggs. One advantage to having a school inspected by a dog is that a bed bug dog can check rooms very quickly. Where it might take two pest management professionals several hours to thoroughly inspect a classroom, a dog could complete the inspection in about 5 minutes. Dogs are particularly useful for inspecting hundreds of school lockers, and multiple employee areas. Keep in mind that most dogs are not 100% accurate (but usually above 90% accurate), so the dog handler must also be well trained. The handler is responsible for confirming bed bug presence when the dog gives a positive signal. There are some charlatans out there with dogs that give false positives. So make sure you hire a certified handler and be present the day of the inspection. The handler should show you live bed bugs when the dog gives a positive signal. Never pay for a chemical treatment unless you have been shown live bed bugs.

Develop a Code of Practice (Policy, Procedure, Methodology) for when a Bed Bug is Found

It will be critical to decide how to respond to a single bed bug found on a child's clothing versus how to respond to one or more bed bugs loose in a classroom. The infested classroom will require professional treatment and quite possibly, parent notification of the infestation. A single bed bug on a child will require discretion. Have a written code of practice in place for both situations. Communicate this code of practice to all faculty and staff.

If a Bed Bug is found in a Classroom or Elsewhere in the Building

If there is an infestation in the building, you may want to alert the parents of children inhabiting the infested room that bed bugs have been found. This is so they can inspect their child's belongings before bringing them into their home. Let parents know the treatment protocol for the affected classroom, and where the children will meet for class the next day. With regard to the infested room:

- **Identify with a sign the exact location where the bed bugs were found, and isolate that location.**
- **Call the pest management company immediately (no need to leave the room unless the infested area cannot be avoided; no need to panic).**
- **Capture at least one bed bug and save it in a plastic bag for positive identification. Crush all others.**
- **If your pest control company confirms the infestation by identifying your captured specimens, or by inspecting and finding additional bugs, they should provide you with instructions on how to prepare the classroom for treatment. Follow all instructions to the letter (these may include vacuuming, clutter removal, etc.) so that the company can begin their treatment protocol.**

Potential Treatment Methods

- Clutter removal
- Bed bug detection devices
- Steam
- Vacuuming
- Desiccant dusts (e.g. diatomaceous earth)
- Pressurized CO₂ snow
- Localized insecticide applications

- **The pest management company will advise you as to how long after any insecticide application the insecticide label requires that the classrooms remain empty.**
- **See the list of potential treatment methods above. For a complete explanation of each method, see fact sheets titled Non-Chemical Bed Bug Management and Bed Bug Treatment Using Insecticides.**

If a Bed Bug is Found on a Child

In most cases bed bugs will be brought to school on a child's clothing, backpack or other belongings. Luckily, these types of introductions rarely require that the school be treated, or that parents (other than the child's) be notified. There is also no need to send the child home. In this particular case discretion is critical for preventing bed bug hysteria. Luckily, heat is an excellent bed bug killer, and nothing is more effective for killing all bed bug life stages than a hot clothes dryer. The student's clothes can be tumbled in the dryer on high for 30 minutes (you will need temporary clothing available for the child during this process). A dryer with a removable shelf is excellent for heating items that cannot be tumbled, like backpacks and school supplies. It is highly recommended that schools purchase a clothes dryer (nothing more than a dryer you would purchase for your home use) for the purpose of dealing with bed bugs. If bed bugs become a common occurrence in your school, the dryer will pay for itself by keeping up school attendance and reducing the need for pesticide applications.

When a bed bug is found on a child:

- **The nurse or some other predetermined person should be called to escort the child and their belongings to the dryer area.**
- **Have the child change into temporary clothing and place all of their clothes (including shoes) in the dryer set on high for 30 minutes.**
- **After the clothes are heat treated, have the child change back into their clothes and return to class.**
- **Heat the rest of their belongings and the temporary clothes on high for 30 minutes. Use the dryer shelf if their belongings cannot be tumbled.**



Heat Treatment for Bed Bugs

Heating systems are now used by some pest management companies, and these systems are available for purchase by school districts. The most widely available heating system consists of large industrial heaters, multiple high volume fans, temperature sensors and a software package for monitoring the ambient temperatures at the sensors. These systems are used for treating entire rooms. The room is treated by raising the ambient temperature to ~135°F. This temperature will not damage items in the classroom (including computers) but the heated air will be pushed by the fans into cracks and crevices where bed bugs hide. The systems kill the bed bugs by heating them to their thermal death point (114-118°F). Heat can also be used to kill bed bugs in a sealed storage chamber. The infested items (books, furniture, electronics, etc.) are placed inside the chamber and heated to the bed bugs' thermal death point.

Unlike chemical fumigation, heat does not have to be applied by a certified pest management professional because it does not involve pesticide use and is non-toxic. Heat chamber and whole-room heater packages can be purchased by the school division and applied by trained employees in their buildings. While the cost of purchase is relatively high (>\$60,000), an entire Department of Education region might be able to purchase a system and have specific employees trained to transport and apply the heat system in different schools. Note: While heat treatment is usually 100% effective, building construction features sometimes create heat sinks that provide refuge for bed bugs. So it is sometimes necessary that the heat treatment be supplemented with a single insecticide application to harborage locations.

Summary

Although bed bugs have the potential to be brought to school every day, remain calm. A single introduction does not mean the building is infested. Let parents know you have a bed bug action plan that includes bed bug prevention (reduced clutter, individual storage containers, or even periodic canine inspections), training for employees, and the hiring of an expert pest management company. Have a code of practice regarding how to address infestations in a class room (rapid professional treatment), versus a bed bug found on a student (discretion and a clothes dryer). **Unless you are a trained state-certified pest management professional, never attempt to use any insecticide for bed bug or any other pest control in a school building.**

