

Understanding and Controlling Bed Bugs



IN A PUBLIC SCHOOL

The Most Important Things....

- **Bed bugs do not transmit diseases**
- **Bed bugs are not related to cleanliness**
- **Should a child from a bed bug infested home be shunned or excluded from school? Absolutely not!**

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**December 2010
Revised 7/2018**

Purpose of this Guide

This guide should be used as an outline for school administrators and facility personnel in an effort to aid in the rapid identification and control of bed bugs in the public school environment.

Although bed bugs are most often found in locations where humans sleep, they are expert hitch-hikers, and may be inadvertently transported on clothing, back-packs or other belongings to child care centers, schools and a host of other places. Bed bugs typically arrive in schools as stowaways on student and/or staff belongings. In most major urban school districts, one or more confirmed specimens are typically found each month. Schools generally do not experience established, reproducing infestations unless students and/or staff reside at the school or the school maintains a space within its facilities where humans sleep at night. Most public schools have no such accommodations.

By nature, bed bugs are stow-a-ways. They enter a school by hiding out in the cracks and crevices of book bags, computer bags, furniture, clothing, stuffed toys, boxes and other objects. Bed bugs hide during the day and typically feed at night. Since bed bugs feed on blood, their presence has little to do with the cleanliness of the school or someone's home.

Although clutter can provide hiding spaces for bed bugs and make them difficult to treat, bed bugs can survive for months without feeding. Once bed bugs are established, they can rapidly reproduce and spread from room to room in homes, apartments, housing projects, hotels and other sleeping venues. Schools are not a very suitable environment due to the insects feeding habits.



Bedbugs have been known human parasites for thousands of years.

Bed bugs are big news. Bed bugs were a common pest prior to World War II and nearly eradicated during the era of DDT pesticide use (1940s and 50s). However, bed bugs are now a serious challenge domestically and globally. This year, the New York Daily News reported almost 10,000 bed bug complaints in New York marking a 34% annual increase. This resurgence is largely attributed to increased frequency and diversity of international travel and pesticide resistance.

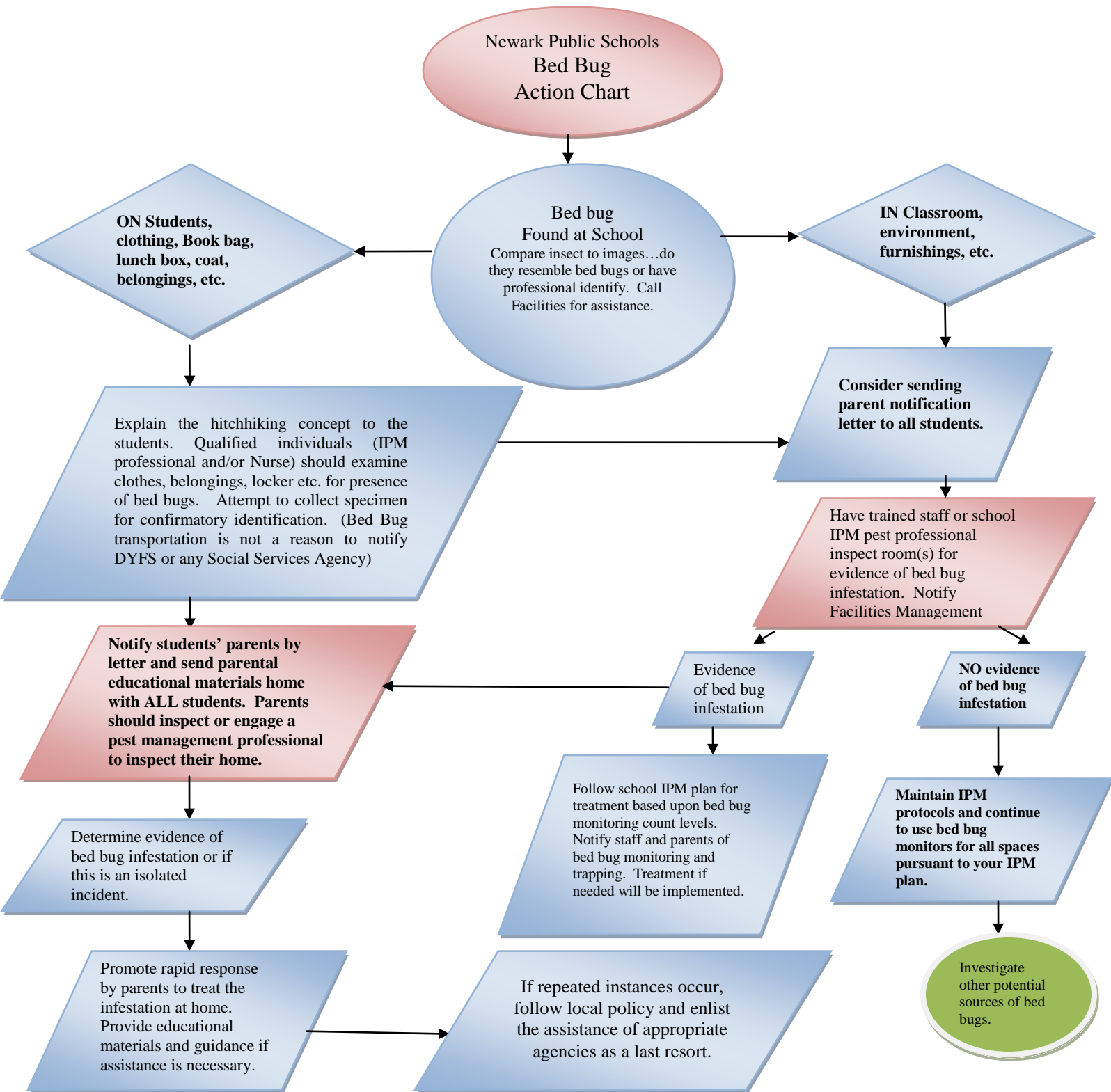
If you suspect someone is carrying bed bugs into your school:

1. The principal, teacher, supervisor and school nurse should be the first to identify a student or staff member transporting bed bugs. The utmost discretion and diplomacy should be used in approaching the individual, keeping in mind their right to dignity and legal considerations, it is very important to address the issue with care and sensitivity. There is no association between cleanliness and bed bug infestations. Anyone can transport bed bugs as they are hitchhikers.
2. If a live insect is observed, while wearing latex gloves grab the insect using a piece of tissue or gauze. It should then be immediately attached to a piece of clear cellophane or Mylar type sticky tape. The tape with the insect should be placed on a piece of plain white paper (index card) and then placed in a zip lock bag until it can be identified. The same method should be used if a dead insect is found. If at all possible, try not to crush the insect during this process (it is much more difficult to identify a crushed insect).
3. The next step is to determine if the suspect insect is in fact a bed bug. This should generally be left to the district's pest control professional. The IPM coordinator in conjunction with the Building Manager, Director of Building and Grounds and/or General Supervisor of Custodians will quickly arrange for the IPM pest control professional to visit the site and determine if an insect is a bed bug. Be sure to label the collection bag with the date, name of person collecting the sample, location where it was found (e.g., on a student, on students belongings, wall, furniture etc.), school name, principals name and a contact phone number.
4. The pest control vendor will need access to the entire room, personal items, backpack, etc. to determine the extent of the situation and whether or not the insect is in fact a bed bug.
5. If the specimen is confirmed to be a bed bug, the principal and school health professional should be notified immediately. Student belongings such as backpacks, coat or personal affects can be isolated in a tight sealing plastic container or bags to help reduce the potential for bed bug dispersal while the problem is being resolved (**do not wait for confirmation to implement this important step**).
6. The Facility Management Team is responsible for overseeing the IPM pest management plan in conjunction with the school principal and the head custodian who is the IPM designated person in the school. Although it is unlikely for bed bugs to be spread in a school environment, an inspection will be conducted by the district's licensed IPM pest vendor and if indicated, bed bug monitoring stations may be placed throughout the space in question to determine and confirm if there is a need for a space treatment. Treatment of the area where the bed bug was found will be implemented only after a bed bug monitoring count determines treatment to be necessary.
7. The Building Manager is delegated responsibility to mobilize all resources necessary through the Superintendent/ Executive Director/ Regional Superintendent/ Principal and is responsible to keep communication lines open, providing the facts in a straightforward manner. The Building Manager is responsible in the event of a bed bug incident for keeping a running log of all work performed pertaining to communications, directives and treatment of a pest problem, including but not limited to the following:
 - Notify IPM pest provider technician to make an immediate site visit;
 - Arrange for immediate inspection of the classroom in which the suspect bed bug is discovered;
 - Engage the IPM vendor to carefully inspect the desks, floor, walls and storage area where

students belonging are stored;

- The IPM vendor and facility team should inspect crevices in baseboards, pictures, student work displays, furniture, window and door casings, wallpaper, electrical switch plate covers, telephones, clocks, wall mounted art work etc.;
- Look for cast skins, bug feces and eggs near crevices;
- The IPM pest vendor will install bed bug monitoring stations in the room if no live insects are discovered and inspect the bed bug monitors again within 24-48 hours of placement;
- The room should be thoroughly cleaned with the general purpose cleaner in use in the district and all surfaces washed down (cleaning compounds are a deterrent to insects), vacuuming with special attention to cracks and crevices in furniture and equipment, walls and floors, switch plates etc. and laundering of washables in hot water and drying on the highest heat setting. Vacuum collection bags should be removed and sealed in plastic and then disposed of outside the school to prevent re-infestation or movement within the school, in addition the vacuum should be isolated until determined to be pest free.
- The IPM designated person should insure the IPM log book is kept current and provide a general description of work done on a daily basis during the event;
- Note any unusual occurrences and items requiring follow-up or clarification;
- Document any health department or PEOSH visitors or inspections;
- If the bed bug was found on a student's clothing or other belongings, parents or guardians should be notified. **There is no need to send the student home.** The school administration depending on the extent of the pest problem may notify students parents of the entire school about the situation. Parents should be directed where to find additional bed bug control information;
- The school nurse should manage the case including re-inspecting belongings, desks, classrooms etc. until the problem is resolved. The facilities team and IPM designated person can assist and also call in the professional IPM vendor if necessary;
- Students belongings such as backpacks can be isolated in a tight sealing plastic container or bags to help reduce the potential for bed bug dispersal while the problem is being resolved; and
- Parents of all students in the school where the bed bug was found should be notified and provided with basic information about bed bugs including a description, signs and symptoms, strategies to monitor for and eliminate infestations in their home. This should include eliminating clutter, laundering and using specially designed mattress covers and box spring covers that can entrap bed bugs and reduce harborage opportunities. The information package should also include sources of assistance especially in multi-housing situations.

Every day, 49 million children attend school in the United States, served by nearly seven million teachers and staff. But they're not alone; schools are also frequented with a number of pests, such as cockroaches, mice, dust mites and yes, bed bugs. Do NOT PANIC!



Bed bugs have been common in U.S. history. Although bed bug populations dropped dramatically during the mid-20th century, the United States is one of many countries now experiencing an alarming resurgence in the population of bed bugs. Though the exact cause is not known, experts suspect the resurgence is associated with increased resistance of bed bugs to available pesticides, greater international and domestic travel, and lack of knowledge regarding control of bed bugs due to their prolonged absence, and the continuing decline or elimination of effective pest control programs at state and local public health agencies.

In recent years, public health agencies across the country have been overwhelmed by complaints about bed bugs. An integrated approach to bed bug control involving federal, state, tribal and local public health professionals, together with pest management professionals, housing authorities and private citizens, will promote development and understanding of the best methods for managing and controlling bed bugs and preventing future infestations. Research, training and public education are critical to an effective strategy for reducing public health issues associated with the resurgence of bed bug populations.

TREATMENT

- The IPM coordinator and Principal, will determine if a classroom treatment is necessary in conjunction with the Building Manager, Executive Director of Facilities, IPM vendor and Regional Superintendent
- In most cases, the situation will be treated as an isolated incident; treatment will only require the placement of bed bug monitoring stations and close observation by the staff and pest control vendor.
- In the event of an actual infestation, consent will be given to the IPM vendor to proceed with a IPM non-chemical techniques approved for initial control, technical material application pursuant to IPM school law dependent on bed bug monitoring counts may be authorized by appropriate district personnel;
- Unless an emergency situation is declared (usually not the norm for bed bugs, 72 hours notice shall be given to students, staff, and parents before a chemical treatment is performed.) This should be in writing using the **model form** in your IPM plan covering all the legal parameters and if necessary, Black Board Connect can be used for supplemental rapid communications;
- Re-entry into a chemically treated space is allowed after the time in hours on the label passes, depending on the technical material applied, the IPM coordinator will advise you;
- A follow-up inspection will need to be conducted within 10-14 days to check bed bug monitors and see if there is any continued activity, another treatment may be necessary; and
- Once the area is deemed to be under control, normal everyday activity can continue and separation of personal items discontinued.
- Observation and rapid reporting is the key to managing bed bug incidents.

Environmentally Preferred Solutions

While chemicals can kill active bugs, most cannot penetrate the egg or the sticky coating that they are incased in as they are laid. That is why the most effective way to deal with bed bugs today, is actually a combination of things, including the use of more environmentally-friendly methods to eradicate insects, vacuuming, and steam-cleaning.

Areas showing active signs of infestations should be vacuumed, using a unit with an enclosed, disposable collection bag. The collection bag should be removed, dropped into a trash bag and sealed, and disposed of immediately after use to avoid spreading the infestation from one area to another. Vacuuming prior to steaming and chemical treatment will not only help remove active bugs, but dirt and soil as well, which will allow the chemicals to penetrate better and improve their residual effect. Incidentally, use of a HEPA equipped vacuum is also advisable, since they control the dispersion of insect allergens as they are being vacuumed, filtering particles as small as .03 micron with 99.97% efficiency. Vacuuming alone cannot be viewed as an effective means of dealing with infestations, however, since bugs in crevices can be missed and eggs themselves can resist the suction force, glued in placed when they are laid.

The Steam Advantage

Bed bugs are very sensitive to heat, which is where steam cleaning comes into place. Steam cleaning or heat treatment is actually one of the most effective means of dealing with infestations. Studies have shown that temperatures of 40C/104F will kill adult bed bugs and temperatures of 60C/140F is found to be lethal to bed bug eggs. The advantage of using a professional steam cleaner, is that if used properly, the steam can kill all bed bug stages, including eggs, with the unit capable of producing steam up to 248°F.

Another benefit of utilizing a commercial steamer is that doing so can dramatically reduce the amount of pesticide used and/or the number of pesticide treatments required to address an infestation within a building. Since heat is the Achilles heel of bed bugs and steam treatment provides such an effective kill rate, the primary focus of the use of pesticide essentially changes from the primary means of attack, to that of providing residual kill benefit. Hence, use of a professional-grade, commercial steamer or other forms of heat treatment, is one of the most effective means of addressing a bed bug infestation in a “socially responsible” manner. It really does little good to rid a facility of bed bugs, if in doing so you create another set of problems with respect to toxicity of the area treated. That is why use of a commercial-grade steamer, followed by appropriate chemical treatment is a much more environmentally preferred means of addressing an infestation.

Use of Pesticides

Bedbugs can survive for almost a year without feeding, which is one of the reasons irradiating them in an infested area can be such a challenge. Historically, there have not been many options available when it comes to ridding facilities of bedbugs, and those that were effective, such as the pesticide DDT, were proven to have harmful environmental consequences. Relatively common prior to World War II, DDT made bedbugs all but vanish in the United States by the late 1950s. However,

DDT was banned in this country in the 1970s, and that along with a number of other factors — increases in immigration, globalization, and international travel and shipments, among others — have contributed to their dramatic resurgence. The problem we have today is that although there are now less-toxic pesticides available, they have proved to be far less effective in killing bedbugs. It is also quite difficult to get new pesticides approved by the federal government, particularly any pesticide that could come in direct contact with humans. Fortunately, there are options that are proving to be both effective and safer for the user and the environment. One is the use of professional steam cleaners.



Direct contact and increase heat can be made using a cloth wrap



Multiple steam port tools provide even coverage and greater kill.

Effective Steam Cleaning

Before discussing the use of steam cleaners to eradicate bedbugs, it is important that we be aware there is a major difference between retail steam cleaners made for the home consumer and high-end systems made for the professional cleaning industry.

Most retail or consumer steam cleaners are not appropriate for eliminating bedbugs. They do not allow for the production of low vapor flow and high temperature, both requirements for a steam cleaner to effectively tackle the bedbug problem. A unit that is easily adjustable and can produce “dry steam”, which allows for quicker drying times. As important, the unit should have a continual flow feature (can be filled and refilled while remaining operational), which is critical in treating bed bugs. Most retail steamers do not offer this feature, which means the user must stop, refill, and wait for the unit to reheat. During that down period, active bugs can migrate to the area just steamed, escaping direct contact as the operator begins where he or she left off. Additionally, most “retail” steamers don’t allow for control of the nozzle flow and produce a jet of steam that ends up actually blowing the bugs from one area to another on the surface being cleaned.

When using a professional grade steamer:

- Pay particular attention to seams and ribbing on beds, chairs, and other surfaces.
- Avoid “jet” nozzles, because they can blow the bugs away from the area being treated.
- Select steam heads with multiple steam ports or nozzles, including those that allow the entire head to be wrapped with a cloth; these are the most effective tools for treating bedbugs, because they allow for direct contact with the surface being treated.
- To avoid dilution of the chemical and/or vaporization, always do steam treatments prior to chemical treatments.

While professional steamers are extremely effective in killing all phases of bed bugs, including eggs, the one disadvantage is that they kill on contact and don’t have “residual” benefit. Specifically, once the surface cools to below 60 °C/140 °F (the temp where adult bedbugs and eggs are killed), there is no continuing kill benefit. That is the reason why steam treatment should be followed up by use of a residual pesticide to complete the control process. Fighting bedbugs obviously involves direct spraying of chairs, beds, and other surfaces that people and animals have extended contact with, and it is important to note that a pesticide should never be used on those surfaces unless it is specifically labeled for such use. Due to the very nature of bedbugs, monitoring and regular inspection of the area(s) being treated are important to ensure that eradication is successful. It is also worth noting that several treatments are normally necessary to eliminate this persistent bug, and an integrated cleaning approach using both equipment and Environmental Protection Agency (EPA)–registered pesticides will produce the most effective results.



Book bags are the most common way for a bed bug to get a ride to school.

On the positive side, schools aren't the most hospitable environment for bed bugs, due to the lack of constant hosts and feeding opportunities.

Bed bugs prefer to feed undercover of night according to entomologist who study them. That's not to say they can't survive, but rather that they will not thrive in a school environment.

Younger students, overall, may be more vulnerable due to more personal interaction and sharing of belongings...the same things that make head lice more prevalent in elementary school.

Treating bed-bugged schools can be easier or harder than treating one at home depending on variables that include clutter and cooperation.

- **Schools are not ideal places for bed bugs as they prefer to hide during the day and few people are around at night. Hungry bed bugs will feed during the day.**
- **Evening school staff, on breaks in rest areas, may be the first to notice regular bites.**
- **In nearly all cases, careful inspection, vacuuming, laundering and school health and IPM designated persons case management will be adequate to resolve a confirmed bed bug sighting in our schools without the need for space heat or steam treatments.**
- **A vacuum is very effective for removing bed bugs, eggs and debris from surfaces and cracks and crevices;**
- **The vacuum bag and vacuum should be isolated after use for bed bug control.**

The school nurses in our schools are also prepared to look out for bugs and report any sightings. They are also prepared to talk with families and students if any are found and can explain the hitchhiker method in which bed bugs travel. If bed bugs are found during the school day on a backpack or clothing item, one easy thing that can be done is to seal the backpack or clothing in a plastic bag. Students should never be banned from school if a bed bug is spotted on them or their belongings.

Back-to-School Bed Bug Prevention 101

Bed bugs feed on people. They do not infest people. They are very much like mosquitoes which feed and then move off the body to find shelter. The difference being they are hitchhikers. So backpacks and coats rather than the actual child are the primary vehicles of transmission when it comes to bed bugs at school, and thus should be the primary focus of the schools defenses.

- Encourage students to keep his or her backpack and coat isolated from other children's belongings as much as possible. That means avoid tossing backpacks on a heap of others, and draping coats over the back of a chair versus in a pile of others or stuffed into a cubby;
- Encourage students to keep school bags and coats out of the bedroom and off the bed and couch. Stray bugs will need to work harder to become established, potentially falling victim to a vacuum cleaner;
- Bed bugs are most likely to be found in the seams and crannies of the exterior of a student's backpack. So although books and homework need to come out (and placed on a table or desk, **not** the bed or couch), consider isolating the backpacks themselves in a sealed plastic bag or sealable Tupperware-type container or plastic bin. You may also want to isolate coats in a similar fashion;
- In severe cases put student's coats and knapsacks into separate sealed bags, or Tupperware-type containers or plastic bins;
- Once a week, encourage students to empty their knapsacks at home, and have the parent inspect items as they are removed. Remove all crayons and put the bags and coats in the dryer on high for 30 minutes to kill bugs and eggs; and
- Vacuum floors and furniture regularly, discarding the vacuum bag when you're done directly to the outside. Isolate the vacuum from the area.

If parents find evidence of bed bugs in their homes, such as bites on themselves or children in the morning, they should call a professional pest control company. While bed bugs bites are not typically serious, the sooner you address a potential infestation in the home, the more likely you will be able to eliminate the bed bugs completely from the home.

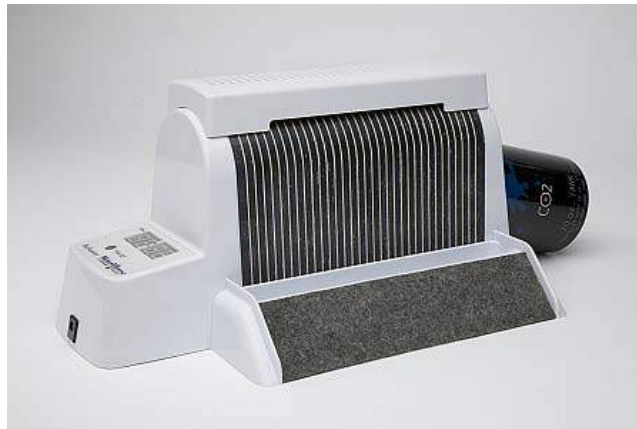
Should a child from a bed bug infested home be shunned or excluded from school? Absolutely not! To exclude that child would be an unconscionable injustice. Realize that children from infested homes do not hold a monopoly on bringing unwanted 'pests' to school. Teachers, principles, custodial workers and others are just as likely to ferry bed bugs (and cockroaches) from their own homes as well. There is no real way to determine how the bed bug hitchhiked into the school; we would never try to find out who brought the mosquito into a building.



Bed bugs usually congregate in groups, although they can travel on their own up to 100 feet.

Bed Bug Facts

- Bed bugs can live several months without feeding.
- Bed bugs can reach maturity in as little as one to four months.
- Females lay hundreds of eggs over their lifetimes.
- Bed bugs do not discriminate.



Example of a CO2 type Bed Bug Monitor

What are Bed Bugs?

Bedbugs are small, flat, wingless insects with six legs that, **just like mosquitoes**, feed on blood from animals or people. They range in color from almost white to brown, but they turn rusty red after feeding. The common bedbug doesn't grow much longer than 0.2 inches (0.5 centimeters) and can be seen by the naked eye to the astute observer. Bedbugs get their name because they like to hide in bedding and mattresses.

Feeding Habits

These nocturnal creatures can hide in beds, floors, furniture, wood, and paper trash during the day. We humans usually become their dinner during the night, with peak biting activity just before dawn. They can obtain their meal in as little as three minutes, after which they are engorged and drop off the host, then crawl into a hiding place to digest their meal. Bedbugs can live for months, and can go weeks without feeding.

Signs and Symptoms of Bedbug Bites



Bed Bug bites on human body.

Amazingly, these sneaky little bloodsuckers dine on you without waking you. You don't feel their stealthy bite because they inject a numbing agent into your body, along with an anticoagulant to keep your blood flowing as they suck. The first sign of bedbugs may be itchy, red bites on the skin, usually on the arms or shoulders. Bedbugs tend to leave straight rows of bites.

Treating Bites

Bedbug bites do not usually require treatment. If a secondary infection occurs (usually from scratching), apply a local antiseptic lotion or antibiotic cream or ointment. Creams with corticosteroids and oral antihistamines may be advised in the presence of allergic reaction or larger skin reactions. In these more severe cases, you may need to see your doctor.

Bed Bug Myths per the US EPA

Myth: You can't see a bed bug.

False: You should be able to see adult bed bugs, nymphs and eggs with your naked eye.

Myth: Bed bugs live in dirty places.

False: Bed bugs are not attracted to dirt or grime; they are attracted to warmth, blood and carbon dioxide that humans exhale. Clutter offers more hiding spots for a bed bug and makes them more difficult to control.

Myth: Bed bugs transmit diseases.

False: There are no cases that indicate bed bugs pass diseases from one host to another. Lab tests have shown that it is unlikely that the insect is capable of infecting its host.

Myth: Bed bugs won't come out if the room is brightly lit.

False: While bed bugs prefer darkness, keeping the light on at night will not deter these pests from biting you.

Myth: Pesticide applications alone will easily eliminate bed bug infestations.

False: Bed bug control can only be maintained through a comprehensive treatment strategy that incorporates a variety of techniques and vigilant bed bug monitoring. Proper use of pesticides may be one component of the strategy, but will not eliminate bed bugs alone. Bed bugs have developed resistance to many commonly used pesticides. Some products and application methods may actually make the problem worse. Schools should consult a qualified licensed IPM pest management professional upon the discovery of bed bugs or the suspicion that they are present.



Bed bug first instar on finger.



Bedbug nymph feeding on human host

Like fleas, ticks, head lice and mosquitoes, bed bugs feed on blood. Similar to mosquitoes, bed bug abdomens swell and become brighter red as they feed (see picture above).

Bed Bug Movement

Bed Bugs get into Schools in a variety of ways:

- From bugs and eggs that "hitchhiked in" on clothing and student book bags, books, stuffed toys, lunch boxes and computer bags, etc.;
- From infested items (e.g., furniture, clothes) brought into the school, schools are no place for salvaged sofas and overstuffed chairs someone else disposed of;
- From wild animals (e.g. bats, birds, squirrels and rodents) and pets brought in;
- Apartment to Apartment then student to student then to school;
- Travelers who have stayed at hotels, motels, cruise ships and planes.

It is generally accepted and almost guaranteed that we will see bed bugs show up in public facilities because they are able to crawl on and travel with a person and this is the case with any type of insect that has these capabilities. **The important thing is for staff members to continue to be observant and notice and catch the problem before it becomes too big.**

Predators

Natural enemies of bedbugs include cockroaches, ants, spiders, mites and centipedes; because these insects are as undesirable as bed bugs in school buildings, biological pest control is not very practical for eliminating bedbugs from school buildings.



Bed bug inspections must be very thorough.



Bed bug hidden next to screw on furniture.

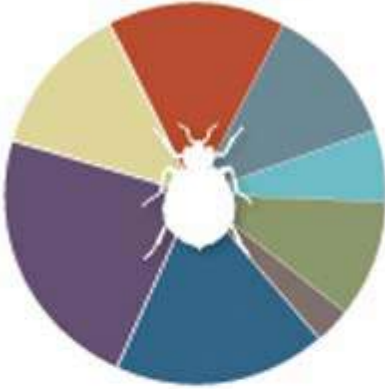
Management

Eradication of bedbugs frequently requires a combination of pesticide and non pesticide approaches. Pesticides that have historically been found to be effective include: pyrethroids, dichlorvos and Malathion. Resistance to pesticides has increased significantly over time and there are concerns of negative health effects from their use. Mechanical approaches such as vacuuming up the insects and heat treating with steam or a rapid drop in body temperature using CO₂ or nitrogen is sometimes recommended.

IPM Methods for Bed Bug Control in Schools:

- Inspect suspected areas and surrounding spaces;
- Observe students book bags, outer garments and clothes for signs;
- Do not allow any second hand items such as sofas or couches or chairs into your school;
- Correctly identify pests so the proper target insect is being addressed;
- If bed bugs are discovered or suspected, non-chemical bed bug monitors will be put into place;
- Thoroughly clean all items within a classroom and the room itself with a general purpose cleaning solution and use a vacuum to get into cracks and crevices;
- Reduce clutter in the classroom where bed bugs or insects in general can hide;
- Eliminate bed bug habitats;
- Physically remove bed bugs through cleaning and vacuuming (dispose of vacuum bags and isolate the vacuum);
- Pesticides are only to be applied by licensed personnel after bed bug monitoring trap counts indicate such treatment is required. There must be an active infestation determined by bed bug monitoring trap counts. **Staff cannot bring in sprays from home as it is against the law for a non-licensed person to apply pesticides in a school;**
- Document and keep accurate records of application dates and locations in the IPM log book and;
- Insure follow up inspections and treatments are carried out as prescribed by the IPM vendor; and
- Raise awareness in the school through education on how bed bugs hitchhike.

Where the Bedbugs Are Biting



Of the total reported infestations, facility type was:

Office Building	23%
Hospital	13%
Higher Education (including dorms)	15%
K-12	12%
Government	6%
Hospitality	10%
Retail	3%
Other	18%

Source: BOM Survey

What should school personnel do if they find a bedbug on a child's clothing or in their belongings?

Bed bugs have spread far and wide through the country and are to be expected in every community regardless of the population, per capita income, or ethnic/racial makeup of the population.

Very much like mosquitoes, except for a few minutes of contact during which the bugs may feed on blood on our skin, bed bugs do not remain on a person. Bed bugs are secretive insects. When not feeding, they hide away in cracks and crevices where they will be less noticed. Whereas most will tend to hide near where a person sleeps regularly, some may wander into clothing pockets and cuffs, book bags, brief cases, purses, luggage and anywhere else that affords them shelter. If the item in which one or more may be hiding is then taken to school or work, then the little stowaways get to 'see the world', so to speak.

Should a child from a bed bug infested home be shunned or excluded from school? Absolutely not! Realize that children from infested homes do not hold a monopoly on bringing unwanted 'pests' to school. Teachers,

principles, custodial workers and others are just as likely to ferry bed bugs (and cockroaches) from their own homes as well.

So, what can and should be done? First and foremost, educate the kids, their care-givers and the school workers (including teachers and staff) about bed bugs and the means to manage or eliminate them, stress that they are hitchhikers. Every school should have a written integrated pest management plan in place. If bed bugs are suspected in a classroom, the rooms should be inspected, and a specialist should examine any suspected bed bug. In general, bed bug monitors should be used to determine the presence of bed bugs and the bed bug monitor count should be used to determine if an insecticide treatment within the school is warranted. Chemical treatment should be avoided unless absolutely necessary, and virtually never as preventative measure, and only done based on bed bug monitoring trap counts.

If it is known that a child's home is infested with bed bugs, encourage the child to bring only the required items to school each day until the problem has been abated. Isolating the child's book bag, coat and other items is an option, but it may be psychologically damaging to the child and generally unwise. Such an action may backfire, as it will convince others to not be forthcoming about their own problems. Similarly, if the homes of school personnel are infested, these staff members should take steps to leave their items at home (and to have their home treated appropriately).

Schools should contact a local school IPM pest specialist to confirm the suspected bed bug's identity.

Considering that more than half of the specimens are not what they were presumed to be initially, this also prevents many unnecessary treatments to the school environment. It also ratchets down the fear factor considerably and prevents unnecessary stress.

CHECKLIST - PREPARING YOUR SCHOOL FOR BED BUG TREATMENT

- IPM Coordinator should facilitate any required parent-staff notification of a pending pesticide application (or notification after the treatment is done).
- Wrap (or place in sealable containers) any infested items that need to be moved.
- Do not move items to another room without first inspecting them thoroughly. Move infested items only to the designated area/room if necessary.
- Bag items that have been designated for drying (carpet squares, pillows, towels, stuffed animals, etc.) and take to laundry. Do not overload dryer. Use high heat for at least 45 minutes. Double bag all items right after drying and do not return to classroom/office until the room has been treated or otherwise determined to be bed bug free.
- Inspect items that cannot be laundered/dried (books, electronics, picture frames, plastic toys, etc.) thoroughly inspected and placed into plastic bags or bins if bed bug free.
- Vacuum and wash all floors. Replace vacuum cleaner bag before using the vacuum in other parts of the school. To prevent bed bugs from escaping, be sure to place the vacuum bag into a plastic bag before disposing of it.
- Disinfect desks and chairs in classrooms. Check carefully for bed bugs in crevices and joints of furniture
- Vacuum and wash all floors. To prevent bed bugs from escaping, be sure to place the vacuum bag into a plastic bag before disposing of it.
- Vacuum couches and chairs in offices. Bed bugs are often found in couches and upholstered chairs. If possible, turn the furniture over or on its side/back and vacuum underneath as well. If there is a dust cover attached on the underside, pull it back and vacuum areas that will need to be treated. Double-bag and discard the vacuum bags in an outdoor trashcan immediately to avoid reintroducing or spreading any bed bugs caught in the vacuum.
- Empty lockers and cubby holes that require some chemical treatment. Reduce in storage cabinets that require treatment. Do not reuse student storage areas without cleaning them first.
- Provide access to walls, closets, and areas around furniture to allow for a thorough inspection and treatment.

Parent/Guardian Sample Notification Letter to be used if Bed Bugs are Confirmed to be in a Classroom

(Use appropriate school letterhead)

Dear Parent,

Today, a bed bug was found on your child or in your child's belongings. While this 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 take the appropriate steps, if needed.

Please understand that bed bugs can be spread to other homes if they are brought to school in backpacks, clothing, and other belongings. While a school is an unlikely area to be infested, the Newark Public Schools are taking all precautions to prevent the spread of this pest.

Thank you for your cooperation.

Sincerely,

Principal

(This letter is not to be considered notification of an actual pesticide application)

(Use appropriate school letterhead)

Dear Parent or Guardian:

We recently found a bed bug in your child's classroom. Bed bugs are a nuisance, but their bites are not known to spread disease. Bed bugs are usually active at night and feed on human blood. The bite does not hurt at first, but it may become swollen and itch, much like mosquito bites. Watch for clusters of bites, usually in a line, on exposed areas of the body. If you have medical concerns for you or your child, please contact your primary care provider.

The source of bed bugs often cannot be determined, as bed bugs may be found in many places including hotels, planes, and movie theaters. Even though it is unlikely for bed bugs to infest a school, the Newark Public Schools will conduct an inspection and, if needed, will implement an integrated pest management plan in the area where the bed bug was found. The Newark Public Schools will continue to work to identify bed bugs, provide thorough inspections of schools, and have licensed pest control specialists assist with pest management.

Contact your primary care provider or school nurse; *(insert the name of your school nurse and phone number here)* for proper care and treatment of bed bug bites.

If you have any questions regarding bed bugs in your school, please contact *(add principal's name and contact info here)*. If you have any questions regarding bed bugs found in your home, contact your local health department.

Sincerely,

Principal

(This letter is not to be considered notification of an actual pesticide application)

THIS IS NOT THE WAY TO ADDRESS A BED BUG PROBLEM!

Cleaner who feared bedbugs is accused of arson after torching mattress on 10th floor balcony

BY [MELISSA GRACE](#)

DAILY NEWS STAFF WRITER

Wednesday, October 27th 2010,



AP/Orkin

New York City's bedbugs have become a burning issue, to the extent cleaner Miriam Ortiz allegedly set fire to a mattress she thought was infested.

A public housing building cleaner was charged with arson for setting fire in a hallway to a mattress she feared was infested with bedbugs, officials said. Miriam Ortiz, 36, was to be arraigned on felony arson and reckless endangerment charges last night for the Sept. 8 blaze in the Manhattanville houses, prosecutors said.

Her bizarre action was rooted in her "fear of bedbugs and laziness," a source said.

She found the mattress in a partially-enclosed hallway on the 10th floor of a 20-story building on W. 126th St., used a lighter to ignite it, and fled.

"The fire ... could have ended in tragedy but for the quick response of firefighters," said Department of Investigation Commissioner Rose Gill Hearn, whose agency investigated.

Ortiz could have easily called an exterminator and workmen to dispose of the bed, a source said. No one was hurt in the blaze.

Ortiz, who has worked for the city's Housing Authority since 1999 and earns \$39,000 a year, faces up to 7 years in prison.

Sustainability Efforts to Curb Bed Bugs

Green treatments for bed bugs won't sacrifice quality or health.

There's nothing like a pest infestation to interfere with your building's sustainability goals. Luckily, there are a variety of eco-friendly treatments to address bed bugs without sacrificing quality or human health.

Bed Bugs: The Rundown

It's crucial to understand that bed bugs are not a sign of sanitary issues or a problem with your building. They're after one thing: fresh blood. They thrive in locations where humans sit still for more than an hour. Multi-family housing, hotels, offices, hospitals, and even schools are prime locations for bed bugs to camp out.

Bed bugs are a problem with people as much as they are a problem with an insect. Humans exasperate the problem by taking in used furniture, having too much clutter, and not reporting bugs.

Prevention = Green

The truly green approach to bed bugs is having a zero tolerance policy against them. A preventive attitude combined with a plan of action will greatly reduce the need to resort to chemical eradication. Have an open policy for reporting bugs, schedule regular inspections, offer awareness training to staff and tenants, and immediately react to potential infestations.

Inspections have the greatest power of curbing bed bugs. They can be as simple as directing staff, particularly cleaning crews, to search daily to scheduling walk-throughs with a pest management company. Dogs can be used particularly for large locations or multiple rooms. These dogs are trained to smell bed bugs and can be useful either as part of preventive practices or after treatment.

The Alternatives

The most effective bed bug treatments use integrated pest management, combining conventional products with eco-friendly alternatives to thoroughly kill the insects. There are two categories of green solutions:

Bio-based: Bio-based dusts, sprays, hormones, and oils are applied to small areas, like insecticides. For example, diatomaceous earth and silica aero gel are nontoxic because they kill bugs through a physical process, as opposed to chemical. While safe for human exposure, these treatments are time-consuming and involve multiple applications.

Temperature: Bed bugs die after exposure to extreme levels of heat or cold. Heat treatments use large heaters to raise a room's temperature. Though expensive, it is an immediately effective, one-day solution. Steam and freeze dry applications are ideal for surface treatments, such as furniture, mattresses, and baseboards. Unlike dusts and chemicals, however, there is no residual effect.

Conventional Treatments

If your facility is housing bed bugs, you may have doubts about how sustainable conventional treatments are. Because traditional insecticides are designed for limited applications, such as in cracks and crevices, they can be used with a clear conscience.

All insecticides in the U.S. are registered with the Environmental Protection Agency, which provides a material safety data sheet (MSDS) and an instruction label. The risk of toxic exposure is drastically reduced if the directions are followed. There's no room for interpretation – if it's not on the label, then you can't do it. Only a professional properly licensed and trained person should apply them.

Words of Caution

While exterminators can properly use conventional products, they become a serious hazard in the hands of a flustered school or building occupant. When untrained individuals use over-the-counter insecticides, especially at the point of desperation, they're obviously not going to read the label. Avoid the do-it-yourself approach temptation. You're buying pesticides that are improper for use, then misapplying them, spreading bed bugs throughout the process, and doing it in an unsafe manner. It's dangerous, the problem gets worse, and it costs you more money in the long run.

Regardless of which treatments you use or proactive measures you've taken, cooperation is essential at all levels, if everybody's on board and carrying out an effective plan, then bed bugs can be addressed successfully.



References:

- Green, T. A. 2010, School IPM A Strategic Plan for IPM in Schools
- Frishman, A. 2000, Bed bug basics and control measures. Pest Control 68:24
- Greenberg, L. 2000 Pest Notes, Bed Bugs publication 7454 University of California Statewide IPM
- US EPA web site
- NYC Health Department
- NJ Department of Health and Senior Services
- Reid, B. 1990 Don't Let the Bed Bugs Bite. Pest Control 58(6) 48-50.
- Pest Control Technician
- Mallis Handbook of Pest Control
- National Pesticide Information Center
- Richard Pollack, PhD, Department of Immunology and Infectious Diseases Harvard University
- Dr. Marguerite R. Leuze RN, Director of Nursing, Newark Public Schools
- Anderson A, Leffler K. Bed bug infestation in the news: a picture of an emerging public health problem in the United States. Journal of Environmental Health. 2008; 70(9):24-7, 52-3.
- Special thanks to Tim Boyle, Senior Environmental Specialist, NJ DEP, IPM Pesticide Control Program Coordinator for contributing his expertise and editing this document.



Bed Bugs on a typical metal bed frame where the box spring rests.