



Public health officials and pest control operators in northeast Ohio and across the country are responding to a significant increase in bed bug complaints. Bed bugs were once found only on bedding in homes, apartments, and rooming houses. Now they are found in office buildings, retail stores, hospitals, dormitories, nursing homes, libraries, movie theaters, buses, or any other place where people gather. The Center for Disease Control (CDC) and the Environmental Protection Agency (EPA) have declared that the bed bug is now a “pest of significant public health importance.”

Identifying Bed Bugs

- Bed bugs are small, flat, oval, reddish-brown, wingless insects that feed on the blood of humans and other mammals.
- Adult bed bugs are approximately ¼ inch long, about the size of an apple seed. Young bed bugs (nymphs) are quite small and when unfed they appear lighter and almost clear in color.
- Bed bugs do not fly or jump. However, they can crawl very fast.
- Female bed bugs can lay up to five eggs a day and five hundred during a lifetime.
- They are excellent hitchhikers and are easily spread by moving beds, furniture, luggage, clothes, or other possessions from one location to another.
- Anyone who comes in direct contact with bed bugs or their eggs can unknowingly carry them into their home or workplace.



Bed bug eggs and cast skins



Fecal spots by outlet cover

Bed Bug Bites

- Bed bugs are primarily a nuisance to humans and are not known to transmit disease.
- Bites can cause welts which may become infected by excessive scratching.
- Bed bug infestations can cause anxiety as well as psychological and emotional stress.



Welts from bed bug bites

Signs of a Bed Bug Infestation

Usually the first sign of a bed bug infestation is the appearance of red itchy welts on any bare skin that is exposed while sleeping. Be aware that not every welt or bite is due to bed bugs. Consult a medical provider with questions about unexplained bites or red welts.

Live bed bugs, eggs and cast skins indicate a bed bug infestation. Small black or rusty colored spots found on bed linens, pillows, or the mattress may be blood spots and bed bug droppings.



Blood stains and fecal spots on a mattress

Inspecting for Bed Bugs

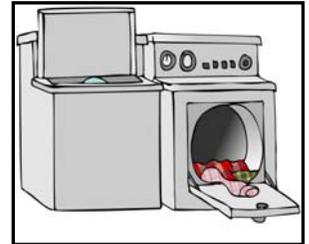
Bed bugs hide close to where people sleep. They prefer fabric, wood, and paper surfaces over metal or plastic. Look for live bed bugs, eggs, cast skins, and blood or fecal spots in these locations:

- | | | | | |
|--|--|--|---|--|
| <input type="checkbox"/> mattresses | <input type="checkbox"/> recliners | <input type="checkbox"/> telephones | <input type="checkbox"/> luggage | <input type="checkbox"/> hollow furniture legs |
| <input type="checkbox"/> box springs | <input type="checkbox"/> baseboards | <input type="checkbox"/> radios | <input type="checkbox"/> futons | <input type="checkbox"/> door frames & hinges |
| <input type="checkbox"/> head boards | <input type="checkbox"/> behind pictures | <input type="checkbox"/> televisions | <input type="checkbox"/> gym bags | <input type="checkbox"/> wall / ceiling junction |
| <input type="checkbox"/> bed frames | <input type="checkbox"/> under loose wallpaper | <input type="checkbox"/> stacks of books | <input type="checkbox"/> draperies & curtains | <input type="checkbox"/> wheelchairs/walkers |
| <input type="checkbox"/> upholstered furniture | <input type="checkbox"/> sleeper sofas | <input type="checkbox"/> piles of papers | <input type="checkbox"/> stuffed animals | <input type="checkbox"/> bed side tables |
| | <input type="checkbox"/> electrical outlets | <input type="checkbox"/> back packs | | <input type="checkbox"/> edge of carpeting |

Treating Bed Bug Infestations

Complete elimination of a bed bug infestation can be a difficult process and may require the services of a knowledgeable and licensed pest management company. It may take several treatments to gain control over an infestation. If a “do-it-yourself” method is chosen, only use pesticide products that are labeled to kill bed bugs. Always read and follow the label directions before applying any pesticide product. Here are some additional tips to help eliminate bed bugs.

- Reduce and eliminate clutter. Do not keep piles of clothes, boxes, toys, shoes, etc. on the floor, under the bed, or in closets. They are prime hiding places for bed bugs.
- Heat kills bed bugs. Wash clothes at the hottest recommended setting. Tumble dry the clothes on high heat for at least 30 minutes (120° F or above).
- Encase an infested mattress and box spring in a zippered cover that is labeled and certified “bed bug proof.” Leave the covers on for at least one full year.
- Vacuum home thoroughly and often. Pay particular attention to the area around the bed and the bed itself. Sprinkle ¼ to ½ cup of talcum powder on the last section of floor to be vacuumed. The powder will help dry out and kill bed bugs in the bag or cup. Place the vacuum cleaner bag or contents in a sealable plastic bag and discard it in the trash outside.
- Pesticides labeled to kill bed bugs are available over the counter and may provide effective control. However, if the problem persists or is heavily entrenched, contact a knowledgeable, experienced, and licensed pest management professional for assistance.
- Since bed bugs are difficult to control, plan on several thorough treatments to eliminate an infestation.
- DO NOT USE “Bug Bombs”. These products may kill on contact but they are mostly ineffective against hidden bed bugs. They may make the infestation worse by scattering the bugs throughout the home or apartment.
- If an infestation is suspected in a rental unit, contact the building manager or landlord about the problem. Property owners should contact a professional pest control company for advice and assistance. The local health department can also provide assistance on bed bug identification, prevention and control options.
- The property manager and pest management professional may provide preparation guidelines prior to treating for bed bugs. Getting rid of bed bugs is a cooperative effort and these guidelines should be followed closely.



Wash sheets and blankets in hot water and dry them thoroughly in a hot dryer before making up the bed



A zippered bed bug proof cover can help protect against



Do not use foggers

Preventing Future Infestations of Bed Bugs

- Do not bring discarded bed frames, mattresses, box springs, or upholstered furniture into the home.
- Carefully inspect used or rented furniture prior to bringing it into the home.
- Place any recently purchased clothes, whether new or second hand, into the dryer at a hot setting for at least 30 minutes (120°F or above).
- When traveling, inspect the bed, headboard, and furniture upon arrival. Keep suitcases off the floor and bed and inspect them before leaving. Wash and dry all clothing, per the above recommendations, after returning home.
- Caulk and seal any cracks and crevices throughout the home, especially in rooms where people sleep.
- Be careful of who stays overnight or sleeps at the house. Likewise, be mindful when staying away from home. Inspect all children’s backpacks, stuffed animals, and other belongings if they have stayed overnight or spent considerable time at another location.



GUIDELINES FOR BED BUG RESPONSE IN A SCHOOL BUILDING

Bed bugs are spreading rapidly within the United States. Contact with bed bugs can occur anywhere, even at schools. It is important for schools to be informed about how to prevent a bed bug infestation and how to address the detection of bed bugs.

Since bed bugs are not known to transmit disease, students should not be excluded from school due to bed bugs. The school nurse or school administration should privately follow these guidelines with the student's dignity in mind.



Education is Key: Provide training for custodial, teaching, and nursing staff on bed bug identification. The training should include the following topics: identification of bed bugs and bed bug evidence, bed bug hiding spots and the school's bed bug response protocol. The training can be conducted by the local health department, an entomologist, or a pest management professional.

Care for the Student

- Discreetly remove the student from the classroom so the school nurse or a qualified individual can perform an inspection of the student's clothing and belongings, including shoes, jackets, hats, books, backpacks, school supplies, etc.
- Place any of the student's items that may not be essential to the school day, such as book bags and coats, into a large plastic bag and tightly seal the bag.
- Heat kills bed bugs. If the school has a washer or dryer, the school may wash the student's clothing at the hottest recommended setting. Tumble dry the clothing on high heat for 30 minutes (120°F or above).
- Check areas where the student sits or where the student's belongings may have been placed for extended periods of time. Bed bugs are excellent hitchhikers and can be found on various surfaces in many different locations.
- Take measures to minimize the amount of attention drawn to the student.



Collect a Specimen for Identification

- Collect a specimen using a tissue or a piece of gauze. Try not to crush the bug. Multiple specimens can be very helpful in identification of the insect.
- Dispose of additional bed bugs found by placing them in a tightly sealed bag and discarding the bag in an outdoor trash receptacle or dumpster. **VERY IMPORTANT:** If a specimen is found on a student or the student's belongings, remove the specimen as instructed above, but do not send the student home. The parents should be immediately notified by the school nurse or the school administration if the specimen is a confirmed bed bug.
- Contact the local health department, a pest management professional, or utilize the website (www.cuyahogabedbugs.org) to assist in identification. The local health department may also consult with the Ohio Department of Health as needed.
- An additional service to identify insects is available at the Ohio State University (www.ppsc.osu.edu).
- Do not send live specimens via any postal or shipping service. Check the appropriate websites for proper submission protocols. Once received by the agency, an entomologist will examine the specimen and then notify the school administration of the bug's identification, typically within two days of receipt.

Positive Identification of Bed Bugs: What to Do Next

After positive identification, the school administration or the school nurse should send the school community a parent or guardian notification letter and a bed bug fact sheet available at www.ccbh.net or www.cuyahogabedbugs.org.



If the bed bug was found directly on a student or the student's belongings, the school administration or nurse should make direct contact with the student's parent or guardian and provide the following information:

- Instruct the parent or guardian to send the student to school with a sealable plastic bag containing a clean, freshly laundered change of clothes. The clothes should be washed at the hottest recommended setting and tumble dried on high heat for at least 30 minutes before being placed in the bag.
- Request that the parent or guardian send only essential items to school with the student. These items should be inspected upon arrival at school. The school may offer to keep non-essential items overnight to help ensure the items are bed bug free.
- Suggest keeping school items sealed in a plastic bag at home and limit items going back and forth from home to school until the infestation is under control.

Treating an Infestation

An Integrated Pest Management (IPM) program should be implemented to help achieve long-term, environmentally sound pest control. An effective IPM approach incorporates a number of components, including education, thorough monitoring, identification of both chemical and non-chemical pest management techniques, accurate record keeping, and periodic program evaluation.

- Ongoing pest management should be overseen by the school administration.
- A properly licensed pest management company should be contracted to apply pesticides. A list of licensed pest management companies and applicators can be found at the Ohio Department of Agriculture's web site (www.agri.ohio.gov/apps/odaprs/pestfert-PRS-searchindex.aspx). Verify the company is experienced in bed bug treatment.

In addition to following an IPM program, the school administration should implement a protocol to treat areas where bed bugs are found. The following vacuuming procedures should be incorporated:

- Vacuum areas where bed bugs are found during the normal after-school cleaning schedule. Make sure floor and baseboards are included.
- Sprinkle about $\frac{1}{4}$ to $\frac{1}{2}$ cup of talcum powder on the last section of floor to be vacuumed. The talc will help dry out and kill bed bugs in the bag or cup.
- Carefully remove the vacuum bag or contents of the bag-free vacuum container and place it in a tightly sealed plastic garbage bag for disposal.
- Dispose of the sealed bag in an outdoor trash can.
- Do not use the same vacuum bag in uninfested areas.

To help minimize the potential transfer of bed bugs or their eggs from one student's belongings to another, it is recommended to store each student's items (coat, backpack, lunch bag, etc.) separate from those of their classmates or in individual plastic containers labeled with the students' names. Coats hung next to each other and lunch bags stored together in a common container provide bed bugs an opportunity to relocate and to be transported home with an unknowing student.

Note: These guidelines include recommendations of the Central Ohio Bed Bug Taskforce

BED BUG TIPS FOR TRAVELERS

Contact with bed bugs can occur anywhere, especially when traveling. Many hotels and motels have developed bed bug surveillance programs to inspect rooms for evidence of bed bugs. However, even the most diligent surveillance may miss an infestation. Precautions can be taken to avoid sleeping in a bed bug infested room and to prevent transporting bed bugs from hotels, motels or other lodging to home.



Preparing For Travel

- If possible, use hard shelled luggage for traveling, which is less bed bug friendly than fabric luggage.
- Place shoes, electronics, books, jewelry, and toiletries, in sealable plastic bags (Ziploc® bags work well for this purpose). Keep these items sealed when not in use, especially during the nighttime hours.
- Pack large sealable bags for storing worn clothes and anything purchased during the trip.
- Pack heavy duty plastic bags, large enough to cover luggage, for the commute back home. Zippered luggage encasements can also be purchased for use at the hotel or while in transit.

At the Hotel

- Inspect the hotel room before bringing in luggage. Look for bed bugs and evidence of bed bugs, including: fecal spotting (dark brown or black spots/stains), shed skins from bed bugs, or eggs. Use a flashlight to inspect dark areas such as the closet, on drapery, the edges of the headboard, and in the crevices of furniture. Turn back the comforter, sheets and mattress pad. Check carefully along the visible edges of the mattress, under the mattress tag, and the edges and seams of the box spring.
- If evidence of bed bugs is found, immediately notify the management and request a room change. If possible, request a room on a different wing or floor. Thoroughly inspect the new room.
- Keep luggage closed and away from bed bug prone areas such as beds, upholstered furniture or in a closet. Do not place luggage on the bed or on carpeted floor. Store luggage on the luggage rack or on the bathroom floor.
- Keep clothes and belongings in the luggage whenever possible. Clothes may also be hung in zippered clothing bags. Do not unpack or place belongings in drawers.
- Store worn clothes in sealable bags. If possible, use a bag for light colored clothes, a bag for dark colored clothes, and a bag for dry cleaning.
- During the stay, if live bed bugs are found or if unexplained welts are discovered, notify management. Request a new room.
- Before packing to leave the hotel, inspect luggage for bed bugs. Place everything into plastic bags.



Returning Home

- Keep luggage in heavy duty plastic bags or luggage encasements while commuting home.
- When reaching home, leave the luggage in the garage or outside, if possible.
- If luggage must be brought inside the house, unpack the luggage in an area that is well lit and away from any furniture and sleeping areas. Take the bag that the luggage was removed from and discard it in an outdoor trash receptacle as soon as possible.
- Items that will not be immediately laundered should be kept in the presorted sealed bags.
- Heat kills bed bugs. Wash clothes at the hottest recommended setting. Tumble dry the clothes on high heat for 30 minutes (120°F or above). Keep clothes that require dry cleaning in a plastic sealable bag until dry cleaning.
- Items or clothes that cannot be washed should be tumble dried on high heat for 30 minutes.
- Items that cannot be laundered, but have been kept in sealed plastic bags throughout the trip, can be removed from the bags and inspected for signs of bed bugs. Discard the bags in an outdoor trash receptacle.



Note: These guidelines include recommendations of the Central Ohio Bed Bug Task Force and Bed Bug Central

In the past, bed bug infestations were mostly limited to sites where people sleep: apartments, dorms, hotels, private homes and the like. Now, bed bug infestations are found in a variety of non-residential sites, including commercial workplaces. The following precautions can be taken to help protect against transporting bed bugs home from the workplace and to keep the workplace bed bug free.

Bed Bugs: A Special Problem in Office Buildings

Unlike in residential settings, bed bugs in the workplace do not have sleeping and resting areas to infest; instead they wander and spread around the office before anyone is aware of them, making early detection difficult.



In homes, bed bugs are typically most active at night. In offices, bed bugs are active at night at first, but since they cannot find food sources (i.e. human blood) they often shift their activity to daylight hours.

In offices, bed bug numbers tend to be low, increasing by periodic reintroductions rather than through reproduction.

Prevent Transporting Bed Bugs Home from the Workplace

Bed bugs are hitchhikers, transferring to new locations on purses, briefcases, clothes, shoes, books and other items. Bed bugs are carried into the workplace by employees, vendors, custodial staff, visitors, customers, clients and others. While at the work location, take these precautions:

- Minimize the number of items brought into and out of the workplace.
- Keep personal items off of the floor. Hang bags, briefcases and coats from a door knob or hook or store these items in a tightly sealed bag or plastic bin when not in use.
- As much as practical, eliminate office clutter.
- Avoid wearing pants with cuffs when possible.
- Be proactive. Monitor the work area and personal belongings for bed bug activity. Look for small black (fecal matter) or dark red (blood) stains along with both live and dead bed bugs.

Additional Precautionary Steps to Take if Bed Bugs are Found at the Workplace

- Keep a change of clothes at work to avoid wearing work clothes home, in the car, or on the bus or train. When changing clothes, put the clothes in a sealable plastic bag.
- When leaving infested offices, inspect yourself and coworkers for bed bugs. Check clothes, shoe treads, cuffs, pockets and collar. Use a hand mirror to help look for bed bugs or eggs.
- At home, remove clothes before or immediately upon entering the home, if possible. Place them in a separate bag and keep them apart from the general laundry.
- Heat kills bed bugs. Wash clothes at the hottest recommended setting. Tumble dry clothes on high heat (120°F or above) for 30 minutes. Clothes that require dry cleaning should be kept in a plastic sealable bag until dry cleaning.



Actions Employers Can Take to Prevent Bed Bugs at the Workplace

The presence of bed bugs in the workplace is a politically sensitive subject and involves facilities, human resources, public relations and risk management decisions that can have significant financial and legal implications. Management and custodial staff need to be educated about bed bugs. They should be familiar with the myths and misconceptions associated with bed bugs, the challenges of bed bug management, and the limitations associated with many of the control methods. Employers should do the following:



- Educate workers on how to prevent bed bugs or treat bed bugs. Bed bug training can be conducted by the local health department, and entomologist or a bed bug experienced pest management company.
- Identify and inspect areas that are susceptible to bed bug infestations.
- Remove clutter and minimize the storage of unnecessary items.
- Vacuum areas that have been identified as having bed bug activity.
- Seal cracks and crevices with silicone based sealant in areas suspected of having a bed bug problem.
- Encourage employees to report bed bug sightings and unexplained bites or red marks. It is best to collect a specimen for a positive identification.
- Provide employees with sealable plastic bags or plastic bins with snap on lids to store personal items off of the floor and away from those of other workers.



- Place monitoring devices (sticky traps or climbing deterrents) in areas of concern. Traps should be placed along the edges of the base of cubicle dividers, in areas where personal belongings are stored, next to computers and other heat generating equipment, and in areas where utilities emerge from raised floors. Climbing deterrents, including moats or two sided tape, should be placed on or beneath furniture legs.



- When it comes to office furniture, plastic, vinyl and metal surfaces are less appealing to bed bugs and are generally better than upholstered furniture.
- If a bed bug infestation is suspected, promptly contact a bed bug experienced pest management company. The local health department can also be contacted for additional information and assistance.

Bed Bug Control Tactics for Offices

There is no “one size fits all” bed bug program for offices. Analyze each office infestation and design a customized program with tools and tactics determined by the specific conditions at the site, including:

- Determining the size and distribution of the bed bug problem in the building.
- Identifying furniture and structural conditions that can create bed bug hiding places, including upholstered chairs, cracks and crevices in walls, utility runs, carpets, rugs, peeling wallpaper, cubicle dividers, etc.
- Monitoring for bed bug activity on a regular basis and keeping accurate records of bed bug sightings.
- Providing education on bed bug prevention and identification to all workers in the building and appropriate training for building custodial and management staff.
- Implementing a routine sanitation program to ensure a clean and clutter-free workplace.

VISITING A CLIENT'S HOME: HOW SOCIAL WORKERS, HOME HEALTH AIDES, AND OTHERS CAN PROTECT AGAINST BED BUGS

Healthcare and social workers who routinely visit clients' homes are at risk of transporting bed bugs. Precautions must be taken to prevent transporting bed bugs from clients' homes to the office, car, or home of the social worker or home health aide.

Education

The prevention of the spread of bed bugs begins with education. For professions that require workers to visit clients at home, it is important that employees receive bed bug training. The training can be conducted by the local health department, an entomologist, or a pest management company experienced in bed bug control. The training should include the following topics: identification of live bed bugs, evidence of a bed bug infestation, where bed bugs hide, how to conduct a self-inspection for bed bugs, and proper containment or isolation procedures for infested items.



Although some of the following measures may sound extreme, implementing a strict prevention protocol is the only way to proactively protect from transporting bed bugs.

Preparing for Home Visits

Follow these guidelines to prepare for a client home visit. Before going to a client's home, contact the client, and ask if there have been any insect infestations in the last 2-3 months.

- Wear simple clothes.
- Avoid shirts with buttons and pockets.
- Avoid cargo pants and cuffed pants.
- Wear shoes that can be heated in a clothes dryer.
- Avoid accessories, especially scarves, jewelry, and handbags.
- Carry a supply of sealable plastic bags (such as Ziploc® plastic bags).



While at the client's home, take the following precautions. Be extra diligent if a bed bug infestation has been confirmed at the home.

- Wear protective booties. Inform the client that the booties help protect against potentially having insects transported into the client's home.
- Do not sit on upholstered furniture or on the bed. Inspect the cracks of hard chairs before sitting down. If possible, bring a hard surface chair or plastic stool.
- Carry only essential items into the home. Use a plastic clipboard to hold any paperwork.
- Avoid placing any belongings on upholstered furniture, bedding or against the walls.
- When there is an infestation and the purpose of the visit is to move items or to move the person, wear coveralls or a Tyvec® suit.

Discovering Bed Bugs at a Client's Home or Apartment

If bed bugs are discovered at the client's residence, remain calm. Take the following steps to avoid transporting the bed bugs out of the client's home.

- When returning to the car, remove the booties immediately and seal them in a plastic bag. Dispose of the bag before getting into the car. If the client lives in a multi-unit dwelling, remove the protective gear just outside the client's door. Do not leave the shoe covers on while walking through the building. Place them in a tightly sealed bag and place the bag in an outdoor trash receptacle.
- If coveralls were worn, remove the coveralls by turning them inside out and trapping any bed bugs inside. Put the coveralls in a plastic bag and dispose of the bag before getting into the car.
- Use a hand mirror to inspect yourself for bed bugs. Check clothes, shoe treads, cuffs, and collar.
- If an insect is found, use a wet wipe to capture it. Place it in a Ziploc® bag for identification. Use a second wet wipe to wipe down seams, buttons, and other bed bug hiding places.
- Instruct the client to report the infestation to the landlord and to the local health department.

Repeat Visits at Infested Homes

For repeated visits to a home with a bed bug infestation, make a bed bug containment kit. The bed bug containment kit should include the following:

- Portable, hard surface chair or stool
- Small bag to hold personal items like identification, cell phone, and gloves
- Extra clothes and shoes (to be kept in the car)
- Large plastic storage container with a sealed lid
- Booties
- Coveralls
- Disposable gloves
- Duct tape
- Small plastic garbage bags
- Large plastic garbage bags
- Flashlight
- Wet wipes
- Ziploc® bags
- Plastic clipboard



Transporting Clients Who May Have a Bed Bug Infestation

While transporting a client from a bed bug infested home, take measures to protect the car used. Use large garbage bags to contain the client's personal items and to line the car seats. If the client has a wheelchair that must be transported, use large garbage bags or a small tarp to cover the wheelchair. If the infestation is high, ask the client to wear coveralls while traveling in the car. After the client and the client's belongings have been transported, vacuum the car. Wipe down the seat belts and seat seams with wet wipes to remove any bed bugs.



After Visiting a Client's Home

After a visit to a client's home, return home directly. Take precaution by removing clothes and shoes and placing them in the dryer on high heat for 30 minutes. Heat kills bed bugs in all life stages.

If a bed bug is found, remove the work clothes outside of the home or in the bathroom immediately. Put the clothes and shoes in a separate, sealed or tied bag and keep it separate from the general laundry. Wash the clothes at the highest recommended setting and tumble dry the clothes and shoes for 30 minutes on high heat (120°F or above).

If home visits are frequently made, it is recommended that the employer purchase a clothes dryer in order to heat clothes at the office prior to returning home.

Additional Suggestions

The following additional practices may help avoid transporting bed bugs from a client's home:

- Keep the car clear of clutter; inspect it frequently; vacuum weekly.
- Keep a pair of shoes and a jacket for use only in clients' homes in a sealed container in the car.
- Discourage clients from sharing their vacuum cleaner with neighbors or other residents.
- Discourage clients from accepting clothes, furniture, or other items from friends or neighbors.
- Keep informed about bed bugs in order to offer clients accurate bed bug information.



Dini M. Miller, Ph.D., Department of Entomology, Virginia Tech, and Stephen Kells, Ph.D., Department of Entomology, University of Minnesota, Bed Bug Action Plan for Home Health Care and Social Workers, <http://www.vdacs.virginia.gov/pesticides/pdf/files/bb-healthcare1.pdf>.