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BED BUGS GO TO SCHOOL AN IPM APPROACH

In 16th Century Europe, bed bugs mostly troubled rich people, as they had the warmest homes. But as the quality of homes improved in the developed world, bedbugs became a problem for people of all economic classes. Before World War II, they were a common pest in the U.S. until a combination of factors including DDT, and the wide-spread use of the vacuum nearly eliminated them.



Today bed bugs are a serious problem in developing countries in over crowded homes. However, in general bed bugs have made a worldwide come-back. They can be found in up-market hotels, hospitals, college dorms, laboratories, airports, planes, movie theaters, homes, etc. and even in our kid's schools.

Many scientists feel that increased global travel and trade have been important factors. People and goods are traveling more widely and in greater numbers than ever before. Bed bugs are nocturnal, small, reclusive, and easily overlooked, and adults can live for several months without food. They often stowaway in luggage and shipping crates.

Although bed bugs feed on blood, they are not known to transmit diseases to humans under natural conditions. The backyard bred mosquitoes pose a more significant health risk. Excessive or improperly applied, pesticides intended to manage bed bugs could be far more hazardous. The best strategy to deal with bedbugs is to use integrated pest management (IPM), which combines a variety of practical techniques and products that pose the lowest risk to our health and to the environment.



The first step in your IPM plan is to confirm that you really

do have bed bugs. There are several very similar insects (e.g. bat bugs) and it takes a professional entomologist to determine species.

Bed bugs are insects in the true bug Order, Hemiptera, in the Family, Cimicidae. A few types of Cimicidae live in close association with people. The common bed bug, *Cimex lectularius*, and the bat bug, *C. pilosellus*, are often found in homes in the United States. Bat bugs typically spend most of their time hiding in and around the roosting areas of their hosts, making repeated visits to the host for a blood-meal. Colonially roosting bats provide a frequently available and reliable food source. So associated bat bugs may be present in large numbers. There are a number of Cimicidae that are associated with bird species.

Adult bed bugs are straw-colored to reddish-brown, oval-bodied, wingless insects. Their bodies are clearly segmented, and covered with short, golden hairs. Before feeding, they are 1/4–3/8" long (about the size of a pencil eraser) and nearly as flat as a piece of paper, which is why they can fit into such narrow crevices. Their appearance changes dramatically after they've fed; they become rounded and dark red. Their eggs are white, slightly pear-shaped and about 1/32" long, about the size of a pinhead, with a 'lid' at one end through which the young will emerge. The eggs are laid in crevices, in clusters of 10–50. Newly hatched bed bugs are nearly colorless but otherwise resemble the adults, only smaller. Bed bugs are gregarious, so you may find adults, young, and eggs in the same location.



Inside buildings, bed bugs can breed all year. They typically have up to three generations per year.

Their average lifespan is ten months to a little over one year, and in that time, a female may lay from 200–400 eggs, depending on the temperature and the amount of food available. The females need a blood meal before laying eggs.

Eggs hatch in about ten days. Under ideal conditions, the young can reach adulthood in five to eight weeks. Young bed bugs must take a blood meal before they can shed their skins and grow. They shed their skins five times before becoming adults.

Don't let the bed bugs bite!

The common bed bug will feed on a variety of animals but prefers humans, so pets such as dogs and cats are not a major host for bed bugs. Bed bugs feed for about five to ten minutes at night, then drop off the host and crawl to a sheltered crevice where they'll remain for several days while digesting the meal. They will bite all over the body, especially on exposed areas, such as the face, neck, arms, and hands. People experience a range of reactions to the bites; some are unaware while others experience an allergic reaction to the saliva injected while the insects feed, and may develop painful welts. Repeated bites tend to generate more severe reactions and heavy infestations of bed bugs may cause anemia in children and the elderly. Bed bug problems in the home may also cause stress and sleeplessness. Their presence may be undetected for months. Also, because they can survive for about six months without feeding, bed bug infestations can persist in abandoned buildings or those that are only used seasonally.



Detecting bed bugs

- ✦ Inspect seams and tufts of mattresses and furniture where kids or people sleep.
- ✦ Inspect cracks in the bed frame, behind the headboard, and gaps behind baseboards, pictures, window, and door casings, wallpaper, behind electrical switch plates, in telephones, radios, clocks, behind and inside wall mounted art-work and mirrors, even in smoke detectors.
- ✦ Look for the insects, their cast skins, and eggs near crevices.
- ✦ Check pillowcases, sheets, and the mattress for bloodstains, smears, or flecks.
- ✦ Most individuals are found within 5' and no more than 20' of a regular food source. However, though some egg-laying females and newly hatched nymphs may be found further away.
- ✦ When populations are high, you may notice a pungent, sickly-sweet odor a little like raspberries.
- ✦ Bites on people.

✦ Schools are not ideal places for bed bugs as they prefer to hide during the day and few people are around during the night. However, hungry bed bugs will reluctantly feed during the day.

✦ Evening school staff on-break in rest areas may be the first to notice regular bites.

✦ Faculty lounge, office area or nurse's office with upholstered furniture or a cot may become infested. Similarly schools that have child care facilities with stationary bedding are prone trouble spots.

✦ Schools with dormitories provide ideal habitat for populations to rapidly increase.

Managing bed bugs using IPM (Integrated Pest Management)

- ✦ Inspect and monitor for bed bugs constantly, they arrive with people and their belongings. Inspect donations and monitor lost-and-found areas with extra vigilance.
- ✦ Vacuuming is an effective way to remove bed bugs and the dirt that provides them with shelter.
- ✦ Bed bugs are sensitive to extreme temperatures in all of their life-stages. So toss all bedding and infested clothing in a hot (140°F) dryer for 20 minutes. Steam cleaning is effective. However, when possible, dispose of all bedding, beds, drapes, pillows, anything fabric. Bed bug eggs have been found to survive cloths dryers.
- ✦ Eliminate shelter by sealing cracks and crevices with a silicone based sealant. Seal around utility conduits.
- ✦ Remove clutter.
- ✦ Contract for expert help with a contractor who is experienced in bed bug eradication.
- ✦ Pyrethrin-based sprays can be used to flush them out of crevices.
- ✦ Inspect student back-packs and coats if the laws permit. Most bed bugs in schools will be coming in with students and can be found on, and in the student's belongings. If specific students are identified, schools may have success contacting the family and extending the offer of expert advice.
- ✦ Do not give up, it will take a concerted effort and several months work.
- ✦ Pest Management Professionals will use a combination of pesticidal crack and crevice treatments, silica gel dusts, steam or dry heat treatments, Steri-Fab® disinfectant.
- ✦ **Simply "spraying" is NOT going to be effective.**

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Best Fact sheets:

Harvard bed bug website http://www.uos.harvard.edu/ehs/pes_bedbug.shtml and fact sheet http://www.uos.harvard.edu/ehs/enviro/bedbug_brochure.pdf
 Armed Forces Pest Mgt Board technical guide <http://www.afpmb.org/pubs/tims/TG44/TG44.htm>
 Cornell <http://www.entomology.cornell.edu/Extension/DiagnosticLab/IDLFS/BedBugs/BedBugs.html>
 Ohio State <http://ohioline.osu.edu/hyg-fact/2000/2105.html>
 University of Minnesota <http://www.entomology.umn.edu/faculty/kells/kellscv.html>

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