

Bed Bugs: Back with a Vengeance

Detection, Prevention and Least Toxic Control of Bed Bugs

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Bed bugs have recently re-emerged as a common unwanted insect and troublesome infestation problem. Though there is no definitive consensus on what sparked this resurgence, increased international travel and resistance to pesticide treatments are thought to be contributors.¹

What are bed bugs?

There are at least 92 bug species in the family Cimicidae, some of which are known to feed on humans, bats, birds and other warm-blooded animals. All bed bugs are wingless and feed by hematophagy, or blood feeding. Adults are between 1/8 and 1/4 of an inch, reddish-brown in coloration and flat and elliptical in shape, appearing somewhat like a flattened apple seed. Immature bed bugs, or nymphs, are smaller than adults (about the size of a pin head) and are yellowish or clear before eating and red or purple afterwards. Bed bugs' antennae are segmented in four pieces, and the insects' bodies are covered in short, golden hairs. Their legs are well-adapted to crawling up vertical surfaces, such as wood, paper, plaster, and with some difficulty, dirty glass.² Bed bugs can survive up to one year on a blood meal.³

Are these bed bug bites?

Detecting bed bugs may be as easy as realizing you are waking up with sore spots or itchy welts, often in a line. This being said, the offending insect can rarely be identified solely by the appearance of the bites, since they can resemble bites caused by many other kinds of blood feeding insects, such as mosquitoes and fleas. Find the insects and identify them, either using the description above or by taking a specimen to an entomologist.

Can bed bugs make you sick?

Transmission of disease by bed bugs is highly unlikely, though they can harbor pathogens in their bodies. Their medical significance is mainly limited to the itching and inflammation from their bites, which can be addressed with antihistamines and corticosteroids to reduce allergic reactions and antiseptic or antibiotic ointments to prevent infection.

Do you have a bed bug infestation?

Bed bugs are nocturnal insects. The night is the time to see them active and feeding, mostly in the hours before dawn. If attempting to see bed bugs while active, use a red light.

Bed bugs are most often found in the following places:

- In cracks and crevices of bed frames or headboards; and,
- Along the seams of mattresses, or within box springs.

They may also be found in the following places:

- In the cracks and crevices of the floor, plaster or ceiling moldings;
- Along the edge of carpeting;
- Under loose wallpaper; behind picture frames, wall hangings, switch plates and outlets;
- In drapery pleats, the upholstery of sofas or chairs or the folds of clothes hanging in the closet;
- In the cracks and crevices of night stands or bureaus;
- Inside clocks, phones, televisions and smoke detectors; and,
- In the case of more established infestations, bed bugs move further from the bed.

Tiny white eggs (1mm in length, the size of two grains of salt), deposited in batches of 10-50, can be found in these areas.



Bed bugs on the seam of a mattress.

How do bed bugs get into your home?

In the case of apartments and/or adjoining homes, bed bugs are able to travel by way of water pipes, wall voids, gutters and wiring. Rodents, birds, and bats can serve as alternative hosts. If a nearby habitat (see below) is the source of the insect, then it should be carefully moved away from the building and the bed bugs' entryway should be blocked. Otherwise, bed bugs have likely been introduced accidentally or are traveling between homes.

Habitat modifications

Exterior

- Seal up cracks and crevices and fix screens, to prevent bed bug entrance from the outdoors.
- Remove any animal habitats near, attached to, or inside the house, such as bat roosts or bird nests in the eaves, roof or attic, and exclude animals from entry. Deal with any rodent infestations using least toxic management strategies (see Beyond Pesticides alternatives fact sheets).
- Move woodpiles and debris away from the structure, and eliminate all garbage.

Interior

- Fill cracks, nooks or crannies in bed frame, floors, walls, the edge of baseboards and moldings with sealant. Re-glue loose wallpaper.
- Check carefully furniture, linens or luggage brought into the house for bed bugs or rusty-orange stains from their fecal matter.
- Clean up clutter, which serves as a hiding place.
- Duct tape bed legs (sticky side out), which may trap insects for identification.

Mechanical controls

Exterior

- Trap and remove host animals and nests.

Interior

- Scrub infested surfaces with a stiff brush to dislodge eggs, then vacuum. If possible, dismantle bed frame, turn over furniture and remove shelves from desks and bureaus to look for hiding insects, vacuuming to remove insects from crevices.

- Move the bed away from the wall.
- Encase both the mattress and box spring in zippered (plastic) covers, which deny bed bugs access to inner, hidden areas and trap those already inside. After a year, bed bugs trapped inside will die.
- Launder bed linens and clothing in hot water (at least 120°F). Enclose linens and clothes in plastic bags when moving them through the house.
- Vacuum walls, floors, carpet, and drapes.
- In worst cases, duct tape (sticky side out) or smear with petroleum jelly the legs of the bed or place bed legs in bowls or jars filled with water to prevent bed bugs from entering the bed from the floor.

Least-toxic chemical controls

Interior

- Clean vacuumed areas (see above) with diluted borax (2 oz per quart of water).
- Open wall voids and treat with, sodium borate, food-grade diatomaceous earth, or other products labeled for this use with ingredient disclosure. (Wear a dust mask when handling powder formulations.) Seal void completely.

Be careful when traveling Simple precautions can help to avoid and stop the spread of bed bugs when traveling:

- When entering a hotel room, use a luggage stand to elevate belongings off the floor. Do not place luggage or briefcases on the bed until conducting the following inspection: Check the sheets, the upper and lower seams of the mattress and any cracks in the headboard for the insects. Most headboards in hotels can be removed and inspected easily. Look for rusty-red stains of bug fecal matter, or blood spots.
- If bed bugs, their fecal spots or eggs are detected, inform the manager and ask for a different room.
- If bed bug bites are suspected, be sure to wash belongings with hot water (120°F minimum) and borax. Though it is difficult to detect bed bugs in a suitcase, inspect and vacuum luggage after a trip.

END NOTES:

- 1 Nixon, P. 2006. Bed Bug Resistance to Pyrethroid Insecticides. Illinois Pesticide Review 19(5). <http://www.pesticidesafety.uiuc.edu/newsletter/html/200605e.html>; Ogg, B. 2005. Don't Let the Bed Bugs Bite! University of Nebraska Cooperative Extension. <http://lancaster.unl.edu/enviro/pest/factsheets/263-95.htm>.
- 2 Tvedten, S. The Best Control for Bed Bugs. The Best Control II. http://www.safesolutionsinc.com/18_Bed_Bugs.pdf.
- 3 Pollack, R and G Alpert. 2005. Bed Bugs: Cimex lectularius (Cimicidae). Harvard School of Public Health. <http://www.hsph.harvard.edu/bedbugs/>.

OTHER SOURCES:

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