

Bedbugs Like the Smell of Dirty Laundry

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STORY AT-A-GLANCE

- › Bedbugs are parasitic insects that feed exclusively on blood, preferably human blood; they are making a resurgence and have reached near-epidemic populations in many cities
- › Fueled by resistance to pesticides and being transported around the world in suitcases, scientists have found they are naturally attracted to dirty laundry
- › You may prevent an infestation in your home by thoroughly inspecting any hotel or house where you stay, and routinely inspecting your home as they may hitchhike from the movies, office or laundromat
- › Pesticides used to kill bedbugs are linked to health issues and neurological symptoms; natural choices are healthier for you and your family, such as thermal remediation

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Bedbugs are little parasitic insects that feed exclusively on blood, preferably human blood. An adult bedbug is about the size of an apple seed, with a flat brown body. However, after feasting on your blood, their body swells and turns a reddish color.¹ Although these tiny insects are a nuisance and multiply quickly, they're not likely to spread disease.

Typically, these little vampires hide during the day in the crevices of your mattress, couch, dirty laundry or any small crack they can find. They don't create nests or little homes, but travel and live in groups, making them a little more visible when you search for them in your headboard, behind wallpaper or bedframe. While their body remains as

round as an apple seed, they can flatten to the width of a credit card making it easier to fit into small spaces.²

A female bedbug can lay hundreds of eggs in her lifetime. The average life cycle of a bedbug is between 10 months to 1 year, going through multiple stages.³ If there is a viable host available, the bugs can progress through those stages rather rapidly, reaching maturity in approximately one month.⁴ In order for the nymph-stage bedbugs to survive they need a blood meal at least every few weeks, but an adult may survive for up to five months without a meal.⁵

The population of **bedbugs** has been rapidly increasing since 2004.⁶ There may be many reasons for the resurgence of these little pests. Some researchers theorize the growing bedbug population may be the result of their resistance to pesticides or the difficulty killing all of them to eradicate the problem in one area. Another reason may be how quickly humans have spread the problem across the world.

Have Bugs, Will Travel

Bedbugs rely on a variety of sights, smells and changes in temperature to find their next blood meal. Bedbugs live year-round as they are sheltered in your home or hotel room, but they are most active during warm summer months. More infestations are reported in summer months, likely since more people are traveling. If you are traveling, you'll be interested in learning how to avoid bringing bedbugs home to roost in your house.

Researchers from the University of Sheffield in England investigated what drives bedbug behavior in the absence of a viable host,⁷ hoping to find clues to reduce the number being transported from place to place around the world. In this small study, they set up two bedrooms with two bags of clothing. One bag was full of clean clothing and the other with clothes that had been worn for several hours.

One of the rooms also had a steady flow of carbon dioxide piped in to simulate human breathing.⁸ The scientists were not surprised that the bugs in the room with carbon dioxide more actively searched for a blood host as this behavior of bedbugs is well-

documented. However, what they did learn was that the bugs appeared to be more attracted to the bag of clothing that had been previously worn.⁹

The ability of the bugs to discern human odor apparently plays a predominant role in the spread of the bugs and offers valuable information on the development of scents that may detract the bugs.¹⁰

One way the bugs may have become world travelers is in the bags of **dirty laundry** we cart from hotel to home. This study demonstrates it may be in your best interest to store your dirty clothes tightly away to prevent parasitic hitchhikers. It takes only two or three to fully infest your home after a couple of months.

How to Find Bedbugs at Home or When You Travel

Prevention is the key to keeping your home free of bugs. While you can't stop the little critters from coming in on your company's clothing, you can reduce the risk you'll bring them home when you travel. In this short video, bedbug expert Lou Sorkin from the American Museum of Natural History describes the life cycle of the bugs, and helps you determine where and how to look for them.

Before making reservations at any hotel, check out their Bedbug Report,¹¹ a free public database of hotels and apartment complexes across the U.S. and Canada. The database lists the hotels by regions, so if your hotel has a report of bedbugs, you can find one on the list that has a clear report.

Once you've arrived at your destination, whether it's a hotel or a friend's home, there are several ways of determining if there are bedbugs in residence. Don't unpack when you arrive, but leave your luggage in a clean bathroom tub, or on a rack off the floor while you inspect the room.¹² A flashlight and credit card will help you find the buggers. Start with the pillows, peeling the pillowcase back and looking along the seam of the case for **small insects**, eggs, excrement or small blood stains.

Next, move to the bed sheets and cover, lifting them up slowly and looking carefully along the seams where they might hide. Peel the sheets back, being sure to go all the

way to the mattress. Search along the seam and in the tiny air vents located on the sides. Be thorough and look at all four corners of the bed and not just one.

Look under the box springs, upholstered furniture, curtains, along the headboard and even under the nightstand where they may hide until their next meal. If you do find bedbugs, pick up your luggage and leave immediately.

When you get up the next morning, look for tiny red blood stains on the sheets that are evident after a bedbug bite. If you didn't see them on inspection, but find them the next morning, you'll be able to take precautions, so you don't bring them home.¹³ Bedbugs may arrive after you travel, when a friend comes to visit or even on the clothes of an appliance repair person.

So, it's a good idea to routinely do a basic inspection of your home for bedbugs, even if you haven't traveled. Remember, bedbugs are more likely to be attracted to your dirty clothes, so when traveling keep those clothes packed up tightly to reduce the potential that any bugs in the room will be coming home with you.

Bedbugs May Not Spread Disease, but They Do Take a Toll on Your Health

Many believe bedbugs don't spread disease. To date, evidence of the transmission of disease has not been documented,¹⁴ but it also has not been extensively studied. Some people are highly allergic to the bites, and excessive scratching from the itch may lead to secondary skin infections. Since the bedbug first injects a chemical that anesthetizes the area so you don't feel the bite, if you're losing sleep thinking you're being bitten, it's likely from [anxiety](#) and not from the bugs.

The anxiety and stress from a bedbug infestation may take a psychological toll on your health, leading to physical symptoms of stress. In one case, a woman committed suicide after repeated bedbug infestations. Researchers who studied the case concluded:¹⁵

"Our case report shows that the bedbug infestations were the likely trigger for the onset [of] a negative psychological state that ultimately led to suicide ... Given the ... surge in infestations, rapid action needs to be taken not only in an attempt to control and eradicate the bedbugs but also to adequately care for those infested by bedbugs."

Studies have shown that people who have lived with bedbugs are more likely to report anxiety, sleep disturbances,¹⁶ suicide, financial distress, mood swings and delusional behavior.¹⁷ Psychological and emotional effects associated with post-traumatic stress disorder (PTSD) have also been reported after a bedbug infestation.

Compounding these psychological issues is a pervasive misguided stigma that bedbugs are the result of uncleanliness. Others may want to distance themselves as much as possible from those who have the problem, increasing feelings of isolation and keeping people from turning to friends and family for support. Suddenly, the place they call home and their sanctuary has been invaded by tiny insects that feed on your blood and your vulnerable psychological state.

Steer Clear of Pesticides

Although you may want these bugs gone as quickly as possible, you'll also want to use caution before accepting standard pesticide treatments around your family and pets. The National Pesticide Information Center (NPIC)¹⁸ has reported a dramatic increase in the number of reports of mild to serious side effects, including one death, as the result of pesticide exposure to kill bedbugs.

In most cases, the illnesses were related to an excess of **pesticides** applied to the area, a failure to change pesticide-treated bedding and inadequate notification of the chemical application. In one case in Ohio, a statement to a health advisory released by the CDC stated:¹⁹

"These illegal applications were made five times over 72 hours and included spraying of ceilings, floors and even beds and a crib mattress. The occupants

included a family with small children, who displayed health symptoms typical of pesticide poisoning, including headache, nausea, vomiting, diarrhea, dizziness and muscle tremors."

Healthier Nontoxic Treatments Can Kill the Bugs

Ridding your home of bedbugs requires a focused and consistent effort. Unless you use thermal remediation, the bugs won't all die overnight. You have to be vigilant when leaving the house, so you don't infect your car and track those bugs back into your home or anyone else's house.

Bedbugs are highly susceptible to heat. Extreme heat, called thermal remediation, over a period of several hours is often enough to kill bedbugs. You can leave everything in your home, except plastics, pets and your family, when the home is treated.

Although slightly more expensive than chemical treatment, it is healthier and safer for everyone involved, except the bugs. If you have a relatively small area, you may want to try a steam cleaner with an attachment to clean your bed, all furniture and the carpeting.²⁰

If it's the summer months, be sure to leave your car in full sun with the windows completely shut to drive the heat in your car to temperatures that will kill the bugs. Rubbing alcohol is another option to help kill the eggs of bedbugs.²¹

A 91% isopropyl alcohol solution in a spray bottle may be used to thoroughly wet areas likely to contain eggs, such as upholstered furniture and mattresses. Bed sheets, pillows, blankets and towels can be run through the dryer on high heat for at least 30 minutes.²²

Bag your clothes and seal them tightly until you know your home is free of bedbugs. You can remove clean clothes as needed and only put them away when you are sure your home is free of bugs. Other natural means of killing bedbugs include diatomaceous earth, which doesn't evaporate or go away until you vacuum it up.²³ It works by cutting

the outer membrane of the insects. Essential oils, such as [tea tree oil](#), [lavender oil](#) and [peppermint oil](#) are effective repellents.

Open Questions Remain Over Safety of Biopesticide

A biopesticide called Aprehend,²⁴ developed by Penn State, was approved for sale on a state-by-state basis in 2017. The product is a proprietary formulation of fungal spores that adhere to the legs of the insects. Within 20 hours of contact, the spores germinate and colonize the body of the insect, effectively killing it.²⁵

Direct spray contact is not necessary in the way chemical pesticides are used to kill the insects. Instead, the fungus adheres to the legs of only a small percentage of the population, who then bring it back to the group and physically transfer the spores to others as they groom.

In the lab, scientists were able to achieve nearly 100% eradication with one application. The product also continues to work over three months. This particular fungus has been used as a pesticide in the past to control grasshopper and locust populations in Africa before company scientists turned their attention to bedbugs.

However, the long-term effects of releasing a fungus into the insect population have not been extensively studied and may have far-reaching effects, well beyond killing bedbugs in your home. So, to be on the safe side, I'd recommend diligently implementing the suggestions above first, before trying this novel biopesticide.

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