

Bed Bug Prevention and Detection



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Bed Bug Awareness

- **Prior to the 1950s, most people had a certain level of “bed bug awareness”. Whenever they left home, in the back of their minds, they were conscious that they might encounter bed bugs.**
- **They were conscious where they put their personal belongings.**
- **They inspected their hotel rooms before staying the night.**
- **Where is your purse or jacket right now?**

Prevention While Traveling

- **Whether traveling in the United States or internationally, there are hundreds of places where your luggage might come in contact with bed bugs.**
- **Bed bugs might be in your hotel room, in the trunk of the taxi, in the luggage compartment of the airplane, or in the baggage handling facility at the airport.**
- **You cannot control your bag's travel experience, but you can inspect your hotel room, and you can inspect your luggage prior to bringing it into your home.**

Give the mattress an inspection before opening your suitcase:

- Pull back all of the bedding at the head of the bed to look for evidence**
- Check the underside of the mattress tag and the seams of the mattress and the boxsprings**
- If possible remove the head board from the wall and inspect the back of it**
- If evidence is found, report it to the management**

In the Hotel



To Protect Your Luggage

- Do not place your suitcase on the spare bed
- Inspect the luggage stand and place your bag on the stand away from the wall.
- Keep your clothing in your bag, do not place your belongings in drawers
- Give a quick check to the closet for bed bug evidence before hanging clothes
- Place your shoes in an open area, not under the bed or in the closet



To Protect Your Home

- **Upon returning home, unpack your luggage immediately, not in the bed room**
- **Laundry all clothing.**
- **Inspect your bag for bed bugs.**
- **If you believe that your bag does have bed bugs:**
 - **Place your suitcase in a plastic bag.**
 - **Put it out in the hot sun or in the hot car for a day.**
 - **Put a fumigant strip (NoPest® strip) inside the bag.**
 - **Purchase a collapsible heat chamber designed for heat treating luggage (PackTite Portable Bed bug Killing Unit™).**
- **Using a soft bag like a duffel style bag will allow you to put the bag in the dryer when you get home.**

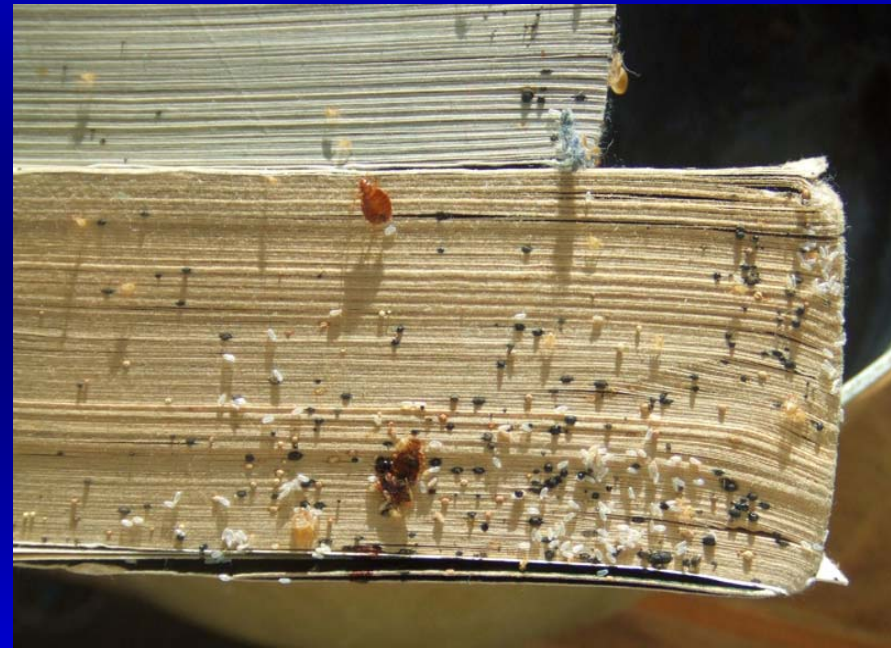
- **Used furniture is the primary cause of bed bug infestations at the moment.**
- **While not taking a mattress out of the dumpster may be an obvious risk storing your son or daughter's furniture after they finish college may not be so obvious.**
- **These days, you need to be conscious of ways bed might be transported into your home.**

Avoid Used Furniture



Avoiding Used Furniture

- Do not purchase refurbished mattresses or couches
- Do not purchase furniture at a garage sale or antique store without inspecting it first
- Never rent or store anyone's furniture in your home
- Do not purchase used books without inspection



Used books are a real bed bug problem

Avoiding Used Furniture

- **If you purchase a new mattress (or any piece of furniture), do not have it delivered to your home.**
- **If you are helping a friend move, be sure to inspect your vehicle once the belongings have been removed. Bed bugs do not usually survive the hot car, but the car is an excellent habitat during the cooler weather.**

Visitors in Your Home

- **Be conscious of what visitors might bring with them in their bags**
- **If your mother is coming for Christmas, from your childhood home in Iowa, you have nothing to be concerned about.**
- **If your mother has been at a rest home for the last several years, you may want to inspect her things (discretely) as you are unpacking them.**
- **If your daughter is coming home from abroad in Asia, and she is bringing several of her Swedish backpacking buddies, you may want to inspect their bedroom after they leave.**

Laundry Mat

- **Bed bug victims have been told to bag their washables and put them into a hot dryer**
- **Most will go to the laundry mat to do this massive washing**
- **What do they do with those bed bug infested plastic bags?**
- **They put them in the trash.**



At the Laundry Mat

- **Do not transport laundry in cloth bags. Use white, plastic baskets that are easy to inspect when they are empty.**
- **Do not set your laundry basket on the floor, or on top of the washer but put it back in your car when it is not in use.**
- **If you do not have a car, place the basket on top of the washer and inspect it thoroughly before putting clean laundry back into it.**
- **Do not set your laundry basket anywhere near the seating areas or trash cans.**
- **Inspect any chairs in the seating area of the laundry mat before sitting on them.**
- **Inspect the table used for folding laundry before placing your clean clothes on them. Better still, fold your clean laundry at home.**

Bed Bugs in the Work Place

- **Some jobs are more risky for encountering bed bugs than others, consider the pest control operator.**
- **However, there are a host of other jobs that bring people into close contact with bed bug. Think about it:**
 - doctors, nurses, home healthcare and hospice workers, homeless shelter employees, school teachers, daycare workers, parole and police officers, prison wardens, firemen, ministers, priests, plumbers, electricians, movers, painters, handymen, apartment managers, hotel managers, hotel maids and maintenance personnel, taxi and limousine drivers, theater ushers, janitors.....
- **All should be familiar with bed bugs and on the look out for them in their day to day activities**

Bed Bugs At Work

- **If you belong to a profession where you are required to visit people's homes that you know or suspect have bed bugs:**
- **wear dedicated clothing and shoes that you can bag up in your vehicle, to avoid taking bed bugs into another person's home or your own.**
- **Be conscious of not sitting on the couch or laying your hand bag or backpack on the furniture.**
- **Inspect your clothing and the bottom of our shoes when you leave a person's home, and before you get into your vehicle.**
- **Some professions now provide Tivec™ suits for employees that who make regular visits to client's homes as part of their job.**

Bed Bugs At Work

- **Slowly but surely bed bugs are also making their way into office buildings. If you work in an office building:**
- **Keep you hand bag and personal items in a desk drawer rather than setting them on a chair or the floor.**
- **Hang your jacket on a hanger in your office or cubicle. Do not just hang it on the back of your office chair.**
- **If you find a bed bug in your office, catch it in a plastic bag for positive identification.**
- **Be discrete (bed bugs can cause mass hysteria in an office) and contact the building maintenance personnel immediately.**

Early Detection Tools

- **Early detection is critically important to putting a bed bug problem behind you quickly and efficiently.**
- **If you find a bed bug in your home, don't freak out! You don't have time. You will need all of your rational faculties focused on the tedious bed bug elimination process.**
- **First, catch the bed bug if you can and preserve it in a plastic bag for positive identification. Next, try to isolate the location where the bed bug was seen.**
- **Next call a qualified and experienced pest management company to do an inspection.**
- **Comply with all of the pest managers directions on preparing your home for inspection and treatment.**

Early Detection Tools

- **You may want to purchase high quality mattress encasements for your mattress and box springs. The encasements keep you from having to throw the bed away, and prevent new bed bugs from infesting the box springs.**
- **You may place ClimbUp™ devices under the bed and furniture legs to detect and intercept bed bugs as they attempt to climb the bed legs to feed on you.**
- **The mattress encasements and ClimbUp™ devices are the best methods for preventing bed bug infestations from progressing undetected.**

Bed Bug Consciousness

- Please don't be paranoid about bed bugs. But be aware that you may encounter them during your daily activities.
- Because there is currently no simple and inexpensive way to eliminate bed bug infestations, so we are seeing their populations becoming more and more widespread.
- It is for this reason that we need to develop a “bed bug consciousness” so that we can modify our behavior to avoid bringing bed bugs into our home.

What About Control Methods?

- Although bed bug treatment has been insecticide heavy in the recent past, more and more non-chemical methods are being used to supplement the pesticide products for a more integrated approach.
- Here we will review the chemical and non-chemical methods used for bed bug control.



Insecticide Basics

- The U.S. EPA is responsible for protecting people from exposure to pesticides.
- EPA has strict toxicity testing methods.
- The test results are reviewed by the EPA before a pesticide is allowed to be sold in the United States.
- Those pesticides that are not long-term environmental contaminants and that have very low mammalian toxicity will be registered, under strict conditions.
- Pesticides will have 1000-fold *margin of safety* reflected in the label directions (See the Food Quality Protection Act for more information).
- What does all this mean for bed bugs?

Insecticide Sprays

- Insecticide sprays are formulated by mixing a small volume of active ingredient (0.03%-0.5%) into a large quantity of water inside a spray tank.
- The spray is applied in cracks and crevices and along baseboards where bed bugs hide. If the bed bugs themselves are sprayed directly they will die.



Insecticide Sprays

- **Sprays are also supposed to leave behind active residues (residual) to kill bed bugs after the product has dried. Unfortunately, studies have found that bed bugs are not very susceptible to dried insecticide residues. Bed bugs may have to sit on the dried residues days.**
- **If the spray is applied in cracks where the bed bugs rest, the dried residues have a much better chance of killing the bed bugs harboring there.**

- Aerosol products are insecticides formulated with a propellant that allows them to be sprayed out of a can under pressure.
- Many types of insecticides are formulated as aerosols,
- The labels on these products may list very different directions regarding where the product can be applied.
- *It is very important that pest management professionals be knowledgeable about the label directions for each product.*

Aerosols



Aerosols work best when bed bugs are sprayed directly. However, a few aerosols leave residues that are active for several days after their application.

Insecticidal Dusts

- **Bed bugs walking on dusted surfaces will become covered in the dust.**
- **Some dusts contain some of the same active ingredients as liquid insecticide formulations.**
- **The labels for insecticidal dusts allow them to be applied in protected cracks and crevices.**
- **Dusts can be used in wall voids to intercept bed bugs travelling from one apartment unit to another. They can be puffed in behind baseboards, electrical outlets and other locations where bed bugs like to hide.**
- **Dust cannot be used in locations where they would be moved on air currents.**
- **Dusts have strict label directions as to where they can be placed in the indoor environment.**

Insect Growth Regulator: Hydroprene

- **There are two products formulated with hydroprene, one is a liquid insecticide, the other is an aerosol.**
- **The IGR residues mimic insect growth hormones in the young bed bug's body. These hormones cause the bed bugs to develop incorrectly. The nymphs molt, but are supposed to be incapable of reproduction as adults.**
- **Laboratory studies have shown that hydroprene does not sterilize bed bugs. Instead, the IGR exposure results in many bed bugs dying during or after the final molt.**
- **Some bed bugs that survive are still able to mate and produce one batch of eggs, even if they die afterward.**
- **The affect of hydroprene on a population living in someone's apartment are still not known.**

Consumer Use Products

- There are many insecticide products available for consumer use. However, most of these products contain pyrethroids.
- Bed bugs are highly resistant to pyrethroids, so efficacy is limited.
- Because the products do not work consumers over use them.
- When the first two bombs fail, they set off ten.
- Multiple bombs typically fail to kill all of the bed bugs.



Non-Chemical Methods

- **Clutter Removal**
- Place clothes that are on the floor into bags for laundering.
- Remove items from under the bed, but do not move them into another room.
- Bag and throw away any items in closets that you no longer use.
- Old newspapers, junk mail, magazines, and broken electronic equipment should be bagged and thrown away.
- The pest management professional may provide specific instructions.



Too many places for bed bugs to hide

Mattress Covers

- Encasements for both mattress and **box springs!**
- Improved version has a zipper protector sewn in
- Traps bed bugs and eggs, bite proof and escape proof



Not all covers protect



Where the zipper closes and the zipper teeth are vulnerable to bed bug escape

Dissolvable Laundry Bags

- **Dissolvable (GreenClean™) laundry bags** are laundry bags that dissolve in the washer. You can pack your clothing and other washable belongings into the bags and put them directly into the washer without having to open the bag, or disposing of a potentially infested bag in the laundry mat.

Vacuuming

- The value of vacuuming is that it makes inspections easier.
- In large infestations, bed bug harborages are not only filled with live bed bugs, but also with dead bed bugs, molted skins, hatched egg shells, and feces.
- It is often difficult to distinguish what is alive from what is dead in a messy harborage, particularly after treatment.
- A high powered vacuum is very useful for removing this debris.



Steam Cleaning

- **Steam temperature (at the bed bug) must be 135° F (54° C) or greater**
- **The steam head must be large**
- **Steam power will kill bed bugs and their eggs (115° F)**
- **Steaming is slow and labor intensive**



**Upholstery and bedding can
disperse steam heat
Thermal death point 48°C**

Cryonite®

- **Some of the larger pest management companies have been using a new technology where bed bugs are frozen to death by being exposed to pressurized CO₂ snow at -108o F. The snow mixture is blown out a pressurized cylinder through a nozzle that forms vapors to penetrate baseboards, bedding, box springs, the furniture, other cracks and crevices where bed bugs aggregate.**
- **The pressurized snow freezes the cells of the bed bug killing them instantly. Similar to steam cleaning, the Cryonite® process requires patience.**
- **This system will not eliminate a bed bug infestation if used alone. Other control methods will still have to be used.**

Diatomaceous Earth

- **Diatomaceous earth (DE) is a desiccant dust made of the silica-based skeletons of microorganisms called diatoms. This dust kills bed bugs by sticking to the outside of their bodies and absorbing the wax layer that keeps them from losing their body moisture. The bed bugs desiccate and die within a couple of days.**
- **Do not use the pool filter DE it has been heat treated and is an inhalation hazard**

Climb-Up Device

- Used for detecting small infestations (early detection)
- Prevents fed bugs from leaving the area
- Detects bed bugs that may be entering adjacent units
- Can catch enough bed bugs to reduce the population



Canine Scent Detection

- **Excellent detectors for both hotels and apartments**
- **As of 2008 most will distinguish between live and dead infestations and can detect eggs**
- **Good for lawsuit defense**



Questions?

