



Protecting Yourself From Bed Bugs

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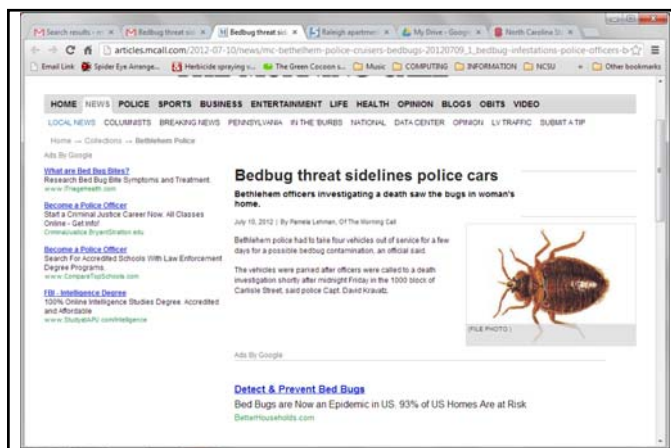






2012 Top Bed Bug Cities Based on Treatments

<ol style="list-style-type: none"> 1. Chicago 2. Detroit 3. Los Angeles 4. Denver 5. Cincinnati 6. Columbus 7. Washington, D.C. 8. Cleveland/Akron/Canton 9. Dallas/Ft. Worth 10. New York 11. Dayton 12. Richmond/Petersburg 13. Seattle/Tacoma 14. San Francisco/Oakland/San Jose 15. Raleigh/Durham/Fayetteville 	<ol style="list-style-type: none"> 16. Indianapolis 17. Omaha 18. Houston 19. Milwaukee 20. Baltimore 21. Syracuse 22. Boston 23. Colorado Springs/Pueblo 24. Lexington 25. Miami/Ft. Lauderdale 29. Atlanta 42. Albany/Schenectady/Troy 43. Charlotte 46. Las Vegas 47. Greenville/Spartanburg/Asheville
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BED BUG ADDENDUM

Addendum Date: _____

_____, ["Management"], as Owner of _____ as Agent for the Owner of _____

_____, ["Community Name"], enters into this Bed Bug Addendum to the Apartment Rental Contract with _____

_____, ["Resident"], pertaining to Apt. No. _____ located at _____ [Address]. This addendum is part of the Apartment Rental Contract dated _____ [Date of Lease].

1. This Addendum is part of the Apartment Rental Contract and deals with the difficulties and associated problems when bed bugs (*Cimex lectularius*) are found in or infesting an apartment or personal property located in the apartment.
2. Both Management and Resident agree that inspected the apartment prior to move-in and did not observe any evidence of bed bugs or a bed bug infestation.
3. Management represents and agrees that it is not aware of an infestation or presence of bed bugs in the apartment or building in which the apartment is located; or, if there was a prior infestation or presence in the apartment or building, it has been professionally treated by a licensed pest control vendor and is believed to be free of further infestation.
4. Resident represents and agrees that he or she has read the information about bed bugs provided by Management and is not aware of an infestation or presence of the pest in Resident's current or previous apartments, home, or occupancy. Resident represents and agrees that he or she is not aware of any bed bug infestation or presence in any of his or her furniture, clothing, or personal property and possessions and has fully disclosed any previous bed bug infestation which Resident may have experienced. Resident represents and agrees that if he or she has not been subjected to or living in an environment, apartment, or home in which there was a bed bug infestation or presence. Resident represents that if he or she was previously living in an apartment or home that had a bed bug infestation that he or she has had all furniture, clothing, and personal property or belongings professionally and properly cleaned and treated by a licensed professional pest control service and believes that such items are believed to be free of further infestation. In the event Resident discloses a previous experience of bed bug infestation, Management shall have the right to see documentation of the treatment and inspect Resident's personal property and possessions to confirm the absence of bed bugs.
5. Resident acknowledges that used or discarded furniture, clothing, and personal property obtained from other owners or found abandoned and discarded can contain bed bugs which will infest apartment, be extremely difficult to control, and the costs associated with treating bed bugs and lost revenues associated with it are expensive. Resident represents and agrees that he or

What Is a Bed Bug?



- aka, "Chinches", "Red Coats", "Chinch Bugs"
- Small ($\frac{3}{16}$ " long) broadly oval, flat, reddish-brown color
- Piercing-sucking mouthparts



Bed Bugs & Their Relatives

- Bed bug - *Cimex lectularius* ←
- Bat bug - *Cimex adjunctus*
- Chimney Swift bug – *Cimexopsis nyalis*
- 16 *Cimex* species in the U.S.
 - Bats – 9 species
 - Birds – 10 species
 - Humans – 3 species



A Bed Bug's Life

- Female lays 200-500 eggs in batches in cracks and crevices. Eggs hatch in about 10 days
- Nymphs (immatures) take about 35-48 days to become adults



A Bed Bug's Life

- Require a blood meal (lasts about 5-10 minutes) in order to molt and for females to lay eggs
- **Can survive 80-140 days without a blood meal**
- **Adults often live 6-7 months.**
- Critical temperatures:
 - Low: 55°F
 - High: 112°F



Bed Bugs & Disease

- Literature: plague, yellow fever, TB, relapsing fever, leprosy, leishmaniasis, smallpox, Chagas' disease - **Lack of definitive evidence**
- **HIV** – detected up to 8 days after ingestion of highly concentrated virus (experimental meals)
 - No replication or virus found in feces
 - No mechanical transmission

Bed Bugs & Disease

Hepatitis B

- Hepatitis B DNA detected in bed bugs 6 weeks after feeding on infected blood.
- **No replication**
- BB Eradication had no impact on Hepatitis B rates



Bed Don't

- Discriminate based on socio-economic status, but lack of money often means lack of control (ability and effort)
- Indicate unsanitary conditions (but unsanitary conditions complicate spread & control)
- Fly, jump, or burrow into the skin



Bed Bug Do.....

CRAWL

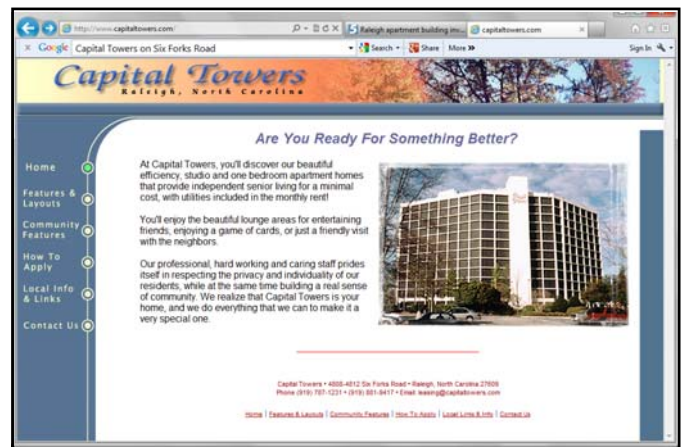
- 20 ft. in search of a "meal"
- Use conduit/utility pipes to move between areas

HIDE

- in cracks and crevices, often (but not always) in groups.

HITCH-HIKE

- Bags/backpacks/luggage
- Furniture



Bed Bugs in America: A Pest Management Industry Survey (2005)

Jeffrey Hahn, University of Minnesota
 Laurel Hansen, Spokane Falls CC
 Craig Hollingsworth, University of Mass.
 Brad Kard, Oklahoma State University
 Michael Waldvogel, North Carolina State University
 Jody Gangloff-Kaufmann, Cornell University

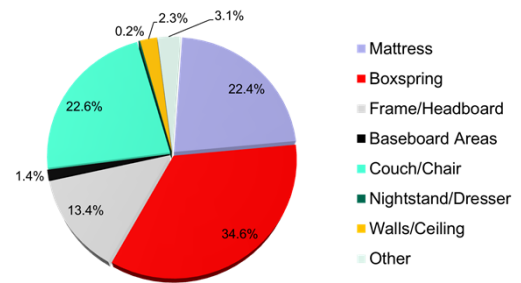
“What is the oddest location where bed bugs have been found?”

- Make-up drawer
- Kitchen, bathroom
- In the shower head
- In a car
- Radios and stereo speakers
- Around a fireplace
- Telephone
- Children’s toys
- On the person
- In luggage
- Sofa or couch
- On a pool table
- In a microwave oven
- In an old man’s ears



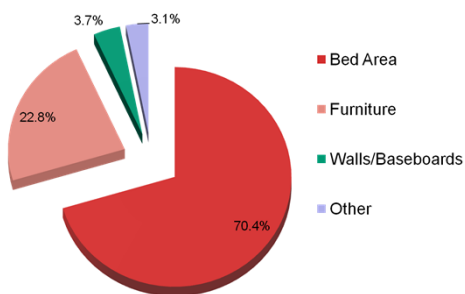
Bed Bugs in America: A Pest Management Industry Survey, 2005

Bed Bug Hiding Spots



Source: Potter et al. – University of Kentucky

Bed Bug Hiding Spots



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Signs of bed bugs

- Blood spots
- Shed skins
- Dead bed bugs
- Live bed bugs
- Eggs
- Sweet odor (heavy pop.)







Medical Facilities



Evidence Lockers

- You need to adjust your procedures for handling potentially infested items (including people)
- Can anything be done with infested items?



Got Bed Bugs?



What's Your Game Plan?



- "Prevention"
- Confirmation
- Inspection
- Containment
- Elimination

Bed Bugs Can be confused with...

- Ticks
- Cockroach nymphs
- Bat bugs
- Carpet beetles
- Other kinds of bug bites



Carpet Beetle



Cockroach Nymph



Tick



Bat Bug

Bed Bug – Identification



Bites are not reliable as the sole means of determining a problem



Body Lice & Scabies

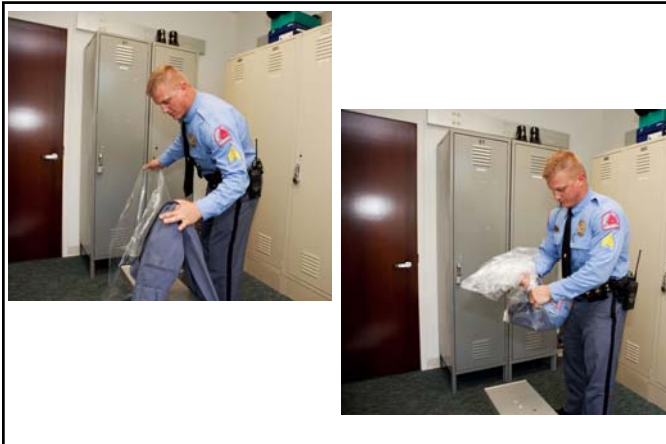


Handling Potentially Infested Items



- Plastic sheeting on seats?



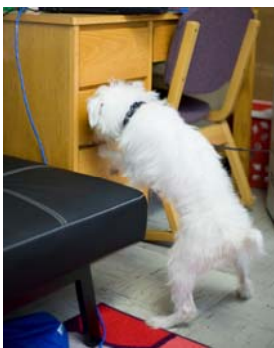


Heat Treatment

- Wash (or dry-clean) items (if dry cleaner accepts them)
- Place in dryer on high setting for 30 minutes (don't pack dryer full of items)



Detecting Bed Bugs



Homemade Detection Devices Carbon Dioxide Sources

- Dry ice - Potential hazard around children and pets
- Need a point source (not flood the area with CO₂)



Homemade Detection Devices Carbon Dioxide Sources

- Sugar-Yeast Trap
 - 5 tbs of sugar
 - 1 tbs of yeast
 - 24 oz of water



- Place in a suitable open container and on an inverted pet food bowl





PackTite™ Heating Unit

- Portable and easily set up
- Useful for items that can't be put into a clothes dryer (shoes, equipment belts and other gear)
- Not suitable for some items (ammunition, pepper spray or other compressed gas cartridges/containers)



Bed Bug Treatment

- Use "Sterifab" or similar product or steam on automobile seats suspected of having bed bugs.
- Kills on direct contact only



Nuvan Strips

- DDVP ("vapona")
- Use only in confined areas (closets) and in rooms that occupied less than 4 hours daily
- Use with storage containers
- Question again about affect on evidence

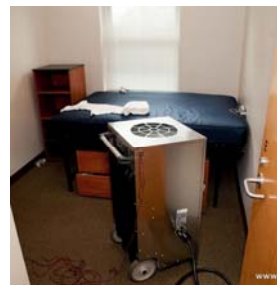


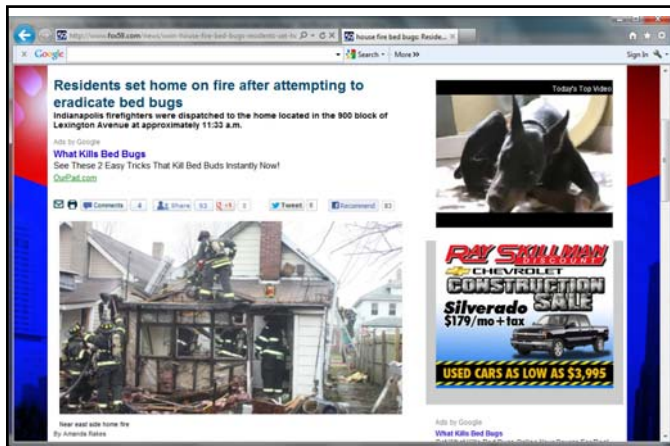
Heat Treatment



- Not simply a matter of raising the room temperature with HVAC
- Core temperature must reach 113°F
- Would it affect evidence in storage (e.g., biological samples)?

Heat Treatment





Prevent The Spread of Bed Bugs

- Disposal of mattresses and box springs is an option.
- Remove from residence carefully
 - Wrap in plastic sheeting
 - Render useless or make sure they're removed from property immediately



Travel Advice

- Keep luggage off beds & floor
- Don't use hotel dressers to store clothing



Travel Advice

- **Look** for signs of bed bugs BEFORE you unpack and settle in



Be Careful With Used Furniture



When in doubt:

BAG IT & CONTAIN IT

If you think you're bringing "guests" home:

- Isolate "infested" items
- Wash and dry (if possible)

