Sleep Tight... Don't Let the Bed Bugs Bite...

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Bed bugs have plagued humans for thousands of years!

Bed bugs are an emerging pest throughout the U.S.!
--Early 20th Century—
Bed Bugs Were Everywhere

- Rated among the top 3 household pests
- In some cities, 1/3 of all residences were infested
- “Public enemy number one” in lower income areas
- Commonly infested sites included: movie theatres, trains, buses, streetcars, moving vans, cloak rooms in schools and offices, ...

1940s – 1950s
“Live Better Through Chemistry”

DDT and other synthetic insecticides with long-lasting residual were very effective in controlling bed bugs.
Late 1940s – early 1950s
Bed bugs developed resistance to DDT

but... Effective bed bug control was provided by alternative insecticides with long-lasting residual: lindane (an organochlorine), malathion (an organophosphate)

At this writing the National Pest Control Association has received several reports of bedbugs resistant to DDT. Lindane oil-base sprays at 0.5 percent lindane by weight are being used for the control of such resistant bedbugs. Should the bedbugs eventually become resistant to all the chlorinated insecticides then fumigation will return to its former prominence as a means of eradicating bedbugs. Of course there is the likelihood of the development of a safe insecticide to which the bedbugs are not resistant.

Worldwide Resurgence of Bed Bugs Since Late 1990s

Aumenta la presencia de chinches en Barcelona
Las empresas de control de plagas descartan su desaparición. 
Han incrementado las actuaciones contra estos insectos en los próximos meses.

THE TIMES
THE SUNDAY TIMES

From The Times
April 14, 2004

Bedbugs invade London’s

In the past 10 years, bedbugs have been found in hotels, hospitals, and homes. The number of people with bedbug infestations has increased by about 20 percent each year.

SPAIN

CANDA

ENGLAND

AUSTRALIA

Bed bugs eat into tourism

The recent "bed bug tourism" trend is the latest in a series of crises for Australia's tourism industry. The country has been struggling to recover from a series of natural disasters, including floods, fires, and earthquakes.

Canadians and Australians are encouraged to travel to the United States, where they can enjoy a safe and comfortable stay.

Bedbugs are a common problem in hotels and homes, and travelers should be aware of the risks associated with bedbug infestations.

The bedbug population has been increasing in recent years, and travelers should take steps to prevent the spread of bedbugs, such as checking hotel rooms for signs of infestation and washing their clothing and luggage after returning from a trip.

The EPA has approved the use of bedbug heat treatments, which involves heating rooms to a temperature high enough to kill bedbugs and their eggs. This method is effective in eliminating bedbugs and can be used in combination with other control methods.
Some Reasons For the Resurgence of Bed Bugs

- International travel
- Housing with high tenant turnover
- Pesticide use has changed
  - Pesticide bans
  - Baits to control ants & cockroaches
- Insecticide resistance

Genes involved in insecticide detoxification were expressed at very high levels in field-collected bed bugs from Ohio

**SW Ohio Bed Bug Complaints***

* Probably represents a small fraction of overall bed bug infestations in area.

1 Verified to be bed bugs. 2 Data courtesy of Greg Kesterman. 3 Data courtesy of Camille Jones.

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**Bed Bug Complaints**

1 Number of complaints (data courtesy of Franklin Co. Public Health and Columbus Code Enforcement).
2 An underestimate of overall bed bug infestations in area.
Bed Bugs
Hemiptera: Cimicidae
(Cimex lectularius)

- External parasites
- Feed only on blood
- Typically feed at night
- Prefer to feed on humans

Alternate hosts
- rodents
- bats
- birds
- pets (cats, dogs, etc.)
Cimicidae

- Other species of Cimicids prefer to feed on
  - Bats
  - Birds
    - Poultry
    - Pigeons
    - Swallows

Commonalities
- All live communally (at least part of the year)
- All warm blooded
- All have a home (recurrent roosting site)

General Characteristics of Nymphs and Adults

- Beak-like mouthparts
- Oval shaped body
- Adults: ~1/4 to 3/8 inch long
- Body flattened (unfed)
- Body swollen (recently fed)
- Deposit black fecal spots
Life History Characteristics Show That Bed Bug Numbers Can Quickly Skyrocket …

- **Eggs**
  - Glued in place
  - 1 – 12 eggs / day / female
  - A single female can produce ~150 eggs
  - Hatch in 6 – 17 days

- **Nymphs (immature bugs)**
  - Five nymphal stages
  - Require a blood meal in order to grow

- **Adults (males & females)**
  - Require repeated blood meals
  - Can live 12 – 18 months
  - Can survive months without food
Injury from bed bugs

• Initial bite is painless
• ~70% of people have an allergic reaction to the injected saliva
  - Swelling
  - Welts
  - Severe itching (hrs to days)
• Scratching of bites increases inflammation, can lead to secondary bacterial infections
• No conclusive evidence of disease transmission
• Sleeplessness
• Agitation
• Anxiety
• …

Bed bugs in hiding
Recognize the telltale signs of bed bugs!

- Black fecal spots
- Shed skins & eggshells
- Live bed bugs (nymphs & adults)
- Blood stains from crushed bugs
- Welts on exposed skin

Bed bugs, not just a pest in the bedroom

- Bed bugs can be found in
  - Homes
  - Hotels
  - Assisted living facilities
  - Office buildings
  - Retail stores
  - Movie theaters
  - Libraries
  - Schools
  - Public transportation
  - Hospitals
Don’t bring infested items home!

- Inspect secondhand beds, bedding, furniture, & clothing
- Inspect clothing and luggage of travelers

Disinfect Items by

★★★ Laundering & Drying★★★
(kills all bed bug life stages)

Launder clothing
- Wash in hot water ($\geq 120^\circ F$)
- Use drier on hot setting ($\geq 30$ mins.)
- Dry clean items
Did you check for signs of bed bugs in your hotel/motel room when you last traveled?

**BED BUG PREVENTION FOR TRAVELERS**

Make it STANDARD PRACTICE to check for bed bugs in hotel/motel rooms!

- Pull back the bedding and look for black fecal spots on mattress & box springs (especially seams)
- Carefully examine the underside of the bed skirt
- Look for bb signs along bed frame (especially head board)
- Open nightstand drawers and look for bb signs along inner and outer edges
- Look for bb signs along baseboards
BED BUG PREVENTION FOR TRAVELERS

Reduce the chances of getting bed bugs from hotel/motel rooms!

- Keep clothes in your zipped suitcase
  - Don’t keep clothes in hotel chest-of-drawers
  - OK to hang clothes in closet

- Keep your suitcase on the luggage rack
  (after first inspecting it for bb signs)
  - Don’t store your suitcase on the bed, floor, or upholstered furniture

In multi-family housing, bed bugs readily spread to units that are adjacent, below, and above the infested unit.
Contact a professional pest control company to treat for bed bugs

- Make sure properly licensed to apply restricted use pesticides
- ODA web site lists licensed pest mgt. companies and applicators

How to Select A Pest Management Company

- Check for satisfied customer references that relate to bed bug control
- Check with the local Better Business Bureau (http://www.bbb.org.us/Find-Business-Reviews/)
- Recognize that bed bug control typically takes several treatments
  - time-intensive and labor-intensive
  - team-approach is useful
  - useful to treat any active bug harborage as soon as it is located, then continue in-depth inspection

OH Dept. of Agriculture Pesticide Regulation Section
614-728-6987; 800-282-1955
http://www.agri.ohio.gov
Insecticides

- Residual insecticides
- Low impact products (diatomaceous earth, insect growth regulators, etc.)
- Several different insecticides and formulations often are used to treat a unit
- Spot treat all harborage sites
- Follow-up treatments typically necessary
- Don’t keep using the same insecticide (rotate insecticides)

What can I do to help solve a bed bug infestation?

- Remove clutter!
- Launder and dry items
- Vacuum thoroughly
- Clean and disinfect items
- Encase mattress and box springs
What *shouldn’t* I do for a bed bug problem?

Typically, you shouldn’t dispose of furniture.

- Bed bugs will fall off the furniture as you are moving it, hence spreading the problem.
- Infested furniture usually can be treated.
- Bed bugs can quickly infest replacement furniture.
- Items placed on the curb often are picked up and reused, thereby spreading bed bugs to other households.

DO NOT apply insecticides to
- Human skin
- Clothing
- Bed linens
- Bedding

Products containing DEET have not been shown to repel bed bugs.
DO NOT use “bug bombs” against bed bugs!

- “Bug Bombs” ("foggers") don’t work
- Few bugs will be killed!
- “Bug Bombs” cause bed bugs to scatter!!!

“Bug Bombs” will worsen the bed bug problem!!

BUYER BEWARE:
Boric acid products don’t work!

- Boric acid does not kill bed bugs.
- Boric acid is a stomach poison that must be eaten by an insect.

Remember that bed bugs feed only on blood.
BUYER BEWARE:
Grocery store insect sprays won’t eliminate a bed bug infestation!

- Must be sprayed directly on the bed bugs (‘kills on contact’)
- Most bugs are hiding and WILL NOT be killed
- Little or no residual activity (the chemical breaks down quickly)

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For More Information
http://ohioline.osu.edu

OSU Extension Fact Sheets:
- HYG-2105 (Bed bugs)
- HYG-2105A (Bat bugs)
http://centralohiobedbugs.org

Thank You!

Sleep tight, and don’t let the … … well, you know the rest