Bed Bugs

- Class Insecta, Order Hemiptera: True Bugs
  (Bed bugs are related to aphids which feed on plant fluids, while bed bugs feed on blood)

- Family Cimicidae: blood feeding insects

- The common bedbug (Cimex lectularius) is the species best adapted to human environments and is found in temperate climates throughout the world.

- Probably evolved as cave-dwelling ectoparasites first feeding on bats, then moving down to tastier hosts.
What Do Bed Bugs Look Like?

- Size: Adults 5 mm long or ¼ to 3/8”
  - Nymphs/instars 1.5 – 3 mm.
- Shape: oval, flattened sesame seed size adults apple seed size.
- Color: light beige - reddish brown - red.

The Proud Parents

In the adult stage the female is rounded while the male abdomen tapers to a “point”.

BED BUGS DO NOT FLY
BED BUGS DO NOT JUMP

Bed Bug Biology

- Females can lay between 200 - 500 eggs at a rate of 5-7 per week in their lifetime.
- Young emerge in 7-12 days (room temperature)
- Bed bugs go through 5 stages before becoming adults.
- A blood meal is required for each molt but nymphs may feed once per day.
- Bed bugs can live for approximately one year.
Bed Bug Ecology

- Nocturnal and secretive behavior
- Feed only on blood of warm-blooded animals
- Usually feed at night with a peak prior to dawn, but they will feed opportunistically
- They tend to congregate

Public Health Concerns
Bed bugs are ectoparasites of humans

While bed bugs have been identified as a pest of public health importance, to date there is no evidence of disease vectoring by Cimex lectularius per CDC and WHO.

BITES

• Bed bugs pierce the skin and inject saliva which contains an anticoagulant and anesthetic.

• The area may become red and itchy due to an allergic reaction to Cimex saliva.

• The bite itself is painless, but reactions differ with some people showing no signs while others may have serious reactions.

• Even dermatologist can not tell for sure which insect may have caused a particular bite
OTHER SUSPECTS

- FLEAS
- TICKS
- LICE (HEAD, BODY & PUBIC)
- MOSQUITOES
- MITES (BIRD/RODENT)
- SCABIES

NON BITING
- COLLEMBOLA (SPRINGTAILS)
- PSOCIDS
- SPIDER BEETLE

Allergies or Skin irritation
Drug Reactions  Legal/Illegal

Delusory Parasitosis
Mental health issue when you imagine insects are crawling or feeding on you.

How are people reacting
FEAR  PANIC  STRESS

Methods of Bed Bug Introduction

CAPTIVES
In this instance a bed bug is introduced from another location but not by its own locomotion.
• Hitchhiking
• Furniture
• Mattress
• Guests
• Employees
• Clients

VOLUNTEERS
In this case a bed bug migrates through its own locomotion
• From one room to another via pipes, telephone, cable wires, cracks, etc.
• Travels down a hallway after dropping off an unwrapped item being discarded.
Bed Bug Terminology

TRANSFER SITE

INTRODUCTION

INFESTATION

TRANSFER SITE

★ TRANSFER SITE is a term sometimes used to denote a spot where a bed bug may or has come off an item or person and may be picked up by another.

★ An example of a transfer site might be a school, coat check room or office.

★ Proper vacuuming and other best practices can greatly reduce the odds of transfer.

INTRODUCTION

★ The term INTRODUCTION is used to describe a single or limited number of bed bugs which may have been carried into a location but have not established themselves.

★ Inspection does not find more than a few bed bugs, no eggs or nymphs.
INFESTATION

INFESTATION is the term used to describe an established site where bed bugs are actively feeding and breeding.

Inspection finds fecal spots, eggs and multiple life stages of bed bugs.

Bed Bug Detection

Bed bugs are Cryptic and Nocturnal

WHAT ARE WE LOOKING FOR?

- Bed bugs DEAD or ALIVE*
- Bed bug eggs
- Cast exoskeletons
- Blood spots / fecal stains
THE SEARCH

Evidence of Bed Bugs

- Number one spot in hotels: HEADBOARD
- Number one spot in homes: BOX SPRING
**BED BUG MONITORS**

Products are shown for reference purposes, but no endorsement is intended or implied.

**DRY ICE**
TEMPERATURE -109.3 F

**CANINE DETECTION**

**DOGS:** Although a good detection tool dogs are not beyond error.

**Bed Bug Control**
BED BUG CHAMBER OF DEATH

HEAT 120°F FOR AT LEAST 30 MINUTES

LAUNDERING

Any item which can be placed in the dryer for 30 minutes on high, over 120°F, will come out live bed bug free.

Washing is a little trickier as the core temperature of items being washed must reach 140°F and many washers may not reach that temperature.

It is important that you include the laundry bag in your treatment or if plastic bags are used, that you use new ones for the return trip home.

Be creative but not careless about what can go in the dryer. It is great for sneakers, stuffed animals, coats, backpacks etc. Always follow manufacturer’s instructions.

NON CHEMICAL CONTROL HOT

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Adults</th>
<th>Eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>110°F</td>
<td>90 Minutes</td>
<td>7 Hours</td>
</tr>
<tr>
<td>118°F</td>
<td>20 Minutes</td>
<td>90 Minutes</td>
</tr>
<tr>
<td>122°F</td>
<td>DEAD</td>
<td>10 Minutes</td>
</tr>
</tbody>
</table>

DRY VAPOR STEAMERS are a good tool with steam above 200°F.

HEAT TREATMENTS
**Do It Yourself Heat**

- Irons can be used for sheets, clothes, pillows, mattresses etc. Also good for ties, gloves, scarves and many other items.
- Blow dryers may blow too much and spread bed bugs around if not careful. But they still are a good tool for some items like suitcases, shoes etc.
- Heat guns tend to be too hot as in FIRE!!!

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**VACUUM**

- A vacuum cleaner can be helpful when dealing with numerous accessible bed bugs.
- Vacuuming crashes the population and leaves a clear field for other treatments.
- A crevice tool is recommended.
- Be sure to dispose of bag or empty canister after each use, seal contents and discard.
- Vacuuming is also an important prevention tool.

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**ENCASEMENTS**

Mattress encasements are zippered enclosures that cover the entire mattress. Encasing both mattress and box spring eliminates the need to discard bedding and provides a smooth simple outer surface that can be inspected, vacuumed and cleaned easily. It also reduces the number of items being discarded which others may bring back in.
Be sure any items being discarded are properly wrapped and removed from building ASAP.

CHEMICAL CONTROL

Chemical control utilizes strategic placement of long term dusts, and the tactical application of limited aerosol and liquid insecticides. In some cases fumigation may be an option especially if moving.

Best practices include making more than one service, utilizing different types of treatment and tools as well as the inspection of surrounding units.

Do not BOMB for bed bugs

Do not use total release bombs to control a bed bug infestation. While it may kill a few exposed bed bugs it may send the rest deeper into voids and sheltered areas and possibly into adjacent units.

DO NOT USE FLAMABLE LIQUIDS LIKE KEROSENE.

ALCOHOL CAN ALSO BE HAZARDOUS.
LATEST BED BUG INFO:

- A single bed bug can cause several bites.
- Most bed bug activity is found around fecal focal points which are usually located around sleeping and lounging areas.
- There is no preference as to who bed bugs bite.
- Perhaps over 50% of those bitten do not react.
- Elderly tend to have less reaction to bites.
- “Clutter will undermine any treatment”

Bed bug Social Interaction

- While inspection of surrounding units is recommended sometimes it is who you know that can bring bed bugs to your home.
- This has been observed as a factor in senior residences and as well as in multiple family unit buildings.
- Case workers, home health aids, domestics and a variety of service personnel can also be involved or may be at risk.
- Bed bugs are now reported in all types of settings such as work places, entertainment locations, transportation, schools and many other locations.

Don’t bring the little buggers home.
In public places, reduce your bed bug footprint.

BED BUG FACTS
DO NOT JUMP
DO NOT FLY
PRIMARILY ACTIVE AT NIGHT
THEY STAY IN HARBORAGE LOCATIONS
DO NOT ROAM ABOUT

HIGH RISK AREAS
BEDS
FUTONS
CLUTTERED AREAS
UPHOLSTERED ITEMS

CHANGE BEHAVIOR
DO NOT LAY COATS OR JACKETS IN HIGH RISK AREAS (clothing bag)
IN AN INFESTED APARTMENT USE A CHAIR
KEEP BAGS CLOSED OR BAGGED
THINK ABOUT USING ZIPLOC BAGS
A good resource for vetted bed bug information is

NYC.GOV/BEDBUGS

BED BUG CULTURAL ENTOMOLOGY

“Sleep tight don’t let the bed bugs bite”