

Bed Bug History

- While bed bugs have been around for centuries, the number of infestations has been very low since World War II.
- Many references can be found that indicate bed bugs have been a human pest during our entire existence.

Bed Bug History

- The common, “universal” pesticide DDT was banned in 1972, with replacement compounds being less potent and more pest-specific.
- Over the past several years, bed bug infestations have been on the rise in America and other developed nations.

The Return of Bed Bugs

- It is generally believed that bed bug infestations have increased for two reasons:
 1. Increased international travel has transported bed bugs all over the country and the world.
 2. Today's pesticides are not directly designed for eradication of bed bug populations. Bed bugs also may have built up some resistance to commonly applied compounds.

Bed Bug Biology

- Scientific name: ***Cimex lectularius***
- Bed bugs are flat, small, oval-shaped insects that do not have wings.
- They feed on the blood of sleeping people and, in some cases, animals or pets.
- The home of any person can be infested by bed bugs, regardless of sex, race or economic status.

Adult Bed Bug



Bed Bug Biology

- Bed bugs are a persistent pest due in part to the fact that they can live up to 6-10 months without a blood meal.
- Bed bugs often hide in mattresses, box springs, bed frames, and even behind peeling wallpaper.
- These pests are attracted to the carbon dioxide in human exhalation, and use this sense to locate hosts.

Bed Bug Biology

- Bed bugs bite their hosts using specially-designed mouth parts that inject an anesthetic (to numb the skin) and anticoagulant (to prevent blood clotting) before feeding on a blood meal.
- Bed bug bites are most often located on the face, neck, arms, and hands, but can be found anywhere on the body.

Bed Bug Biology

- Bed bug bites can be random in location or can be found in a straight line.
- The bites themselves are very similar to those of a mosquito bite. They may be slightly swollen and red, and may itch or irritate the host in a similar fashion.

Bed Bug Bites



Bed Bug Biology

- Bed bug bites do not transmit disease but their bites are a nuisance and can cause significant itchiness, secondary infections, anxiety and sleeplessness.

Bed Bug Biology

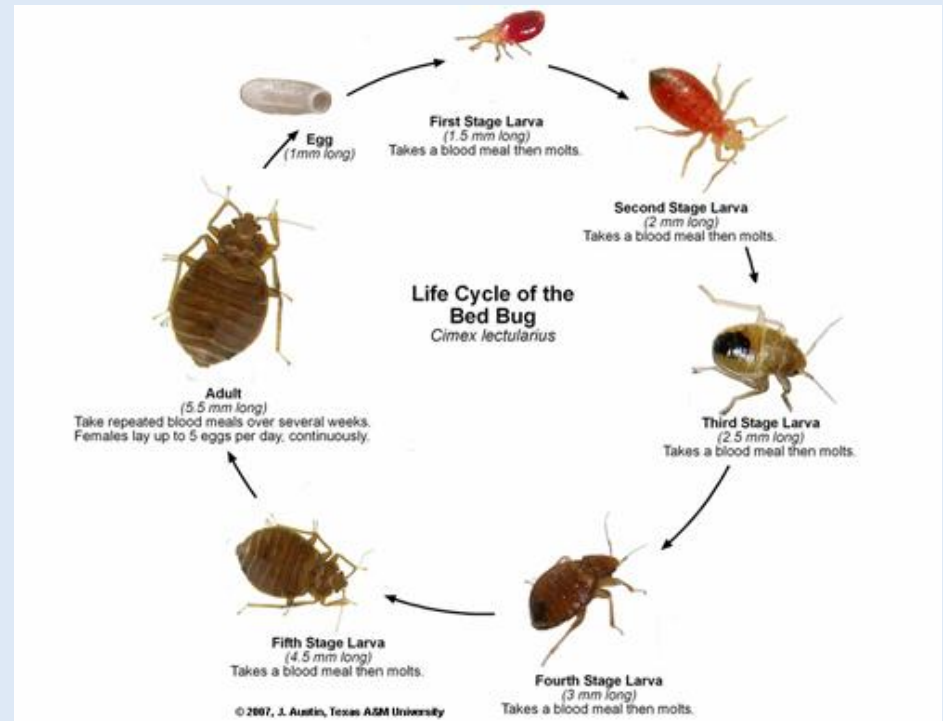
- Depending on temperature and the presence of a host for feeding, a female bed bug may lay 200 or more eggs in her lifespan.
- These factors indicate a strong possibility that bed bugs can re-infest an area where bed bugs have been previously eliminated.

Bed Bug Biology

- Bed bug eggs hatch in eight to twelve days.
- Bed bugs go through five youth stages (called nymphs), feeding and shedding their exoskeleton with each stage. Nymphs need a blood meal to grow into their next stage of life, just as females need a blood meal in order to lay eggs.

How Big are Bed Bugs?

- Bed bugs are generally reddish-brown in color, and are only approximately one-quarter of an inch when fully grown.



Bed Bug Biology

- Bed bugs excrete rusty-colored blood spots that contain blood material. This excrement is very small and is likely to be found in mattress seams or nearby furniture in an infested area.
- Bed bugs are sometimes crushed as a host moves in bed. This may cause blood-colored spots on bed sheets or blankets.

According to the Centers of Disease Control and Prevention (CDC), bed bugs are not known to transmit disease. Although blood-borne pathogens are not known to be transmitted, other health problems may occur.

How is an Infestation Recognized?

- While bed bugs are very small, they leave behind excrement and molted exoskeletons, usually in mattress seams.
- Heavy infestations may have a sweet, musty odor.
- Blood smears or spots on sheets and bedding may indicate a recently fed and crushed bed bug.

How is an Infestation Recognized?

- Bites on the face, neck, arms and hands that look and feel like mosquito bites. Bites that are in a straight line are a strong indicator of bed bug bites.
- Picking up cluttered areas that serve as a safe area for bed bugs may reveal evidence of a bed bug problem in the form of droppings, exoskeletons, or the bugs themselves.

Bed Bug Infestation



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*****Do Not Try to Identify a Bed Bug Infestation, this should be performed by a New Jersey Department of Environmental Protection (NJDEP) licensed professional*****

How To Eliminate Bed Bugs

- Contact a NJDEP licensed professional to identify and treat infestation
- Tenant/Landlord have shared responsibilities
- Temperature treatment
- Chemical treatment
- **Avoid use of “Do-It-Yourself” techniques and “off-the-shelf” products**

Integrated Pest Management (IPM)

- IPM is a comprehensive program that is designed to prevent infestation, as well as eradicate an infestation of any pest, including bed bugs.
- A successful IPM program contains elements of organization and sanitation to prevent infestation, as well as methods to treat affected areas.

IPM

- IPM is an approach to a problem, rather than a reactionary answer to a present issue.
- Businesses in nearly all sectors of the local economy benefit from the development of a strong IPM program. Public schools are required by law to have an established IPM.
- Private citizens can also develop an IPM strategy for their home with an emphasis on prevention of a bed bug infestation.

IPM

- As it relates to bed bugs, a sound IPM program may include the removal of clutter, disposal of affected surfaces, caulking or otherwise sealing of gaps in all walls, steam treatments, heat treatments of infested areas, and also responsible application of chemical treatments by New Jersey Department of Environmental Protection (NJDEP) licensed pest control professionals.

Temperature Treatment

- While bed bugs appear to have built up resistance to many chemical applications, they remain susceptible to extreme temperatures. New methods of treating areas known to be infested with bed bugs are currently developing and are shown to be very effective with little risk of side effects on people and their living quarters.

Temperature Treatments

- Temperatures above 140 degrees Fahrenheit appear to be fatal to bed bugs after exposure for at least 20 minutes. Some methods of treatment use 120 degrees Fahrenheit for a longer time period.
- The fatality rate of bed bugs in the presence of high heat is a factor of temperature and exposure time. This method requires only that temperature-sensitive items be removed from the bedroom or treatment area.

Temperature Treatments

- Laundering clothes in a hot water cycle and drying them under normal to high heat conditions should kill any bed bugs that may be in clothes or other fabrics.
- Cold temperatures are capable of killing bed bugs but require more exposure time at achievable temperatures.

Chemical Treatments

- Chemical treatment may be a part of any IPM program for commercial as well as residential property. However, a New Jersey Department of Environmental Protection (NJDEP) licensed pest control professional should be the one responsible for application.

Chemical Treatments

- Chemical treatments have varying ranges of success when applied to bed bug infestations, and efficacy often depends on the surface that is being treated and the level of infestation.

Post-Treatment Care

- Most bed bug infestations require multiple treatments and can be very costly. For these reasons, prevention of re-infestation is a critically important responsibility.

Post-Treatment Care

- While bed bugs can infest the most pristine of homes and structures, infestation is greatly enabled by cluttered, unsanitary conditions. Frequent vacuuming, if done properly, can help prevent infestation.
- When an area contains little clutter and items for bed bugs to hide in, it is less likely to enable an infestation.

Post-Treatment Care

- IPM systems can be further developed to ensure inhabitants do not become re-infested. Additional measures that may need to be taken might include:
 - rearranging furniture to separate a headboard from nearby walls
 - ensuring that no bed skirts or covers touch the floor
 - general cleaning procedures are enhanced.

Vacuuming

- Vacuuming alone is not enough to prevent bed bug infestation. However, it represents one more way to lower the likelihood of bed bug infestation.
- Vacuum bags should be placed immediately in trash bags and disposed of directly into a dumpster or outdoor trash can.

Vacuuming

- Bagless vacuums should be emptied into trash bags and wiped clean. The trash bags should again be disposed of in a dumpster or outdoor trash can.