

VOLUME 12

PEST MANAGEMENT BULLETIN

BED BUGS

INSPECT | PRESCRIBE | COMMUNICATE | TREAT | FOLLOW-UP

01



Common Bed Bug (*Cimex lectularius*)

Bed bugs were nearly eradicated in North America in the 1950's with the widespread use of DDT. They remained common in many parts of the world however, and recently have made a rebound in the US. The resurgence of bed bugs has become a common pest in major metropolitan areas, particularly in hotels and residences, and are quickly spreading across the country. Many people attribute this resurgence to two things: increased international travel and a shift in pest management practices. Bed bugs are great travelers. They are quick to congregate in suitcases which are set down for a few days near infested beds, and due to their small size, usually go undetected. When the suitcase arrives home or at the next hotel, they can quickly infest their new home. The shift in pest management practices moving away from routine indoor residual sprays for pest maintenance, which was the norm during the DDT era moving toward modern methods of reduced pesticide with emphasis on pest specific baits, left a big opportunity for bed bugs to get reestablished. Since there are no effective baits for bed bugs, and the professional pest industry hasn't routinely inspected and treated for bed bugs for several decades, there was no safeguard in place to stop the reemergence of this pest.

02



Bed bug (left) compared to bat bug (right)
Note the longer hairs on the bat bug.

COMMON BED BUG & TROPICAL BED BUG

The most frequent bed bug encountered in the United States is *Cimex lectularius*, the common bed bug. One other bed bug species occasionally found in the southern United States, is *Cimex hemipterus*, the tropical bed bug. Both of these species are oval, flattened and reddish-brown. Adults range from one-fourth inch to five-eighths inch in length. Nymphs and adults have piercing-sucking mouthparts and are incapable of flight. Small stubby wing remnants can be observed on the prothorax of adults. (photo 01)

BAT BUG & SWALLOW BUG

Occasionally, PMPs observe two other insects that superficially resemble the common bed bug from the same family (Cimicidae); the bat bug (*Cimex adjunctus*) (photo 02) and swallow bug (*Oeciacus vicarius*). Their primary hosts are bats and birds respectively. Problem infestations with these bugs may occur in attics or unused chimneys. Typically, when one host is gone these bugs seek an alternative host. This is when humans are bitten. It is important to differentiate between the common bed bug and other cimicids because control efforts may be targeted at the wrong sites and infestations can continue. Their physical differences are small but diagnostic so using a key for proper identification is recommended.

03



Bed Bug Lifecycle

BED BUG LIFE CYCLE

Bed bug females lay between 200 to 500 eggs during their lifetime in batches of three to four eggs per day. These eggs hatch after 6 to 17 days. Bed bugs nymphs molt 5 to 6 times before becoming adults with a blood meal required between molts. The life cycle can be completed in as little as 4 to 5 weeks, but may require as long as 5 months. Adults may live 4 to 18 months. (photo 03)

04



Bites may develop small white to red, hard welts at the bite site.

Bed bugs feed exclusively at night. They take approximately three to five minutes to engorge on blood. Once feeding is complete, they return to their harborage.

Common bed bugs feed on human blood. Those bitten by a bed bug may develop small, white to red, hard welts at the bite site. These bites may itch intensely. [\(photo 04\)](#)

Bed bugs tend to live in pheromone induced clusters in cracks, crevices and voids similar to German cockroaches. Heavy infestations have an odor that is described as an “obnoxious sweetness”. Adult bed bugs generally travel 20 feet or less from their harborage sites to feed.

In what settings can bed bugs be found? Bed bugs are found in all types of dwellings and transportation vehicles including single family homes, apartments, public housing, hotels and motels, movie theatres, buses and trains, elderly care facilities, hospitals, even airplanes. Each of these settings presents unique challenges to the PMP and every situation should be assessed separately. [\(photo 05\)](#)

Can bed bugs be “starved out” as a method of control? Vacating a bed bug infested room, for a few weeks, as an attempt to starve bed bugs to death will not work. Adult bed bugs can survive more than 10 months without a blood meal. In the absence of a host, bed bugs may actively search out a new host leading to their movement into adjacent areas in the structure. This is particularly relevant in multi-family dwellings or motel/hotel settings.

What is the best way to control bed bugs? Controlling bed bugs is difficult and time consuming. It is strongly recommended that the Prescription Treatment® approach be utilized for bed bug elimination.

05



Bed bugs are found in all types of dwellings.

01 COMMUNICATE

Education and communication play a very important part in any bed bug control program. Educate your customer about bed bugs. Explain what they are, how infestations are established and the control measures used to eliminate them. It is essential that the customer cooperate and assist in the preparation of rooms and furnishings for treatment. Giving your customer a fact sheet about bed bugs which includes common concerns and the customer’s role in bed bug management is often helpful. Review with your customer the steps necessary to manage the bed bug infestation and that it may require several follow up visits to completely eliminate the infestation.

06



You must move and/or disassemble some items while searching for bed bugs.

02 INSPECT

The goals of the inspection are to determine whether bed bugs are present and, if so, where they are hiding. Be thorough. Your primary tool is a flashlight. Bed bugs are cryptic insects, spending most of their time hiding in cracks and crevices near the hosts resting site. You will need a flashlight to find them. You must move and/or disassemble some items while searching, including beds, dressers, night stands, chairs, carpets and rugs. [\(photo 06\)](#) Flushing agents such as PT® 565 Plus XLO® Contact Insecticide can also be useful in flushing them out of cracks and crevices where they may hide. No potential harborage site should go unchecked. Be very thorough. Once bed bugs are found, or determination is made that treatment is required, a treatment strategy should be prescribed.



07



All beds should be stripped down to bare mattresses and box springs.

03 PRESCRIBE

BEGIN WITH PREPARATION

Preparation is a vital part of all bed bug treatments. Preparation impacts how well the treatment can be performed and whether it will be successful. Prescribe exactly what needs to be

done and who is going to do it. Some of the important preparations are:

- All beds should be stripped down to bare mattresses and box springs. (photo 07)
- Bedding, blankets, clothes and clutter should be removed from furniture and floors for cleaning. All dressers and chests should be emptied. (photo 08) Transporting these items in sealed plastic bags reduces the risk of distributing bed bugs to other areas.
- Bedroom floors should be vacuumed thoroughly. Including the area under beds, night stands and other furniture. Brush attachments should be used for vacuuming along baseboards and in cracks, crevices, mattresses, box springs and other furniture. (photo 09)
- All pictures and other wall decorations should be taken down. Draperies should be removed and laundered.
- Discard severely infested mattresses and upholstered furniture if possible.
- Infested electronic devices such as TVs, radios, computers and alarm clocks should be removed from the room in tightly sealed plastic bags. These goods should not be treated with conventional insecticides and should either be discarded or dealt with by someone familiar with cleaning and servicing these devices. Exposing goods to extreme heat or extreme cold may be an effective option to killing all stages of bed bugs; however some temperature sensitive components may be damaged in the process.
- Go to www.wmmg.com/bedbugpreparations for additional preparation ideas that may be appropriate for your customers.

04

TREAT

When performing your treatment, it is best to break down the room into sections. Having a systematic process helps to ensure that no harborages will go untreated.

Wall Voids - Contain the infestation by treating the perimeter wall voids of the room. Tri-Die® Silica & Pyrethrum Dust is an excellent choice for treating voids. Its high repellency, quick kill and long residual make it a great product for containing an infestation to one room. Remove utility switch plates and inject dust into the voids; drill walls to gain access where needed. (photo 10)

Walls - Remove and treat all items mounted on the walls including picture frames and headboards. Perform a Crack & Crevice® treatment to these items using Cy-Kick® CS Control Release Cyfluthrin. If crown molding, chair-rail molding, window or door molding or cable conduit is present on the walls, careful Crack & Crevice treatment should be performed to these items. Also treat the gap beneath baseboard molding around the entire room. It may be necessary to pull the carpet up from the tack-less strip to access this common harbor-age. Cy-Kick CS can be used as a Crack & Crevice or spot treatment for this area. (photo 11)

Beds - Infested mattresses may be treated with quick killing contact products such as PT 565 Plus XLO Contact Insecticide or if a residual product is desired, Microcare® Pressurized Pyrethrum Capsule Suspension can be applied directly



08



All dressers and chests should be emptied.

09



Brush attachments should be used for vacuuming in cracks and crevices.

10



Remove utility switch plates and inject dust into the voids.

11



Treat the gap beneath baseboard molding around the entire room.

12



Remove the batting on the box spring for treatment inside the cavity of the box spring.

13



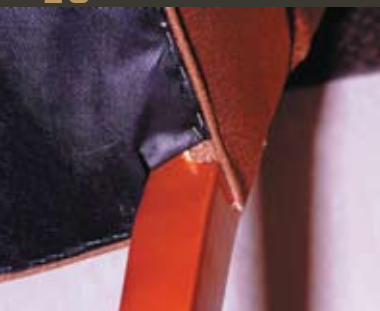
Drawers should be removed for thorough treatment including the underside and runners of the drawers.

14



Upholstered furniture should be treated in similar fashion to the mattress with special attention paid to the tufts, folds, seams and buttons.

15



Flip over upholstered furniture to treat the frame and along the seams of fabric.

to mattresses along seams, tufts and folds. The use of bed bug proof mattress covers is recommended either in lieu of or following treatment to the mattress. The top and sides of the box spring should be treated the same way as the mattress. The bottom side of the box spring often has batting that obstructs easy access for thorough treatment to the inside cavity of the box spring. It is advisable to remove this to allow for a thorough Crack & Crevice or spot treatment to its interior using Cy-Kick CS or inject Tri-Die into voids. (photo 12)

All cracks and crevices in the bed frame should be treated with Cy-Kick CS. This includes the headboard, footboard, bed frame and/or platform. Sometimes the framing of these items are constructed using hollow tubing. These voids should be treated with Tri-Die.

Furniture - Treat all cracks and crevices in and on cabinets, dressers and nightstands with Cy-Kick CS. Drawers should be removed for thorough treatment including the underside and runners of the drawers. Be sure to turn these items upside down to access and treat the undersides, legs and supports. (photo 13)

Upholstered furniture should be treated in similar fashion to the mattress with special attention paid to the tufts, folds, seams and buttons. The cushions should be removed and if appropriate, treated. Use PT 565 XLO on fabric for fast contact kill or Microcare where a residual is desired. (photo 14)

Flip-over upholstered furniture to treat the frame and along the seams of the fabric. If appropriate, remove the batting to gain access to the interior frame for treatment. Cy-Kick CS may be used here for long residual. (photo 15)

05

FOLLOW-UP

Plan a follow up visit within 7 days for re-inspection and if required, retreatment. Eggs will continue to hatch following treatment and some emerging nymphs may find their way into harborages that were left untreated. For extremely heavy infestations, several additional services may be required.

TREATMENT TECHNIQUE	PRIMARY PRODUCT	OTHER PRODUCT CHOICES
Void	Tri-Die®	FastOut™ CS Foam
Directed Contact	565 Plus XLO®	P.I. MotherEarth™ 2% Py
Spot Treatment	Cy-Kick® CS	Microcare® (on mattress and fabric)
Crack & Crevice®	Cy-Kick® CS	Microcare® (on mattress and fabric)

For additional information, contact Whitmire Micro-Gen at 800-777-8570 or visit www.wmmg.com

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