

# Fact Sheet

## Best Management Practices for Controlling Bed Bugs



### An Integrated Pest Management Approach

Pesticides alone should not be used to control bed bugs. The most effective program for eliminating bed bugs is one that utilizes Integrated Pest Management (IPM). IPM is the use of all possible methods in a logical combination that minimizes risk of pesticide exposure, safeguards the environment, and maximizes effectiveness.

Housing units, apartment buildings, hotels, motels and other overnight facilities should have a pest management plan in place, to deal with pests including bed bugs, before they are a problem.

#### IPM methods include:

- **Inspect** infested areas, plus surrounding living spaces
- **Correctly identify the pest**
- **Keep records**, including dates when and locations where pests are found
- **Clean** all items within a bed bug infested living area
- **Reduce clutter** where bed bugs can hide through storage and/or disposal of items
- **Eliminate** bed bug **habitats**
- **Physically remove** bed bugs through cleaning
- **Pesticide** use, careful and according to the label directions or
- **Thermal Pest Eradication** by an experienced heat treatment professional
- **Follow up** inspections and possible treatments
- **Raise awareness through education on prevention of bed bugs**

A building may need several cycles of inspection, cleaning, and pesticide or thermal use before bed bugs are fully eliminated. IPM also includes *prevention through education* of clients, residents, facilities managers, and landlords.

### **Strategies that DO NOT work**

1. **Abandoning** rooms or even a whole facility is not a guarantee that bed bugs will be eradicated. Adult bed bugs can live without a blood meal for over a year and will wander to find a new host when one is unavailable.
2. The use of “**bug bombs**” or total release foggers is not advised. These devices release insecticide in small droplets that land on exposed surfaces and do not penetrate the cracks and crevices where bed bugs hide. This results in increased pesticide exposure to the resident and poor control of these pests. This has been linked to pesticide resistance and suspected repellency to bed bugs, causing them to spread.
3. Simply **discarding beds and bedding** is NOT a sound approach to bed bug management. Bed bugs will spread quickly to walls, molding, ceilings, light fixtures, electronics, TV remote controls, alarm clocks, and spaces within and along floor boards, and the edges of carpets. If items are discarded they should be wrapped in plastic before transport and LABELED as “infested with bed bugs” or made unsalvageable. Often people discard furniture and belongings that are infested with bed bugs. When doing so, it is a good practice to destroy or deface the items to prevent others from unknowingly collecting infested items. Bed bugs are likely being transferred from place to place through infested furniture and discarded objects. Slash mattresses and plush furniture, break box spring frames, and label items with the word “bed bugs” to prevent the spread of bed bugs in your community.

### **Responsibilities of building management and staff:**

- Encourage tenants or guests to report bed bugs (unreported and uncontrolled bed bugs will spread quickly)
- Keep records of bed bug (or other pest) complaints on site in a log book
- Respond quickly to complaints with an inspection and intervention
- Develop an aggressive bed bug control protocol with elimination as the goal
- Raise tenant or guest awareness about bed bugs
- Institute a prevention program, centered on awareness
- Refer tenants and guests to the proper sources of help (medical, mental health, financial, and social services)

### **Responsibilities of residents:**

- Read and follow all guidelines given by building management for reporting signs of bed bugs, and for cleaning and room preparation.
- Cooperate with staff and management in preventing and controlling bed bugs whether your individual living space is infested or not.
- Know the signs of bed bugs and check constantly for signs of them in your living space.
- Encourage other tenants to follow guidelines and cooperate with management.

## **Room Preparation**

Preparation of a room for bed bug treatment is essential to the successful management of these pests. Most pest managers prefer to conduct an inspection before any cleaning or rearranging has occurred. This gives the pest manager a sense of the full extent of the problem and prevents the disturbance and spread of bed bugs before treatment. However, once bed bugs are located and the size of the problem has been estimated, room preparation must be done, usually by the resident. Some residents will need help preparing their living space for inspection and treatment. Suggested room preparation steps include organizing belongings and placing them in bags, laundering all clothing and bedding, moving furniture away from the walls, and emptying furniture of items for better inspection. See the Room Preparation Checklist below for detailed information.

## **Inspection**

A thorough inspection is important to determine how widespread the infestation is and the best way to manage bed bugs. Adult bed bugs can hide in any spaces as thin as a piece of paper. Young bed bugs are even smaller. When conducting an inspection, move slowly and avoid disturbing hiding bugs, so they don't scatter. Keep in mind that in a low infestation, the bed bugs will be concentrated close to sleeping areas. Items away from the sleeping area will be at a low risk of infestation.

## **Reporting and Recordkeeping**

It is critical for managers of multiple-unit housing of any type to encourage residents to report suspected cases of bed bugs to the facility manager. If a bed bug problem is not addressed immediately, it will grow quickly and spread throughout the facility room by room. Eliminating a widespread problem is MUCH more expensive and difficult than a limited one.

Management should keep the following pest information records for all types of pests:

1. Date of the complaint
2. Type of complaint (bites, bug sightings, damage to property)
3. Unit or room number
4. Date of first pest inspection
5. Results of the inspection, what was found, how much was found
6. Dates of pest management activities
7. What pest management strategies were used, such as cleaning, pesticide or thermal treatments, resident education

## **Educating Residents and Staff**

The administrators and facilities managers of homeless shelters, group homes, dormitories, apartment buildings, and other types of housing should seek to better educate residents about bed bugs and how to prevent them. The Village of Saranac Lake's Public Health Officer and Code Enforcement Officer offers fact sheets on bed bugs to educate the public.

## Treatments for Bed Bug Elimination

Controlling bed bugs is a difficult and time and money consuming activity. However, **bed bugs can be eliminated** with a coordinated effort that includes cooperation of the residents and landlord or property management. There is no single tool or activity that, used alone, will eliminate bed bugs, including pesticides. Multiple techniques are always required because bed bugs are small, good at hiding, and reportedly live without feeding for up to a year. In some cases, bed bugs are resistant to the pesticides used against them, meaning that many will survive treatment. **The reduction of household clutter is absolutely necessary for fighting bed bugs.** Despite the challenges, the technology of bed bug control is getting better. Pest managers are becoming more knowledgeable as bed bugs become a greater issue. Treatment of a living area for bed bugs should focus on containment of the infestation. Do everything possible to avoid spreading bed bugs to new locations. A combination of the following steps will be needed for bed bug control:

- Clean and organize the bed, bedroom, other living areas, furniture and belongings, including elimination of clutter
- Physical removal of bed bugs and eggs using a vacuum
- Barriers, such as mattress encasements and sticky barriers (sticky traps may be useful for monitoring but will not help control bed bugs)
- Steam (to kill all life stages)
- Heat or cold treatments (to kill all life stages)
- Eliminate bed bug hiding spots
  - Fix peeling wallpaper and paint
  - Caulk or seal cracks and crevices around the room and on furniture
  - Seal floors or the spaces between floor boards or tiles
  - Make other repairs to the living area to reduce hiding spots
- Chemical applications
  - Low risk pesticides
  - Professional use pesticides
  - Professional fumigation
- Prevention of reinfestation

**It is important to consider that a bed bug infestation in a living area (bedroom, apartment, dormitory room, shelter room or unit) might spread to adjacent units or those below, above or to the sides. This is especially true if the population is high or if pesticides are used in the original unit. Adjacent units should be inspected and if bed bugs are found or residents notice bites, they should be treated as if infested.**

## Housekeeping Procedures

Thorough cleaning, in the form of vacuuming and washing floors and furniture, is an essential step in bed bug control. Cleaning, alone will not eliminate bed bugs but is necessary to crash high populations. Cleaning removes debris that may contribute to allergies and asthma, and removing bugs, droppings, and cast skins allows the inspector to spot new activity. Vacuuming does not easily remove eggs and bugs hiding in cracks. Cleaning for bed bugs should focus on sleeping and lounging areas, (whereas cockroach control depends on sanitation in cooking and

eating areas). However for cleaning to have any impact, the resident must cooperate by reducing clutter, organizing, and bagging their belongings. There may be a need to store their belongings temporarily. Be certain every item is bagged until it can be cleaned of bed bugs. Units should always be cleaned before new tenants move in. A cleaning procedure for bed bugs begins with vacuuming, using a vacuum that is dedicated only to pest control. Although a regular vacuum is acceptable, a HEPA equipped vacuum will reduce the spread of allergens. A crevice tool will be needed to focus suction in small spaces, cracks and crevices. Use the crevice tool with a scraping motion to dislodge bugs and eggs, because bed bugs cling to wood and fabric and the eggs are cemented to the surface where they are laid. A brush attachment can also be used but must be cleaned carefully to prevent the spread of bugs. See below for proper handling of the vacuum cleaner.

### **Cleaning and organizing a room or home**

Cleaning and organizing a room or home for bed bug management can be as burdensome as changing residences. It is, however, an extremely important first step to control bed bugs, because bed bugs will thrive in a cluttered living area. Vacuuming and cleaning should be done before a pesticide or thermal intervention. Cleaning should be carried out in a systematic way, beginning with removing items from the infested room or home. Soap or detergent will aid in the cleanup of bed bug debris and allergens, making the environment healthier and more tolerable for those living there. Essential oil soaps (pine, orange or lemon), enzyme soaps, and sudsy detergents are good choices. Bleach and ammonia do not kill bed bugs and should not be used to combat them. Their vapors can also be harmful.

Steps to follow include:

- Scan the room for items on the floor. Make a plan for each item, and how it will be quarantined (closed into a plastic bag, for example), inspected, sanitized of bed bugs, and stored until further notice.
- Place clothes, shoes, plush toys, pillows, and bedding into large clear plastic bags and seal them tightly to be laundered. Place the bags away from the infestation site.
- Alternatively, plastic tote bins that have an airtight seal can be used for items that cannot be laundered, such as hard toys, electronics, books, breakable items, etc. Be prepared to store these items for a period of time until they can be thoroughly inspected or enough time has passed that bed bugs are dead – at least a year.

### **Vacuuming:**

- Once the room has been “stripped” of all personal belongings, begin vacuuming the bed, paying special attention to the mattress seams.
- Use a crevice tool and a scraping motion.
- Remove the mattress and box spring from the bed frame and inspect and vacuum all surfaces, removing all loose debris and visible bed bugs.
- Flip the bed frame over and vacuum and crevices where bed bugs may hide. This is especially important for wooden bed frames and captain’s beds.
- Vacuum inside and under drawers of night stands, dressers, and other furniture in the room.
- Turn over each piece of furniture and vacuum the under sides of each.

- Pay attention to screw and nail holes, using a credit card crevice tool.
- Vacuum along the bottoms of all walls and the moldings. If molding or wallpaper is loose lift or remove and vacuum beneath.
- Make sure to vacuum around heating units.
- Vacuum along carpet edges.
- Vacuum plush furniture with a carpet beater attachment or by patting the furniture while vacuuming to flush out bed bugs.
- If a vacuum brush attachment is used it is possible some live bugs or eggs could be caught in the brush bristles. Wash the vacuum brush with hot water and detergent if this is a concern.

### **Washing Surfaces and Furniture:**

- Wash all furniture (non-plush) and hard surfaces in the room using an orange, lemon, or pine based soap or detergent cleanser. Pay attention to crevices and spaces in the frame.
- After removing the mattress and box spring from the bed frame, wash the bed frame liberally with soap and water.
- Wash cribs and children's bed frames rather than using pesticides.
- Wash the floors, moldings, window sills, and walls generously.
- Steam or hot water heating units can be washed as well. Do not wash electrical heating units.

### **Rugs and carpeting**

- Many small rugs can be placed into the dryer on a hot setting for 30 minutes.
- If the room has a large area rug, the rug can be steam cleaned within the same time frame that other bed bug control measures are taking place, although steaming should be done before pesticide applications are made.
- Rugs can be sent out for professional cleaning, as well. Wrap in plastic for transport and warn the cleaning company.
- Wall to wall carpeting can harbor bed bugs and should be removed, especially in a heavy infestation, or steam cleaned, paying very close attention to the edges. Previous inspection will help determine where to concentrate steaming efforts. Carpeting may also be treated with a labeled pesticide.
- The carpet tack strip left behind after wall-to wall carpet is removed, should also be removed for safety purposes, as well as bed bug management.

**Handling a bed bug vacuum:** A vacuum used for bed bugs can have live bed bugs inside and it will be important to avoid transferring bed bugs to new locations.

- **Dedicate a vacuum for the purpose of pest control in your facility.**
- After each use, remove the vacuum bag and dispose of it in a sealed plastic bag.
- Clean the brush attachment with hot water and detergent.
- Stuff a paper towel in the hose end to prevent bed bugs caught in the hose from escaping.
- Store the pest control vacuum in a large plastic garbage bag that is closed tightly.
- Inspect the vacuum before each use to be sure no live bed bugs are on the outside.

## **Use of Steam Cleaning, Heat, and Cold Treatments**

**Steam treatments**, when properly applied, will kill all life stages of bed bugs, including the eggs, which are protected from the effects of most pesticides. It is recommended that a facility at risk of getting bed bugs invest in a steam cleaner for fighting bed bugs. Combined with pesticides and other methods, steam is very effective and can be used to reduce cockroach allergens, dust mites, and for many other health-related cleaning purposes. Steam can be used on mattresses and plush furniture, such as couches and chairs. However steam will only kill bed bugs in places where the steam can reach. Move the steam cleaner nozzle slowly to maximize depth.

The best choice in a steam machine is a professional type with large water-holding capacity, many types of attachments, and variable output rates. Dry-steam or low vapor steamers are better because they use and leave behind less moisture. **When steam is used, steam cleaning should be done before vacuuming for several reasons.**

1. Steam will flush bed bugs out of their hiding spots to be killed or vacuumed.
2. Steam kills bed bugs that will then need to be cleaned up anyway.
3. And reducing the number of live bed bugs vacuumed up reduces the chance that the vacuum will become infested and spread bed bugs to new areas.

**Heat treatments** come in many forms. Compartment heat treatments or whole-building heat treatments have been very successful in eradicating bed bugs. It kills bed bugs eggs to adults. The lethal temperature (130° to 145° F) at 5% relative humidity, held evenly for three to six hours (based on building size) has been successful in ridding buildings of this pest.

The use of **cold temperatures** or freezing to kill bed bugs may be recommended, however this method can vary in effectiveness. Placing household items, such as books, into the freezer may kill some bed bugs, however it has been shown that some bed bugs can recover from being frozen. Items treated in this way must be stored in a freezer for a long period of time (possibly a month) or must be very quickly frozen to an extremely cold temperature to kill all the bed bugs. A new rapid freeze technology called Cryonite has been developed. This method uses carbon dioxide snow to rapidly freeze and kill bed bugs. This leaves no pesticide residue.

## **Use of Pesticides**

Pesticides are an important tool in the fight against bed bugs, however they should be applied by a licensed and well-trained pest management professional. Many legal over-the-counter and some illegal products are readily available to the public. Residents should not attempt to do their own pest control. They should contact their building management to report pest problems and should be reminded to follow the guidelines for cleaning and room preparation. Incorrect use of pesticides for bed bugs poses several risks:

1. Overexposure to pesticides can cause or exacerbate already existing health issues.
2. Children are more susceptible to toxic effects of pesticides than adults.
3. People tend to treat places where they see bed bugs, including the bed, which may result in more pesticide exposure.
4. Unskilled use of pesticides can result in the spread of bed bugs into adjacent rooms.
5. Bed bugs are developing resistance to pesticides used against them.

Only a few types of pesticides are available for use against bed bugs. They come in different formulations (liquid, aerosol, dust) but many have the same mode of action. Some low-risk products are available. Consult a pest management professional for information about treatment choices. The types of pesticides that are commonly used for the control of bed bugs include:

- Liquid insecticide for treatment of moldings, carpet edges, cracks and crevices.
- Aerosol insecticides for treating bed frames, box springs, furniture, cracks and crevices.
- Dusts (that may or may not include an insecticide compound) used in cracks and crevices, inside walls, behind electrical outlet covers and switch plates.
- Fumigants are gases used for treating whole buildings, or for container treatments of the contents of a home.
- Fumigants are different than foggers. Foggers, commonly called “bug bombs” are liquid aerosol insecticides that are released into the air of an indoor space. **They are not effective for bed bug control.**

## Preventing a Bed Bug Infestation

### Furniture and Room Guidelines

Bed bugs thrive under certain conditions which are enhanced by the availability of hiding spots close to their human hosts. Bed bugs have a strong preference for paper and wood, over metal and plastic. Porous surfaces provide more humidity and egg-laying locations. Furniture choices can greatly contribute to the control of bed bugs. **Guidelines for furniture include:**

- Replace wood frame beds with metal frame beds to discourage bed bug hiding and egg-laying on beds.
- Eliminate head boards completely. Bed bugs hide and thrive in head boards.
- Replace all plush furniture with metal and plastic, or items easily cleaned with soap and water.
- Adding smaller cushions that can be placed in a dryer is one way to make residents more comfortable. Cushions should be dried on a hot setting if bed bugs are an issue.
- Use only white or light colored sheets.
- Use wooden baby cribs, but choose models that are painted white. Fill gaps in the frames with silicone caulk. This will allow for much better inspection and reduce need for treatment. Avoid using pesticides on baby cribs!
- Vinyl-covered or seamless mattresses are recommended for adult beds and cribs.
- If vinyl mattresses have holes, consider repairing them with tape or discarding them.
- Do not discard regular (non-vinyl) mattresses, only to replace them with other regular mattresses. Bed bugs will reinfest the new bedding quickly. Use mattress encasements.
- If a box spring is being used, be sure to encase it too. The box spring is more likely to harbor bed bugs than the mattress.
- Wooden dressers, wardrobes, tables and other furniture can be painted white for easy inspection. Any crevices where a credit card will fit should first be sealed with silicone caulk to eliminate hiding spots.