Protocols for the Prevention and Control of Bed Bugs in Multiunit Housing

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There has been a resurgence of bed bugs throughout the world: they are now are commonly reported in public housing, apartments and dormitories, as well as hotels, nursing homes, furniture rental stores, moving vans and single unit homes. Because of resident turn-over and the ability of the pest to spread, multiunit housing provides a set of unique challenges in the prevention and control of the bed bugs. This document describes procedures to mitigate the pest and is intended for those people involved in maintaining the health of multiunit housing, including landlords and building managers, pest management professionals, housing authority inspectors and supervisors, college off-campus housing staff, and renters and residents.

Bed bugs are small wingless insects. Adults are approximately ¼ inch long: nymphs are much smaller. They feed on blood, usually at night. Bed bugs often congregate in cracks and crevices near where humans or animals sleep. They also infest furniture, electronic devices, books or any other article that provides a crevice. Evidence of infestations includes presence of the bugs or their cast exoskeletons, and blood spots or stains on bedding, walls or furniture.

Bed bugs do not spread disease, but their bites result in itchy skin reactions and scratching bed bug bites can lead to secondary skin infections. Bed bug infestations may result in psychological distress, disruption of sleep and agitation.

Why is multiunit housing so vulnerable to the spread of bed bugs?

Although multifamily housing shares much in common with a single family home, pests such as bed bugs must be handled differently from those in a single family home. Because residents share the same building infrastructure, i.e. hallways, walls, ceilings, floors, and utility lines, bed bugs can easily move among different units in multifamily housing, thereby spreading quickly among people who live in close proximity to each other. Multi-family units tend to have considerable turnaround of residents, which increases the potential risk of infesting an entire complex.

Eliminating bed bugs is a huge cost for landlords, often leading to landlord/resident disputes over who is at fault for the infestation. Landlords must hire a licensed pesticide applicator to inspect all adjoining apartments surrounding the infested apartment, and then treat all infested apartments. Residents often have to remove and or discard belongings.

The adequacy and timeliness of maintenance can greatly affect pest problems. When inspections are not thorough, pest problems go undetected; pest population increase control becomes more difficult. Budget cuts and chronic underfunding in both operating and capital accounts have hampered staff's efforts to address pest problems. Limited resources affect the number of units that can be serviced and pest contractor time that can be purchased. The performance of the pest contractor is adversely affected when residents do not adequately prepare and also when technicians do not do thorough inspections or fail to adequately document pest problems.

Challenges associated with multiunit housing

Multiunit housing serves an extremely diverse population with a wide range of incomes. In addition to racial and ethnic diversity, residents may be diverse linguistically and culturally. Varied languages and cultures make the communication of policies and procedures challenging

and provide people with different experiences with pests such as bed bugs. There is a high degree of variability in residents' response to a pest problem. Some people may report a problem after sighting one pest whereas other residents may wait a long period of time or until there is a serious infestation. The ability to read and understand and comply with instructions to prepare for a bed bug inspection varies greatly. Residents may not adequately follow detailed preparation instructions given by management and the pest contractor lessening the effectiveness of the inspection and any treatment applied.

Some apartments have little storage space, contributing to clutter and creating harborage for pests. Disabled and elderly may have difficulty maintaining their homes as clean, pest-free environments. Poor housekeeping leads to unsanitary conditions, contributing to pest problems. Some new residents have little or no furniture, and thus are inclined to pick up infested items off the street or buying secondhand, bringing in new pests.

Management of bed bugs in multiunit housing

An occupant should also call their landlord or property manager as soon as a bed bug infestation is suspected. Throughout Massachusetts, bed bug complaints may also be directed to the local Board of Health (LBOH), Health Department, or Inspectional Services Department (ISD) within the community. 105 CMR 410.000: Minimum Standards of Fitness for Human Habitation (State Sanitary Code, Chapter II) requires the LBOH or ISD to inspect a dwelling unit upon receipt of a complaint (see 105 CMR 410.820). In addition, 410.820(A) (k) requires an inspection be conducted within 24 hours after receipt of a complaint for an insect infestation.

Upon notification, the local code inspector will conduct a thorough inspection of a unit to determine whether a bed bug infestation exists. The inspector will examine all potential sources of bed bugs in the unit, including the room perimeters, furniture, storage areas, and mattresses and box springs. The Massachusetts Sanitary Code specifies that the owner of a dwelling containing two or more dwelling units is responsible for maintaining the dwelling and its premises free of pests and insect pests and is responsible for exterminating pests (see 105 CMR 410.550). If an infestation is detected, the landlord or property management company will be served with an order to exterminate the bed bugs.

RECOMMENDATIONS FOR OWNERS AND MANAGEMENT OF MULTIUNIT DWELLINGS

Control of bed bugs is a complex procedure and requires the cooperation of all stakeholders involved in an infestation. Early infestations are small and are relatively simple to eliminate. As populations increase, they spread and control becomes more complex and more expensive. Educating staff and residents to recognize bed bugs and their evidence will reduce the financial burden of control.

The Massachusetts Sanitary Code specifies that the owner of a dwelling containing two or more dwelling units is responsible for maintaining it and its premises free of pests and is responsible for exterminating pests (Massachusetts Department of Public Health 105 CMR 410.550). Access to units for inspection and treatment is essential. The Massachusetts Sanitary Code requires an occupant to allow an owner/property manager into their unit to make repairs (105 CMR 410.810). Lease agreements should include a provision for the building owner to enter the premises of a unit during reasonable hours for the purposes of inspection, pest extermination or

repairs. Such a provision may require permission of the resident or a reasonable period (e.g. 48 hours) after notification.

Hiring a licensed professional with bed bug control experience is highly recommended and in some communities may be required. Licensed commercial pesticide applicators are required to have insurance and to maintain training. Under Massachusetts General Law chapter 132B, section 10, property owners with three or fewer residential units may perform their own pesticide applications. On properties with four or more units, pesticide applications must be made by a Licensed Commercial Pesticide Applicator. In all cases, pesticide label instructions must be followed.

Training recommendations

Owners and operators should provide training to all staff on bed bug identification, surveillance, control and prevention. Bed bug control is less time-consuming and less expensive when infestations are controlled before they become well established, thus identifying signs of early infestation is critical.

Where bed bugs are of concern, flyers and posters describing pest identification and reporting procedures should be distributed and posted to alert residents and support groups. Bed bug training should be provided for all appropriate staff at the beginning of employment and a review should be provided annually. Elements of training should include:

1. Identification of bed bugs and explanation of their life cycle and habits.
2. Inspection procedures including, seams and joints of mattresses, behind headboards, baseboards, cracks and crevices, floors, picture frames, window sills, all furniture (especially bed frames) and other potential harborage.
3. Maintenance and housekeeping procedures
4. Reporting and referral procedures subsequent to the detection of bed bugs or evidence of an infestation and instruction on communicating with residents
5. Prevention and control procedures aimed to reduce bed bug populations and limiting their spread within the facility.

Recordkeeping by building management

Management should keep records of

1. Reports of bed bug infestations by staff, residents, pest management professional (**PMP**) or government inspector
2. Reponses to resident's complaints
3. Recommendations and services of PMPs.
4. Cooperation by staff and residents to recommendations to abate infestations

Suggested procedures for building management in responding to bed bug complaints

Building management should:

1. Develop a procedure for residents and staff to report pest complaints to management *in writing*. Reporting should include, at minimum, the date, unit number and location of infestation within the unit.
2. Respond to complaints of bed bugs within 48 hours with a plan of action for the complaint. The plan of action should be formulated with the PMP to ensure three-way

cooperation and optimize the work of the PMP. The plan of action should be executed within three days of the initial complaint.

3. Instruct the residents to launder their clothing and linens, placing items in plastic bags so that they do not spread bed bugs during transport to the laundry. Isolation of cleaned items is also needed and should be explained. See Appendix D.
4. Notify residents in adjacent units (next door, above and below) of the infestation and arrange for inspection and treatment, if necessary, for bed bugs. Provide written educational materials (fact sheets) to residents so they understand the potential movement of bed bugs.
5. Management should discuss disposal of infested furnishings with the resident and the PMP. The PMP should assess all furniture, box springs, mattresses and other items to determine whether they can be salvaged. Bed bugs and their eggs cannot be eliminated from some items. These items should be destroyed or rendered non-functional and treated with pesticide. Items should be wrapped in a protective cover to prevent bugs and eggs from falling off during transport and disposal. Items left outside should be clearly labeled as INFESTED WITH BED BUGS. When possible, items left curbside should be left as near to pick-up time as possible.
6. Ensure that all vacuumed refuse and vacuum bags from infested rooms are disposed in sealed plastic bags. Bugs and eggs can be trapped in vacuum cleaner brushes and hoses and can be spread throughout the unit. If a vacuum cleaner is used, all washable components should be thoroughly cleaned in hot water and detergent.
7. Provide properly operating clothes dryers to heat infested fabrics.

Relocation

In hotels, motels and shelters and other temporary housing, it is desirable to relocate a resident to a bed bug-free area. Relocating the person, along with associated clothing, luggage and other accessories, without transferring bed bugs to a pest-free zone is a complicated process. Moving residents from infested apartments is not recommended because bed bugs can potentially infest all the belongings of individuals, thus the potential for moving them during relocation is very high. If moving is necessary, refer to Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities (Gangloff-Kaufmann and Pichler, 2008).

Vacant Apartments

If vacant units adjoin infested units, they should be inspected for infestations and treated appropriately. In areas with an infestation history, insect monitors may be left in vacant units to detect possible infestations. At this time, the most effective monitors are very expensive, but sticky traps (e.g. mouse glueboards or cockroach traps) have shown some utility in detecting pests: These should be placed near potential bed bug harborage. Monitors are not completely reliable: absence of bed bugs in a monitor does not mean that a unit is uninfested. However, the presence of bed bugs in a monitor will indicate the need for further inspection and treatment.

RECOMMENDATIONS FOR RESIDENTS

Refer to the fact sheets and checklists provided in the appendices

Residents should:

1. Report a bed bug infestation, or other pest problem, to building management within 24 hours of the pest sighting.
2. Do not attempt to control a bed bug infestation by yourself.
3. Never self treat with pesticides, especially "bug bombs", which drive bed bugs into adjacent rooms or units.
4. Do not remove anything from an infested room until after the room is treated by a PMP, with the exception of laundry (see below).
5. Cooperate fully with the recommendations provided by the PMP to prepare rooms for bed bug inspection and treatment. Ask your landlord or building manager for help if there are preparation steps that you cannot accomplish, such as disassembling or moving furniture. Disabled and elderly individuals should request assistance with preparation.
6. Prior to treatment, all clutter, debris and garbage from infested rooms should be placed in plastic bags and sealed. Bagged items should remain in the infested room for treatment by a PMP prior to disposal.
7. The day of the pesticide treatment, all bedding and clothing should be bagged in plastic, transported to the laundry and laundering using hot water and dried at the highest setting recommended for the article. Bags used for transport should not be re-used, but should be sealed and disposed with other infested refuse.

Residents' management of furnishings and materials infested with bed bugs

1. Do not remove infested materials designated for disposal until after the unit has been inspected and/or treated by the PMP.
2. Remove clothing, linens and materials designated for disposal from an infested room in sealed plastic bags to prevent moving the bugs to other areas.
3. Pets must be relocated during treatment. Leave all bedding and cages in the unit for treatment, unless the items, including joints and seams, can be thoroughly cleaned,
4. Wash infested linens in hot water (washing doesn't kill bed bugs 100%) and dry using the hottest dryer setting to kill bed bugs and their eggs. Do not exceed temperature recommended on clothing labels. Alternately, delicate and woolen items, shoes, pillows, stuffed animals, and other softer items can be dried on high heat only (with no washing). Heat kills bed bugs and their eggs.
5. Dry cleaning will kill bed bugs. Infested or potentially infested items taken to a dry cleaner should be sealed in bags: the dry cleaner should be informed of the potential infestation so that bugs do not infest the business establishment.
6. If a vacuum cleaner is used, all washable components should be thoroughly cleaned in hot water and detergent. Bed bugs and eggs can be trapped in vacuum cleaner brushes and hoses and spread throughout the unit. Dispose of all vacuumed refuse and vacuum bags from infested rooms in a sealed plastic bag.
7. Have PMP determine which furniture, box springs and mattresses are salvageable. If infested items are determined to be unsalvageable, they should be made unusable, treated with insecticide and wrapped in plastic prior to disposal. Items should be clearing labeled or spray painted as INFESTED WITH BED BUGS. Items left curbside should be left as near to pick-up time as possible to minimize the chances of being taken by others.

RECOMMENDATIONS FOR THE PROFESSIONAL PEST MANAGER (PMP)

In most cases, eradication of bed bugs by a professional is the only option. The PMP should integrate both non-chemical and chemical methods into the eradication program. Complete eradication with a single treatment is unlikely: the PMP should provide at least one retreatment to infested rooms two weeks following the initial treatment.

The professional pest manager should:

1. Identify species of bug infesting the property. Although rare, infestations of bat and swallow bugs do occur.
2. Train owners, managers and staff to recognize and inspect for bed bugs.
3. Provide written instructions to owners and managers on how to prepare rooms for treatment and provide written notification to residents between seven (7) days and forty-eight (48) hours prior to treatment with pesticides (see below).
4. Develop an IPM plan for controlling the infestation on the property.
5. Inspect infested rooms and all adjacent rooms for bed bug harborage. Inspections should include, but are not limited to, seams and joints of mattresses, behind headboards, baseboards, cracks and crevices, floors, picture frames, window sills, all furniture (especially bed frames) and other potential harborage.
6. Apply legally registered pesticides in a manner consistent with the pesticide label and Massachusetts pesticide rules and regulation. Total release foggers/aerosols should never be used for bed bug control.

Notification and Posting

Pesticide applicators or their employers are required by law to pre-notify occupants, *in writing*, of residential units between seven (7) days and forty-eight (48) hours prior to any application of pesticides (Section 13.08, Massachusetts Pesticide Regulations). Notification must be made in writing. The intent is so that individuals, who wish to avoid exposure or want to avoid encountering the applicator, can make necessary arrangements.

Notification must include the following:

1. Name and phone number of company making the application
2. Proposed date and time of application
3. Locations to be treated
4. Product names, EPA Registration Numbers, and active ingredients for the pesticide products that may be used
5. Purpose of application
6. Preparation procedures required by the pesticide label to protect items such as food, utensils, and pests; and
7. Massachusetts Department of Agricultural Resources-approved Consumer Information Bulletin

CONTROL RECOMMENDATIONS FOR PROFESSIONAL PEST MANAGERS

(adapted from S. Kells, 2006: refer to this publication for specific details and methods)

Inspection

A thorough inspection is required in any unit where bed bugs are suspected. The inspector will look for large and small insects, cast skins and fecal spotting. Because of the feeding habits of bed bugs, they are most commonly found in the bedroom but infestations can occur anywhere, especially living rooms, laundry rooms, closets and bathrooms. Where available, bed bug detecting dogs have been useful in locating bug infestations.

Interview

The first step in an inspection should be an interview of residents to determine possible sites of infestation. Questions such as the following may be of value:

1. Who in the family has been bitten by bed bugs? Are the bites visible?
2. Where do affected people sleep or rest for extended periods in the residence?
3. Have neighboring units been infested with bed bugs?
4. Has any furniture, new or used been recently added to the residence?
5. Has someone in the family been on a trip or visit that required luggage?
6. Where was the luggage placed when returning from the visit?
7. Where is the luggage currently stored?
8. Does anyone else visit the residence with bags, coats or other items?
9. Are there pets in the house and, if so, where do they typically sleep or rest?
10. What control measures have been attempted?

Tools of inspection

A professional pest manager should be prepared to inspect cracks and crevices, dismantle furniture, remove baseboards, lift carpet, remove receptacles and outlet covers, and seal and contain infested items and furniture. The following tools are necessary:

1. quality flashlight
2. thin blade spatula
3. screwdrivers and wrenches
4. 10x magnifying glass
5. inspection mirror
6. carpet adhesive
7. garbage bags
8. clear packing tape (for samples and sealing articles in bags)
9. staple gun and ¼" staples
10. vacuum cleaner with filter bags

Initial Inspection

The purpose of the inspection is to determine whether and where bed bugs are present and the level of infestation. If at any time a bed bug is found, advise the client of treatment options and initiate control procedures.

Inspection will begin where the affected person rests or sleeps (usually beds, sofas and chairs) and moves out from that area, looking for bugs, caste skins and fecal spotting. Inspection of the bed must be very detailed, and will include linens, blankets, pillows, mattress, box spring, headboard and frame. The bed will be disassembled and as they are inspected they will be placed centrally on the floor. Bed bugs are small and flat and hide in very small cracks and crevices, including holes drilled for screws. All potential sites on the bed will be inspected including mattress piping, stitching, buttons and labels. Box spring sites include stitching, under edge guards, behind the dust cover ("ticking") and all joints and crevices. Bed frame seams, cracks, bracing, legs, casters and head and foot boards must be examined.

After the bed (or sofa or chair) is inspected, the perimeter of the search is expanded to include all furniture and base boards, carpeting, appliances and curtains, etc.

In multiunit housing, if bed bugs are located in one unit, all adjacent units (including those directly above and below) should be inspected for bed bugs.

Control Procedures

A commercial pesticide license is required to treat all private or public properties used for human occupation with four or more units (Massachusetts Pesticide Control Act Chapter 132 B of the Massachusetts General Law). Only pesticide labeled in the Commonwealth of Massachusetts for use against bed bugs may be legally applied.

Because of their biology and cryptic habits, pesticide resistance and the marginal effectiveness of current pesticides, bed bugs are difficult to control. Because bed bugs can move from a treated area (or residential unit) to an untreated area, control practices in different areas must be applied simultaneously. Furniture and items in infested room should be moved or prepared before treatment.

Treatment will require much moving of furniture and other items. A "pest-free zone" will be designated and will be treated with non-chemical and chemical methods. Treated items can then be placed in this area. As the zone fills with items, additional area will be treated and the zone expanded.

Non chemical treatment

Non-chemical methods, particularly vacuums, play an important role in controlling infestations. Non-chemical means can be used solely for controlling bed bug infestations, but they will require repeating the procedures many times before control is achieved: residents will be exposed to bed bugs longer and the chances of infestations spreading are increased. Vacuums are very effective in removing visible bugs and their waste. Vacuum should be fitted with filter bags that can be treated with diatomaceous earth or silica gels and sealed for disposal. Steam cleaners are very effective in killing all stages of bed bugs, especially those hidden hard to reach areas, however, the use of steam can be very time consuming. Thermal treatments can control bed bugs if they raise the core temperature to 120^{o}F for two hours (note damage to some fabrics can occur at 145^{o}F). Bed bugs can also be killed by freezing (23^{o}F for five days or flash frozen at -15^{o}F).

Proper mattress and box spring encasements are recommended for areas prone to infestations. Encasements prevent bed bugs from hiding in the mattress/box spring complex. Covers should have no holes tears or gaps. If an insecticide (specifically labeled for use on mattresses) is used, a cover can contain the application, reducing the dissipation of the chemical and providing a barrier between the pesticide and the person using the mattress. If the mattress or box spring are infested the mattress and box spring encasements should be left in place for *at least 18 months.*

Chemical treatment

Insecticides are generally a necessary component of controlling bed bug infestations. Some infestations may not by accessible to non-chemical methods and bugs move to quieter areas. Chemical formulations have different uses and advantages (see Kells 2006). Some formulations will be more appropriate in specific sites than others. Because a residential unit presents a complex of situations, it is expected that a number of different pesticide formulations will be used on any one control job.

Treatment of the sleeping area requires thought. Bedding (linens and blankets) should not be treated with pesticide, but should be placed in a high-heat clothes drier. Before treating mattresses or box springs, the pesticide labels should be carefully studied to determine that the product is can be legally applied to *human* sleeping surfaces.

In treating furniture, test applications should be made, as pesticides may react with fabrics of upholstered furniture and varnishes and waxes of wooden furniture.

Pesticide dust applications are recommended as a barrier along baseboards and carpet edges and as crack and crevice applications. In electrical receptacle boxes, only dusts, not liquid formulations should be applied.

If infested furniture or other items are determined to be unsalvageable, they should be dismantled, broken or otherwise made unfunctional, treated with insecticide and wrapped in plastic prior to disposal. Items should be clearing labeled or spray painted as INFESTED WITH BED BUGS. Items left curbside should be left as near to pick-up time as possible to minimize the chances of being taken by others.

In multiunit residential buildings, the pesticide applicator is responsible for posting common areas (including hallways) regarding pesticide application, unless the contracting entity (e.g. building manager) has signed a waiver.

Follow-Up Inspection and retreatment

Approximately two weeks after the application of treatments, a follow-up inspection is required to confirm that all bed bugs have been eliminated. This inspection should be as thorough as the initial inspection. If bugs are found again, control procedures must be repeated and monitors should be left in place or replaced.

THESE PROTOCOLS WERE ADAPTED FROM THE FOLLOWING RESOURCES

California Department of Public Health. 2007. Guidelines for the control and prevention of bed bug infestations in California. http://ww2.cdph.ca.gov/HealthInfo/discond/Documents/BB%20Guidelines.pdf

Gangloff-Kauffman, J. and C. Pilcher. 2008. Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities. NY State IPM Program. Cornell University. http://www.nysipm.cornell.edu/publications/bb_guidelines/

Kells, S. 2006. Control of bed bugs in residences: information for pest control companies. University of Minnesota Extension Service. http://www.ipmctoc.umn.edu/Control_of_bed bugs_in_residences_US_Commercial.pdf

ADDITIONAL RESOURCES

Kells, S. and J. Hahn. 2006. Control of bed bugs in residences: information for homeowners and tenants. University of Minnesota Extension Service. 5 pp. http://www.ipmctoc.umn.edu/Bedbugs_Homeowners_and_Tenants.pdf

Pollack, R and G.Alpert. Bed Bugs ~ *Cimex lectularius* (Cimicidae): Biology and Management. Harvard School of Public Health. http://www.hsph.harvard.edu/bed bugs/

Pinto, L.J., R. Cooper and S.K. Kraft. 2008. *Bed Bug Handbook: the Complete Guide to Bed Bugs and Their Control*. Pinto and Associates. Mechanicsville, MD. 266 pp.

Massachusetts Department of Public Health. 2009. Frequently Asked Questions about Bed Bugs (in English, Spanish and Portuguese) http://www.mass.gov/?pageID=eohhs2terminal&L=6&L0=Home&L1=Consumer&L2=Community+Health+and+Safety&L3=Environmental+Health&L4=Environmental+Exposure+Topics&L5=Pesticide+Spray&sid=Eeohhs2&b=terminalcontent&f=dph_environmental_g_sanitation_bedbugs&csid=Eeohhs2

Appendices

A. How to Protect You and Your Family from Bed Bugs

B. What Can I Do About Bed Bugs?

C. Room Preparation: a Checklist for Bed Bugs

D. Cleaning and Laundry Checklist for Bed Bugs

Appendix A

How to Protect You and Your Family from Bed Bugs

Adapted from Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities by J. Gangloff-Kauffman, J. and C. Pilcher. 2008.

Bed bugs have become a serious pest in the US. Bed bugs, like mosquitoes, are insects that feed on blood. Bed bugs live in the home, especially in and around the bed, and usually bite at night when people are sleeping, but will feed at any time of day if necessary. Bed bugs have three main stages of life, the egg, the young and the adult: Their size can vary from that of a poppy seed to an apple seed-size adult. All are tan or brownish-red in color. The first sign of bed bugs is usually a group of bites. If you experience bites, look for bed bugs in your bed or where you have slept recently.

Fast Facts about Bed Bugs

- Do not transmit diseases to people
- May trigger asthma
- Cannot fly or jump, but can run fast
- Can be transported in personal belongings
- Are often found on thrown-out furniture
- Can travel through a building
- Can be difficult to control
- Can be eliminated and prevented

Photo by Jeff Hahn

Where to Look for Bed Bugs

- Check the sheets, pillows and blankets for bugs and stains.
- Look under the mattress and pillows.
- Check the seams and puckers of the mattress and box spring.
- Look at the bed frame for bugs and stains.
- Check the floor, carpet edges and moldings.
- Look inside and underneath drawers.
- Radios, phones, clocks near the bed or on a nightstand may also be hiding places for bed bugs.

How to Help Yourself

- Don’t panic: bed bugs are not life threatening.
- Call your building manager, landlord or social service provider immediately if you think there may be bed bugs in your room or bed.
- Wash and dry your clothing and bedding on hot: 30 minutes of heat kills bugs and their eggs.
- Wash and use the clothes drier on any donated clothing before wearing.
- Do not take furniture or items from the street: they may have bed bugs!
- Do not try to use pesticides to kill bed bugs on your own.
- “Bug bombs” are not effective for bed bugs.
- Talk to others about it; bed bugs are common today in all types of housing. Everyone should be aware of them.

Appendix B

What Can I Do About Bed Bugs?

Adapted from Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities by J. Gangloff-Kauffman, J. and C. Pilcher. 2008.

Photo by Jeff Hahn

Do I have bed bugs?

Bed bugs are a growing problem in all types of living situations. If you have seen bed bugs or have itchy bites that could be from bed bugs DON"T PANIC, but seek help quickly. Bed bugs may be confused with other household insects such as cockroaches, carpet beetles, or spider beetles. If you find an insect that may be a bed bug, **SAVE IT** in a container for identification!

There are many steps that you must take to help get rid of bed bugs.

1. –**Seek advice.** Contact your building or facility manager and arrange for someone to check for bed bugs. If you see bugs, capture them on sticky tape or on a tissue and store them in a plastic bag in the freezer for identification. Insects found where you live could be one of many things. Don't assume that they are bed bugs. Do not move belongings until confirming that you have bed bugs.

2. –**Prepare to clean** your living space thoroughly if someone confirms that bed bugs are present. Cleaning includes the following:

- Wash and dry all clothing on hot settings. Drying on HIGH for at least 30 minutes is more important than washing to kill bed bugs.
- Wash and dry bed sheets, blankets and pillow cases at high temperatures. Again, drying on HIGH is most important.
- Shoes, pillows, curtains, coats, plush toys can all be placed into a dryer at a medium to high temperature.
- Pick up and organize your personal belongings to reduce the amount of clutter in your living space.
- Provide access to all walls, closets, space around the bed and furniture for an inspector to search for and get rid of bed bugs.
- Store cleaned items in plastic bags away from the problem
- Vacuum and wash the floors, or hire a cleaning crew to clean.
- If a vacuum cleaner is used, all washable components should be thoroughly cleaned in hot water and detergent. Seal vacuum bags in plastic and dispose of them immediately: they contain live bed bugs.

2. – **Prepare to follow** more thorough instructions given to you by the management. Prepare to cooperate and do what is required to eliminate bed bugs. Without your cooperation, the bugs will not be eliminated. There are no simple ways to kill bed bugs.

3. – Do not use any over the counter "bug bombs" or insect killers on your own. You will only spread the bed bugs further into your living space and belongings.

4. – **Do not pick up discarded items** on the street. Although there are many valuable items being tossed away, today many of these items, including clothes and shoes, are already infested with bed bugs. **Any used furniture should be carefully inspected.**

Appendix C

Room Preparation: a Checklist for Bed Bugs

Adapted from Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities by J. Gangloff-Kauffman, J. and C. Pilcher. 2008.

Preparation of a room for treatment is essential to the successful management of bed bugs. 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, and usually by the resident. Some clients may need help and the pest control professional or building management must be sensitive to this.

Suggested room preparation steps include:

- Remove all blankets, sheets, covers, pillows, bath towels, and drapes/curtains from the bed and room and place them into bags for transport to the laundry.
- Empty drawers and closets and place belongings into plastic bags. Place all clothing and coats into bags for transport to the laundry. Shoes, pillows, and children's plush toys should be bagged for the laundry.
- Plastic toys, books, electronics, and anything that cannot be washed should be bagged separately for inspection.
- The room should be empty of all cloth and plush items, except plush furniture. If possible, the pillows of plush furniture should be removed and laundered.
- Move furniture at least 18 inches away from the walls. People may need help with this.
- Remove outlet covers and switch plates on all walls.
- Picture frames should be removed from the walls and cleaned or treated.
- People and pets must leave the area during treatment and wait the stated amount of time before reentering, usually 4 hours.
- If there is a fish tank in the household, it should be covered with a towel or plastic, because fish are very sensitive to many pesticides.
- All clothing, linens and other items must be cleaned (free of bed bugs) and kept isolated until the client is moved to a new room or location, or until the bed bug problem is eliminated.
- Make sure the pest control professional can get to all furniture, closets, beds, and baseboards to inspect and treat.

Appendix D

Cleaning and Laundry Checklist for Bed Bugs

Adapted from Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities by J. Gangloff-Kauffman, J. and C. Pilcher. 2008.

Pesticides, alone, will not eliminate a bed bug infestation. Inspecting and cleaning the living area and all personal belongings are critical for bed bug control and elimination. Cleaning should occur before pesticides are used. Follow all the recommended steps as they apply to the individual situation:

- Seal all clothing and linens in large clear plastic bags. Clear bags are good because bed bugs can be seen inside them.
- Seal shoes, coats, pillows, children's plush toys, and small rugs and mats in large clear plastic bags.
- Personal belongings should be inspected carefully, cleaned, and sealed in plastic bags or bins. Do not use cardboard boxes, bed bugs can hide in folds and will deposit eggs there.
- Newly laundered items should be placed in fresh bags to prevent reinfestation. Commercially available dissolvable laundry bags will limit the possibility of bed bug escapes.
- All clothes, linens, pillows, shoes, coats, and children's plush toys should be treated by placing them into a HOT dryer for 30 minutes. Do not overstuff the dryer, heat must reach all items.
- Keep cleaned items separate from items that have not been checked or cleaned. Unless you are sure that there are no bed bugs on personal belongings, these should remain in the sealed bag or bin until they can be carefully inspected or washed.
- The room should be emptied of all personal belongings and floors thoroughly vacuumed with a brush attachment (which should later be washed in hot water and detergent).
- The mattress and box spring should be vacuumed to remove any live bugs and debris and immediately encased or prepared for treatment. See text for discussion regarding reinfestation dangers with vacuums.
- Hard furniture, floors, and walls should be washed liberally with soapy water.
- Outlets and electrical switch plates should be opened and inspected for signs of bed bugs, but not washed!
- Wash in and around any non-electric heating units (such as steam pipes or radiators).