Division of Housing and Food Service
Bedbug Procedures

Identify

1. Determine that bedbugs are present. Staff inspecting the room will wear coveralls while conducting the inspection and will need to remove and bag these prior to leaving the room so they can be run through the dryer at high heat
2. Work with the Area Manager on campus or the Apartments Manager to relocate the student(s) as needed to a temporary location
3. Work with the student(s) to determine what items need to be removed for the time they are displaced. The more items that stay in the room the less chance we have of bedbugs infesting other areas
4. Only move necessary items from room
5. It is preferred that all clothes the student takes with them be run through the dryer. Inform students that the clothes ran through the dryer will be at high heat for 20 minutes so they need to pick out clothes that the heat will not damage. If the clothes and other items cannot be run through the dryer they need to be treated with steam and disinfectant
6. **Do not wash or dry any clothing that the student has not picked out and given to us to run through the dryer.** The dryer may cause some clothes to shrink. Do not wash any clothing. If the student gives you permission ahead of time we will wash and dry the sheets and put clean sheets back on the bed for the students return.
7. Install a temporary wire clothes line to hang and spread out all remaining clothes left in the room to allow heat to permeate. Some clothes in the closet may need to be placed on this line to allow air circulation.
8. Leave all other items in the room including electronics other than the heat sensitive items listed below. Electronic equipment including the computer has a heat source and will attract bedbugs. The heat process will not damage these items.
9. Based on the infestation of the room being heated one are both adjacent rooms may require heat treatment. This will be determined once an inspection of both rooms has been conducted.
10. Heat the temporary room the students were moved to during treatment

Team Preparation and Safety Requirement

1. Determine the electrical requirement and availability. On campus, work with Res Life on areas that will require electrical outages in order to have sufficient electrical service to treat the infestation
2. Assemble the team once the electrical requirements can be met and begin prepping the room for the heat process
3. The team will be expected to wear coveralls furnished by UT and booties over the shoes or rubber boots while preparing the room and setting up the equipment. Once the room is set up and the heat is ready to turn on the coveralls, boots, and booties will be removed and left in the room to be heated
4. Once the process is completed all team members will be expected to remove and bag their clothes, shower and put on clean clothes before going home. Every effort possible shall be taken to prevent transferring the bedbugs to the team member's personal home
Room Preparation

1. Remove heat sensitive, flammable items, and anything that can melt at 90 degrees from the room. You will need to go through all drawers to ensure all items are removed that could cause fire safety issue. VERY IMPORTANT. SEE LIST BELOW
2. Insulate doors and windows
3. Seal all Vents for AC supply and return
4. Seal any area that will allow the heat to escape
5. Spread clothing out in closet and place on racks portable racks to ensure there is spacing for the heat to permeate each item on both sides.
6. Move furniture slightly away from wall to allow heat to circulate. Heat must be able to get on all sides of furniture including built in
7. Drill holes in bottom and back of all built in furniture to ensure the heat can permeate these dead spaces
8. Remove switch plates, outlet covers, and inspect drop light fixtures to determine if they need to be removed. Verify that no ACM will be disturbed in this process.
9. Cover sprinkler heads with insulating box and insert heat sensor in one before sealing
10. Remove bulletin boards, pictures, and other items attached to the wall that could harbor bedbugs
11. Stand mattresses on edge or over furniture to allow heat to permeate both sides
12. Pull out and remove all drawers to allow heat to permeate
13. Remove all baseboards
14. Remove bolsters on built in furniture
15. Spread out everything as much as possible to allow the heat to permeate

Heat Equipment Set Up

1. Prepare electrical hook up in breaker panel. Each power distribution box requires a 50 amp breaker and each heater requires a power distribution box
2. Place the power distribution boxes in the hallway in a manner that allows student to pass without a safety issue
3. Place heaters in the room. The number of units will be determined by the size of the room(s). For optimum heat use one heater per 150 square feet
4. Place heater units diagonal to better disperse air
5. Place the fans in the room during the equipment set up and Aim fans towards walls, under desk, closets, and under beds
6. Ensure the extension cords are laid and secured to prevent tripping hazards and safety issues
7. Ensure extension cords are tape flat to floor at the entrance to the room to allow the door to open and close. Use vinyl tape to avoid heat induced residue
8. Install door seal on bottom of doors
9. Remove threshold if necessary for door to close

Wireless Data Logger

1. Place “H” sensors on heating unit return air grill. Tape this on so it does not vibrate off
2. Place supply air sensors on floor in direct air flow
3. Supply air sensors should be placed where they will not pick up flow from other heating units.
4. Place additional sensors in areas that show infestations or in areas that may be difficult to measure temperatures such as drawers, cabinets, closets, low shelving and etc. A minimum of 10 sensors is usually adequate but use what you need
5. Make sure one sensor is in the fire sprinkler insulated box. The sprinkler head is rated at 165 degrees but should never get above 120 if inside the insulated box.
6. Draw diagram of room on the back of the log sheet and indicate where sensors were placed by sensor number.
7. Enter sensor numbers and locations on log sheet.
8. Place Data logger in room that will allow for monitoring. This can be several feet away and you will need to test your monitoring capability prior to starting heaters to ensure your logger is reading the temperature.
9. Install printer and verify it is working properly. Ensure there is enough paper on the roll to run the entire length of the treatment.

**Turning On Heaters**
1. Ensure all items above have been completed.
2. Plug in heating units.
3. Turn on heater fan and wait 5 seconds.
4. Turn on heater. Ensure all 5 heating elements are operating.
5. Turn off lights and ensure lights are off during the heating process.
6. Close door and begin monitoring.

**Monitoring and Treating**
1. Monitor and begin logging the temperatures.
2. Monitor the return air temperature closely as you will need to inspect inside the room once the return temperature air temperature air reaches 100 degrees.
3. Enter the room at 100 degrees return air temperature and inspect for bedbugs. If you see live bedbugs you will need to vacuum with special vacuum cleaner provided with the equipment. If you vacuumed live bedbugs leave the vacuum running in room with suction hose in heater supply air flow to cook the bedbugs in your vacuum cleaner.
4. Resume heating and monitoring room temperatures.
5. Register your temperature for each sensor on your log sheet every hour.
6. When return air temperatures reach 120 degrees re-enter the room and turn on the fans to allow convection air to speed up the heat process and ensure the room meets maximum temperature. Re-enter the room every 2 hours and adjust fans if there are areas that are not heating up as hot as other areas. Turn over mattresses, chair/couch cushions, pillows, and any other large heat insulating items.
7. Return to heating and monitoring.
8. Once the return air is 125 degrees and all sensors reach a minimum of 118 degrees (except sensor in fire sprinkler box) begin your 6 hour count down. The bedbugs begin dying at 113 degrees and to achieve the best success we need to run 6 hours of heat with all sensors at 5 degrees above the known kill temperature.
9. If necessary use furnace for heat assist in the apartments.
10. Turn off heaters after 6 hours of heating at 118 degrees or hotter and let the room cool down until the next morning.

**Breaking Down and Completing the Treatment**
1. Remove the heaters, fans, insulation, insulation boxes, and extension cords.
2. Place DE (Diatomaceous Earth) in electrical outlets, under wall spaces behind cove base, under areas that are not normally accessible with plastic duster.
3. Install all electrical covers, lights, bulletin boards, baseboards, and any other item removed.
4. Clean room, vacuum, put everything back in that was removed
5. Have pest control contractor treat room with insecticide that is made for use with bedbugs as a precautionary measure
6. Turn over to residents
7. Complete any remaining work the following day

Additional Work Required at Apartments
1. Leave AC vents open to heat duct work
2. Use the heat box for large items and hard to heat items
3. If Apt is split level consider sealing off each level with heat resistant plastic or insulation board. As the heat will stack in the upper level and not heat lower level
4. If Apt is too large for number of heating units consider starting in bedrooms or at one end of apt and work toward opposite end by heating rooms to approximately 135 degrees for 3 hours. Removing half of the heating units to next section of apt. and leaving starting units to hold heat for 6 hours
5. On all adjoining apartments remove cove base treat adjoining wall with DE (Diatomaceous Earth)
6. Use the hot box to treat returning resident belongings that have been exposed to bedbugs
7. With electronics check web for heat tolerance. Review with resident
8. Insulate PTAC Units from outside and remove interior cover
9. After heat treatment use chemical treatment every 5 days for 3 treatments. Chemical should have residual effect with both growth regulator and ability to kill bedbugs that come in contact with it

Heat Sensitive Items
This is a guide it is not an exhaustive list and does include items that are prohibited however we need to ensure nothing flammable and nothing explosive is left in the room
1. All plants, animals, fish from tanks, snakes, reptiles
2. Deodorant
3. Candles
4. Crayons
5. Lipstick, Cosmetics, Hair Spray
6. Medicines & Vitamins
7. Aerosol paint Cans (All aerosol cans)
8. Fire Extinguishers
9. Propane Tanks
10. Any type compressed gas
11. Fireworks
12. Cigarette Lighters/ Matches
13. Ammunition
14. Guns
15. Musical Instruments, i.e.; Violins, Guitars
16. Humidors & Cigars
17. Fresh Fruit & Vegetables
18. Wine
19. Oil Paintings

10/2009