Turning the Heat on Bed Bugs

By Paul Rannick - Hotel Interactive - July 13, 2005

The comeback of bed bugs is becoming a legal and public-relations headache for the hotel industry.

The bed bug (cimex lectularius), a pest that was common before World War II, had been kept under control for 50 years. However, there has been a resurgence in the last five years. The cause of this resurgence in hotels is the high rate of international travel and occupant turnover, as well as the discontinued use of many pesticides such as DDT.

Hotel industry management is recognizing that bedbug infestation is becoming a major problem. A survey of insect-control companies in 2004 by Pest Control Technology magazine found that hotels represented the largest proportion of all reported bedbug infestations. Respondents reported that 37 percent of bedbug remediation requests came from hotels and motels, compared to 31 percent the year before.

Lack of professional treatment comes with great risks — most notably the possibility of lawsuits and lost business.

Bedbugs are about a half-inch wide, and red and brown in color. They emit a sweet odor, a little like raspberries. Bedbugs are wingless insects and they move around by crawling or hitching a ride from place to place in clothing, luggage, or other such mobile goods.

They like darkness and can be found most commonly in bed mattresses and linen. Bedbugs feed at night by biting and sucking the blood of people as they sleep. Their bites cause itchy, red welts on the victim, however they are not known to transmit disease.

Thermal methods of insect control were used in the early twentieth century, but fell out of favor as effective, low-cost chemical fumigants became available. Now, with the elimination of DDT and restrictions on the use of pesticides, many companies are revisiting the use of heat treatments for controlling insects. A growing number of North American grain processors now use heat in place of chemical treatments.

Research conducted by commercial grain processors, the USDA, Kansas State University and other institutions provides quantitative results for the various ways to apply heat for insect control. It has been found that raising the ambient temperature to 50°C or higher for a sufficient length of time will kill most of the insects that infest various facilities. Results vary depending on the insect species, their stage of development, and heat application method. It has been proven that exposing a bedbug infested area to hot temperatures is an effective method of eradication.

The general technique for this method is to utilize forced air heaters to raise the temperature in the infested area to 50°C–55°C and hold it for approximately three hours. Mattresses and upholstered furniture can be placed within a plastic tent, then heated by 70ºC air blown in through a flexible duct.

Sufficient heat can penetrate completely through the material. The rest of the room area may be allowed to reach a maximum recommended temperature of 55ºC. This method will kill the insect at all stages of development - egg, larvae, pupae and adult - by causing dehydration, protein coagulation, and/or enzyme destruction.

Different pest service companies will have their own unique or preferred eradication procedures. Some may apply the technique as needed to specific areas based on insect trap counts. When portable heaters are utilized, the remediation expert may treat multiple areas by moving the heater from one target area to another in succession.

It is important to take precautions to remove TVs, appliances, electronic devices, plants, artwork or any material from the target areas that may be damaged by the elevated temperatures and turn off power to lights and wall receptacles. Sprinkler systems must also be deactivated before the procedure. Check with the local fire authorities for proper procedures for monitoring the thermal treated area in the absence of the sprinkler system.

Electric portable heaters are the cleanest and most convenient of all types available today. These heaters can reduce capital investments because the units may be moved as needed throughout a facility, therefore fewer heaters are required. Advantages of portable electric forced air heaters include:

- No toxic combustion byproducts
- No water vapor (a byproduct of fossil fuel combustion)
- No open flame
- No fuel to store
- No chance of fluid leakage
- Safe to operate in unattended and enclosed areas
- Long air throw
- Quiet operation

Typical safety features include a completely enclosed fan motor, magnetic contactor, thermostat, overheat cut-out device, plus front and rear protection grills to meet OSHA requirements.