OSHA INFOSHEET

Bed Bug Infestations in the Workplace – Recognition and Response

OSHA field offices are receiving an increasing number of calls related to bed bug infestations in the workplace. Infestations of bug beds have been found in a wide variety of workplace settings, including: medical facilities, call centers, offices, schools, and daycares. The Department of Labor has also recently (January 10, 2013) filed suit against a company for violating whistleblower protection by firing an employee who reported an infestation.

This InfoSheet discusses bed bug infestations, recognizing an infestation, hazards associated with them, and suggestions regarding what protective measures Compliance Safety and Health Officers (CSHOs) should take.

Bed bugs (specifically *Cimex lectularius*) are wingless parasitic insects that subsist solely on blood meals with adults being the size of an apple seed or 4 to 5 mm in length. Bed bugs were effectively eradicated in the United States after World War II with pesticides. However, population growth, travel, and pesticide resistance has resulted in an increasing number of infestation reports during the past two decades.

7 life stages of a bed bug
***Photo: State of* Oregon, 2013**

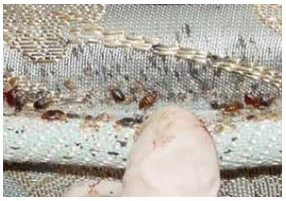
These insects have several life stages as shown in the figure to the right. Each life stage requires a single blood meal in order to molt and mature to the next life stage, except for adults who will feed only when the previous meal has completely digested. Bed bugs are nocturnal, so they tend to feed before 6 AM and seek shelter during the day. Bed bugs are not limited to humans for their blood meal and will use other animals as a blood source.

How to Recognize an Infestation

Bed bugs feed every 5 to 7 days if a host is present (they have been known to survive without food for months). After feeding, the organisms excrete much of the liquid that exists in blood. The rest of the blood takes several days to digest. Fecal spotting is caused as the meal is digested and excreted from the body. The spots from the digested blood are black in color. This spotting will also often be accompanied by molted exoskeletons that are left behind when they transition to the next life stage.

Typical locations include: upholstery seams, wooden frames, tops of baseboards, edge of carpeting, joints in walls or doorways, picture frames, behind chipped paint or loose wall paper, underneath temperature control units, along mattress seams, box spring, upholstered furniture, electrical outlets, personal item, and etc.

Evidence of Bed Bugs
***Photo: (left to right): State of New York, Indiana University, Maricopa County, AZ* (2013)**



What hazards do bed bugs pose?

Bed bugs are not known to be disease vectors, but they can reduce the quality of life by causing anxiety, discomfort, and sleeplessness. In rare cases, some people have mild to severe health reaction to the bites with effects ranging from mild irritation to anaphylaxis (a whole body response). These bites may also lead to secondary infections.

What are the other potential hazards in an inspection and during treatment?

Safety hazards have been ergonomic hazards associated with moving furniture during bed bug infestation inspections. The California Department of Public Health reviewed workers' compensation data from California starting in 2000 until 2011. Several reports were filed reporting *physical injuries (e.g., strains)* resulting from workers moving furniture to inspect or treat bed bugs.

Pesticide hazards can vary based on the chemical used with EPA having approved over 300 chemicals for bed bug treatment (http://cfpub.epa.gov/oppref/bedbug/). Excessive use of insecticides or improper application can increase the potential for exposure. A study using the Sentinel Event Notification System for Occupational Risks (SENSOR) Pesticides program and data from the New York City Department of Health and Mental Hygiene found 110 illnesses and one fatality associated with bed bug-related insecticides in seven states. The most common factors contributing to illness were excessive insecticide application, failure to wash or change pesticide-treated bedding, and inadequate notification of pesticide application. (http://blogs.cdc.gov/niosh-science-blog/2011/09/bed-bugs/)

Other treatments may also have their own hazards:

- Carbon Dioxide Freeze Treatments – The potential exists for an oxygen deficient environment during application.
- Radiant Heat – Increase of radiant heat for up to 8 hours increases risk of fire hazard during treatment because sprinkler systems must be disabled in order to perform this extermination strategy. Individuals should not be allowed to work in these spaces during treatment.
- Steam Heat – Hot water application may cause water damage and subsequent mold growth.

What precautions should CSHOs take?

If you know that a workplace is infested, contact the Regional Safety and Health Manager for instruction.

If you suspect a place to be infested with bed bugs you should:

1. Wear protective booties and/or shoes that can be heated in clothes dryer.
2. Carry a second set of clothes or wear a disposable coverall.
3. Do not sit on upholstered furniture or place belongings on furniture or against walls.
4. When finished, place disposable apparel in a sealed plastic bag. Check self for bed bugs using a mirror. They will usually seek cuffs, seams, and collars.

5. Throw away disposable coveralls before returning to your vehicle. If you are not wearing a disposable coverall, leave clothes in the sealed bag (i.e., water soluble laundry bags (available from the Cincinnati Technical Center - AESP ID FES0001730)), and immediately Place the sealed soluble bag in the washing machine. Wash clothes with hot water (104°F or above) for 30 minutes to kill all life stages, and dry clothes in clothes dryer. A clothes dryer should reach temperatures as high as 140°F for 30 minutes to kill all life stages as well.

What should CSHOs tell management and workers?

They should be informed that they need to contact their local Health Department and direct them to the CDC Bedbug website (http://www.cdc.gov/parasites/bedbugs/).

Other Resources

CDC Health Advisory on Misuse of Pesticides
http://www.cdph.ca.gov/HealthInfo/discond/Documents/HAN336CDCPesticideBedBugHealthAdvisory.pdf

National Institutes of Health

http://www.nlm.nih.gov/medlineplus/bedbugs.html

Virginia's How to Identify a Bed Bug Infestation

http://www.vdacs.virginia.gov/pesticides/pdffiles/bb-identify1.pdf

California Department of Public Health

http://www.cdph.ca.gov/healthinfo/discond/Pages/BedBugs.aspx