

Unsafe Pesticide Applications More Dangerous Than Bed Bugs

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Bed bugs are here. In the U.S., first reports of increased bed bug infestations began in 1999, primarily in hotels in larger cities in the eastern U.S. In just a few years, bed bugs traveled across the U.S. and found their way into the heartland. By 2003, clients were bringing me bed bugs for identification. The speed of bed bug movement across the U.S. was quite amazing and almost certainly related to human travel.

There's no evidence bed bugs transmit any disease, but bed bugs are important public health pests. Bites can produce serious allergic reactions, including hives and anaphylaxis. Scratching can result in secondary infections. The psychological consequences of infestations include insomnia, anxiety, and stress, and social isolation. The high cost of control presents a financial burden, especially to low-income families.

In the U.S., most over-the-counter (OTC) products available for use in homes contain pyrethrins and/or pyrethroids. Studies have shown that nearly 90 percent of bed bug infestations are resistant to pyrethrin and pyrethroid products. This means these OTC products do not kill bed bugs very well, even if they are used the way the label says. Bed bugs are unlikely to die even after they sit on a surface after



Photo by Barb Ogg, UNL Extension

It is best to let pest control professionals do chemical treatments; after all, they are trained and licensed to do these treatments safely. They also have access to professional-use products not readily available to consumers.

the pyrethroid insecticide has dried.

These products are intended to be applied to bed bug hiding places and not to surfaces coming into contact with skin. Exposure to skin can result in parasthesia, which is defined as itchy, tingly, or stinging sensations. People may confuse these sensations with bed bug bites. Repeated applications of pyrethrins or pyrethroids may result in stinging sensations.

Most pyrethroids can be identified with a characteristic suffix “-thrin.” For example, permethrin, bifenthrin, and deltamethrin are insecticides in the pyrethroid family. Fluvalinate and

esfenvalerate are also pyrethroids.

Bed bug control often involves the application of pesticides to beds, couches, recliners, and other locations where people spend a lot of time. When insecticidal products are used improperly, adverse health outcomes can result. The National Pesticide Information Center (NCIP) has pored over thousands of incidents related to bed bug control — most of the following examples come from their files. A *misapplication* is defined as an application inconsistent with label directions.

Pesticides Misapplied to Human Skin

- A woman applied pesticides directly to her bed bug bites and hair before bed, sleeping with a hairnet.
- A person reported dousing himself, his bedding and mattress with an insecticide; he reported red, itchy, burning skin.
- A caller applied an insecticide to her own skin regularly while treating her home over several months; she reported muscle twitching.
- A mother applied insect repellents to her young children before bed for months; the kids had skin and respiratory problems.
- A landlord planning to inspect for bed bugs sprayed herself heavily with insecticides; she reported itchy, red, burning skin.

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Application of Cancelled Pesticides in Homes

- Report of aldrin use in 2008; cancelled in 1987
- Report of bendiocarb use in 2007; cancelled in 1999
- Report of acephate use in 2009; indoor uses cancelled in 2001
- Report of malathion use in 2010; indoor uses cancelled in 2006

Inappropriate pesticide applications are not just being done by do-it-yourselfers. Earlier this year, a New Jersey pest control company was fined \$860,000 by treating a home with malathion and carbaryl, both pesticides not approved for indoor use.

Application of Pesticides in Ways Inconsistent with Labeling

- A person hired three pest control companies and applied five types of pesticides herself, including misapplications to her ceiling and walls
- A person sprayed his recliner with insecticides until wet, used the chair with exposed legs, and developed red bumps on his skin

- A person used a total release fogger and another product to control bed bugs in her car
- One couple reported spraying their sleeping area (couches) until damp every night before sleeping, and during the night, as needed
- A person sprayed an OTC pyrethroid aerosol to her sheets, slept on them and developed a rash on her skin.

Other Unfortunate and Unsafe Practices

Reports of other unfortunate bed bugs treatments include:

- Apartment tenant tried to self-exterminate bed bugs and sprayed the couch with rubbing alcohol while smoking a cigarette and the couch caught on fire
- A pest control company, attempting a thermal treatment, used six propane heaters and one of the six heaters malfunctioned and ignited carpet in a living room.

What About Essential Oils and Other Alternative Treatments?

The EPA allows products containing active ingredients on

their “25B list” to make pesticidal claims, produce a pesticide label without EPA approval, and market them without any efficacy or safety testing. The active ingredients in this list are considered “safe,” so the EPA has relaxed its normal requirements for pesticide safety testing and label language approvals. To see what active ingredients are on the 25B list, go to http://www.epa.gov/oppbppd1/biopesticides/regtools/25b_list.htm.

Most of the active ingredients on the 25B list are plant-based oils. Many do have some insecticidal activity, but none of them have a residual effect. This means once applied, the activity doesn’t last more than a few hours at most. These products are “contact” insecticides, which means you must spray the insect directly to kill it.

Because these products, as well as the OTC pyrethroid products have little residual activity, they are not very effective at reducing bed bug populations. When people use these ineffective products, bed bug populations continue to increase, resulting in repeated insecticide use and greater exposure and health consequences.

Sources: National Pesticide Information Center, Environmental Protection Agency.