

Bed bugs are parasitic insects that feed exclusively on blood. Bed bugs prefer to feed on humans, although they will take blood meals from other animals if humans are not available. Bed bugs are not introduced into homes by pets. There are other bed bug-like insects that look very similar, but are adapted to feed on other animals e.g., bat bugs.

Bed bugs can cause anxiety, bite reactions, and financial hardship. The University of Arizona Community IPM Program and partnering research institutions are working to battle the recent bed bug resurgence. Researchers hope to determine the real social cost of bed bugs, as well as determine the significant causes of infestations.

Bed Bug Effects on Human Health

In 2001 residential bed bug cases in the United States began to increase, and have continued to increase in most areas each year since. The over-use and improper use of retail pesticides and other chemicals to supposedly control bed bugs also continues to increase. The information presented here is a result of 5 years of data collection (2007-2011). This information was collected from individuals by phone, by email, or through participation in educational trainings.

- The two most commonly used pesticides by residents battling bed bugs were total release foggers and aerosol sprays.
- In one resident training 9% of the audience had applied gasoline, and more than 20% had applied other chemicals to beds.
- 19% of people had attempted non-chemical control methods.
- 31% had used more than two chemicals in an attempt to control bed bugs.
- 42% appeared to understand what behaviors put them at risk of acquiring bed bugs.
- 89% indicated extreme stress, 100% indicated some level of anxiety.
- 4.5% of residents attempted to seal cracks and crevices.
- 8.9% had paid a professional company to remediate the infestation.
- Relatively few (about 7%) people had no concerns when informed of bed bug control costs.
- 32% of specimens submitted as bed bugs or possible bed bugs were not bed bugs.

Bed Bug On-line Survey

We received a variety of reports regarding troubling treatment practices and social impacts. These included the application of gasoline, lighter fluid, rubbing alcohol, Windex, and Listerine on beds; pesticides applied to children; agricultural pesticide products applied indoors; illegal and unidentifiable pesticides used in bedrooms and school backpacks; over the counter pesticides used in/on school backpacks; children missing school for more than 6 months; psychiatric patients refused admission to medical facilities; and isolation from friends and family. Damages included loss of: home and/or belongings, financial stability, mental stability, partner and employment.

As a result of these findings, we developed an on-line survey to methodically determine bed bug impacts and analyze the behavioral risk factors associated with bed bug infestations. The survey asks brief questions on how bed bugs affect an individual's life, how bed bugs cause stress, and what people do in response to finding bed bugs in their home.

The survey is designed to capture information from people living with bed bugs, those who have experienced bed bug infestations in the past, as well as those who have been lucky enough never to have lived with them.



Bed Bug survey in English: <http://www.surveymonkey.com/s/DGLQS52>
 Bed Bug survey in Spanish: <https://es.surveymonkey.com/s/F5NZXJK>



COLLEGE OF AGRICULTURE
AND LIFE SCIENCES
COOPERATIVE EXTENSION

AZ1642

Assessment of Bed Bug Impacts and Practical Methods of Controlling Bed Bugs at Home

Shujuan Li, Dawn Gouge, Al Fournier and Shaku Nair
Maricopa Agricultural Center, University of Arizona

Based on Bed Bug Reports We Make the Following Recommendations:

Learn about bed bugs and how to prevent them from being introduced into your home. If an infestation is confirmed an **Integrated Pest Management (IPM) approach is the most likely strategy to result in successful elimination of the pesky bugs.**

1. Prevention

- Avoid used mattresses/box springs, bedroom furniture, or stuffed furniture. If the use of rented or used furniture is unavoidable, carefully inspect and clean items before moving them into your home.
- Avoid moving bedding in and out of other homes. If bedding is taken to a childcare facility, school, home, hotel/motel or shelter, wash and **dry** all items thoroughly as soon as you return home.
- Do not place coats, backpacks, or purses on beds, recliners, or sofas when visiting friends or family. Items placed on a hard surface are less likely to acquire hitchhiking bed bugs.
- Try to avoid sitting on upholstered furniture when visiting friends or family if you know they have bed bugs or may have bed bugs. If it's unavoidable, wash and dry your clothes as soon as you return home. Don't forget to inspect your shoes.



2. Monitoring Your Own Home

- Visually inspect beds, chairs and sofas. Pay special attention to seams and crevices where bed bugs hide.
- Place bed bug traps under bed and sofa legs. Traps should be checked every 1-2 weeks.
- Inspect light colored bed linens for blood spots.



3. Non-chemical Controls

- Launder bed sheets and clothing regularly.
- Place items that cannot be placed in the dryer in a household freezer for 4 days.
- Dispose of heavily infested items.
- Apply dry steam to infested furniture.
- Place non-washable items in dryers or hot boxes.
- Vacuum, bag contents and dispose of in an outdoor garbage receptacle. Store vacuums in garages or external storage cupboards.
- There are methods available to professionals including in-home heat or cold treatments.



4. Home Environment Improvement

- Reduce clutter around the bed and sofa areas. Seal cracks and crevices where bed bugs can hide.
- Vacuuming removes bed bugs! Discard the vacuum bag and store the vacuum cleaner outside the house.
- Install bed bug encasements on mattress and box springs.
- Pull the bed away from the wall, and place bed bug interceptor (or similar) traps under bed and furniture legs.
- If discarding a mattress, write warnings on it in marker pen (to deter people from taking it), seal it completely in plastic before moving it out of the bedroom.
- Store suitcases and luggage in a garage or outdoor storage cupboard. If this is not possible, seal them in large plastic bags.
- When returning from a trip, unpack suitcases outside the home. Bag the clothing, then wash and **dry** items completely.
- Research shows that washing in a washing machine does not harm bed bugs, but drying in a clothes dryer kills them.

5. Management

- The earlier you call a pest management professional, the faster and cheaper the remediation process will be.
- Many over-the-counter products do not work well. Once a home is infested, killing the bugs you can see will not eradicate an infestation.
- Applying over-the-counter **Diatomaceous Earth (DE)** products can help control bed bugs. Apply DE to voids, crevices and cracks in walls, and behind wall plates as the product label indicates.



Acknowledgements

This project was funded in part by the USDA National Institute of Food and Agriculture (NIFA) through a grant from the Western IPM Integrated Pest Management Center. Additional support for this publication was provided by the University of Arizona - Arizona Pest Management Center through a grant from USDA NIFA Extension IPM Coordination and Support Program.

Literature

1. Gouge, D.H., Li, S., Stock, T., Bryks, S., Foss, C., Romero, A., Young, D.J., and Code, A. 2014. Bed Bugs. Cooperative Extension, University of Arizona. <http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1625.pdf>
2. Gouge, D.H., Fournier, A., Li, S., Stock, T., Romero, A., Young, D. and Foss, C. Bed Bug Survey.
3. Anderson and Wang, Bed Bug Information for Residents and Building Managers. <http://njaes.rutgers.edu>.