

## Information for Homeowners & Tenants

Dealing with bed bugs in the home can be an unsettling experience. The good news is that bed bugs are a manageable pest! Control will require time, patience, and a well thought out plan.

The first step in managing a pest infestation is to have the pest properly identified. This is critical for bed bugs! There are many other insects that can be mistaken for bed bugs. Having the pest identified by a trained professional maximizes the chances of successfully getting rid of the pest.

The Missouri Department of Health and Senior Services (DHSS) recommends consulting with a pest control professional if you are concerned that you have bed bugs in your home. A professional can conduct a thorough inspection of your home and discuss which **treatment option** (<https://www.bedbugs.umn.edu/homeowners-and-tenants/understanding-treatments>) is most appropriate.



- The Missouri Department of Agriculture maintains an on-line list of **Missouri licensed pesticide applicators** (<https://apps.mda.mo.gov/moplants/PesticideApplicator/ApplicationExternalSearch.as>)

Pest control services for bed bugs can be very expensive. While there are some "DIY" steps that can be taken to address the problem on your own, it is important to realize that these steps may not take care of the bed bug problem entirely. However, these steps can reduce the number of bugs in the home in a short amount of time. "DIY" steps to consider include:

1. **Clean and Declutter:** Unnecessary clutter such as boxes and knick-knacks can be excellent hiding places for bed bugs, so eliminate these items as much as possible.
  - **Bed bugs are not a sign of a dirty home!** Anyone can get bed bugs. Cleaning and decluttering regularly will make it easier to spot areas where bed bugs are hiding.
2. **Vacuum:** Manually removing bed bugs and the eggs with a vacuum is a good way to get a large number of bugs out quickly. It may seem like an inefficient approach, but every bed bug you can pick up with the vacuum is one less bug that can reproduce in your home!
3. **Laundry:** For clothing, bedding, and other items that can be laundered, wash and then dry on high heat for 20-30 minutes. Once dry, pack away in sealed plastic bags or containers with lids to keep bed bugs out!
4. **Encasements:** You can purchase bed bug encasements for your mattresses and box springs. The mattress and box spring must be encased separately. Encasements can be used to prevent an infestation of your mattress or box spring, or they can be used as a way to salvage your items after they have become infested.
  - Read the label! Make sure to purchase an encasement that is specifically labeled for bed bugs. These are made of special material that bed bugs cannot bite through.

- Ensure that encasements do not become ripped or torn. Openings in the encasement can allow bed bugs to get in or out of the encasement.
5. **Monitoring:** Bed bug monitors can be used to help you identify areas of concern. There are a variety of monitor types available, but the most common is the interceptor style. For more information about bed bug monitors, refer to the following:
- **Texas A&M University - Insects in the City**  
(<https://citybugs.tamu.edu/factsheets/biting-stinging/bed-bugs/ent-3012/>)
  - **University of Florida Extension** (<https://www.youtube.com/watch?v=Jjc4CD4U4uQ&feature=youtu.be>) (video)

**If you are a tenant:**

Notify your landlord of your bed bug concerns right away. Bed bug treatment may be up to the tenant or the landlord. More information may be available in the terms of your lease agreement. The Missouri Attorney General's Office has developed a booklet about landlord and tenant rights and responsibilities. This booklet can be viewed by visiting:

- **Missouri's Landlord-Tenant Law: The Rights and Responsibilities of Landlords and Tenants** (<https://www.ago.mo.gov/docs/default-source/publications/landlord-tenantlaw.pdf?sfvrsn=4>)

For more information about handling bed bugs in your home, please refer to the following resources:

- **Environmental Protection Agency (EPA)** (<https://www.epa.gov/bedbugs/do-it-yourself-bed-bug-control>)
- **Michigan Department of Health & Human Services**  
([https://www.michigan.gov/documents/emergingdiseases/Getting\\_the\\_Bed\\_Bugs\\_Out\\_of\\_Your\\_Home.pdf](https://www.michigan.gov/documents/emergingdiseases/Getting_the_Bed_Bugs_Out_of_Your_Home.pdf))

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## Safety Issues in Controlling Bed Bugs

Many bed bug control techniques present some potential safety issues. Pay attention to these issues when choosing and implementing control methods.



### Pesticides

When selecting and using pesticides, read and strictly follow the label directions. The label tells you:

- If the pesticide is approved for use against bed bugs (don't use it if it is not).
- How the product is to be applied and how often you can use it.
  - Never use a pesticide indoors that is intended for outdoor use. It is very dangerous and won't solve your bed bug problem.
- Where it can be used (e.g., in cracks and crevices, on mattresses, etc.).
- How you should protect yourself against overexposure (e.g., leave the treated area for a certain amount of time, wear gloves when applying, etc.).
- Whether or not EPA has registered the product. Keep in mind that any pesticide product without an EPA registration number on the label has not been reviewed by EPA, so we haven't determined how well the product works.
- If there are any other potential concerns.

Even if you have used the product before, read the label each time you plan to use the product so you don't forget a step or a protective action. Reading the label also helps ensure you get the most effectiveness from the product.

[Should I Use a Fogger?](#)

### Heat Treatments and Bed Bugs

Heat treatment can be a very effective means to control bed bugs. Residents can kill bed bugs using heat produced by the clothes dryer or a portable heat chamber. Professionals can also treat your entire residence, but care must be taken to ensure that it is done properly. Some things to look out for include:

- Choose professionals who have strong references and history of successful treatment.
- Properly handle heat-sensitive items so that they do not melt during treatment (these items should be treated using an alternative technique).
- Put practices in place to avoid re-introducing bed bugs, since heat treatments have no residual effects.

For further information on heat treatments see [Using Heat to Kill Bed Bugs \(PDF\)](#).

(4 pp, 156.08 K, [About PDF](#)) EXIT

## Using Cold to Control Bed Bugs

Although cold temperatures can kill bed bugs, this technique may require specialized equipment and knowledge. Home freezers do not always get cold enough to kill the bugs. Bed bugs can go dormant and appear dead for days and then become active again once they are warm.

Other techniques, such as the use of carbon dioxide, have their limitations and often are most effective as components of a more comprehensive bed bug control plan. There may also be some safety concerns with these techniques, depending on how they are used. Like registered pesticide applications, these treatments have the potential to damage materials and may pose risks to humans and animals. Treatments as seemingly innocuous as carbon dioxide can be fatal if applied incorrectly.

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# Do-it-yourself Bed Bug Control

## Información relacionada disponible en español

Can you treat and eliminate the bed bugs on your own? Bed bugs are challenging pests to get rid of, since they hide so well and reproduce so quickly. In addition, the egg stage is resistant to many forms of treatment, so a single attempt may not be sufficient to complete the job.

Treating bed bugs is complex. Your likelihood of success depends on many factors, including:



- Extent of the infestation.
- Site-specific challenges.
  - Clutter.
  - Neighbors with infestations.
  - Ability of all of the residents to participate.

Achieving complete control can take weeks to months, depending on the nature and extent of the infestation, and everyone will need to cooperate and do their part.

Before starting, you should lay out all of the steps on a calendar. The following steps will help you begin:

1. Identify the problem
2. Develop a strategy
3. Keep the infestation from expanding
4. Prepare for treatment
5. Kill the bed bugs
6. Evaluate and prevent

## Identify the Problem

- Inspect infested areas, plus surrounding living spaces, to determine extent of infestation.
- Correctly identify the pest.
  - Collect a sample to [show an extension agent](#) EXIT or other reliable expert in entomology.
  - Extension agents are trained in pest control issues and know your local area.
- If you have bed bugs and live in an apartment, notify your landlord, because the units surrounding yours should be inspected.
  - Landlords may have a responsibility to participate in treatment. [Check the housing codes and laws in your area.](#)

## Develop a Strategy

- Using a calendar, map out each stage based on the recommendations in the following sections.
- Plan to keep records through the whole process – including dates and locations when pests are found.
- Leave time for long-term monitoring to make sure all of the bed bugs are gone.

## Keep the Infestation from Spreading

- Anything removed from the room should be placed in a sealed plastic bag and treated.
  - Items that cannot be treated should be placed in a sealed plastic bag and left for an extended period of time to ensure any active bugs are dead (research shows variation in the length of time needed, but it can be as long as a year).
- Empty the vacuum after each use.
  - Seal the bag and throw it out in an outdoor trash container.
- Don't discard furniture if you can eliminate the bed bugs from it.
- If furniture cannot be salvaged, discard it responsibly. Destroy it so someone else won't be tempted to bring it into their home. For example:
  - Rip covers and remove stuffing from furniture items.
  - Use spray paint to mark furniture with "Bed Bugs."
- Take steps to have infested items picked up as soon as possible by the trash collection agency.

## Prepare for Treatment

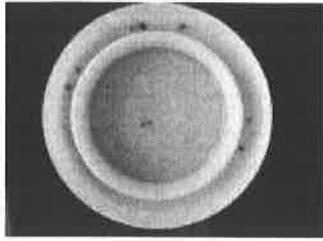
Jumping straight into control is tempting, but won't work. Preparing for treatment is essential to getting successful control. It will also help by making it easier for you to monitor for bed bugs that haven't been completely eliminated. This preparation should be conducted whether you are doing the treatment yourself or hiring a professional.

[Learn more about preparing for treatment](#)

[Learn about treatment options \(PDF\)](#). (4 pp, 480 K, [About PDF](#)) EXIT

## Kill the Bed Bugs

- Make sure the methods you select are safe, effective and legal. See [What's Legal, What's Not](#) for more information.
- Consider **non-chemical methods** of killing bed bugs. Some will be more useful than others.
  - Heat treatment using a clothes dryer on high heat, black plastic bags in the sun or a hot, closed car (pest management professionals have other methods that are not suitable for non-trained individuals to use).
  - Cold treatment can be successful in the home environment if the freezer is set to 0° F. You must leave the items in the freezer at that temperature for four days. Always use a thermometer to check the temperature, since home freezers are not always set to 0°.
  - Steam cleaners (wet or dry) can penetrate into cracks and fabrics to treat carpets, baseboards, bed frames, and other furniture. Steam temperature must be at least 130° F, but should not have a forceful airflow (use diffuser) or it may cause bed bugs to scatter.
  - Reducing the numbers of bugs with these and other non-chemical methods is helpful, but is unlikely to entirely eliminate the infestation.
- **If needed, use pesticides** carefully according to the label directions or hire a pest management professional.
  - Look for EPA-registered pesticides.
  - Bed bugs must be listed on the label.
  - Use foggers (bug bombs) only with extreme care. Improper use can harm your health or cause a fire/explosion.
    - Because foggers work with a broadcast spraying action, they should not be used as the sole source of bed bug control. The spray will not reach the cracks and crevices where bed bugs hide.
    - See [Should I Use a Fogger?](#)
- Every few days after you complete your initial cleanup and control processes, **carefully look for any evidence of bed bugs.**
  - If you see bed bugs, that means that either the initial cleanup missed some individuals or that eggs have hatched (finding and removing or killing all eggs can be very difficult) and retreatment may be needed.
- If repeated treatments are needed, consider using pesticides with [different modes of action](#).
  - **Desiccants (drying agents) can be particularly effective** in some situations since they work by drying out the bug (which means the bed bugs can't develop resistance to it).
    - If using desiccants, be sure to use only products registered as a pesticide.
      - Do not use pool or food-grade diatomaceous earth - this type of diatomaceous earth can harm you when you breathe it in. The pesticide version uses a different size of diatoms, which reduces the hazard.
    - Desiccants can be very effective; however, they can take up to several months to work.



Bed bug interceptor  
(place under furniture  
legs to catch bed bugs)

## Evaluate and Prevent

- Continue to inspect for presence of bed bugs, at least every 7 days, in case any eggs remained.
  - Interceptors (placed under the legs of furniture to catch bed bugs and keep them from climbing the legs; commercial and do-it-yourself versions available), traps or other methods of monitoring can be used.
- Continue to implement preventive measures.

For additional information, please see:

[Bed bugs: Do-it-yourself control options](#) -- Texas A & M AgriLife Extension EXIT

[Bed Bug Control in Residences](#) -- University of Minnesota EXIT

[Bed Bugs Integrated Pest Management in and Around the Home](#) -- University of California  
EXIT

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# Controlling Bed Bugs Using Integrated Pest Management (IPM)

## Related Information

The Federal Bed Bug Workgroup has completed a [Collaborative Strategy on Bed Bugs](#).

The strategy highlights ways that all levels of government, community, academia and private industry can work together to reduce bed bugs across the United States. It outlines four priority areas for bed bug control:

- Prevention.
- Surveillance and Integrated Pest Management [IPM].
- Education and Communication.
- Research.

## [Información relacionada disponible en español](#)

Controlling bed bugs takes time and patience. The biology of bed bugs dictates this, since they reproduce quickly and their eggs are resistant to many methods of pest control, both chemical and non-chemical. This page describes some of the techniques that have been found to be effective against bed bugs.

- [Understanding IPM \(Integrated Pest Management\)](#)
- [Non-chemical methods](#)
- [Using Pesticides](#)

## Understanding IPM (integrated pest management)

Integrated pest management is an effective and environmentally sensitive approach to pest management. IPM (integrated pest management) programs use information on the life cycles of pests and their interaction with people and the environment. This information, combined with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

IPM takes advantage of all appropriate pest management options, including the judicious use of pesticides. Although bed bugs may sometimes be controlled by non-chemical means alone, this approach is often very difficult, potentially less effective, and usually more resource intensive.

Bed bug control is most effective when an IPM approach is implemented with diligent participation by the residents. In multi-family housing, diligent participation is also required of the building management.

A comprehensive IPM (integrated pest management) program to control bed bugs may include a number of non-chemical and chemical methods. Some of these are described in the following sections.

## Non-Chemical Methods

- Put bedding and clothing in the dryer at high temperatures for 30 minutes to kill bed bugs (just washing will generally not kill bed bugs).
- Heat infested articles (e.g., furniture, luggage, other items that can't go in a clothes dryer) and/or areas (i.e., a room in a house or apartment, or a whole house) to at least 120 °F (approx. 49 °C) for 90 minutes to ensure that eggs are killed.
  - The higher the temperature, the shorter the time needed to kill bed bugs at all life stages.
  - This is often done using a heat-generating device or in a specially constructed heating unit, some of which are portable.
- Cold treatments (below 0 °F (-19 °C) for at least 4 days) can eliminate some infestations.
  - The cooler the temperature, the less time needed to kill bed bugs.
  - Home freezers may not cold be enough to reliably kill bed bugs. Always use a thermometer to measure the temperature.
  - Read more at [Using Freezing Conditions to Kill Bed Bugs](#) EXIT
- Use mattress, box spring, and pillow encasements to trap bed bugs and help detect infestations.
- Use monitoring devices such as bed bug interceptors to ensure that the bed bugs have been truly eradicated.
- See the "[do-it-yourself](#)" steps for more details on methods to reduce and control bed bug populations.

## Using Pesticides

- Use a comprehensive strategy for controlling bed bugs - pesticides should be only one part of a multi-part IPM plan. (Integrated Pest Management)
- [Use the Bed Bug Product Search tool](#) to help you find a pesticide product that meets your needs. Currently, there are over 300 products registered by EPA for use against bed bugs -- the vast majority of which can be used by consumers.

- Before reapplying or trying a different product read, [When Treatments Don't Work](#).
- You may want to [consult a pest management professional](#) to inspect your residence and, if needed, apply approved pesticides to treat any infestation.
- For assistance with choosing a pesticide registered for consumer use, you may also check with the [Cooperative Extension Service](#) office in your area.

[Read more about IPM](#)

[Stay Legal and Safe in Treating for Bed Bugs](#)

[Learn about treatment options](#). (4 pp, 480 K, [About PDF](#)) [EXIT](#)

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