

Bed Bugs

Toolkit



ARIZONA DEPARTMENT
OF HEALTH SERVICES

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General Information

Bed bugs are a common pest that can be found in a variety of environments. The presence of bed bugs does not mean that a place is dirty or unclean. Bed bugs have been found in the most upscale of accommodations, as well as in shelters, homes and several public places. Typically, bed bug infestations will occur in places where people sleep, rest, or are still for hours at a time. However, roving bed bugs may be inadvertently introduced into any location people frequent.

Bed bugs are not known to transmit diseases, but their presence in a home or work setting may prove stressful, especially when trying to eliminate the pest from a specific setting. The most important thing to keep in mind is not to panic.

What are bed bugs?

Cimex lectularius are more commonly known as bed bugs. They are typically flat in shape, reddish brown in color, and can vary in appearance depending on the stages in their life cycle. As adults, they are typically oval in shape and about 1/5 an inch long (about the size of an apple seed). They can appear less flat, or engorged, and even a bit longer if they have recently fed. You can see in this chart that immature bed bugs can appear yellowish in color, almost translucent. Eggs can appear as small as the size of a pinhead and can be difficult to see.

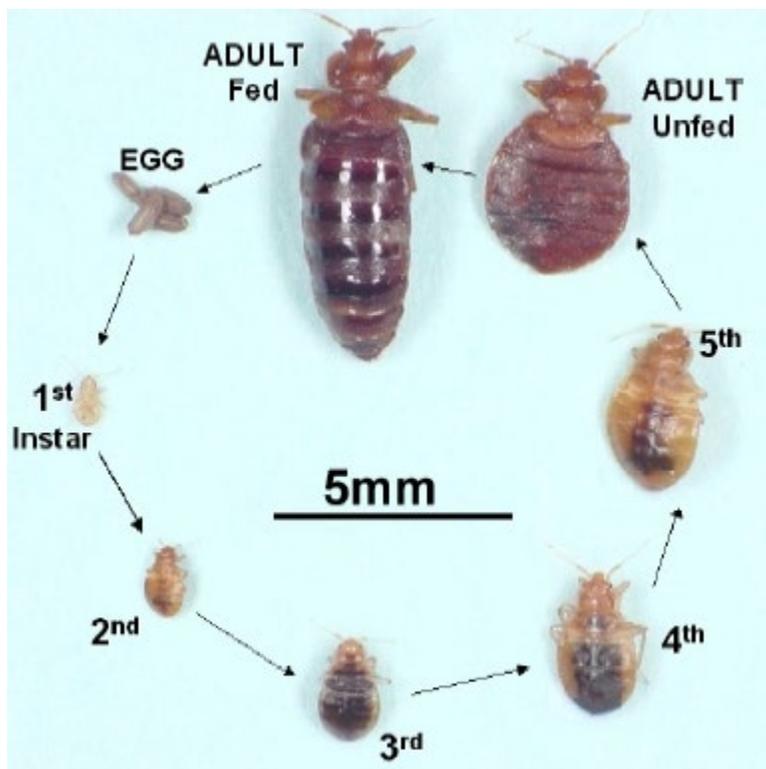


Photo credit: <https://www2.health.vic.gov.au>

How can I look for bed bugs?

If you identify a bed bug in your home, it is possible that another is not too far behind, so the best thing to do is to address the matter immediately to avoid having a more widespread issue.

Physical inspections can be more telling of the presence of bed bugs than bites, since bites can often be mistaken for rashes, hives, or other skin conditions.

You can search for rusty or red stains in bedding, as well as in the stitching, seams and folds of mattresses, headboard, box springs, and bed frames. Other common places to look for dark spots, reddish stains, or live bugs would be in seams of upholstery on chairs and sofas, electrical appliances and sockets, and furniture joints. In inspecting furniture, remember sometimes it will be necessary to move furniture and check in less conspicuous places, such as furniture peg holes and joints.

Another common place to check would be at the junctions of walls and ceilings. Actual bugs or excrement can be identified as dark specs at the juncture.



Photo credits:

<https://ecommons.cornell.edu/bitstream/handle/1813/43862/guidelines-bed-bugs-group-NYSIPM.pdf?sequence=1&isAllowed=y>

How do bed bugs get from one place to another?

Bed bugs can travel by way of various methods, and can often “hitch a ride” on personal items, clothing, furniture or luggage. This is typically the most common way that bed bugs can spread once they are present in a home or location. Make every effort to keep personal items separate in a public space or work setting. At home, do your best to keep things tidy, as bugs can more easily hide in clutter. If in a home, they will travel to areas where they sense there is a human presence. For this reason, blocking off a room or area of a building in hopes that they will die off is not an efficient strategy to eliminate them.



Photo credit:

<https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1625-2014.pdf>

Other resources

- <https://extension.arizona.edu/bed-bug-resources>
- <https://www.epa.gov/bedbugs>
- <https://www.cdc.gov/parasites/bedbugs/index.html>
- <https://www1.nyc.gov/site/doh/health/health-topics/bedbugs.page>
- <https://www.bedbugcentral.com/tv/index.php/2010/03/how-to-inspect-a-bed-for-bed-bugs/>

Prevention and Control in your Home

Anyone can get bed bugs. Promptly seek help immediately if you find them, but don't panic. Bed bugs are not known to transmit diseases.

Tips to keep bed bugs outside your home

- Never bring bed frames, mattresses, box springs or upholstered furniture found on the street or out of a dumpster into your home. Avoid utilizing second hand beds and mattresses if possible.
- Check all used, purchased, gifted or rented furniture, luggage, and clothing for bed bugs before bringing items into your home.
- Check luggage and other items used during travel by your family or visiting family/friends.
- 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.
- **Seal cracks and crevices** with caulk, even if you don't have bed bugs. This will help prevent bed bugs and other pests from coming in if you share a common wall with neighbors.
- **Reduce clutter** in your home to reduce hiding places for bed bugs.
- **Vacuum frequently** to remove any successful hitchhikers.
- Change and **wash and dry in a clothes dryer** bed linens, quilts and blankets often.
- **Use mattress covers or encasements** to enclose mattresses and box springs. This is helpful both to keep potential bed bugs away and to kill any existing ones.

Specific tips for multi-family homes

- Be vigilant when using shared laundry facilities. Transport items to be washed in plastic bags (if you have an active infestation, use a new bag for the journey home). Remove from dryer directly into a bag and fold at home.
- Try to isolate your unit by installing door sweeps on the bottom of doors to discourage movement into hallways, sealing cracks and crevices around baseboards, or light sockets to discourage movement through wall voids.
- Under **Arizona law**, landlords are required to provide existing and new tenants with educational materials on bed bugs. Additionally, landlords are prohibited from knowingly leasing a bed bug infested residence. The legislation requires tenants to notify the landlord of a bed bug infestation and disallows them from knowingly moving bed bug infested materials into a residence. This law does not apply to a single family residence.

Travel tips to prevent bringing bed bugs home:

- Select hard smooth luggage over fabric luggage, as they have fewer places for bed bugs to hide and can be vacuumed after traveling easily inside and out.
- Pack clothing and other items in sealable plastic bags and bring extra bags for items you might buy during your trip.
- At your destination, keep luggage on luggage racks or on a hard surface rather than on the floor, bed or other upholstered furniture; and keep luggage closed when not in use.
- Inspect the bed area for signs of bed bugs (bugs or brown fecal spots on mattress seams, headboards, furniture and nearby objects).
- If you find bed bugs or any evidence of bed bugs, tell the front desk staff. Ask for another room away from the original room.
- When leaving your accommodation, check your luggage and shoes for signs of bed bugs, and pack all items in the sealed plastic bags.
- Once home, unpack luggage outside residence, if possible, and take clothes from the bags directly into the washing machine. Wash immediately and dryer to completely dry items, then continue drying in the dryer for an additional 30 minutes.

Do I Have Bed Bugs?

An early sign of bed bugs is the appearance of **small dark spots on your mattress and bed linens**. These are bug droppings and blood spots. Closer examination of these areas may reveal one or more bugs.

Another sign is **unexplained red marks on arms, face, neck, or feet**. Very few people can feel bed bugs feeding. The bug's saliva contains an anticoagulant that promotes blood flow. People experience a range of reactions to bites. Some have no reaction at all, while others develop red itchy welts. Very few people have severe reactions, but the most severely affected may require medical attention.

How to Monitor your Home for Bed Bugs

Although bed bugs are most efficiently controlled using a professional pest control company with experience in bed bugs control, there are steps you can take to inspect your home or your temporary accommodation, if needed, and to monitor for potential reintroduction after elimination.

1. Items you will need:

- **A flashlight:** bed bugs hide in dark areas and in cracks and crevices. When hunting for bed bugs hold your flashlight parallel to the surface being inspected; this will cause eggs and small bed bugs to cast a shadow, making them easier to find.
- **A library card, old credit card or a play card:** use one that is plastic or that has a plastic coating which allows their edges to be pushed into cracks and crevices. By moving the card's edge along cracks and crevices, you can push bed bugs out where they can be captured or killed.
- **Plastic bags:** shopping bags and garbage bags are useful for holding items like clothes and bedding that may be infested. Placing infested items in bags will help you move these items without spreading bed bugs into other areas.
- **A roll of tape:** Wide, clear plastic shipping tape is a good option because it enables you to capture bed bugs, and it provides a closer look at them to confirm that it is a bed bug. As you see insects, or as you are digging along cracks and crevices, have a sticky edge of the tape exposed to quickly trap bed bugs.

2. **Identify the pest:** collect a sample of the pest and compare with available pictures from other resources (such as [this](#)) or contact your [local county extension agent](#) or send specimens in non-crushable containers to the attention of Public Health Entomologist at the University of Arizona, 37860 West Smith-Enke Road, Maricopa, AZ 85138.

3. **Establish a Clear Zone:** this is a clean zone into which you can move furniture and items which you have inspected and cleaned to reduce the chance that they will be re-contaminated. Where infestations are heavy, treatment and removal of infested furniture and mattresses may be necessary. If bed bug numbers are small, they can be physically removed from mattresses and harborage sites by vacuuming.

4. **Visually inspect your home:** In a home with a low infestation, bed bugs will likely be concentrated close to sleeping and resting areas. Start by looking in an area 10-20 feet around **where you sleep or sit**, as that's the distance a bed bug will usually travel. The **mattress** should be the first site inspected and the seams, beading, under buttons, labels, and corner protectors (if not previously removed) should be examined closely. See this [Arizona Cooperative Extension document](#) for examples and pictures of bed bugs in a home.

Follow these steps to properly inspect your home

- Use the flashlight in dark spaces and your library/credit card push bed bugs out of cracks or crevices. If live bugs do come out, crush them with a paper towel and throw them away outside your building.
- Check all possible hiding places, mindful that bed bugs, especially the young nymphs and eggs, can fit into very tiny cracks and crevices.
- **Check the top and bottom seams, tufts, and any rips** in the covers of mattresses and box springs.
- Look **underneath the bed and along the bed frame**, as well as at spring seams, and the joints of bed frames and headboards.
- Remove drawers from **furniture** and check the inside, top and bottom, joints and even screw holes.
- Remove and check zippers, seams and tufts in **cushions** of upholstered furniture, and their frames.
- Check inside and under items on the furniture, **near the bed**, such as lamps, alarm clocks, stuffed animals, purses, backpacks, etc.
- Using crevice tools, check paintings, posters, pictures and mirrors **hanging on the wall**.
- Check cracks in plaster and peeling wallpaper.
- Inspect the face plates of **electrical outlets and light switches** (by eye only – do not insert anything into areas with wires). Look in phones, clocks, smoke detectors and toys.
- Check along and under the **edge of carpeting** and in the places where the floor meets the wall.

If evidence of bed bug activity is found, wipe off dead bugs, blood stains, eggs and droppings with hot soapy water. Then follow the next section on controlling bed bugs in your home.

How to Control Bed Bugs in your Home

Non-Chemical Control:

- Carefully **throw away** bed bug infested items. Wrap items in **plastic bags**, and use duct tape to seal. Mark the item as 'bed bug danger' if possible. Do not drag unwrapped items through the house or building(s), as this can spread bed bugs.
- Items and furniture that have been inspected and are clean can be moved to the clean zone mentioned earlier in this document.
- Wipe off dead bugs, blood stains, eggs and droppings with **hot soapy water**.
- Wash bed sheets or other clothes in hot water and completely dry items, then continue drying in the dryer for an **additional 30 minutes**. Dry clean delicate clothes. (read more here about using heat to kill bed bugs).
- Place non-washable items in dryers or hot boxes.
- Fragile non-clothing items that cannot be heat treated in the dryer and delicate clothing can be sealed in plastic and placed in a **freezer for 4 days** (the freezing lethal temperature for adult bed bugs is 0.00°F, but they need at least 4 days to die). Even electronics that have been near or on a bed can be cold-treated.
- **Vacuum** bed frame, mattress and box spring using a crevice tool.
- Discard the vacuum bag and keep the vacuum outside the house. Store vacuums in garages or external storage cupboards.
- Vacuums with permanent cloth bags are not suitable. If the vacuum is bagless, empty the container carefully outside the home, and wash with hot water and soap. Some bagless style vacuums cannot be washed because of filters inside the vacuum. If this is the case, store the vacuum in a garage or external storage cupboard.
- Apply **dry steam** to infested furniture.
- If not already in one, put mattresses and box springs in bed bug-proof covers, or "**encasements**", that do not allow bed bugs to move through them.

Chemical Control

Hire a pest management professional or use pesticides carefully **according to the label directions**. Use the [EPA Bed Bug Search Tool](#) to help you choose an EPA-registered bed bug product that meets your needs. Here are a few more tips related to chemical control of bed bugs:

- **Always read and follow label instructions** for any pesticide product and make sure the pesticide is intended to treat bed bugs.
- Avoid daily spot treatments for bed bugs. It can cause the pesticide-resistant population to grow, making elimination of the bed bugs more difficult.
- Never use products indoors that are not approved for indoor use.
- Typically, dust products should be applied in small amounts within the cracks and crevices where bed bugs hide. Read the label to be sure.
- Infested items that cannot be treated with pesticides (bedding, clothing, electronic items) can be treated with heat or cold to kill hidden bed bugs. See above for the specific treatment methods.
- It can be helpful to use pesticides that differ in their mode of action because it can reduce the likelihood that bugs will develop resistance (read [here](#) for more details on different modes of actions).

Foggers and bug bombs should not be used as the only method to attempt to control bed bugs. Excessive amounts of pesticides can lead to poisonings. Read [here](#) for more information about foggers for bed bug control.

Finding help for bed bug control

- Search for companies that use integrated pest management (IPM) services. IPM is a pest management strategy that minimizes the risks associated with pests and pest management practices.
- Only utilize companies that have been registered to apply pesticides by the Arizona Department of Agriculture.
- Ask companies about their membership in recognized national, state, and local pest control associations (such as The National Pest Management Association (NPMA), state pest management associations, QualityPro, the Better Business Bureau (BBB), bedbugFREE, and Arizona Pest Professional Organization (AzPPO)).
- A good company should utilize some, if not all, of these procedures:
 - Use of vacuuming, cleaning, steaming, using mattress encasements.
 - Insist on inspecting before quoting a final price.
 - Provide a written report and a follow up program. This is very important as multiple treatments are usually required.
 - Inquire if children and pets are present, and adjust their treatment accordingly.
- In recent years, a number of scent detection companies have emerged offering canine scent detection of bed bugs. Canine scent detection should not be used as the only method of bug identification. This is especially well suited for large scale inspections where visual inspection is simply not practical, such as periodic inspections of hotel guest rooms, college dormitories, entire apartment complexes, etc. If using a bed bug detection dog service provider, it is advisable to confirm that the dogs and handlers are third-party certified by World Detection Dog Organization (WDDO), National Entomology Scent Detection Canine Association (NESDCA) or similar evaluation agency.

Evaluate and Prevent

Continue to inspect for bed bugs, at least every 7 days, in case any eggs remain. You can use interceptors, traps or other monitoring methods. Interceptors are placed under the legs of furniture to catch bed bugs and keep them from climbing the legs. Do not allow linens to touch the floor. Commercial and do-it-yourself interceptors are also viable options (see video [here](#)). Continue to protect your home from bed bugs.

Prevention and Control of Bed Bugs in Office Environments – Employees and Vendors

Bed bug numbers tend to be low, increasing by periodic reintroductions rather than through reproduction. Management and staff all have roles to play in reducing the spread of bed bugs.

This document outlines specific monitoring, prevention, and control measures that can be implemented by employees in an office environment.

- Visually monitor areas in your workspace such as upholstered chairs, desks, near electrical outlets, on wall dividers, behind hanging decorations, locations where personal items are left, as well as gathering areas.
- Report any evidence of bed bug activity to the designated contact person.
- Reduce clutter to provide fewer places for the bed bugs to hide and fewer opportunities for them to hitchhike to your home.
- Conduct daily visual inspections of all items brought to the office from home and vice versa (including lunch bags, clothes, etc.). Look for small black (fecal matter) or dark red (blood) stains along with both live and dead bed bugs.
- Keep your belongings stored separately from those of other people. Consider storing your belongings in a plastic bin.
- Minimize the number of items brought into and out of the workplace including home visit sites.
- Clients and visitors should also be encouraged to minimize belongings brought to appointments or visits.
- Personal items (e.g., clothing, shoes, backpacks/bags that are heat tolerant) can be placed in a dryer to completely dry items, then continue drying in the dryer for an additional 30 minutes.
- Inform management and facility staff of any questions or concerns.
- Items that are discarded due to infestation should be clearly labeled and double bagged to avoid someone taking items, and re-introducing them into an environment.

Prevention and Control of Bed Bugs in Office Environments – Management

Bed bug numbers tend to be low, increasing by periodic reintroductions rather than through reproduction. Management and staff all have roles to play in reducing the spread of bed bugs.

This document outlines specific monitoring, prevention, and control methods for bed bug activity in an office environment.

Inspection - When signs of bed bug activity are reported the area should be inspected.

- Visual inspections should be conducted as soon as possible once activity is reported to gather further information. Record information such as: date of sighting; location found; nymph or adult; alive or dead; and remediation steps taken.
- Areas to inspect include:
 - Upholstered chairs, desks, near electrical outlets, on wall dividers, behind cove molding, behind hanging decorations, locations where personal items are left, carpeting seams, as well as gathering areas.
- Inspections that are conducted with canine scent detection are more efficient in detecting bed bug activity as compared to visual inspection and should be incorporated into the response when possible.

Preparation - In preparation for treatment, the following should be done to clear the surface areas where chemicals will be sprayed.

- Remove personal items from work space.
- Detach and lay to the side any adjustable components from the cubicles.
- Dispose of any unnecessary items- reduce clutter.
- Vacuum the area that will be treated (dispose of vacuum bag to prevent re-introduction).

Treatment - Office bed bug pest control treatment service may include the following:

- Insecticide applications.
- Steam or spot cold treatment.
- Vacuuming to eliminate clusters of bed bugs.
- Heat treatment of rooms or compartment heat treatment of furniture and fixtures.

Ensure that the prescribed contact time instructions are met for any treatment applied.

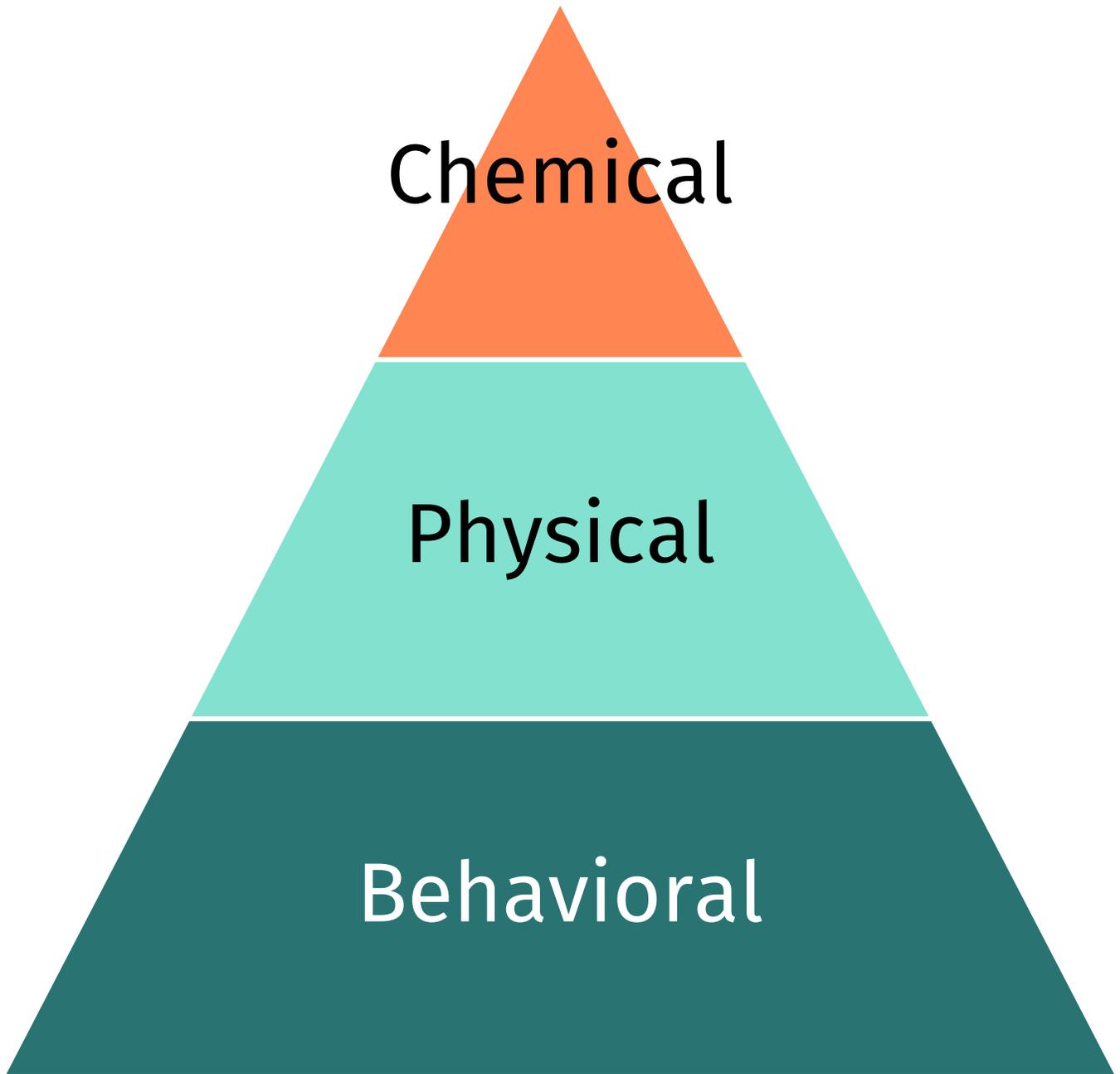
Communication:

- To ensure that the full scope of the pest activity is accounted for, it is important to designate a point person in charge of receiving and distributing communication regarding pest activity. Information regarding the sighting/activity should be shared with employees.
- Provide information to staff about:
 - Risk of bed bugs being transferred from home to office, from office to home, and between offices.
 - General biology of bed bugs.
 - How to recognize bed bugs and signs of bed bug activity.
 - Prevention and control methods that can be used by employees, vendors, and clients to reduce the likelihood of spreading bed bugs.

Prevention:

- The following steps will decrease the likelihood of re-introduction:
 - Continue to encourage employees to report any additional evidence of bed bug activity and maintain a log of the reports.
 - Encourage daily visual inspections of all items brought to the office from home or vice versa (including lunch bags, clothes, etc.). Look for small black (fecal matter) or dark red (blood) stains along with both live and dead bed bugs.
 - Reduce clutter to provide fewer places for the bed bugs to hide and fewer opportunities for them to hitchhike.
 - Keep belongings stored separately from those of other people. Consider storing belongings in a plastic bin.
 - Minimize the number of items brought into and out of the workplace including home visit sites.
 - Encourage the use of a plastic bin where personal items from home can be placed while in the office.
 - Personal items (e.g., clothing, shoes, backpacks/bags that are heat tolerant) can be placed in a dryer to completely dry items, then continue drying in the dryer for an additional 30 minutes.

Overall, it is important to remember that integrated pest management encompasses behavioral, physical, and chemical components with an emphasis on the behavioral components.



Follow pesticide label directions; consult a pest management professional

Seal cracks; launder; vacuum; steam clean; use heat treatment; use interceptors and mattress encasements

Prevention, Monitoring, Education, Awareness, Evaluation

Bed Bug Employee Sample Notification Letter

Date

Employee Name

Employee Address, City/State/Zip

Dear **[Enter employee name]:**

Bed bugs were detected in your work area. As a result, a specially-trained canine was brought in to conduct a full inspection of the area. The canine detected evidence of bed bugs in your specific workstation/office.

The health and safety of Arizona **[insert Agency name]** personnel are primary concerns for the Agency. *Cimicidae lectularius* is the scientific name for the common bed bug. Due to the detection of bed bugs in your work area, you are now required to obtain an inspection from a licensed bed bug inspector/exterminator. A list of qualified companies will be provided. If bed bugs are found at your place of residence, you will be required to have your home treated before returning to work. If no bed bugs are found, you will be required to submit an attestation from the inspector/exterminator attesting that no bed bugs have been identified, a copy of any treatment recommendations, and the receipt for the work. A Vendor Inspection Attestation must be completed by the inspector/exterminator.

If telework is available, you may work from your residence until you are able to obtain the inspection of your residence and provide the completed Vendor Inspection Attestation form. If you are unable to telework, or if no work is available for you to perform from your home, you may be required to take annual leave, if available, or leave without pay.

We regret that these requirements may be disruptive; however, we are committed to ensuring a safe and healthy work environment for all personnel. Please contact the Human Resources Office at **[phone number]** for assistance as you work through this process.

Sincerely,

Name

Title

Division

cc: Chief Human Resources Officer

Q: What are bed bugs?

Bed bugs are common pests that can be found in a variety of places but most commonly in places where people sleep.



Q: Are bed bugs a common problem?

Bed bugs can affect anyone regardless of sanitation or income level, they have been reported in locations from homes to businesses.

Q: Can you get any diseases or illnesses from bed bugs?

Bed bugs are not known to transmit any diseases.

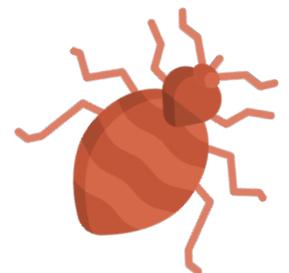
Q: How can I control bed bugs if I have them?

There are chemical and non-chemical control measures you can use. Throw away any infested items and wash all sheets in hot water and dry in a hot dryer.

Bed Bugs

What you need to know

- Never bring in bed frames, mattresses, box springs or upholstered furniture found outside.
- Reduce clutter in your home to reduce hiding places.
- Change and wash bed linens, quilts, and blankets often.
- When traveling, inspect the bed area of any signs of bed bugs and when returning check your luggage and shoes for signs of bed bugs before bringing items into the house.



What can I do?

References and Other Resources

- University of Arizona publications:
 - <https://extension.arizona.edu/bed-bug-resources>
 - This report has many pictures of bed bugs around the home:
<https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1625-2014.pdf>
 - This poster a good summary of bed bugs control in your home:
<https://cals.arizona.edu/apmc/docs/AZ1642Poster.pdf>
- Arizona Department of Agriculture:
 - <https://agriculture.az.gov/pests-pest-control/household-pests/bed-bugs>
- Maricopa County Bed Bug brochure:
 - <https://www.maricopa.gov/DocumentCenter/View/5382/Bed-Bug-Brochure-PDF>
- Illinois Department of Public Health -Bed Bug Home Page:
 - <http://www.dph.illinois.gov/topics-services/environmental-health-protection/structural-pest-control/bed-bugs>
- New York City Health Department-Bed Bug Home Page:
 - <https://www1.nyc.gov/site/doh/health/health-topics/bedbugs.page>
- Texas A&M:
 - <https://citybugs.tamu.edu/factsheets/biting-stinging/others/ent-3012/>
- University of California:
 - <http://ipm.ucanr.edu/PMG/PESTNOTES/pn7454.html>
- University of Minnesota:
 - https://www.bedbugs.umn.edu/sites/bedbugs.umn.edu/files/y2017m04d15_bed_bug_control_in_residences.pdf
- EPA Bed Bug Home Page:
 - <https://www.epa.gov/bedbugs>
- National Pesticide Information Center - Bed Bug Home:
 - <http://npic.orst.edu/pest/bedbug/index.html#bio>
- Cooperate Extensions in Arizona:
 - <http://npic.orst.edu/mlrDetail.html?lang=en&to=CEX&state=AZ#countyExtension>
- CDC:
 - <https://www.cdc.gov/parasites/bedbugs/faqs.html> and
<https://www.cdc.gov/nceh/ehs/Topics/bedbugs.htm>