

## Least Toxic Cockroach Control

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Some people see a roach and immediately grab a can of "bug spray". But, a quick spray from an aerosol can won't result in long term control. Ingredients in most aerosol and "bomb" treatments repel roaches. After aerosols are sprayed, roaches avoid those sprayed areas. Using these products can cause the roaches to hide deeper inside walls and be more difficult to control later. To make the most of your efforts, it is best to use a multiple tactic approach to control cockroaches. But first, you need to understand a little about the roaches that live in our houses, what they need to survive and what actions you can take to eliminate them.

### *Living With Roaches: Is it so Bad?*

Some folks don't seem to be bothered by a few roaches, but there are good reasons to control them. Cockroaches feed on food scraps and garbage, and can transfer germs by crawling on counter tops, clean dishes, and silverware. These germs could give you food poisoning and expose you and your family to other diseases. Another reason to be concerned is because some people who live in roach infested areas develop allergies that can trigger asthma.

### *Cockroach Species*

There are four species of cockroaches found in Nebraska homes: the German cockroach (*Blattella germanica*, Fig. 1), oriental cockroach (*Blatta orientalis*, Fig. 2), brownbanded cockroach (*Supella longipalpa*, Fig. 3) and American cockroach (*Periplaneta americana*, Fig. 4). The two most common roaches are the German cockroach and the oriental cockroach. German roaches are usually found in kitchens and bathrooms. Oriental roaches are more often found in the basement because they like cool, moist environments and are sometimes called "waterbugs".

Brownbanded cockroaches can live in kitchens and bathrooms, but you can also find them in living rooms and

bedrooms because they need less water than the German roach. Compared with southern states, American cockroaches are not found very often in Nebraska, but they are sometimes found in old buildings that have steam heat. American cockroaches are also found in sewer systems.

### *Cockroach Habits*

Cockroaches are most active at night and live in groups. During the day, they live in cracks and crevices that are dark and moist. Roaches also like to spend time on porous surfaces, such as wood, cardboard and paper—because they can saturate these surfaces with their odor—which attracts other roaches to these areas. Roaches eat anything that is organic—food scraps and crumbs, grease, garbage, cotton and wool fabrics, cardboard and wallpaper glue. Roaches also need water, although the brownbanded cockroach can live for several weeks with very little water. Cockroaches prefer to live near their food and water sources. Take their food and water away and roaches will have a much harder time living in your home.

### *Find Problem Areas*

Knowing what kind of roaches you have can help you know where to focus your inspecting efforts. Use the pictures to help you. Find sources of the roach infestation by inspecting and using sticky traps to capture roaches. Draw a diagram of each room, and start your inspection. Use a flashlight and a small mirror to peak behind or under appliances and cabinets. Look for living or dead cockroaches, shed exoskeletons (cockroach "skins"), egg cases, and roach droppings ("roach specks") that may look like grains of pepper. If you find live roaches during your search, use a vacuum cleaner to suck up the roaches and their debris. You can also find their hiding places at night by quietly entering a dark room and watching where they run when you turn on the lights.

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Figure 1. German cockroach.



Figure 2. Oriental cockroach.



Figure 3. Brownbanded cockroach.



Figure 4. American cockroach.

### ***Sticky Traps***

Sticky traps are an easy way to determine what kind of roach you have and to get an idea about how many roaches you have. Any sticky traps will work; it may be cheaper to buy glue boards that are sold for mouse control.

Place traps near evidence of roaches discovered during the inspection, especially where roach specks are found and locations near water and food sources. Mark the locations of sticky traps on your diagram. Write the date on the traps and check the traps weekly. Record the date, location, type and number of roaches caught. These traps will be used to judge the success of your control efforts.

### ***Jar Traps***

Another type of trap that is very cheap and easy to make is a jar trap. An empty, clean, glass quart mayonnaise jar with slanted shoulders will work best. Smear a thin film of petroleum jelly on the shoulder area inside the jar. To bait the jar trap, put a two-inch piece of banana peel in the bottom of the jar. During the night, cockroaches will smell the banana peel and crawl into the jar. They won't be able to crawl out because the petroleum jelly prevents the cockroach from clinging to the jar. For oriental roaches, attach a paper towel to the outside of the jar because oriental roaches are unable to climb a glass surface. After you have captured cockroaches, you can put the lid on the jar and put it in the freezer for several hours to kill them. Dispose of the dead cockroaches outside in a trash can and re-use the jar. When there are high numbers of cockroaches, these jar traps will catch roaches even if no banana peel is used.

### ***Inspect All the Tooms***

**KITCHENS.** Moisture, food and hiding places are reasons why German cockroaches are often found in the kitchen. Look on the floor underneath and behind sinks, stoves and other appliances. Inspect all cracks formed by kitchen cabinets. Especially look for roach specks that may be on the wall, in cupboards, near cracks and crevices and corners. Where there are many roach specks, you can be sure that many roaches spend time in those areas. Examine the edges of drop ceilings, especially above cooking and dishwashing areas. Check the back of the refrigerator and around door seals.

A careful inspection should reveal "hot spots" where most of the roaches are living. Focus control efforts in these areas.

**BATHROOMS.** Moisture is important here. Look for leaky or sweating pipes that may be adding to the roach problem. Check the bathtub and/or shower and look for leaking ceramic tile or fiberglass panels that result in water seeping behind the wall. Check sink overflow cavities and drains; roaches will also live in these areas.

**BASEMENTS.** Oriental cockroaches are most common in basements because they like cool and moist conditions. They are attracted to floor drains, laundry areas, basement bathrooms because of the moisture found in these locations. Moist basements and basements with wall-to-wall carpeting, where oriental roaches live underneath, are especially challenging. Unlike other types of roaches, oriental cockroaches can live and breed outside as well as indoors. Check basement foundations for cracks because they will come into the house through cracks in the foundation.

**OTHER ROOMS.** The brownbanded cockroach doesn't need much water, and is sometimes found in drier areas of the

house, like living rooms and bedrooms. In these rooms, vacuum drapes and furniture, especially under cushions and in crevices. Empty and clean book shelves and shake out books. Look behind picture frames. Check closets, desks, clocks, radios, stereos, computers, televisions—wherever it is warm and dark.

### ***Reduce Moisture***

Because all roaches need moisture, getting rid of moisture sources will help eliminate them. Repair leaks, insulate pipes and seal gaps around sinks, tubs and pipes to keep water from getting behind walls. Fix worn grout around bathtubs and showers. Seal gaps around countertops and the splashboards behind the kitchen sink.

Keep the kitchen and bathroom as dry as possible. Wipe up spills. Don't let water stand in houseplant dishes or in the drip pan under the refrigerator. Remove pet water dishes overnight.

### ***Eliminate Food Sources***

The kitchen is a great place for German and brownbanded cockroaches because it is warm, moist, and has plenty of food. Keep your kitchen very clean and do not allow grease, crumbs, or clutter to accumulate anywhere.

Move stoves and refrigerators and scrub on, around, underneath and behind them. Clean all surfaces, especially between counters and appliances. Clean cupboards inside and outside. Wipe up cockroach specks and droppings. Droppings are eaten by baby roaches and attract roaches to these areas.

Store all food, including pet food, in tightly sealed, roach-proof containers. Don't leave bowls of pet food on the floor overnight.

Garbage is attractive to roaches. Keep garbage, compost and recyclables in tightly sealed containers. Empty them daily, preferably in the evening, because cockroaches are most active at night. Wash and dry dishes, utensils, pots and pans immediately and don't allow dirty dishes to remain on the counter top or in the dishwasher overnight.

Roaches can live underneath poorly fitting refrigerator door seals. Fix them.

### ***Take Away their Hiding Places***

Roaches live in tight spaces with other roaches. Clutter allows more living spaces for roaches so getting rid of clutter is very important. Do not store paper bags, containers, cardboard, magazines, newspaper, equipment boxes or clothes on the floor or wedge paper bags between appliances or inside cabinets.

If there are gaps in your kitchen cabinets or between pieces of wood shelving, clean, vacuum and seal them with silicon caulk. Remove drawers in the kitchen and inspect inside the frame.

Seal small openings that are pathways into your home. If you live in an apartment building, pay special attention to walls that adjoin other units.

Repair cracks and crevices in basement walls and floors. Steel wool may be inserted into cracks for a quick fix. Cover drains in the basement and floors with window screening. Tighten loose windows and seal gaps around doors with weather-stripping.

Seal gaps around water, gas and heating pipes, both indoors and out. Don't forget cracks around heat registers, air ducts, electrical boxes and false ceilings.

Replace missing or damaged baseboards.

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Immature cockroaches live in very tiny cracks. In extreme cases, when there are no cracks or crevices available, German and brownbanded roaches can live underneath the labels of canned goods and eat the glue off the paper labels. To take away these hiding places, remove labels and use a marker to label the contents.

Outside, remove debris and trim ground cover near the building. Move firewood and garbage cans away from the building.

**Wipe Out Roaches Using Low Toxic Methods**

It is best to use the least toxic control method that will eliminate your cockroach infestation. It doesn't make sense to expose your family, your pets and yourself to a toxic insecticide when the lower toxic methods are just as effective.

We have listed roach control methods, starting with non-toxic actions progressing toward more toxic methods. It makes sense to use non-toxic methods first and more toxic methods only if the non-toxic ones fail to solve the problem.

**VACUUMING.** It seems too simple...but it works. To quickly reduce cockroach populations that you find behind appliances or in cupboards, have a vacuum cleaner ready and suck them up. The hose attachment works best. When you're done, remove the vacuum bag, seal it inside a plastic or paper bag, then dispose of both bags, preferably outside the house. Or, place the sealed bag in the freezer for a few hours to kill the roaches, then toss them in the garbage.

**HOT AND COLD TREATMENTS WHEN PRACTICAL.** Extreme temperatures will kill cockroaches. It isn't very practical to let your house freeze in the winter. But, you can kill roaches in small appliances, furniture or paper goods by letting them sit outside (below 20-degrees F) for several days or by placing the item in the freezer compartment for several hours.

**STICKY TRAPS OR JAR TAPS.** Trapping will reduce the number of roaches so continue to use them in places where you have caught them before. It is almost impossible to get rid of all the roaches with traps alone so you will need to use some other control methods, too.

**BAITS.** The biggest improvement to controlling cockroaches in recent years is the availability of effective bait products. They can be found in hardware stores, drug stores, discount stores, home centers, supermarkets and even web sites that sell pest control products. Insecticide baits are available in small plastic containers (bait stations) or as a dispensable gel. Baits are safe for the environment and not harmful to people or pets. Slow-acting baits work best. Use baits that have hydramethylnon, fipronil, boric acid or sulfluramid as their active ingredient (see Table 1). The active ingredient will be found on the product label.

Bait stations can be stuck to the walls, but change them often because after they are empty, roaches will hide in them. Gel baits are very effective and can be placed in wall voids and cracks and crevices where the bait stations won't fit. If the gel bait is eaten or dries up, you will need to replace it.

Be patient; baits take several weeks to see results. Cockroaches will use the bait as a food source, but you must eliminate other food sources as much as possible during the time you are baiting. Some roaches will eat the bait and be poisoned; others will be poisoned when they eat the dead roach bodies or the droppings. Don't use pesticides or household cleaners near the baits because they may repel cockroaches away from the baits.

Set the baits in "hot spots"—close to where sticky traps have caught roaches, or where you have seen roach specks or droppings. Placement is important. For German and brownbanded cockroaches, set bait stations next to walls and flush in corners. For American and oriental cockroaches set bait stations in the basement near floor or sewer drains or in damp crawl spaces.

**DUSTS.** *Silica (including silica dioxide, silica gel and silica aerogel) and diatomaceous earth* damage the waxy coating of the roach's body, causing it to shrivel and die. *Boric acid* is a readily available dust that roaches ingest when they groom themselves. It acts as a stomach poison, but is one of the safest control products to use around people and pets. Look for these dusts in hardware stores, drug stores, discount stores, home centers, supermarkets and even web sites that

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**Table 1.**

Common bait active ingredients found in cockroach control products. This may not be a complete listing and all products are not available nationwide.

Active ingredient	Examples of product names
abamectin	Avert Cockroach Gel Bait Avert Dry Flowable Cockroach Bait
boric acid	Blue Diamond Roach Food Niban FG Pic Roach Killer Gel Roach Free System
fipronil	Combat Quick Kill Formula Max Force Professional Roach Killer Gel Bait FC - with fipronil
hydramethylnon	Combat Roach Killing Gel Combat Source Kill Max Force Professional Insect Control Granular Bait Max Force Professional Roach Killer Gel Bait - with hydramethylnon Siege Gel Insecticide
sulfluramid	Raid Max Roach Bait

sell pest control products (see Table 2). Apply dusts in very thin layers underneath appliances and inside void areas (such as wall voids and voids around cabinets). Only apply dusts in areas inaccessible to children and pets.

*Continue to Check*

Once you get your cockroach problem under control, continue to use sticky traps to monitor for the reappearance of roaches. Cockroach populations grow quickly. Getting rid of a few roaches is easier than getting rid of many.

*Working With a Professional*

You may want to hire a pest control professional to help you, especially if you have a large infestation. If pesticides are needed, professionals are trained to apply pesticides safely. But, they can still use low toxic methods, like baits, to control the infestation in your home.

If you live in a multi-family dwelling and there is a serious roach problem, contact the apartment manager. If you get an unsatisfactory response, contact your local health department.

The information in this fact sheet is greatly condensed from the *Cockroach Control Manual*. For more detailed information about cockroach control in the home, check out the *Cockroach Control Manual* at: <http://pested.unl.edu/cockcom.htm>

A hard copy of the *Cockroach Control Manual* can be purchased at the University of Nebraska Cooperative Extension in Lancaster County Extension Office, 444 Cherrycreek Rd, Lincoln, NE 68528-1507. (402-441-7180).

**Table 2.**

Common dust active ingredients found in cockroach control products. This may not be a complete listing and all products are not available nationwide.

Active ingredient	Examples of product names
boric acid	Borid Boric Acid Dust Perma-Dust Pressurized Boric Acid Dust Pic Boric Acid Roach Killer Gel Pic Boric Acid Roach Killer III Powder Roach Prufe Victor Roach Killing Powder
diatomaceous earth	Diatomaceous Earth Roach and Ant Killer D-E Dust Safer Ant & Crawling Insect Killer
silica (silica dioxide, silica gel and silica aerogel)	DeltaDust (also contains pyrethrins) Drione Dust (also contains pyrethrins) Safer Ant & Crawling Insect Killer (also contains diatomaceous earth) Tri-Die Pressurized Silica + Pyrethrin Dust (also contains pyrethrin)

**Always read and follow the directions on the product label carefully. Use only products that are labeled for in-home use. Listing of products is not necessarily an endorsement by the University of Nebraska.**