

Low-Toxic Cockroach Control

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This NebGuide describes how to identify common cockroach species, what they need to survive, and effective, low-toxic alternatives to traditional chemical control options.

Some people see a cockroach and immediately grab a can of bug spray, but a quick spray from an aerosol can won't provide long-term control. Ingredients in most aerosol and "bomb" treatments repel cockroaches. Using these products can cause the cockroaches to hide deeper inside walls and be more difficult to control later. To make the most of your efforts to control cockroaches, use a multiple tactic approach. First, you need to understand a little about the cockroaches that live in our homes, what they need to survive and how to eliminate them.

Cockroaches: Why to Control Them

Some folks don't seem to be bothered by a few cockroaches, 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 can cause food poisoning and expose your family to other diseases. Another health issue is that people who live in cockroach-infested areas develop allergies that can trigger asthma.

Identifying Cockroach Species

Four species of cockroaches live in Nebraska homes: the German cockroach (*Blattella germanica*, Figure 1), oriental



Figure 1. German cockroach.



Figure 2. Oriental cockroach.



Figure 3. Brownbanded cockroach.



Figure 4. American cockroach.

cockroach (*Blatta orientalis*, Figure 2), brownbanded cockroach (*Supella longipalpa*, Figure 3), and American cockroach (*Periplaneta americana*, Figure 4). The two most common in Nebraska are the German cockroach and the oriental cockroach. German cockroaches are usually found in kitchens and bathrooms. Oriental cockroaches often are found in the basement because they like cool, moist environments and are sometimes called "waterbugs."

Brownbanded cockroaches, which need less water than German cockroaches, can live in kitchens and bathrooms, as well as in living rooms and bedrooms. Although com-

mon in southern states, American cockroaches are not often found in Nebraska homes, but are sometimes found in old buildings having 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. Cockroaches also like to spend time on porous surfaces, such as wood, cardboard, and paper. These surfaces can absorb their odor, which attracts other cockroaches to these areas. Cockroaches can survive on a variety of foods—crumbs, grease, garbage, cotton and wool fabrics, cardboard and wallpaper glue. Cockroaches also need water, although the brownbanded cockroach can live for several weeks with very little water. Cockroaches like to live near their food and water sources. Remove their food and water and cockroaches will have a much harder time surviving.

Find Problem Areas

Knowing what kind of cockroaches you have can help you know where to focus your efforts. Use *Figures 1–4* to guide their identification. Locate cockroach infestations by inspecting and using sticky traps to capture them. Draw a diagram of each room and start your inspection. Use a flashlight and a small mirror to peek behind or under appliances and cabinets. Look for living or dead cockroaches, shed cockroach “skins,” egg cases, and cockroach droppings (“roach specks”) that may resemble grains of pepper. If you find live cockroaches during your search, use a vacuum cleaner to suck up them and their debris. You also can find their hiding places at night by quietly entering a dark room and watching where they run when you turn on the lights.

Trap and Count

Sticky Traps. Sticky traps are an easy way to determine what kind of cockroach you have and to estimate the number of cockroaches. Any sticky trap will work; it may be cheaper to buy glue boards sold for mouse control.

Place traps near cockroach hiding places discovered during the inspection, especially near water and food sources and where roach specks were found. 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 cockroaches caught. Trap counts will determine 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 small piece of banana peel or bread in the bottom of the jar. During the night, cockroaches will smell the food 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 cockroaches, attach a paper towel to the outside of the jar because oriental cockroaches 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. With high numbers of cockroaches, these jar traps will catch cockroaches even if no food is used.

Inspect All Rooms

Kitchens. German cockroaches are usually found in the kitchen because of moisture, food, and hiding places. Look on the floor underneath and behind sinks, stoves, and other appliances. Inspect all cracks in and around kitchen cabinets. Especially look for roach specks that may be on the wall, in cupboards, or near cracks, crevices, and corners. Many roach specks are a sure sign that many cockroaches spend time there. Examine the edges of drop ceilings, especially above cooking and dishwashing areas.

A careful inspection should reveal “hot spots” where most of the cockroaches 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 cockroach 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; cockroaches will live in these areas.

Basements. Oriental cockroaches are most common in basements because they like cool moist conditions. They are attracted to floor drains, laundry areas, and basement bathrooms because of moisture in these locations. Moist basements and basements with wall-to-wall carpeting, where oriental cockroaches live underneath, are especially challenging. Unlike other types of cockroaches, oriental cockroaches also can live and breed outside during warm weather. Check basement foundations and floors for cracks because oriental cockroaches can enter through them.

Other rooms. The brownbanded cockroach doesn't need much water. It is sometimes found in drier areas of the house, like living rooms and bedrooms. Inspect drapes

and furniture, especially under cushions and in crevices. Check bookshelves, shake out books, look behind picture frames. Also inspect closets, desks, clocks, radios, stereos, computers, televisions—wherever it is warm and dark.

Reduce Moisture

Because all cockroaches 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. Also, fix worn grout around bathtubs and showers, seal gaps around countertops and 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 brown-banded 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 and wipe up any droppings.

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

Garbage is attractive to cockroaches. 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.

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

Take Away Their Hiding Places

Cockroaches live in tight spaces with other cockroaches; clutter allows them more living spaces. Do not store paper bags, containers, cardboard, magazines, newspaper, equipment boxes, or clothes near infested areas or wedge paper bags between appliances or inside cabinets.

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

inside the drawer frame.

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

Young cockroaches live in very tiny cracks. In extreme cases, when there are no cracks or crevices available, German and brownbanded cockroaches can live underneath loose labels of canned goods and eat the glue off the 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 Cockroaches Using Low Toxic Methods

It is best to use the least toxic control method to eliminate cockroach infestations. It doesn't make sense to expose yourself, your family, and your pets to a toxic insecticide if cockroaches can be controlled with lower toxic methods.

The following list of cockroach control methods starts with non-toxic actions and progressing toward more toxic methods. 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 done, remove the vacuum bag, seal it inside a plastic 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 cockroaches, then toss in the garbage.

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 cockroaches in small appliances, furniture, or paper goods by letting them sit outside when the temperature is below freezing for several days, or by placing the item in the freezer overnight.

Sticky Traps or Jar Traps. Trapping reduces the number of cockroaches so continue to use traps in places where

Table I. Low-impact active ingredients found in cockroach control bait products. This will not be a complete list, and all products may not be locally available.

Active ingredient	Examples of product names
abamectin	Abathor Gel Bait Avert® Cockroach Bait (gel, dry flowable) Enforcer® RoachMax Bait Stations Invict™ AB Insect Paste Vendetta™ Cockroach Gel Bait
boric acid	Deadline® Bug Bait Magnetic Roach Bait™ Mother Earth™ Granular Scatter Bait Niban® FG Fine Granular Bait Pic® Boric Acid Roach Killer Gel Terro® Multi-purpose Insect Bait
clothianidin	Maxforce® Impact Roach Gel Bait
dinotefuran	Hot Shot® Ultra Clear Roach and Ant Gel Bait Advance™ Cockroach Gel Bait Alpine® Cockroach Gel Bait
fipronil	Combat® Max™ Defense System (gel, stations) Combat® Max™ 12 Month Roach Killing Bait Combat® Max™ Roach Killing Bait (gel, stations, strips) Combat® Source Kill Max (gel, stations) MaxForce® FC (gel bait) MaxForce® FC Magnum (gel bait)
hydramethylnon	Combat® Roach Killing Bait (gel, stations) MaxForce® Professional Roach Killer Bait Gel Ortho Home Defense® Roach Bait
indoxacarb	Advion® Cockroach Gel Bait Raid Roach Gel
imidacloprid	Bayer Advanced® Roach Killer Gel Bio-Advance® Home Pest Roach Killer Gel InVict Gold Cockroach Gel™ Roach Doctor® Cockroach Gel Bait

Note: Always read and follow directions on the product label carefully. Use only products labeled for in-home use.

you have caught them before. It is almost impossible to get rid of all the cockroaches with traps alone, so you will need to use some other control methods, too.

Baits. The biggest improvement in cockroach control in recent years is the availability of effective bait products. They can be found in hardware, drug, and discount stores, home centers, supermarkets, and websites 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 abamectin, boric acid, clothianidin, dinotefuran, fipronil, hydramethylnon, indoxacarb, and imidacloprid as their active ingredient (*Table I*). The active ingredient will be listed on the product label.

Bait stations can be stuck to the walls, but change them often because after they are empty, cockroaches will hide in them. Gel baits are very effective and can be placed in wall

Table II. Common active ingredients found in dust cockroach control products. This may not be a complete list and all products may not be available locally.

Active ingredient	Examples of product names
boric acid	Bonide® Boric Acid Powder Borid® Boric Acid Dust Enforcer® Roach Ridd with Boric Acid Enoz Roach Away® Boric Acid Hot Shot MaxAttrax® Roach Killing Powder Nibor-D® Pic® Boric Acid Roach Killer III
diatomaceous earth/ silicon dioxide	Alpine® Dust (also contains neonicotinoid insecticide) Bonide® DE Crawling Insect Killer Cimexa™ Insecticide Dust Drione® (also contains pyrethrins insecticide) Garden Safe® Crawling Insect Killer Insect Dust Diatomaceous Earth Mother Earth™ D Natural Guard Diatomaceous Earth Perma-Guard™ Crawling Insect Control Pure DEfense™ Diatomaceous Earth Safer® Diatomaceous Earth PT TriDie® Pressurized Dust Insecticide (also contains pyrethrins)

Note: Always read and follow directions on the product label carefully. Use only products labeled for in-home use.

voids, cracks, and crevices where bait stations won't fit. If the gel bait is eaten or dries up, check often and 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 while baiting. Some cockroaches will eat the bait and be poisoned; others will be poisoned when they eat dead cockroach bodies or droppings. Don't use pesticides or household cleaners near the baits because they may repel cockroaches away from the baits.

Use plenty of bait in "hot spots"—close to where sticky traps have caught cockroaches or where you have seen roaches, roach specks, or droppings. Placement is important. For German and brownbanded cockroaches, use gel bait in cracks; set bait stations next to walls and flush in corners. For American and oriental cockroaches set large-sized 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 cockroach's body, causing it to shrivel and die. Boric acid is a readily available dust that cockroaches eat 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, drug,

and discount stores, home centers, supermarkets and even websites that sell pest control products (*Table II*). Apply dusts in very thin layers underneath appliances and inside void areas (such as voids behind walls and around cabinets). Apply dusts only in areas inaccessible to children and pets. Avoid inhaling these dusts.

Continue to Check

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

Work With a Professional

You may want to hire a pest control professional, especially if you have a heavy infestation. If pesticides are needed, professionals are trained to apply pesticides safely; 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 cockroach problem, contact the apartment manager. If you get an unsatisfactory response, contact your local health department.

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