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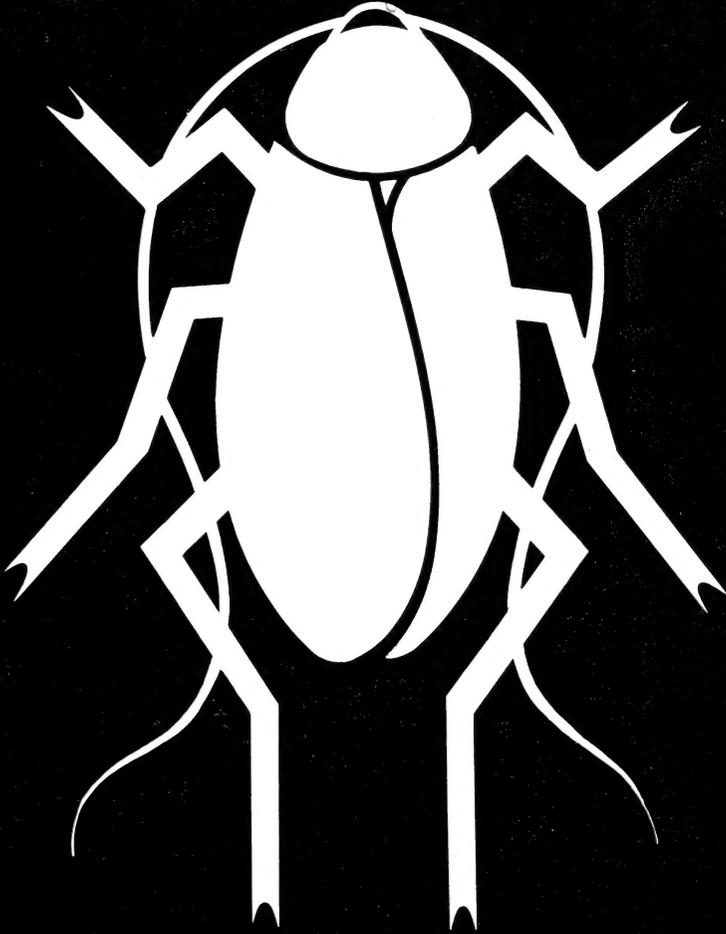
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Reserve

# Cockroaches

## How to Control Them



UNITED STATES  
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## COCKROACHES ; How to Control Them . ,

Cockroaches are pests throughout the United States. They carry filth on their legs and bodies and may spread disease by polluting food. They destroy food and damage fabrics and bookbindings.

Cockroaches have an offensive odor that may ruin food. Unless dishes over which the insects run are thoroughly washed, they may give off the odor when warmed.

There are about 55 kinds of cockroaches in the United States, but only seven kinds are troublesome in buildings. Most of the others live outdoors. They may enter houses by coming in on firewood or by flying to lights, but most of them cannot develop indoors. They either leave or die.

Those that do develop indoors are fairly easy to control in most homes.

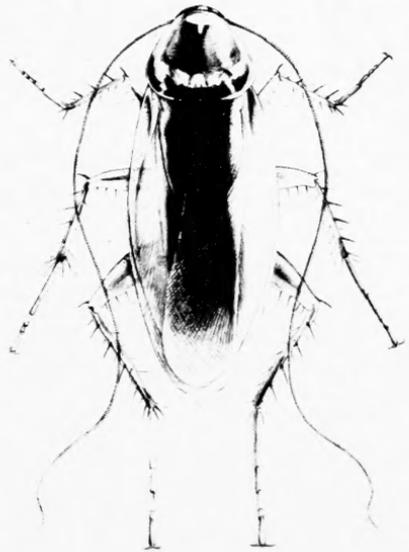
### DESCRIPTION

Cockroaches have a broad, flattened shape, and six long legs. They are dark brown, reddish brown, light brown, or black. The adults of most species have wings. The young look like the adults, except that they are smaller and do not have wings.

Cockroaches hide during the

day in sheltered, dark places. They come out and forage at night. If disturbed, they run rapidly for shelter and disappear through openings to their hiding places.

The seven kinds that are troublesome in buildings can be distinguished from each other by their appearance and by the places where they are found. The table and illustrations will help you learn to distinguish them.



BN-2287

American cockroach (natural size;  
some are larger.)

## DEVELOPMENT

German and brown-banded cockroaches mature in 2 to 5 months; other kinds mature in about a year.

Cockroaches grow slowly when food, temperature, and moisture are unfavorable. Conditions are not usually ideal for rapid growth in buildings and homes where good sanitation is practiced.

The female lays her eggs in a leathery capsule, which she forms at the end of her body. The German cockroach carries the egg capsule about a month, and drops it just before the eggs hatch; about 36 cockroaches hatch from the capsule. The other kinds carry the egg capsules a day or two, then glue them to some object in a protected place; about 12 cockroaches hatch from each capsule after an incubation period of 1 to 3 months.

## PREVENTING ENTRY

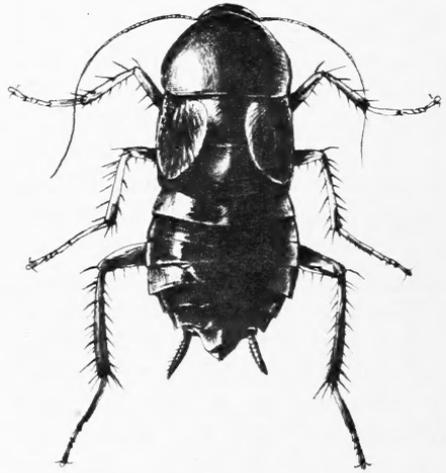
Cockroaches may enter the house from outdoors, in infested containers from other buildings, or from adjoining homes or apartments. To keep them out, fill all cracks passing through floors or walls, and cracks leading to spaces behind baseboards and door frames, with putty or plastic wood. Pay special attention to water and steam pipes entering rooms.

Cockroaches develop in large numbers in dirt and filth. Thorough cleaning reduces the likelihood of heavy infestation.

When you bring baskets, bags, beverage cartons, or boxes of food and laundry into the house, look for cockroaches that may be hiding in them, and kill any that you find.

## SPRAYS AND DUSTS

Infestations can be controlled by applying insecticides in sprays and dusts.



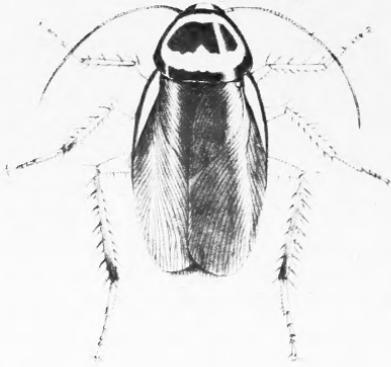
BN-2289

Oriental cockroach: Above, female; below, male. (1½ times natural size.)

## Cockroaches Troublesome in Buildings

Name	Description	Where found
American cockroach <sup>1</sup>	Reddish brown to dark brown. Adults 1½ to 2 inches long.	Develop in damp basements and sewers, forage mostly on first floors of buildings.
Australian cockroach <sup>2</sup>	Reddish brown to dark brown. Yellow markings on the thorax; yellow streaks at base of wing covers. Adults 1 inch long.	Develop in warm, damp places, in or out of doors; forage mostly on first floors of buildings.
Brown cockroach <sup>3</sup>	Reddish brown to dark brown. Adults 1¼ to 1½ inches long.	Develop in warm, humid environments. May occur in all areas of buildings.
Brown-banded cockroach <sup>4</sup> (also called tropical cockroach).	Light brown. Mottled, reddish-brown wings on female; lighter wings on male. Adults ½ inch long.	Develop and live all over the building.
German cockroach <sup>5</sup> (also called croton bug and water bug).	Light brown. Black stripes running lengthwise on back. Adults ⅝ inch long. Most common of the 7 kinds.	Develop and live all over the building, particularly in kitchens and bathrooms.
Oriental cockroach <sup>6</sup> (also called black beetle and shad roach).	Black or dark brown. Traces of wings on females; short wings on males. Female adults 1 to 1¼ inches long, male adults a little shorter. More sluggish than other species.	Develop in damp basements and sewers; forage mostly on first floors of buildings.
Smokybrown cockroach <sup>7</sup>	Dark brown to black. Adults 1¼ to 1½ inches long.	Develop in warm, humid environments. May occur in all areas of buildings.

<sup>1</sup>*Periplaneta americana*.   <sup>2</sup>*Periplaneta australasiae*.   <sup>3</sup>*Periplaneta brunnea*.   <sup>4</sup>*Supella longipalpa*.   <sup>5</sup>*Blattella germanica*.   <sup>6</sup>*Blatta orientalis*.   <sup>7</sup>*Periplaneta fuliginosa*.



BN-2288

Female Australian cockroach. ( $1\frac{1}{2}$  times natural size.)

Make limited applications; do not treat entire floors, walls, or ceilings. Treat only along baseboards, under cupboards, and in similar places where cockroaches hide. Do not treat surfaces used for the preparation of food. Do not treat storage spaces that contain food.

The following list names the most commonly used insecticides, gives the proper strength of each spray or dust, and indicates the effectiveness of each. Dusts can be bought already prepared and so can oil sprays. Emulsions can be prepared easily by following the directions on the label.

**CHLORPYRIFOS (DURSBAN):** 0.5-percent oil solution or water emulsion.

**DIAZINON:** 0.5-percent oil solution or water emulsion.

**MALATHION:** 2-percent oil solution or water emulsion; or 4- or 5-percent dust.

**PROPOXUR (BAYGON):** 1-per-

cent oil solution or water emulsion.

**RONNEL:** 2-percent oil solution or water emulsion.

These insecticides kill the cockroaches present and leave a residue on the treated surface. The residue does not keep cockroaches out, but those that come in contact with it are killed. A single treatment in the right places gives protection for several weeks.

A liquid insecticide is often the best for use in the home. A dust or water-based spray may be used when there is danger of fire from oil-based liquids. Both a liquid and a dust may be used when cockroaches are abundant, difficult to control, or firmly established.

## APPLICATION

Whether spray or dust is used, treatment should be limited to baseboards, cracks, and places where cockroaches hide.

### Spray

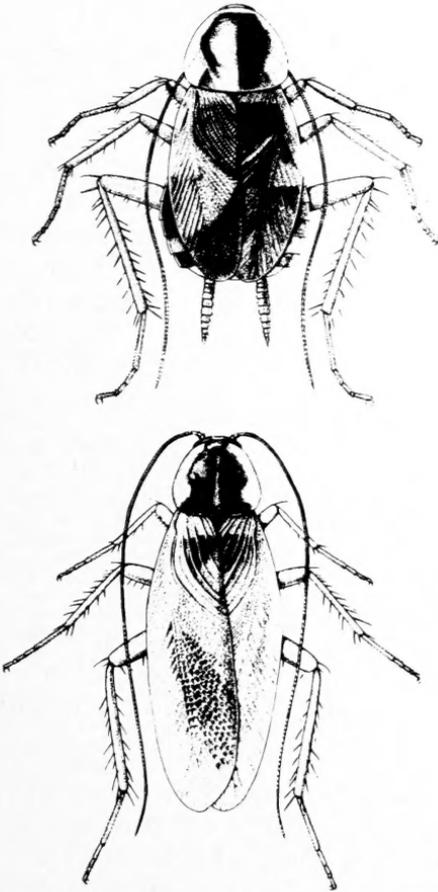
Apply a liquid insecticide with an ordinary household plunger-type sprayer that produces a coarse spray to wet the surface being treated. If the mist is too fine, it will float away in the air. Apply enough spray to moisten surfaces thoroughly, but not so much that the liquid begins to drip or run.

Professional pest-control operators may use larger sprayers but should make spot treatments only.

A paintbrush may be used for applying the liquids in cracks or along baseboards.

## Dust

Apply an insecticide dust with a puff duster of the bulb, plunger, or bellows type. Blow the dust into hiding places that are hard to reach with a spray and onto surfaces where cockroaches run. A light, uniform film is sufficient. Repeat when moisture causes the dust to cake.



BN-2291  
Brown-banded cockroach: *Above*, female; *below*, male. (1½ times natural size.)

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Placing a band of dust on the floor around the edges of a room is not an adequate treatment. Many cockroaches may be able to go from their hiding places to sources of food and water without crossing the band of dust.

## PLACES TO TREAT

For best results, apply insecticides to places where cockroaches hide.

To find the hiding places, enter a dark room quietly, turn on the lights, and watch where the cockroaches run.

They may hide—

Around the kitchen sink and drainboard.

In cracks around or underneath cupboards and cabinets, or inside them—especially in upper corners.

Around pipes or conduits, where they pass along the wall or go through it.

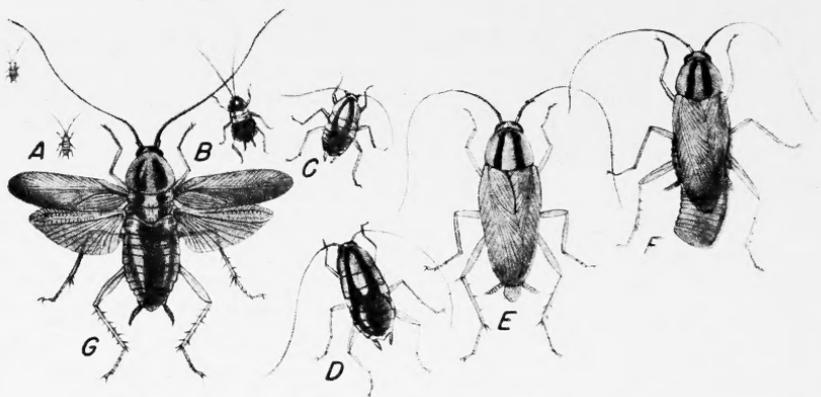
Inside the motor compartment of mechanical refrigerators.

Behind window or door frames. Behind loose baseboards or molding strips.

On underside of tables and chairs.

In radio and television cabinets. Behind mirrors.

On closet and bookcase shelves.



BN-2290

German cockroach: A, First stage; B, second stage; C, third stage; D, fourth stage; E, adult female; F, female with egg case; G, adult with wings spread. (1½ times natural size.)

When treating cupboards and pantries, take everything from shelves and remove drawers so that food and utensils will not become contaminated.

Spray or dust the interiors. Allow the spray to dry, or clean up excess powder. Clean shelf sur-

faces, or cover them with paper, before replacing the articles.

If drawers are cleaned thoroughly, it is not necessary to spray inside them; it will help to spray the sides, backs, and under-surfaces.

## OTHER METHODS OF CONTROL

### Baits

Registered baits containing approved materials may be used in cockroach control programs. Buy these baits and place them in areas frequented by cockroaches. Do not use them where they can be reached by children or pets.

### Contact Sprays or Space Sprays

Contact sprays or space sprays must be applied directly to cockroaches or to open areas where cockroaches are crawling. Spray into cracks, crevices, and other hard-to-reach areas where cockroaches may hide. These sprays provide few, if any, residual benefits after their use.

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### Resistance of Cockroaches to Insecticides

In areas where the German cockroach has developed resistance to some insecticides, poor control of affected infestations may become evident. German cockroaches can be controlled, however, with the proper use of approved insecticides. Frequently, poor control of cockroach infestations is due to improper use of insecticides and lack of good sanitation practices in infested environments.

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## Fumigation

Fumigation immediately destroys a cockroach infestation, but it is dangerous in congested or commercial areas, and it is expensive. Buildings in such areas are likely to become reinfested within a short time.

Since effective residual insecticides have become available, fumigation is seldom used. **Only a professional pest-control operator should fumigate.**

## PRECAUTIONS

Pesticides are safe and effective when used as directed. Used improperly they can be injurious to man, animals, and plants. The user is cautioned to read and follow all directions and precautions on the label of the pesticide formulation being used.

The amount and frequency of pesticide use may vary in different sections of the country. This publication is intended for nationwide distribution. Users of this publication may also wish to consult their State agricultural experiment stations or County Extension Service for information applicable to their localities, or obtain the latest recommendation if this publication is more than 2 years old.

The pesticides mentioned in this publication were federally registered for the use indicated as of the issue of this publication.

Store pesticides in original containers under lock and key—out of the reach of children and ani-

## Boric Acid and Borax

Finely powdered boric acid and borax (sodium tetraborate pentahydrate) act slowly and are generally less effective than other insecticides against cockroaches.

These materials are sometimes mixed with ingredients that are attractive to cockroaches and compressed into tablets to be used as bait. The powders or bait tablets may give satisfactory results when used in places where there is little food for cockroaches, such as in office buildings.

mals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first-aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

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