

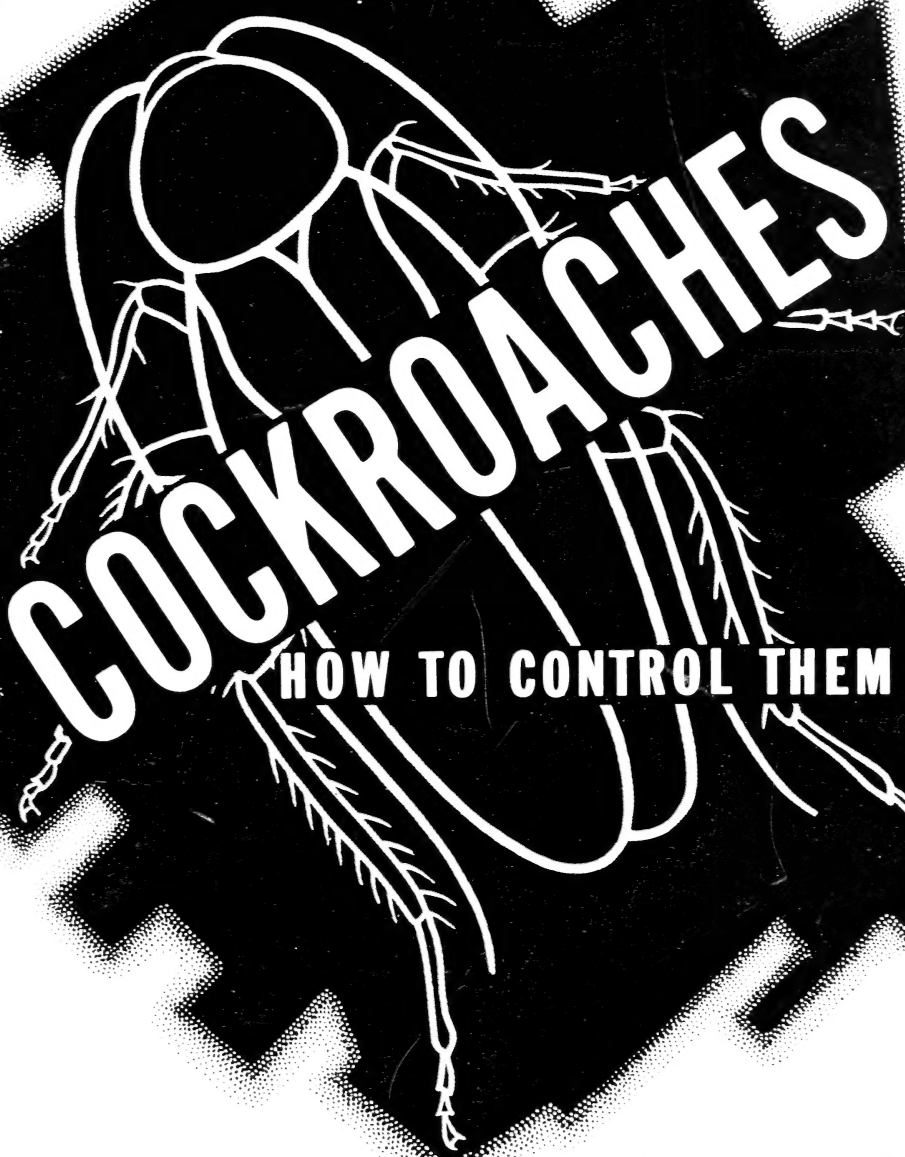
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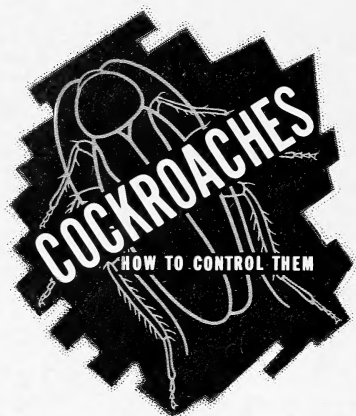
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Leaflet No. 430

U. S. Department of Agriculture

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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 5 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.

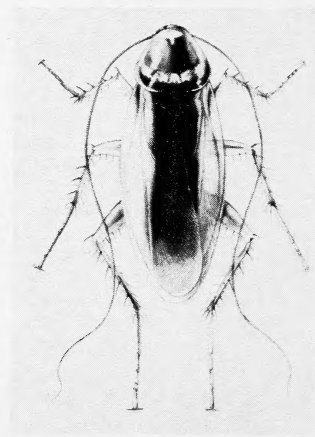
Cockroaches hide during the day in sheltered, dark places. They come out and forage at night. If disturbed, they run rapidly for shelter and disappear through openings to their hiding places.

The five 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.

Development

German and brown-banded cockroaches mature in 4 to 6 months; other kinds mature in about a year.

Cockroaches grow slowly when food, temperature, and moisture are unfavorable. Conditions are



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American cockroach. (Natural size; some individuals are larger.)

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 a day or so before the eggs are ready to hatch; about 30 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 2 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 infestation.

Five Kinds of Cockroaches Troublesome in Buildings

Name	Description	Where found
American cockroach ¹	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 ²	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-banded cockroach ³ (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 ⁴ (also called croton bug and water bug).	Light brown. Black stripes running lengthwise on back. Adults ¾ inch long. Most common of the five kinds.	Develop and live in kitchens and bathrooms.
Oriental cockroach ⁵ (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 four kinds.	Develop in damp basements and sewers; forage mostly on first floors of buildings.

¹ *Periplaneta americana*.

³ *Supella supellectilium*.

⁵ *Blatta orientalis*.

² *Periplaneta australasiae*.

⁴ *Blattella germanica*.

When you bring baskets, bags, 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. A DDT-pyrethrum aerosol is also helpful.

Most of the insecticides recommended for controlling cockroaches are approved for general use, but a few are restricted.

For general use

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. So can most sprays; others can be prepared easily by following the directions on the label.

CHLORDANE: 2-percent oil solution or water emulsion; or 5-percent dust. . . . Highly effective against all cockroaches except those that have developed resistance to insecticides.

DIAZINON: 0.5-percent oil solution or water emulsion. (See "Resistant Roaches," this page.)

DIELDRIN: 0.5-percent oil solution or water emulsion; or 1-percent dust. . . . Same effectiveness as chlordane.

DDT: 5-percent oil solution or water emulsion; or 10-percent dust. . . . Effective against all cockroaches except those that have developed resistance to insecticides. Less effective than chlordane and dieldrin.

Resistant Roaches

Roaches develop resistance to chlordane, dieldrin, and DDT; resistance is especially widespread in German cockroaches.

Diazinon and malathion will control resistant roaches. Apply Diazinon over the infested places as a 0.5-percent emulsion or oil solution spray. Malathion may be used at 2-percent strength in similar formulations. Also, spot treatments may be made with malathion in a 3- to 5-percent concentration, which should be applied with a brush or sprayed in places where roaches run or hide.

LINDANE: 0.5-percent oil solution or water emulsion; or 1-percent dust. . . . Effective against all cockroaches except those that have developed resistance to insecticides. Duration of effectiveness shorter than that of chlordane and dieldrin.

MALATHION: 2-percent oil solution or water emulsion. (See "Resistant Roaches," this page.)

PYRETHRUM: Liquid or dust. . . . May require more thorough and more frequent application than chlordane, dieldrin, or DDT.

SODIUM FLUORIDE: 50-percent dust. . . . Same effectiveness as pyrethrum.

DDT-PYRETHRUM AEROSOL: Thorough and repeated treatments necessary.

These insecticides kill the cockroaches present, and all except those applied by aerosol 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-base spray may be used when there is danger of fire from oil-base liquids. Both a liquid and a dust may be used when cockroaches are abundant, difficult to control, or firmly established.

For restricted-use

Chlorthion and Dipterex are effective in controlling roaches, but their uses are restricted.

Chlorthion may be used anywhere except in homes and in places where milk is processed or stored. It should be applied as a 1- or 2-percent spray or paint.

Dipterex should be used only by pest-control operators. It should be applied in a 1-percent water spray.

Application

Spray

Apply a liquid insecticide with an ordinary household plunger-type sprayer that produces a coarse spray.

If large areas are to be treated, compressed-air sprayers, power sprayers, or other special equipment may be used. The sprayer should deliver a fairly coarse mist that will wet the surface being treated. If the mist is too fine, it will float away in the air. Apply enough spray to moisten surfaces



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Oriental cockroach: Above, female; below, male. ($1\frac{1}{2}$ times natural size.)

thoroughly, but not so much that the liquid begins to drip or run.

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

Dust

Apply a dust insecticide with a puff duster of the bulb, plunger, or bellows type. Blow the dust into hiding places that are hard to

PRECAUTIONS

Most cockroach insecticides are poisonous to man and animals, but they are safe to use if you follow a few simple precautions.

Heed all precautions on the container label.

Keep insecticides out of reach of children and pets.

Do not contaminate food, dishes, or utensils while applying insecticides.

Do not apply oil sprays where they could be ignited by a flame (for example, the flame of a pilot light) or by electric sparks.

Avoid unnecessary exposure to insecticides when handling them. During prolonged handling, it may be desirable to use a respirator.

Do not use malathion, lindane, Diazinon, chlordane, or dieldrin to treat an entire room. Restrict the use of these insecticides to places where roaches run or hide.

High dosages of aerosol may be irritating. Keep people and pets out of the treated room for about an hour after the aerosol has been applied.

Wash all exposed parts of the body with soap and water after applying an insecticide.

reach with a spray and onto surfaces where roaches run. A light, uniform film is sufficient. Repeat when moisture causes the dust to cake.

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

Aerosol

Direct the aerosol into the cockroaches' hiding places. It will cause them to run into the open, where they may be exposed to enough insecticide to kill them. Better results will be obtained if

all openings are closed to prevent the cockroaches from escaping from the room.

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 undersides of tables and chairs.

In radio and television cabinets. Behind mirrors.

On closet and bookcase shelves.

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

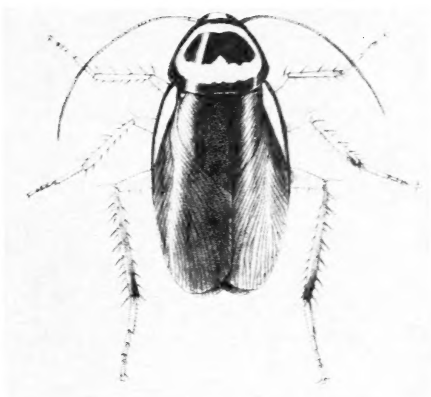
If drawers are cleaned thoroughly, it is not necessary to spray inside them; it will help to spray the sides, backs, and undersurfaces.

Other methods of control

Fumigation, boric acid and borax, and phosphorus paste are sometimes used to control cockroaches when sprays and dusts cannot be used. These other methods may not be completely effective but are useful under certain conditions.

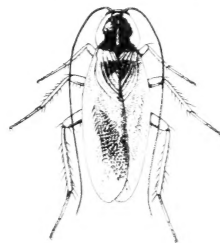
Fumigation

Fumigation immediately destroys a roach infestation, but it is dangerous in congested or commercial areas, and it is expensive.



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Female Australian cockroach. (1½ times natural size.)

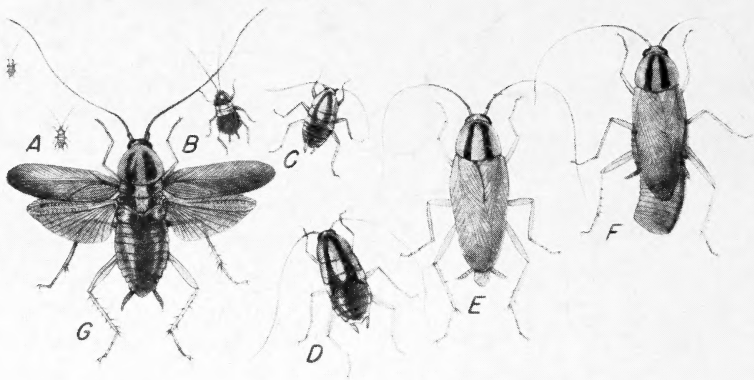


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Brown-banded cockroach: Above, female; below, male. (1½ times natural size.)

Also, 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.



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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.)

Boric acid and borax

Finely powdered boric acid and borax 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.

Phosphorus paste

Phosphorus paste is usually effective against all cockroaches except the German cockroach. It is especially effective in damp climates.

Buy the paste and spread it on

small pieces of cardboard. Roll the cardboard into cylinders with the paste inside. Fasten each cylinder with a rubber band or string. Place the cylinders where cockroaches can get to them, but not where children and pets can reach them. When brown-banded cockroaches are present, put the cylinders behind books, on closet shelves, and in framework of upholstered furniture; tack them to the backs of cabinet drawers.

Prepared by

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