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## PB1024-Control Cockroaches in the Home

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### Recommended Citation

"PB1024- Control Cockroaches in the Home," The University of Tennessee Agricultural Extension Service, PB1024-15M-Rev.3/94 E12-2015-00-035-94, [http://trace.tennessee.edu/utk\\_agexdise/28](http://trace.tennessee.edu/utk_agexdise/28)

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PB1024

# **CONTROL COCKROACHES IN THE HOME**

# CONTROL COCKROACHES IN THE HOME

by Harry E. Williams, Professor  
Entomology and Plant Pathology

Cockroaches are the number one pest in homes or other buildings. They have successfully adapted to living wherever people live and are common on ships, in warehouses, restaurants, stores, apartments, offices, hotels and one-family dwellings. In fact, cockroaches are often the first occupant in a new building.

Cockroaches are frequently carried into buildings in bags or boxes. They can live outside in water meters, garbage dumps or sewage systems and then migrate into buildings.

Cockroaches hide in sheltered, dark places during the day. Because they avoid light, they may not be detected in a home for months. Most homes have many cracks or crevices where they hide. At night, cockroaches leave their hiding places to seek out food and water. If a light is turned on, they will run rapidly for shelter, disappearing through openings into their hiding places.

Cockroaches can carry bacteria, fungi and filth on their legs and bodies. Their habit of hiding in empty spaces and moving under cover of darkness carrying bacteria is a health menace. They may pollute food or cooking utensils with this filth.

## **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 male Oriental cockroach has wings which cover only part of the back. The female's wings are reduced to small pads.

The young cockroach is called a nymph. It looks like the adult, except it is smaller and has no wings. A newly hatched cockroach is 1/8 inch in length.

Cockroach eggs are laid in a group, covered with a hard coating called an egg capsule. The egg capsule is brown, reddish-brown or black. Egg capsules are small and 1/5 to 1/3 inch in length and the width is usually near one-half the length.

## **Control**

To control cockroaches in the home, the homeowner must use care and planning. Prevent cockroaches from entering the home. Prevention is better than applying insecticides to control an established population. Practice cleanliness in the home. Eliminating favorable breeding sites lessens the possibility of cockroach infestation.

A home may be infested by two or more kinds of cockroaches. Identify the cockroach and understand its behavior so that controls are properly applied. For example, insecticide applications may be needed throughout the house to control the brown-banded cockroach. Treatment of the bathroom and kitchen may be enough to control more restricted German or American cockroaches, except with heavy infestations.

## **Non-Chemical Control**

- Practice sanitation in and around the home. A building should be kept clean and repaired to make it less favorable for insects.
- Keep windows and doors tight. Caulk cracks in outside walls, sills and foundations.
- Seal all openings where electrical lines or water, steam and cooling pipes pass through walls and floors. This will slow movement of cockroaches into a home.
- Inspect soft drink cartons, cardboard boxes, dried pet foods, potatoes, onions and firewood carried into the home to avoid carrying in cockroaches.
- Repair plumbing leaks and seal all moisture sources.
- Remove all food crumbs and garbage to containers with tightly fitting lids.

- Store foods in sealed containers.

Cockroach traps (baited boxes with sticky material inside) are very helpful. Specimens collected in traps can locate the part of the home with cockroach problems, as well as aid in identification of the particular cockroach present. Traps will also indicate the severity of the problem. Using a trap may prevent an infestation by catching cockroaches that are carried into the home in bags or boxes before they find hiding places.

### **Chemical Control**

To control cockroaches with insecticides, it is necessary to find their shelters and hiding places and treat these locations. Regardless of the insecticide chosen, chemicals placed in or near regular hiding places will provide much better control than those placed where cockroaches move only occasionally.

To eliminate an already established infestation, remove all routes of reinfestation. Then thoroughly clean the house and apply an approved insecticide.

Several treatments may be needed to kill cockroaches after they hatch. The type of insecticide depends on the location and nature of the infestation. No one chemical is best suited for all cockroach problems, but the various types available present an effective combination.

Ready-to-use insecticide mixtures are available in pre-mixed solutions or in aerosol cans. They are convenient and simple to use when the cockroach problem is small. If the problem is severe, control will require several treatments. Buying a concentrate and mixing the spray for each treatment this way will be cheaper. A spray mixture of the recommended concentration will always be available.

## **TYPES OF INSECTICIDES**

### **Residual Sprays**

Residual sprays are available as oil-base or water-base emulsions or as wettable powders. Oil-base sprays may stain floor tiles or painted surfaces, deform carpet and other rubber pads and present hazards when used near open flames.

Residual sprays are easy and quick to apply and should be used where cockroaches hide, especially cracks and crevices. Usually, exposed surfaces such as whole walls or floors are not treated, although it may be necessary to treat the surfaces over which cockroaches crawl. Sprays should be applied just to the point of runoff to minimize chances of staining and reduce pesticide waste.

### **Dusts**

Dusts sometimes can be used as the total treatment for cockroaches, but are usually used as a supplemental treatment. Dusts generally last longer than sprays, but lose their effectiveness if they become wet.

Dusts are useful in cockroach control because they can be placed deep into cracks, crevices and wall voids; under refrigerators and furniture; around pipes, tunnels and conduits; on very rough surfaces; and in other places that cannot be treated with other types of insecticides. Dusts should not be used for treating large surfaces because they leave unsightly deposits. Also, heavy deposits will repel cockroaches. Apply dusts with light pressure to reduce the amount of dust particles in living areas.

### **Baits**

The least important part of a bait is the insecticide. If cockroaches are not attracted to the bait, the insecticide will not be effective. Know cockroaches' behavior and place the bait where cockroaches will find it. Distribute small amounts of bait at several spots around the infested area.

### **Aerosols**

Aerosols are not useful to identifying the location and extent of cockroach problems. They have no residual effects, so they must be used with residual sprays or dusts. Squirt small amounts of aerosols into hidden areas or shelters to force roaches to evacuate. This will help determine the infested areas and force cockroaches to move across previously treated surfaces.

## INSECTICIDES TO USE

Read the ingredients listed on the cockroach control product label to be sure it contains one of the insecticides listed below. Follow the label instructions to prepare a spray. Household insect control products which contain the insecticides listed below will be useful for control.

CHEMICAL	SUGGESTED APPLICATIONS RATE
<b><u>Insecticides for use inside the home:</u></b>	
chlorpyrifos or Dursban	0.5%
propoxur or Baygon	0.9-1.1%
pyrethrins or pyrethroid	0.25
hydroprene Gencor	0.6%
Silica gel	95%
<b><u>Baits for use inside the home:</u></b>	
propoxur or Baygon	2%
boric acid, Tablets, paste	40%
sulfluramid (Max Roach Bait)	1%
hydramethylon (Combat)	1.65%
<b><u>Insecticides for use outside the home:</u></b>	
chlorpyrifos or Dursban	0.5%
propoxur or Baygon	0.9-1.1%

NAME	DESCRIPTION	WHERE EGGS ARE FOUND	WHERE YOUNG AND ADULTS ARE FOUND
American Cockroach <i>Periplaneta americana</i>	Reddish brown to dark brown. Adults 1/2 to 2 inches, the largest of the common roaches.	Dropped near a food source, or where can be covered with debris. May be glued to a surface.	Dark, moist spots in kitchen, bathroom, basement, sewer, or crawl space. Usually on first floor of building.
Brown-banded Cockroach <i>Supella Longipalpa</i>	Light brown. Female has mottled, reddish-brown wings. Male wings lighter. Adults 1/2 inch long.	Female carries egg capsule 1-2 days, then glues it to protected surfaces (under tables, cabinets, in upholstered furniture, closets or on ceilings of dark rooms).	On ceilings of dark rooms, behind picture frames, in light switches, upper corners of cabinets or closets, under tables or furniture, inside upholstered furniture.
German Cockroach <i>Blatella germanica</i>	Light brown with black stripes running lengthwise on back behind head. Adults 5/8 inch.	Adult female carries egg capsule protruding from abdomen until ready to hatch.	In dark places near moisture and food (kitchens and bathrooms). Will spread throughout house if infestation is heavy and may be found in bedrooms.
Oriental Cockroach <i>Blatta Orientalis</i>	Black or dark brown. Female adults 1 to 1 1/4 inch, males shorter. Wings do not cover entire body.	Female carries egg capsule 1 day, then drops or attaches it to a surface near food.	Damp basements and sewers, dark areas. Usually found on first floor or basement.
Smokybrown Cockroach <i>Periplaneta fuliginosa</i>	Dark brown to black. Adults 1 1/4 to 1 1/2 inches long.	Females carry eggs 1 to 2 days, then attach them to surfaces in or out of buildings. May be embedded in plaster or drywall.	Usually live outdoors. Prefer wooded areas, leaf litter, trash piles or areas with high moisture and organic matter. Enter homes on firewood, or migrate in during summer. May be found throughout building.

## DILUTION TABLE FOR PESTICIDES BASED ON PERCENTAGE OF ACTIVE INGREDIENT IN FINISHED SPRAYS

Column at left margin lists common formulations available from your local dealer. These emulsifiable concentrates and wettable powders have to be diluted with proportional amounts of water to prepare a finished spray.

Percentages of active ingredients normally recommended in finished sprays are on top line at head of each column. Locate percentage of active ingredient of concentrate that you are going to use in column at left margin under formulation. At intersection of these lines, read amount of material needed to produce finished spray. Use figure in parenthesis under percentage and across from concentrate to prepare one gallon of finished spray.

### ACTIVE INGREDIENT IN FINISHED SPRAYS

FORMULATION	0.5%	1.0%	2.0%	
10-12% Emulsion Concentrate (contains 1 lb. chemical per gal.)	(10 Tbsps.)	(2/3 pt.)	(1/3 pt.)	(
15-20% Emulsion Concentrate (contains 1 1/2 lbs. chemical per gal.)	(7 1/2 Tbsps.)	(1/2 pt.)	(1 pt.)	(
25% Emulsion Concentrate (contains 2 lbs. chemical per gal.)	(5 Tbsps.)	(10 Tbsps.)	(2/3 pt.)	(
33-35% Emulsion Concentrate (contains 3 lbs. chemical per gal.)	(4 Tbsps.)	(8 Tbsps.)	(1/2 pt.)	(;
40-50% Emulsion Concentrate (contains 4 lbs. chemical per gal.)	(8 tsps.)	(5 Tbsps.)	(10 Tbsps.)	(
57% Emulsion Concentrate (contains 5 lbs. chemical per gal.)	(7 tsps.)	(4 1/2 Tbsps.)	(9 Tbsps.)	(

## WHERE 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 drain board.
- In cracks around or underneath cupboards and cabinets or inside them, especially in upper corners.
- Around pipes or conduits, where pipes 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 the underside of table 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 food and utensils will not be 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 the sides, backs and undersurfaces.

## WHEN TO TREAT

Make the first application of insecticide when a cockroach infestation occurs. Repeat the spray application in 14 days after the first application.

Continue to spray at 30-day intervals, beginning 30 days after the second.

## ACKNOWLEDGEMENTS

This publication was compiled from information published by the USDA, Texas A&M University Agricultural Extension Service and U. S. Public Health Service for Disease Control. Appreciation is gratefully extended for permission to use the text and illustrations from the references listed in compiling this publication. "Cockroaches, How to Control Them," USDA, 1978, Leaflet No. 430, prepared by Science and Education Administration, G. S. Burden.

"Cockroaches, Recognition and Control, House and Landscape Pests," MP-1285, 1976, H. A. Turney and K. R. Lewis, Texas A&M Agricultural Service.

"Insecticide Application Equipment for the Control of Public Health Pests," 1975, H. D. Pratt and K. S. Littig, U. S. Department of Health Education and Welfare, Public Health Service Center for Disease Control.

## ATTENTION

Insecticides recommended in this publication were registered for the prescribed uses when this publication was printed. Registrations of insecticides are continually being reviewed. In the event registration is canceled on an insecticide recommended in this publication, it would no longer be recommended by the University of Tennessee.

Use of trade or brand names in this publication is for clarity and information. The University of Tennessee does not imply approval of that product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product.



**CAUTION: CARPETS CAN BE DISCOLORED WITH INSECTICIDES.**

Exercise caution to prevent carpet discoloration following the use of an organic phosphate insecticide on carpets. The dyes used in the manufacture of carpets have changed in recent years creating a problem in the use of insecticides on carpets. Carpets dyed with acid red dyes may change color after being sprayed with an organophosphate insecticide. The phosphoric acid reacts with the acid red dye as the insecticide breaks down into the metabolites.

The relative humidity, excess moisture from sweating of walls, floors or slabs, cleaning fluids or bleaches may also interact with the phosphoric acid in the discoloration of the carpets.

The organophosphate insecticides most frequently used in the household sprays are DDVP, Malathion, Sumithion, Orthene, Diazinon and Dursban.

**PRECAUTIONARY STATEMENT**

In order to protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

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PB1024-15M-Rev.3/94 E12-2015-00-035-94

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS  
The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture, and county  
governments cooperating in furtherance of Acts of May 8 and June 30, 1914.  
Agricultural Extension Service  
Billy G. Hicks, Dean