

# Less Toxic Pesticides



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If nonchemical pest management methods alone are ineffective or impractical, you may wish to consider incorporating a pesticide into your integrated pest management program. Although all pesticides are inherently toxic, there are now a number of “less toxic” pesticide options.

Less toxic pesticides are considered so because of several different factors. Many possess lower inherent danger to human health or the environment. Some of the botanical pesticides, which come from plants, as well as such inorganic pesticides as boric acid, silica gel, and diatomaceous earth, fall into this category. Others, the microbial or biological control agents like bacteria, fungi, and nematodes, are more specific to a particular pest. Still others, such as bait stations, are packaged for delivery in such a way as to greatly minimize human exposure.

Most of these less toxic products are available for use by homeowners. Even if you decide to hire a pest control professional, you can request that one of these products be used.

## Botanicals

Pyrethrum is a botanical insecticide extracted from chrysanthemum flowers. **Pyrethrin** is the active ingredient. Advantages of pyrethrin are that it provides a quick knockdown of insects and breaks down very quickly in the environment. **Pyrethroids** are synthetic compounds similar to pyrethrin. Pyrethroids are more toxic to insects and usually more stable in the environment than pyrethrin. Some pyrethroids used in household situations include permethrin, resmethrin, tetramethrin, and allethrin. Both pyrethrin and pyrethroids are available in aerosol or pump spray form. They are useful in controlling a wide range of pests.

Another botanical insecticide is **d-limonene**. This citrus peel extract kills insects on contact. As

of now, it is only available for household use in the form of flea control sprays and shampoos.

## Inorganics

Inorganic insecticides include boric acid and the desiccating dusts silica gel and diatomaceous earth. The term “desiccating” refers to the fact that they cause the insects to die from dehydration.

**Boric acid** is derived from boron, a naturally occurring mineral. It acts as a stomach poison and causes insects to die from starvation. Boric acid is available in powder, paste, aerosol, tablet, and liquid forms for use against cockroaches, ants, and other insects. Most boric acid products are available for use by homeowners. Professional pest control professionals can use boric acid products to control wood-infesting beetles and to spot treat wood to protect it from termites.

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**Silica gel** is an inert, nonabrasive material that is very effective in absorbing moisture. It absorbs the waxy coating on the insect’s body and causes death by dehydration. Silica gel products are often used by professional pest control operators to control cockroaches, silverfish, and other pests.

**Diatomaceous earth** is the fossilized remains of tiny, one-celled organisms called diatoms. It kills insects by scratching their waxy outer covering and causing them to dehydrate. If you decide to use this product, be sure to purchase the

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correct grade, usually labeled “natural grade.” The diatomaceous earth sold for use in swimming pool filters is not suitable for pest control. Diatomaceous earth is used to control cockroaches, ants, silverfish, and fleas.

### Other Types of Less Toxic Insecticides

Other types of less toxic insecticides include insecticidal soaps and insect growth regulators. **Insecticidal soaps** are available in concentrated or ready-to-use liquid form. Soaps penetrate the waxy covering on the insect’s body and cause death by dehydration. Insecticidal soaps are primarily useful against soft-bodied, plant-feeding insect pests on ornamentals and in the home garden. They can be used indoors against such houseplant pests as whiteflies and mealybugs.

**Insect growth regulators** or IGRs are compounds that mimic insect hormones. They disrupt the insect’s reproductive ability, but have no effect on humans. Insect growth regulators available for cockroach and flea control are hydroprene, methoprene, and fenoxycarb. Insect growth regulators are available in aerosol form in combination with one of the pyrethroid insecticides and in cockroach bait stations.

### Biological Control Agents

Biological control is the use of one organism to control another. Everyone is familiar with preying mantids and lady beetles in the garden, but indoors, most household residents don’t like even “good” insects. Therefore, the search for biological control agents for household insects has taken a different approach. Fungi, bacteria, and nematodes—microscopic organisms which aren’t so offensive to homeowners—have been analyzed for insect control properties. Several of these “microbial” control agents are now available for household use.

**Nematodes** are microscopic worms that live in soil. Some nematode species are parasitic on insects and can be used to control insect pests. Several nematode-containing products are available for outdoor flea control. The nematodes carry bacteria that kill the fleas but don’t harm people or pets.

**Fungi** that kill insects but don’t hurt people are also used as biological control agents in

household settings. One of the newest types of cockroach bait station contains a species of fungus normally found in soil. When a cockroach enters the chamber, the fungus adheres to its body and eventually kills it plus any other cockroach that the diseased cockroach contacts.

**Bacteria** are yet another type of microbial control agent. One of the most commonly employed is *Bacillus thuringiensis* or Bt. Bt is widely used in agriculture to control a variety of pests. A strain of Bt that is effective in killing ants should be available soon.

### Bait Stations

**Bait stations** offer several advantages over other forms of insecticide. Bait stations deliver an insecticide through a sealed plastic or metal chamber that insects enter. This gives bait stations the advantage of decreasing both the amount of insecticide used and the likelihood of exposure to it. Bait stations are particularly suitable for use in situations where the safety of children and pets is a concern.

If you decide to use any of these less toxic materials for control, be careful not to confuse less toxic with nontoxic. All pesticides are designed to kill something. Don’t assume that just because a pesticide is “natural,” it is completely safe and can be used with complete abandon. Boric acid, for example, can be poisonous if ingested in large amounts. Be careful to keep it away from children and pets. Pyrethrin can cause skin irritation or an allergic reaction if inhaled. Likewise, you should not inhale silica gel, diatomaceous earth, or boric acid dust. Be certain to wear a dust mask when applying any of these products. As with any pesticide, always read and follow the directions on the label.

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