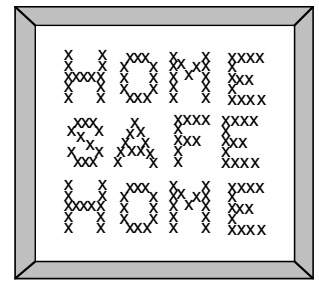


Alternatives

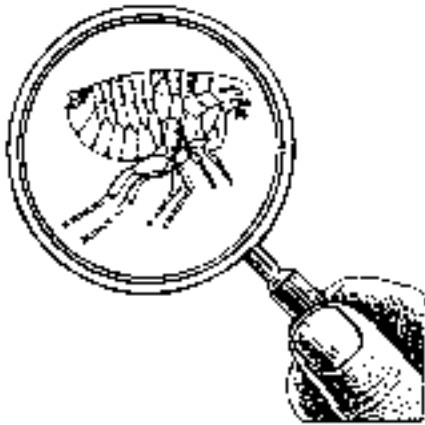
A Washington Toxics Coalition Fact Sheet



Managing Fleas in Your Home

by Philip Dickey

At one time or another, almost all dog and cat owners have to deal with fleas. Tormenting our furry friends and humans as well with their annoying bites, fleas can inflict more serious damage. They transmit tapeworms and several human pathogens, and they may cause allergies in both animals and humans. West of the Cascades, where winters are mild and homes are relatively damp, fleas thrive unchecked by annual freezes. Many pet owners have resorted to purchasing a veritable arsenal of flea killers out of frustration and sympathy for their scratching pets. Impregnated flea collars, insecticidal powders and shampoos, and aerosol bombs may endanger pets and other household members. And even these drastic measures do not provide permanent relief—the fleas always come back if pets are allowed outdoors.



Under magnification, the adult flea's powerful hind legs are evident. They enable the flea to jump onto your pet.

The Dangers of Toxic Flea-Control Products

The problem is not that the insecticides are too weak. Flea killers contain very potent chemicals. The trade-secret “inert” ingredients, which may comprise 90% or more of the product, are misnamed. They are not necessarily non-toxic. The term “inert” means only that these ingredients are not intended to kill fleas.

Some flea collars or powders can cause severe skin conditions such as contact dermatitis. Powders can fall off onto kitchen counters and other surfaces where food is prepared or eaten. Cats lick the materials from their fur when they clean themselves. Children who pet dogs and cats may pick up the chemicals on their hands.

Flea bombs—aptly named—can be particularly dangerous if not used with care. Most use flammable gases as propellants. In one case typical of many I've seen reported, a woman set off more than a dozen flea bombs in her house but failed to extinguish the pilot light on her stove. The bombs ignited, blowing out all the windows in the house and shifting the roof. Not only was her entire family placed in danger, but most of the fleas survived!

Safe and successful flea management is not simply a matter of buying a product and spreading it around the house. Flea control is an on-going process, but one made easier and more effective by regularly following some fairly simple procedures. Some new prescription products can make flea control much easier, if you're willing to pay.

Notice that we are talking about flea management, not flea eradication. The fact is that fleas are almost impossible to eradicate unless pets stay indoors. Fleas are survivors! At any given time they live on your pet, in your yard, in your carpets, and on your furniture in four different life stages. You may kill most of the adults, but new eggs or larvae are waiting to carry on, and your pet will bring in more fleas from outside. If you have a dog or cat in your house, you are probably going to have fleas, too. But you can keep the flea population low enough that they don't bother anyone, and you can do it without using products which endanger your loved ones—furry and otherwise.

The Approach

Successful home flea control is based upon knowledge of the fleas' life cycle, periodic monitoring of the population, and a set of control methods. The idea is simple.



Fleas bites can cause severe allergies in both pets and humans.

First you decide at what level a flea problem becomes unacceptable to you. Depending on your sensitivity and tolerance, this level could be the discovery of one flea bite per week, or finding two fleas each time you comb your pet. During the year the flea population will fluctuate. When the symptoms reach an unacceptable level, you apply control measures, beginning with non-chemical controls. If stronger controls are needed, use the least toxic chemicals first. As soon as the symptoms recede, discontinue the chemical controls. In this way you can minimize the need for chemical controls. Before we discuss control methods in detail, let's look at the flea's secrets of survival.

Life Cycle

The flea species found in most of our homes is the cat flea—even on dogs and humans. There are dog fleas and human fleas as well, but they are less common. All fleas have the four stages of development illustrated at the right: egg, larva, pupa, and adult. In the case of the cat flea, optimal conditions are a temperature of 65-80° F and a relative humidity of more than 70%. Dry conditions are actually fatal to larvae. A female flea can lay 25 eggs a day for at least 3 to 4 weeks—up to 1000 eggs during her life-time. Although some eggs are laid on the host, most are found in bedding where the pet sleeps and in floor cracks, rugs, furniture, and dust. In 2 to 21 days, tiny worm-like larvae hatch out, feeding for 9 to 200 days on dried blood feces from the adults. Finally the larvae spin a cocoon in which they transform into pupae.

Hidden in the cocoon for 7 days to a year, the pupae remain dormant until they hatch out in response to detection of a host. Immediately upon emergence as adults, the fleas bite the host to obtain blood. If necessary, adults could actually go for a month or two without food, and with a single meal they can survive for 8 months. These wide variations in development times for the various life-cycle stages explain why so many adult fleas can suddenly emerge when conditions are right. The fleas have actually been there all along, but they do not mature until late summer and fall when temperature and humidity increase to favorable levels.

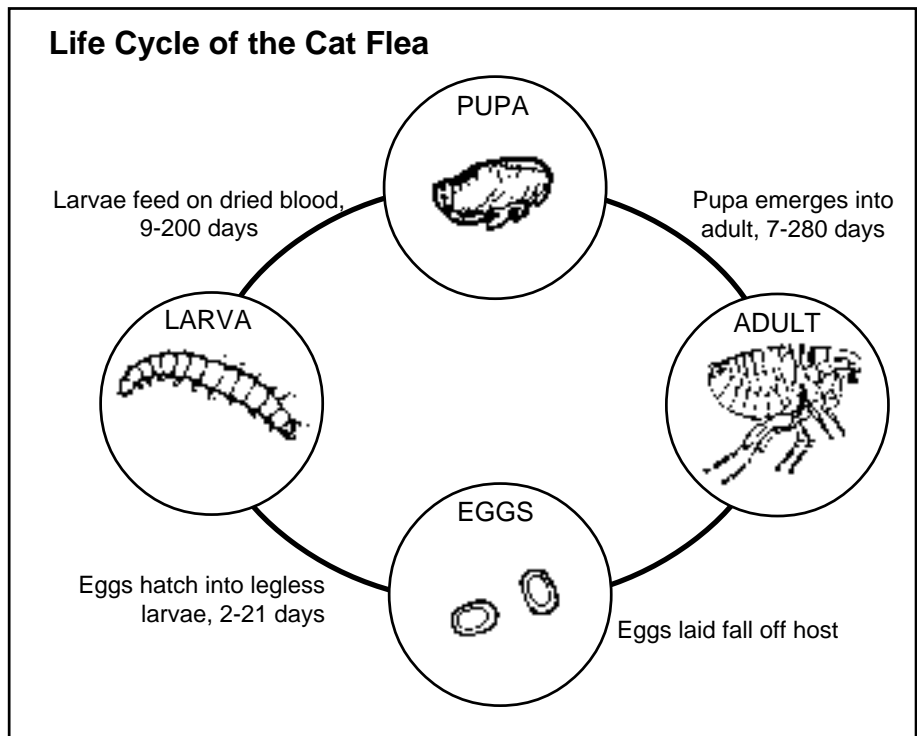
Cat fleas prefer cat or dog hosts, so humans are less likely to be attacked unless the flea population is high, the host is absent for a brief period, or the human is especially attractive to fleas. Odd as it may sound, some people do seem to attract fleas more than others. The difference may be due to skin secretions.

The Flea Control Program

At any given time, fleas may exist in all four life-cycle stages in your home. Control procedures must address all four stages. The program described below is aimed at killing or removing adult fleas on the host and eggs, larvae, and pupae found off the host. In order to succeed, this program must be followed exactly as described, utilizing the physical controls first and the chemical controls only if necessary.

■ Physical Controls—Managing the Environment

Fleas tend to accumulate where your pet sleeps. Establish one regular sleeping area





Most fleas will be found where your pet sleeps. Try to limit your pet's sleeping areas, and launder bedding materials frequently.

Summary of Flea Control

Continuous Controls

- ❖ Establish one sleeping area for your pet. Clean it regularly. Wash all bedding materials.
- ❖ Restrict pet access to bedrooms, attics, basements, etc.
- ❖ Vacuum regularly all year, at least weekly during flea season. Dispose of collected material immediately.
- ❖ Use flea comb regularly to remove fleas and monitor the population.
- ❖ Use flea traps if desired.

Periodic Controls—Use as needed

- ❖ Bathe pet if the flea population builds up.
- ❖ Treat areas where pet sleeps with a flea soap or citrus product.
- ❖ Steam clean and/or shampoo rugs and upholstery.
- ❖ Consult with your veterinarian about one of the new flea treatments such as imidacloprid, fipronil, or lufenuron.

Last Resorts

- ❖ Spot treat small outdoor areas, such as patios or decks, with insecticidal soap if pets spend a lot of time there.
- ❖ Keep animals outside (or inside) during late summer and fall.
- ❖ Apply beneficial nematodes to the lawn to control flea larvae. This must be done in summer or fall, and the lawn must be kept watered to keep the nematodes alive.

for your pet in a place which can be cleaned easily and regularly. This is easier for dogs than for cats. With cats you may have to place removable cloths in several places where they like to sleep. Bedding materials such as blankets or nearby rugs should be removed frequently and washed.

Vacuum every week all areas to which your pet has access. Be sure to use a crevice tool for out-of-the-way places, and don't forget the upholstered furniture. If fleas are present, material collected by the vacuum must be removed from the house and disposed of right away. Severe flea infestations may require an initial shampooing or steam cleaning of rugs and upholstered furniture.

You can reduce the spread of fleas by keeping pets out of certain rooms in the house, particularly bedrooms or rooms which are difficult to clean, such as basements and attics. Pets should also be kept out of rooms belonging to family members who are particularly susceptible to flea bites. While fleas may still be carried into these rooms by humans, it is much less likely to happen if no pets are allowed there. In severe cases, keep animals either outside or inside, but don't let them go back and forth.

Flea traps can also be used indoors. These use a small light bulb to attract fleas, which are caught on a piece of sticky paper. The traps do work and can significantly reduce flea populations, but they will not eliminate a flea problem alone.

■ Physical Controls—On the Pet

Two techniques can remove adult fleas from the pet itself: combing with a special flea comb and bathing the animal. Combing is especially useful for cats, which generally dislike being bathed.

A flea comb has specially designed metal tines spaced to allow hair but not fleas to pass through. Flea combing should be done outdoors, just before your pet comes back inside, or in the bathtub. As you run the comb through your pet's fur, some fleas will jump away, but others will stay on the comb. Remove the fleas from the comb and drop them into a nearby container of soapy water, which can later be flushed down the toilet. While you do this, inspect the material removed from the comb to get a measure of the flea population and judge the need for other control measures. A rising flea count can be an early warning of problems ahead, and you can act to prevent a serious infestation.

Shampooing an animal knocks some fleas off and drowns others. It can be especially useful to reduce a heavy infestation. Ordinary soap or shampoo will work to a degree, but an insecticidal shampoo such as those described below is more effective. Be sure to wash the animal thoroughly, keeping the soap away from its eyes. Discontinue using any product which produces skin irritation or allergies.

■ Chemical Controls—Soaps, Citrus Extracts, and Pyrethrum

The least-toxic material we know of for killing fleas is insecticidal soap. Safer, Inc. used to make a soap for treating the pet and its surroundings, but unfortunately the product has been discontinued. Other brands may be useful for treating patios or decks where pets have access.

Next after soaps, the safest chemicals to kill adult fleas have been thought to be the citrus extracts limonene and linalool. Natural constituents of lemon peel oil which are used as food flavorings, both of these compounds are quite toxic to adult fleas and relatively non-toxic to vertebrates. Products containing these ingredients are available, such as Concern Citrus Home Pest Control.TM

Pyrethrum is a naturally-derived insecticide that is moderately toxic to humans and pets and breaks down rapidly in sunlight. The individual chemical compounds that comprise pyrethrum are called pyrethrins. According to EPA, there is "suggestive evidence" that pyrethrins may cause cancer. Most pyrethrin products contain additional ingredients that increase their effectiveness on insects and may have some risks to humans. If you use a pyrethrin product, be sure to read and follow label directions carefully.

■ Insect Growth Regulators

Methoprene is an insect growth regulator that mimics natural insect hormones and

disrupts certain growth processes in the insect, preventing immature fleas from becoming adults. It is quite specific to the target insect and generally of low toxicity to mammals, although some research indicates that a breakdown product of methoprene may have some hormone effects in mammals.

Methoprene does not kill adult fleas, so it must be used in combination with other controls. The most effective time to use methoprene is when flea populations are just beginning to build. At this point, however, you will not know if the problem is going to become serious enough to need chemical treatment. Consider using methoprene only if you have tried all of the steps outlined above for a full year without adequate control and if the occurrence of a warm winter indicates that the upcoming flea season is likely to be a bad one. Wait for signs of a rising flea population before treating.

Methoprene is available in aerosol foggers and as a concentrate. We generally do not recommend the use of foggers, even those with methoprene as an active ingredient. Some foggers contain toxic and flammable solvents as inert ingredients. If your flea problem is serious enough that you feel you may need methoprene, consult a reputable professional or talk to your veterinarian about prescription treatments (see below).

■ **Dessicants—Boric Acid and Diatomaceous Earth**

Dessicants kill fleas by drying them out rather than by poisoning, so they are less hazardous than many insecticides, but they are still not without some risk to humans. Diatomaceous earth, a fine mineral powder, is hazardous only if inhaled. Boric acid, a moderately toxic chemical, can be particularly dangerous to infants—a lethal dose may be as little as 1/5 ounce. Boron compounds can have effects on male fertility at sufficient doses. For these reasons, we only recommend using boric acid when human exposure can be kept to a minimum.

Some pest control companies now apply boric acid powder to carpets, guaranteeing no fleas for one year. While we know of no illnesses related to this process, boric acid is readily absorbed through cut or abraded skin and the dust can be inhaled. Parents of young children may want to avoid such treatments and should certainly keep toddlers or children with cuts or skinned knees off of treated carpets and be diligent about vacuuming any dust they observe. With those precautions, the boric acid treatment may make sense in especially severe infestations.

■ **Prescription Flea Control Products**

In recent years, a number of new flea products have become available from veterinarians. Imidacloprid (Advantage™) and fipronil (Frontline™) are applied to the pet's fur behind the head or between the shoulders, and lufenuron (Program™) is administered to pets as a pill. All three are well targeted to the pet and thereby reduce the risk of human exposure. As far as potential toxicity to pets, we consider these products to be medications and would refer you to your veterinarian for advice. You might consider using these medications just for prime flea season and discontinue them in the winter.

Remember that none of these products will kill fleas in the house. For that, you will have to use the methods discussed earlier.

■ **Controlling Fleas Outdoors**

Pets which spend time outdoors will bring fleas into the house. We do not recommend chemical flea control in the yard because pesticides can kill beneficial soil insects, as well as bees and birds. One approach is to apply beneficial nematodes, tiny worms that infect and kill flea larvae. Nematodes are available at garden stores under a various trade names. They are quite effective if applied once soil temperatures reach at least 55°F. Nematodes will die if the soil is not kept moist, so this approach requires that the lawn be kept watered in summer. A side benefit is that nematodes also help control crane flies and root weevils. Read the label for specific directions. Small areas outside where your pet spends a lot of time (concrete areas, dog houses, garages or decks) can be kept relatively free of fleas by vacuuming.

What About Repellants and Flea Collars?

Many people react to their pet's scratching by buying a flea collar. These plastic collars are impregnated either with insecticides or repellants. Because of their undesirable side effects, the use of insecticidal flea collars should be minimized as much as possible. If you do use one, don't leave it on your pet continuously. Place the collar on your pet for short periods of time (a week or less) only when the flea population is especially high. Between uses, store the collar in a marked, sealed jar. **This jar should never be used for food!** Be alert for adverse skin reactions to the collar, and remove it if any are seen.

Many of the "natural" flea control products use various materials such as pennyroyal, eucalyptus, rosemary, citronella, or vitamin B1 to repel fleas from pets. Strong-smelling herbs or extracts do not kill fleas, and it is not clear to what degree they repel them either. Use them if you like, but don't expect miracles. One caution regarding yeast: do not give it in large doses or with dry food—it causes gas cramps. A better way to give vitamin B1 is in a specially-designed dietary supplement. Ask at your pet store or veterinarian's office. And speaking of diet, make sure your pet is healthy and well-nourished. Many people feel that healthy pets are better able to withstand and even repel flea attack. ■

The Washington Toxics Coalition is a non-profit organization dedicated to protecting public health and the environment by preventing pollution. Please write or phone for information: WTC, 4649 Sunnyside Ave N, Suite 540, Seattle, WA 98103. Phone: 206-632-1545. Visit our Internet Web site at www.watoxics.org.

The Washington Toxics Coalition assumes no responsibility for any injury or damage resulting from the use or effect of any product or information specified in this publication. Mention of particular products by name does not constitute an official endorsement.