



Flea Control¹

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UNDERSTANDING THE FLEA

Knowing something about the life cycle of the flea significantly advances the battle against the plentiful Florida flea. When environmental conditions are favorable, the flea has a great reproductive potential. Fleas thrive at low altitudes in temperatures ranging from 65° to 80°F. Under these conditions, the flea reproductive cycle can be completed in as little as 16 days. On the other hand, adult fleas are long-lived insects, and can survive several months without a blood meal. However, the female flea needs a meal of blood in order to lay eggs.

Fleas normally spend little time on animals. They prefer to hop off the animal after a meal and hide in warm dark places such as under the cushions of a sofa, in the depths of the shag carpet, or in a dark corner. They will hide in the cracks between tile or wood floors, under the refrigerator, under the house (or dog house), or in the cracks in the wall. In such sites, the female lays her eggs. These will hatch into very small worm-like larvae. Larvae feed on organic debris, such as crumbs and flakes of skin or hair and feces from adult fleas. Larvae molt and form a pupa stage, then emerge as young and hungry adults in about 3 weeks.

It is an unfortunate fact that flea eggs are very resistant to and are not affected by insecticides. When external environmental conditions are unfavorable, such as the cold of winter, their development can be delayed. They will

survive by lying dormant until conditions are more favorable, and at that time they will hatch and complete the life cycle. This explains the rapid increase in the flea population in the spring. The resistance of flea eggs also explains why we find it so difficult to eliminate fleas by spraying insecticides. The timing of our spraying efforts must be based on a knowledge of the flea life cycle.

While fleas actually spend very little time on your pet, they do cause pets discomfort. Even if you inspect your pet regularly for fleas, the only evidence you may find of their presence is "flea dirt." This may be seen on your pet even when you see no fleas. Comb or brush your pet and look for tiny dark dots or comma-shaped pieces of debris. If you comb these out onto a piece of wet paper, they will dissolve and stain the paper red. This is because the flea "dirt" is flea excrement, which is partially digested blood.

FLEA CONTROL

Successful flea control involves a two-pronged program which controls both the fleas on your pets, and those within the environment. There are several programs which are recommendable depending upon your environmental situation. These will be presented in outline form. It is important to remember that flea control must be practiced on all animals in the household. Here are some insecticide programs which can be used on various animals:

Dips. In many cases, dips are the most effective way to kill fleas. Dips are usually applied to dogs every 5-7 days.

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A dip should be applied after a shampoo and rinse by pouring and sponging the solution over the dog so that every part of the dog is covered. The dip should be allowed to dry on the dog, and should not be towelled or rinsed off. You should always wear rubber gloves while applying a dip. Most dips are sold as concentrates and are to be diluted with water just before application because the dips lose their activity rapidly after dilution.

Many dips are somewhat drying to dogs' coats and skin. This can be partially corrected in some cases by adding 1 capful of emollient bath oil to the dip solution. Consult your veterinarian about this.

Most dips are not to be used on puppies or cats unless otherwise instructed by your veterinarian. Check the label carefully. Many dips are organophosphates, and may be toxic to the pet. Atropine is an antidote for toxicity (see Precautions).

Powders. Powders are not as effective as dips. In most cases, powders must be applied very thoroughly and worked well into the coat of the animal. Generally, powders can be divided into 3 classes, depending upon the active ingredients which are listed on the label.

- 1) Powders containing carbamate insecticides. Sevin (carbaryl) can be purchased economically from a garden supply store in 5-10% concentrations. Ten-percent powder is safe to use 2-3 times a week on large dogs; five-percent powder can be used on small dogs.
- 2) Powders with organophosphate insecticides. Powders with organophosphate insecticides include Dermaton powder and Malathion 5% dust. The latter can be purchased at lawn and garden centers. Dermaton powder cannot be used on cats or young puppies.
- 3) Powders containing pyrethrins. Pyrethrin is the most common insecticide in sprays, shampoos, and powders for use on animals. Pyrethrins are not harmful to pets or children except in very high doses. They are also not as effective as insecticides of other varieties. In dogs, they are mainly used as a control method between dippings. These powders are more often used in young animals. Most over-the-counter powders contain only pyrethrins.

Sprays and Foams. In their uses and ingredients, sprays are similar to powders. Some sprays contain carbonates or organophosphates and many contain pyrethrins. These may act quickly to kill fleas on contact,

but some products have little long-term effect. Sprays are often used as a supplement between weekly dips.

A new technology called microencapsulation of insecticides is now produced by the 3M Company. Microencapsulated pyrethrins are extremely safe for animals and young children. They are available as sprays or mousse-like foams.

Flea Collars. Flea collars, as they are presently formulated, are ineffective in many environments in Florida.

Shampoos. The main purpose of a shampoo is to clean the animal. The products in flea shampoos will kill a high proportion of fleas; however, most shampoos have no residual activity and are not recommended alone for flea control-this is why most shampoos are followed with a residual dip. A few shampoos may contain a residual insecticide such as lindane or carbamate for the residual effect. One should not use dips after applying these shampoos as the over-application of cholinesterase depressing materials can be toxic to the animal.

Other. Using a flea comb daily to remove fleas is not an effective method of flea control since fleas spend only a small amount of time on the pet. In addition, there are no "natural" dietary supplements such as brewers yeast, thiamin, sulfur, garlic, etc. which are scientifically proven to benefit flea control.

Systemic Insecticides. These are the insecticides that are given by mouth, or put on the skin and absorbed into the animal's body. The flea usually has to bite the dog in order to be exposed and killed. In the past, there have been a number of these products on the market, but many are now off the market because of problems with toxicity. At present, Proban and Prospot are the only ones approved for use in dogs, and they are available only through veterinarians. There are several important factors to consider about the use of systemic insecticides.

Systemic insecticides include:

- 1) Proban Liquid. Dosage instructions: 1 cc/10# every 3 days or twice a week
- 2) Proban tablets 30 mg. Dosage instructions: 1 tab/20# every 3 days or twice a week.
- 3) Prospot 3 (fenthion): Used by weight.
 - 10 solution: 5.6%, 5-10#
 - 20 solution: 5.6%, 11-20#

40 solution: 13.8%, 21-40#

80 solution: 13.8%, 41-80#

Greater than 80# use 2 Prospot 80

- 4) Topical Systemic Insecticide: Spotton (fenthion 20%). This is an insecticide used on cattle and at cattle strength IS **NOT APPROVED FOR USE IN DOGS**. It can be extremely toxic to dogs.

Treating Puppies, Kittens and Cats

Dips and systemic insecticides should not be used on puppies less than 4-months old. The powders or sprays that have carbaryl can be used every 5-7 days, as directed, on puppies more than 2 months of age. A few dips are fairly safe to use on cats, but as most cats object strenuously to this treatment, we often rely on thorough spraying or powdering with a product that has carbaryl or pyrethrin as the active ingredient.

None of the systemic insecticides are approved for use in cats. Occasionally, for an extremely serious flea allergy problem in an outdoor cat, a veterinarian will recommend the use of a systemic insecticide.

To treat kittens less than 2-months old, use only Pyrethrin containing products, unless otherwise directed by your veterinarian. In general, pyrethrin can be used daily. Some cats are very sensitive; if adverse signs develop, stop use.

Precautions and Signs of Toxicity

Any flea control product or insecticide, whether used on the animal or in the environment, may be potentially toxic or produce unexpected side effects. This can result from an accidental overdose or unexpected sensitivity. If your pet exhibits vomiting, diarrhea, drooling, sluggishness, neurologic signs (weakness, paralysis), any abnormal behavior or unusual signs, stop using the product and contact your veterinarian immediately. These side effects may occur immediately, hours, or even days after application. Insecticides can be toxic to people; all products should be handled with care. Avoid direct contact with skin; keep all products out of the reach of children.

ENVIRONMENTAL CONTROL

Programs for environmental control must be based on the life cycle of the flea. To summarize key points:

- 1) The life cycle is completed in approximately 16 days in a warm environment.
- 2) No insecticide is effective against the eggs or the pupae. However, an insect hormone imitator, methoprene (Precor), is effective against these forms.
- 3) Since fleas spend greater than 90% of their time off the animal, it is safe to say that for every flea seen on an animal, there are probably 10 to 100 fleas in the environment!

Key to Successful Flea Control

Professional Exterminator Service: In many cases, it may be most economical to hire a professional exterminator to treat the environment. When a professional is contacted, flea control must be emphasized, as spraying for fleas is quite different from spraying for roaches. In general, professionals charge more for flea control than for roach control, and rightly so, since a proper job requires more time and chemicals. When you discuss flea control with an exterminator, take the time to make sure that the service will follow the same general principles outlined below for do-it-yourself programs. If you have a flea-allergic pet, mention it to the exterminator. In most cases, a flea-allergic pet will require that there be more follow-up visits.

Remember, even the professionals do not have insecticides that kill eggs. You can greatly improve your rate of success by vacuuming thoroughly before each visit by the exterminator, paying special attention to areas frequented by your pets. Remove cushions and vacuum inside and under your stuffed furniture. When finished with this procedure, discard the vacuum bag (containing the eggs and larvae). Also, laundering your pets' bedding material on the day of spraying will help. You may also want to ask your exterminator about Precor®. (See biologic foggers under Do-It-Yourself methods).

Do It Yourself: This may be a more economical approach for a small house or apartment. There are two ways to approach the problem: with sprays or with bombs. In either case, we recommend:

- 1) Thorough vacuuming before treatment, discussed under Professional Treatment.
- 2) Removal of pets and children from the house for 1 to 2 hours after treatment. Birds and fish are especially sensitive, and should be kept out or protected for several hours after treatment.
- 3) At first, the house (and yard) should be thoroughly treated every 2 weeks. This procedure should be kept

up for 3 treatments in order to break the life cycle of the flea and kill new fleas as they hatch. After the initial period, treatments can be reduced to once a month, or less often in the winter.

For the House

Sprays: A commercial spraying device should be purchased. Two good products available over-the counter are:

- 1) Malathion 50% 2-4 oz/gal: Spray thoroughly, saturating the carpet and under the furniture. Malathion can be safely applied to most carpets and fabrics.
- 2) Dursban 8 oz./gal: Spray as for Malathion. This is more expensive. It has a less penetrating odor. It is also sold as a ready-to-spray product: Rid-A-Bug.

Most other commercial flea sprays have only pyrethrins as active ingredients and are therefore less effective.

Foggers: Foggers may contain an ingredient that acts as an adulticide (killing only adult fleas) or they may contain an adulticide as well as Precor (see Biological Foggers, below). Foggers are meant to cover a certain number of square feet. Unfortunately, foggers are not extremely penetrating. They cannot penetrate under low-set furnishings, nor can they penetrate into a very thick shag carpet. Most often, they can make an effective mist in adjacent rooms but will not penetrate more than one doorway away. If your floor plan is complex and there is no central spot for a fogger to be set off, you will have to purchase more than one. Vacuuming should precede treatment as in spraying.

Biological Foggers: This is an excellent product which is very safe and imitates an insect hormone. It stops the life cycle of the flea so that no adult fleas are able to develop from the egg stage. The generic name is methoprene (Precor). It is marketed through veterinarians as Siphotrol 10 and is also available over-the-counter by several companies. Check the label carefully to be sure it says methoprene or Precor. Using methoprene increases the interval needed between insecticide applications.

For the Yard

A small yard with only a few favorable microenvironments for fleas can be successfully treated with a heavy application of Sevin dust, 5-10%. Fleas will

congregate wherever animals spend their time-close to the house, dog house, or other outbuildings.

A large, heavily-infested yard should be sprayed, and a sprayer attachment for the hose is the best applicator. It is important to use a very heavy application of insecticide in the yard. Again, Malathion or Dursban are the best products. Products containing diazinon are also available and effective for use in the yard. For further advice, consult a professional or a knowledgeable person at a lawn and garden center. You will need to spray every 2 weeks at first, as you do for the house. It is best to treat the house and the yard on the same day. It is also helpful to prepare the area by raking away debris and presaturating the soil with a sprinkler the day before application.

Insecticides are poisonous. If used improperly or without sufficient knowledge of their side effects, they can endanger humans and animals. Be sure to read the labels and know the effects of all products which you use on your pet and in your home.