



**Indoor Flea Control:** Successful flea control requires controlling fleas in all areas where they are likely to occur: on the pet, in the yard, and inside the home. Treatments for controlling fleas on the pet were discussed in Issue 4 of Bug-Wise and control of fleas in the yard is discussed on page 13 of Publication 2331, Control of Insect Pests In and Around the Home Lawn. This article focuses on control of fleas inside the home.

Not allowing pets inside the home is the most effective method of avoiding this problem, but not all pet owners favor this method. Whether or not pets are allowed inside, the first step in flea control is to treat the pet(s) with an effective, and appropriate, on-pet treatment. It is also important to properly treat any outdoor areas that the pet, or wild or feral animals, may frequent.

In order to effectively manage indoor flea problems, it is necessary to understand flea biology. Only adult fleas occur on the animal; the immature stages occur on the ground or floor of areas frequented by the host, especially in areas where the animal rests. Adult fleas lay eggs on their host, but because the small white eggs are not sticky, they roll off of the host and fall to the floor, accumulating in those areas where the pet spends most of its time. In 2 to 6 days the eggs hatch into slender, dirty white, maggot-like larvae that feed on dander, dried excrement and blood, and other organic material that falls from the host or accumulates from other sources. It is the dried excrement of adult fleas, which also rolls off the pet and accumulates in bedding areas, that is the primary food source of immature fleas.

Because they require high humidity and are repelled by sunlight, flea larvae tend to move into cracks and crevices or burrow deep into carpet or rugs. Flea larvae mature in 1 to 3 weeks and then spin a small cocoon, in which they develop to the adult stage. This cocoon or pupal stage can last as little as one week to many months. In fact, developing flea pupae have the ability to sense whether or not host animals are present in the area, based on vibrations and CO<sub>2</sub> concentrations, and will delay emergence for several months when no hosts are present. This is why flea infestations can suddenly appear in homes that have been vacant for prolonged periods.

Given the biology and habits of immature fleas, it is easy to see why indoor flea infestations are often more severe in rooms with carpet or rugs, and why flea infestations are usually concentrated in areas where pets rest. It is also easy to see why vacuuming and other methods of cleaning carpeting and pet bedding can play such an important role in indoor flea management. Frequently cleaning carpets and pet bedding not only removes many flea eggs before they hatch, but it also removes much of the dander and other organic accumulations on which immature fleas feed. Designating special areas where pets are allowed or encouraged to rest can allow one to concentrate frequent cleaning on these areas. If pets are allowed to rest on furniture, it is important to keep in mind that immature fleas can occur on and under seat cushions and in other cracks and crevices within the furniture. It is also important to keep in mind that immature fleas can be concentrated underneath furniture.

When using insecticide sprays to treat established indoor flea infestations it is important to target both the adult and immature stages. There are many products labeled for indoor control of adult fleas. These contain active ingredients such as: permethrin, deltamethrin, or pyrethrins. While these products also have activity against immature fleas, flea larvae are difficult to control with traditional adulticide type insecticides because of their habit of burrowing deep into carpet and into cracks and crevices where they are difficult to reach with insecticides. Control of immature fleas can be enhanced by including an insect growth regulator (IGR) product, such as methoprene or nylar.

These IGR products work by disrupting the growth of immature fleas, causing them to die before they reach adulthood. The greatest benefit of these IGR products is that they last for several months in an indoor environment and thus provide long-term control of immature fleas (Because these IGRs break down quickly when exposed to direct sunlight, they are less useful in outdoor situations). Because these

IGR products will not control adult fleas, **it is best to apply a combination treatment containing an adult flea control product and one of the IGRs when attempting to control established indoor flea infestations.** However, in situations where there is no established infestation of adult fleas and the objective is to simply provide a preventive treatment for areas frequented by pets, the IGR products may be effective when used alone.

There are several different ways in which indoor flea control products can be purchased and applied. Adulticides and IGR products can be purchased separately and mixed in pump-up type household sprayers. Several companies also market pre-mixed, ‘ready-to-use’ flea treatments in trigger-pump sprayers that contain both an adulticide and one of the IGR products. Indoor flea treatments are also sold in pressurized aerosol spray cans and several companies offer total release aerosol foggers that contain either an adulticide, an IGR, or both. Although foggers containing an adulticide and/or an IGR can be useful in an indoor flea control effort, they should not be relied upon as ‘stand alone’ treatments. This is because the fog that they release does not penetrate well underneath furniture, floor coverings, and seat cushions and into the crack and crevices where most immature fleas are found.

When applying insecticides in indoor situations, it is especially important to carefully read and follow all label directions. Be especially sure to avoid applying insecticides to areas where they are not approved for use. For example, some flea treatments may not be applied directly to furniture.

The key to successful indoor flea control is to be thorough in treating all areas in the house where fleas may occur, giving special attention to areas where pets rest for extended periods of time. A cursory, hastily applied treatment is not likely to produce satisfactory results. A well-planned treatment in which floors and pet bedding areas are cleaned, furniture is moved and cleaned, giving special attention to cracks and crevices in seats and under seat cushions, and carpet is vacuumed before making a thorough application according to label directions, should produce immediate, and lasting, results.

Keep in mind however that fleas that are already in the pupal stage are especially difficult to contact and control with insecticide, and given an opportunity, they will immediately hop onto a host as soon as they emerge. This means that some adult fleas may continue to appear for a few weeks following treatment, even when the treatment was properly applied using effective products. However, if an IGR product is properly applied and all pets are treated with an effective on-pet treatment, successful flea control should result. Once achieved, flea control can be maintained by pro-active use of on-pet treatments and IGR treatments at appropriate intervals, and regular cleaning of pet bedding and other areas frequented by pets.

#### **Examples of Indoor Flea Control Treatments**

<b>Active Ingredient</b>	<b>Brand Name (example)</b>
Pyrethrins + tetramethrin + PBO	Raid Flea Killer (aerosol)
permethrin	Venom X-Terminate (25% EC)
deltamethrin	Suspend (4.75% SC)
permethrin	Eagles 7 Flea and Tick Spray (RTU)
nylar	Bonide Flea Beater 210 Martins IG Regulator Flea Fix
methoprene	Precor
nylar + permethrin	Enforcer Flea Spray for Homes (RTU)
methoprene + permethrin	Zodiac Fleatrol Carpet & Upholstery Pump (RTU)
nylar + permethrin + pyrethrins	Enforcer Flea Fogger XX
methoprene + permethrin	Zodiac FleaTrol Fogger

This information is for educational and preliminary planning purposes only. Brand names mentioned in this publication are used as examples only. No endorsement of these products is intended. Other appropriately labeled products containing similar active ingredients should provide similar levels of control. Always read and follow the insecticide label.