



Fleas¹

P.G. Koehler²

External parasites are generally found on or in the skin and are important pests because they bite or annoy both humans and their pets. Fleas, mange mites, and ticks are the most frequently encountered and most troublesome pests that attack humans and their pets.

Fleas (Figure 1) are small (1/16"), dark, reddish-brown, wingless, blood-sucking insects. Their bodies are laterally compressed, (i.e., flattened side to side) permitting easy movement through the hairs on the host's body. Their legs are long and well adapted for jumping. The flea body is hard, polished, and covered with many hairs and short spines directed backward. The mouthparts of an adult flea are adapted for sucking blood from a host.

Several species of fleas may be pests in Florida, and five kinds have been found on a single animal. The cat flea is the most frequently found flea, although the dog, human, and sticktight fleas are also found in Florida. Fleas may attack a wide variety of warm-blooded animals including dogs, humans, chickens, rabbits, squirrels, rats and mice.

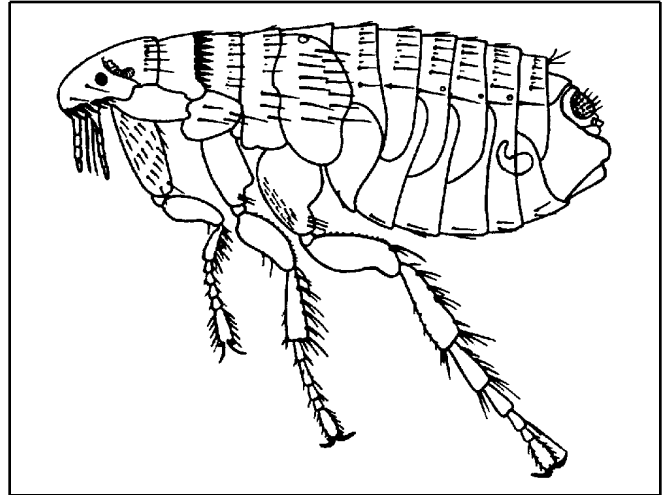


Figure 1. Flea adult.

Biology

The female flea lays her tiny, white eggs loosely on the hairs, in the feathers, or in the habitat of the host. The eggs readily fall off the host onto the ground, floors, bedding, or furniture. Some fleas can lay 500 eggs over a period of several months by laying batches of three to eighteen eggs at a time. The tiny eggs hatch in one to twelve days after being deposited. The white, worm-like larva (Figure 2) avoids light and feeds on particles of dead animal or vegetable matter generally present in cracks and

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crevices. Within 7 to 14 days, unless food has been scarce, the third larval stage is completed, and the larva spins a tiny cocoon and pupates. Usually after a week the adult flea emerges and begins its search for blood.

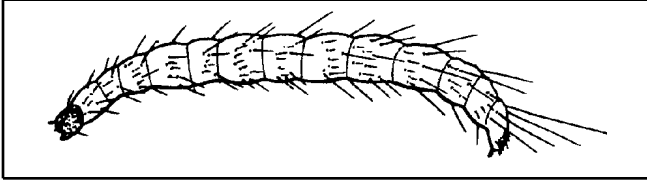


Figure 2. Flea larvae.

Fleas are known to remain in the pupal stage from five days to five weeks in the absence of hosts. Adults emerge from the pupal case when vibrations from pets or humans let them know a host is near. This is one reason why people returning to an unoccupied home may suddenly be attacked by an army of fleas.

Adult fleas must feed on blood in order to reproduce; however, adults can live for long periods without feeding. Fleas usually live and breed most heavily where pets rest. Persons coming near these resting places are also subject to attack. If fleas are established in a home, they will feed on man as well as on the pets. The usual places of attack are the ankles and lower portions of the legs.

The so-called "sand-flea" is nothing more than a common flea that is breeding outdoors in the soil. Contrary to belief, fleas cannot go through several generations without having a blood meal.

The entire life cycle (Figure 3) of a flea can require from two weeks to two years. Hot, wet, summer months favor egg laying. Hot, dry periods give maximum adult production, so greatest adult flea populations are produced in August to September.

Importance

Fleas often breed in large numbers where pets and other animals live. Pets infested with fleas bite and scratch themselves constantly. Their coats become roughened and the skin can become infected. Symptoms of sensitized hosts are often mistaken for mange. Cat fleas and dog fleas may be intermediate hosts for the dog tapeworm.

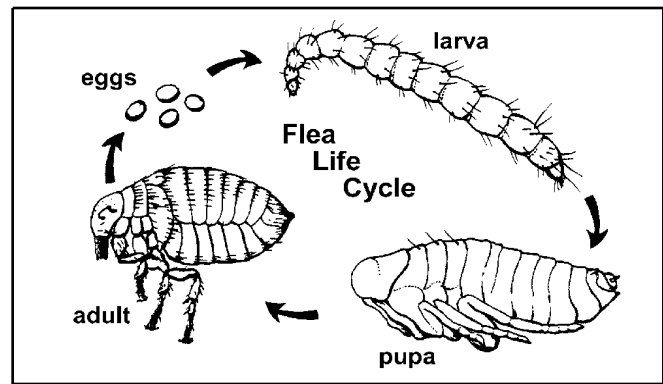


Figure 3. Flea life cycle.

Some people suffer more from flea bites, these can cause intense itching often resulting in secondary infection. The usual flea bite has a small red spot where the flea has inserted its mouthparts. Around the spot there is a red halo with very little swelling. Many people do not react to flea bites at all while others are sensitive and suffer severe allergic reactions. Fleas may also vector such human diseases as plague, typhus, and tularemia.

Control

Flea control is difficult for pet owners to implement because two things must be done: (1) treat the pet and (2) treat the premises. Pet treatment alone is not sufficient because *the animal quickly becomes reinfested* from untreated premises.

Pet Treatment

Flea collars are sold under several trade names and are sometimes effective on small, short-haired dogs or cats that are not subjected to flea-infested areas.

Other treatments are usually necessary to supplement flea collars on large, long-haired pets that are allowed freedom outdoors. Also, some pets may be allergic to flea collars. Ultrasonic flea collars have not been found to kill or repel fleas.

Veterinarians may prescribe or apply pesticides not available over the counter. Oral flea medication prescribed by veterinarians has provided control of fleas when pets are not allowed outdoors and effective flea control is accomplished in the house and yard. Topical or spot treatment has provided effective residual control.

Pets may be combed or shampooed frequently to remove adult fleas before they can irritate the pet or lay eggs. Frequent removal of fleas can quite effectively reduce flea infestations.

To be certain pets remain free of fleas, it is necessary to make routine use of flea control products, especially if pets are allowed to contact infested animals or premises.

Dust treatments should be applied carefully and rubbed into the fur working from the head to the tail. Special attention should be given to the top of the head, the neck, and the back. Apply treatments outdoors so fleas that leave the animals do not remain indoors.

Premise Treatment

Pets become reinfested with fleas from premises. For the most effective control, sleeping areas, bedding kennels, and other areas frequented by the animal should be treated at the time the pet treatment is made. Treatments may or may not include the use of pesticides.

Nonpesticidal premise control includes thorough and frequent cleaning of the house. All rugs should be thoroughly cleaned with a vacuum cleaner or a steam cleaner. Infested furniture, pet baskets, and cracks should be thoroughly cleaned to prevent the larvae from finding food. Dirt which is collected should be disposed of immediately to destroy fleas and flea larvae.

Many people remove pets from the home to attempt flea control. Flea infestations usually become more evident when pets are removed. The hungry adult fleas prefer to feed on cats and dogs. When the pet is removed, the fleas overrun the home, frequently attacking humans. Dogs and cats can be used to attract fleas from the premises. Recommended pet treatments at frequent intervals can be used to kill the fleas.

Spot treat with insecticides when fleas become established on a pet or in the home. Apply sprays according to label directions and do not apply directly to pets. Sprays are effective when properly applied to surfaces in the house. Insecticides can be

applied for yard treatment. Sprays should be directed to all known or suspected breeding places.

Insect growth regulators (IGRs) are the most effective chemicals and are found in indoor misters and total release aerosols. These may be used in conjunction with residual sprays to quickly reduce adult populations. Be sure to follow the label directions. IGRs prevent flea larvae from turning into adults, and have a residual effect of almost three months. For IGR applications to be effective, pets must not be allowed access to heavily infested areas outdoors; otherwise adult fleas will constantly be carried indoors by the pet.

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Advantage Topical Solution (Cats) (Pour-on)		Imidacloprid - 9.1%		
Cats	Fleas	None	None	4 weeks
Available only through licenced practicing veterinarians. Use only on cats. Do not use on other animals. Remove one applicator tube from package. Hold applicator tube upright and pull cap off. Part the hair in the neck at the base of the skull until the skin is visible. Place the tip of the tube on the skin and squeeze the tube twice to expel the entire contents of the tube directly onto the skin. Do not get this product in the pet's eyes or mouth. For treatment of cats and kittens 8 weeks and older and over 9 lbs.				
Aero-cide Contact Insecticide (Aerosol)		Pyrethrins + d-trans Allethrin + Piperonyl Butoxide + MGK264 - 1.0 + 1.0 + 4.0 + 4.0%		
Structures	Fleas	2 hours	None	None
Apply a general volumetric treatment. Open and ventilate the treated area before reoccupying. General volumetric treatment-- open cabinets and doors in area to be treated. Turn off air conditioners and fans and close doors and windows before treating. Disperse toward area suspected of harboring the greatest insect infestations. Keep area closed for 15 minutes. Open and ventilate the treated area.				
Food Areas of Food Handling Establishments	Fleas	2 hours	None	None
Archer (Emulsifiable concentrate)		Pyriproxyfen - 1.3%		
Animal Housing	Fleas	None	None	None
Do not apply when animals are present or contaminate food or foodstuffs, water, or watering equipment. Apply as a general surface, fogger/ULV, or a crack and crevice application to areas where pests collect or breed. For surface applications, thoroughly wet floors, walls, ceilings, doors, around windows, garbage and refuse areas. Control will be enhanced when facilities are cleaned and interior applications are supplemented with exterior perimeter treatments.				
Structures	Fleas	None	None	None
Prior to treatment, vacuum thoroughly and dispose of vacuum cleaner bag in an outdoor trash receptacle. Treat all areas that may harbor pests.				
Bakeries, Beverage/Bottling Plants/Breweries, Hospitals, Institutions/Libraries/ Museums/Sports Facilities, Mausoleums, Nursing Homes, Day Care Centers, Schools	Fleas	Do not contact until dry	None	None
Treat all non-food handling areas that may harbor pests.				

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Bio-Spot Flea and Tick Control for Dogs (Pour-on)		Permethrin - 45.0%		
Dogs	Fleas	None	None	None
For external use on adult dogs only. Do not use on dogs less than 6 months of age. Do not use on sick, aged, medicated, pregnant or nursing dogs without consulting a veterinarian. Apply 1 tube of solution (dogs less than 33 lbs) to the dog's back between the shoulder blades. Apply 1 tube of solution to the dog's back between the shoulder blades and apply a second tube to the dog's back directly in front of the tail (dogs more than 33 lbs). Some animals may be sensitive to this product.				
Buzz Off Equine Spray and Rub-On (Ready-to-Use Liquid)		Pyrethrin + Methoxychlor - 0.05 + 0.5%		
Horse Stables	Fleas	None	None	None
Use undiluted in a mist sprayer. Apply directly to surface to leave a residual insecticidal coating, paying particular attention to areas where insects crawl or alight.				
Conquer (Emulsifiable concentrate)		Esfenvalerate - 3.48%		
Apartments/Houses/ Dwellings/Structures/ Garages	Fleas	Do not contact until dry	None	14 days
Apply as a coarse wet spray to surfaces where these pests are normally found. Pay particular attention to cracks, crevices and similar protected locations in floors and walls. Spray directly on insects when possible. Do not apply this spray to surfaces or utensils that may come into contact with food. Prior to treatment, aquariums and fish bowls should be covered and birds, such as canaries, removed from the area. Do not spray pets.				
Hotels/Motels, Office Buildings, Theaters	Fleas	Do not contact until dry	None	None
Apply as a coarse wet spray to surfaces where these pests are normally found. Pay particular attention to cracks, crevices and similar protected locations in floors and walls. Spray directly on insects when possible. Do not apply this spray to surfaces or utensils that may come into contact with food. Prior to treatment, aquariums and fish bowls should be covered and birds, such as canaries, removed from the area. Do not spray pets.				
Hospitals, Schools, Railroad Cars/Box Cars/Trains, Trucks/Trailers	Fleas	Do not contact until dry	None	None
Apply as a coarse wet spray to surfaces where these pests are normally found. Pay particular attention to cracks, crevices and similar protected locations in floors and walls. Spray directly on insects when possible. Do not apply this spray to surfaces or utensils that may come into contact with food. Prior to treatment, aquariums and fish bowls should be covered and birds, such as canaries, removed from the area. Do not spray pets.				
Building Perimeter (soil 6-10 feet)	Fleas	Do not contact until dry	None	7 days

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
For best results, lawn should be mowed a day or two before spraying. Spray using a slow, even sweeping motion, being sure to cover the entire lawn surface where the pets will normally frequent. Spray under ornamentals and trees, but avoid soaking young or flowering plants. Repeat treatments may be necessary at 7 to 14 day intervals. Treat a 12-18 inch band of soil and other substrate adjacent to buildings and the building foundation to a height of 2 to 3 feet where these pests are active and may find entrance.				
Countdown (Wettable/soluble powder)		Cyfluthrin - 20.0%		
Cattle Barns, Horse Stables, Beef Housing	Fleas	None	None	10 days
Apply as general surface and/or a crack and crevice spray. Control will be enhanced when facilities are cleaned and interior treatments are supplemented with perimeter exterior treatments. Do not make applications to animal feedstuffs or water equipment.				
Kennels, Swine Housing, Poultry Housing	Fleas	Do not contact until dry	None	10 days
Apply as general surface and/or a crack and crevice spray. Control will be enhanced when facilities are cleaned and interior treatments are supplemented with perimeter exterior treatments. Do not make applications to animal feedstuffs or water equipment.				
Cynoff EC Insecticide (Emulsifiable concentrate)		Cypermethrin - 24.8%		
Outdoor & Perimeter	Fleas	None	None	None
Apply to surfaces of buildings, porches, screens, window frames, eaves, patios, lawns, vegetation, refuse dumps, garages and in other areas where pests are found. Wear impermeable gloves made of neoprene when spraying.				
Cynoff WP Insecticide (Wettable/soluble powder)		Cypermethrin - 40.0%		
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Apply as a residual spray to surfaces of buildings, porches, screens, window frames, eaves, patios, lawns, refuse dumps, garages and other areas where pests are found.				
DeltaDust (Dust)		Deltamethrin - 0.05%		
Outdoor & Perimeter	Fleas	None	None	None
Make residual treatment around windows and doors, porches, screens, eaves, patios, garages, understairways, in crawl spaces and other areas where pests hide.				
DeltaGard G (Granule)		Deltamethrin - 0.1%		
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Apply this product uniformly to home lawns, shrubbery, and other ornamental recreational grassy areas. Immediately after application, water the lawn thoroughly with half an inch of water. Retreat as necessary. Do not apply to saturated soil. Do not allow children or pets onto treated areas until granules have been watered into the soil and the grass or soil is dry.				

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Demand CS (Microcapsulated suspension)		Lambda-cyhalothrin - 9.7%		
Animal Housing	Fleas	Do not contact until dry	None	3 weeks
Do not apply when animals are present. Do not apply to animal feedstuffs, water, or watering equipment. Do not contaminate any animal food, feed, or water in and around livestock, poultry, or pet housing when making applications,				
General Structures, Hotels/Motels	Fleas	Do not contact until dry	None	3 weeks
For use as a general surface spray and crack and crevice or spot treatment in, on, or around buildings and structures and their immediate surroundings.				
Building Exteriors	Fleas	None	None	3 weeks
Apply with either hand or power application equipment as a residual treatment. Barrier Treatment: Apply the band up to 10 feet wide around the structure and upwards along the foundation to 3 feet and around windows, doors, and roof overhangs. Apply as a coarse spray to thoroughly and uniformly wet the foundation and/or band area so that the insecticide will reach the soil or thatch level where pests may be active.				
Demon EC (Emulsifiable concentrate)		Cypermethrin - 25.3%		
Building Exteriors	Fleas	Do not contact until dry	None	None
Barrier Treatment: Apply to band of soil and vegetation 6-10 feet wide around the foundation of structure. Also treat foundation to a height of 2-3 feet. Retreat as necessary to maintain effectiveness. Apply as a residual treatment to outside surfaces of buildings.				
Demon TC (Emulsifiable concentrate)		Cypermethrin - 25.3%		
Building Exteriors	Fleas	None	None	None
Do not apply more than 1 pound of material per acre per year. Apply to a band of soil and vegetation 6-10 ft wide around and adjacent to the structure. Also, treat foundation to a height of 2-3 feet.				
Dumps/Landfills/Garbage Areas	Fleas	None	None	None
Do not apply more than 1 pound of material per acre per year.				
Demon WP (Wettable/soluble powder)		Cypermethrin - 40.0%		
Building Exteriors	Fleas	Do not contact until dry	None	None
Apply as a residual spray to surfaces of buildings. Barrier treatment: Apply to a band of soil and vegetation 6-10 feet around and adjacent to the foundation to a height of 2-3 feet.				
Demon WP Water Soluble Packets (Wettable/soluble powder)		Cypermethrin - 35.6%		
Building Exteriors	Fleas	Do not contact until dry	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Apply as a residual spray to surfaces of buildings. Barrier treatment: Apply to a band of soil and vegetation 6-10 feet wide around and adjacent to the building. Also, treat the building foundation to a height of 2-3 feet.				
Dragnet FT (Emulsifiable concentrate)		Permethrin - 36.8%		
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Apply as a residual spray to outside surfaces of buildings. Repeat treatment as necessary.				
Ficam D (Dust)		Bendiocarb - 1.0%		
Structures, Restaurants/Commercial Kitchens	Fleas	None	None	None
This product is intended to be applied with a hand or power duster to hiding and runway areas and those places where pests are found. Apply thoroughly to cracks and crevices where they hide.				
Outdoor & Perimeter	Fleas	None	None	None
To help prevent invasion of building and structures by pests, treat a band of soil and vegetation around and adjacent to the foundation. Rodent burrows, runways, and harborage sites should be thoroughly treated to control fleas associated with rodents.				
Sanitary Sewers/Drain Lines/Outside Surfaces	Fleas	None	None	None
Ficam Plus Insecticide (Wettable/soluble powder)		Bendiocarb + Pyrethrins - 29.45 +3.06%		
Structures	Fleas	Do not contact until dry	None	None
Apply spray to infested areas. Do not treat pets or their bedding with this product. Do not apply to humans, their clothing or bedding. Avoid breathing and working in spray mist or dust. With proper spraying, this product does not produce a visible deposit. However, if unevenly applied, or sprayed to run-off, a visible deposit may occur on some dark surfaces. Do not apply in conduits, motor housings, junction boxes, and switch boxes or ther electrical equipment because of possible shock hazard. Do not contaminate fruit, vegetables, or other feed or food crops.				
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None
Application is limited to spot or crack and crevice treatment only. Apply spray to infested areas. Do not treat pets or their bedding with this product. Do not apply to humans, their clothing or bedding. Avoid breathing and working in spray mist or dust. With proper spraying, this product does not produce a visible deposit. However, if unevenly applied, or sprayed to run-off, a visible deposit may occur on some dark surfaces. Do not apply in conduits, motor housings, junction boxes, and switch boxes or ther electrical equipment because of possible shock hazard. Do not contaminate fruit, vegetables, or other feed or food crops.				
USDA Inspected Facilities	Fleas	Do not contact until dry	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
This product is authorized for use in non-food areas of Federally inspected Meat and Poultry Plants. Apply spray to infested areas. Do not treat pets or their bedding with this product.				
Outdoor & Perimeter	Fleas	None	None	None
Apply as a residual spray to surfaces of buildings. Barrier treatments will help prevent infestations of buildings.				
Flee Insecticide (Emulsifiable concentrate)		Permethrin - 36.8%		
Structures	Fleas	Do not contact until dry	None	None
Use only in well ventilated areas. Do not treat where food is exposed. Do not use in fogging equipment. Do not apply to pets, crops, firewood or sources of electricity.				
Food Processing (non-food/feed areas)	Fleas	Do not contact until dry	None	None
Use only in well ventilated areas. Do not treat where food is exposed. Do not use in fogging equipment. Do not apply to pets, crops, firewood or sources of electricity. Do not use in food areas of food handling establishments. Not for use in Federally inspected Meat and Poultry Plants.				
Sensitive Environments	Fleas	Do not contact until dry	None	None
Use only in well ventilated areas. Do not treat where food is exposed. Do not apply in patient rooms or in any rooms while occupied by the elderly or infirm. Do not apply to classrooms when in use. Do not apply to institutions in the immediate area when occupants are present.				
Outdoor & Perimeter	Fleas	None	None	None
Apply as a residual spray to outside surfaces of buildings. Repeat treatment as necessary.				
Frontline Top Spot for Dogs (Pour-on)		Fipronil - 9.7%		
Dogs	Fleas	None	None	4 weeks
Available only from licensed, practicing veterinarians. Apply to dogs and puppies (10 weeks or older). Persons applying this product must wear latex gloves. Snap applicator tip away from face and body. Place applicator tip through animals's hair to the skin level between the shoulder blades. Squeeze tube, applying entire contents in a single spot to the animal's skin. Avoid superficial application to the animal's hair. One pipette per treatment is needed for dogs under 88 lbs.				
Kicker (Emulsifiable concentrate)		Pyrethrins + PBO - 6 + 60%		
Pets	Fleas	None	None	None
Spray or sponge water dilution to all parts of the animal's body except eyes, nose, mouth, and genitalia.				
Structures	Fleas	Do not contact until dry	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
<p>This product is an EC used as a tank -mix to increase flushing and knockdown of pests and improve control of resistant insects. Can be used with residual insecticides. This product may also be used as a space spray or undiluted ULV treatment. The insecticidal components of this product are classified as food additives and established tolerances will not be exceeded when used as directed. For residual control thoroughly spray surfaces where insects are usually found. This product may be used as a space spray to control crawling and flying insects.</p>				
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None
<p>This product is an EC used as a tank -mix to increase flushing and knockdown of pests and improve control of resistant insects. Can be used with residual insecticides. This product may also be used as a space spray or undiluted ULV treatment. The insecticidal components of this product are classified as food additives and established tolerances will not be exceeded when used as directed. For residual control thoroughly spray surfaces where insects are usually found. This product may be used as a space spray to control crawling and flying insects. This product may be applied as a general surface, space, spot or crack and crevice treatment in both food and non-food areas of food handling establishments. When used as a space spray, vacate the treated area and keep the area closed for at least 30 minutes after treatment. Ventilate the area before reoccupying. Repeat treatment as necessary.</p>				
USDA Inspected Facilities	Fleas	Do not contact until dry	None	None
<p>This product is an EC used as a tank -mix to increase flushing and knockdown of pests and improve control of resistant insects. Can be used with residual insecticides. This product may also be used as a space spray or undiluted ULV treatment. The insecticidal components of this product are classified as food additives and established tolerances will not be exceeded when used as directed. For residual control thoroughly spray surfaces where insects are usually found. This product may be used as a space spray to control crawling and flying insects. The use of this product as a space spray must be confined to time periods when the plant is not in operation.</p>				
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Microcare Pressurized Pyrethrum Capsule Suspension (Aerosol)		Pyrethrins + Piperonyl Butoxide + MGK264 - 0.300 + 2.200 +0.336%		
Structures, Food Processing (non-food/feed areas), Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None
<p>Apply to pet beds and resting quarters, adjacent cracks and crevices, between and under cushions of upholstered furniture and other areas where pests may be present.</p>				
Utilities	Fleas	Do not contact until dry	None	None
<p>Apply to pet beds and resting quarters, adjacent cracks and crevices, between and under cushions of upholstered furniture and other areas where pests may be present. Use actuator to treat open boxes and exposed surfaces.</p>				
Mobile Homes/Travel Trailers/Recreational Vehicles, Vessels (Boats/Ships)	Fleas	Do not contact until dry	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Apply to pet beds and resting quarters, adjacent cracks and crevices, between and under cushions of upholstered furniture and other areas where pests may be present. Close all windows and doors. Disperse in all locations. Leave area closed for 15 minutes.				
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Treat outdoor areas which are landscaped, planted or mulched or unmaintained.				
Campgrounds/Recreation Areas	Fleas	Do not contact until dry	None	None
Treat outdoor areas which are landscaped, planted or mulched or unmaintained. Treat in the direction of a slight breeze away from user that allows the fog to drift into areas of infestation.				
Microcare Pressurized Pyrethrum Capsule Suspension (Formula 1) (Aerosol)		Pyrethrins + Piperonyl Butoxide + MGK264 - 0.300 + 2.200 + 0.336%		
Structures	Fleas	None	None	None
Use this product with supplied actuator and tubes. Inject this product into cracks and crevices. Spot, space, and general treatments are permitted for certain applications. To make a spot treatment release product onto surface. Apply this product to pet beds and resting quarters, adjacent cracks and crevices, baseboards, carpets and floor coverings, etc.				
Mobile Homes/Travel Trailers/Recreational Vehicles, Vessels (Boats/Ships)	Fleas	None	None	None
Use this product with supplied actuator and tubes. Inject this product into cracks and crevices. Spot, space, and general treatments are permitted for certain applications. To make a spot treatment release product onto surface. Apply this product to pet beds and resting quarters, adjacent cracks and crevices, baseboards, carpets and floor coverings, etc. Treat area for 1-3 seconds. Leave unoccupied for 15 minutes.				
Outdoor & Perimeter	Fleas	None	None	None
For treatment of localized infestations in outdoor areas. Treat areas where insects are likely to enter buildings.				
Campgrounds/Recreation Areas	Fleas	None	None	None
Treat so that slight breeze allows fog to drift into areas of infestation. Allow spray to dry before re-entering area.				
Optem Cyfluthrin CS (Prescription Treatment) (Microcapsulated suspension)		Cyfluthrin - 6.0%		
Structures	Fleas	Do not contact until dry	None	None
Inject cracks and crevices and/or voids where these insects may be harboring or hibernating. Do not apply to humans or their clothing or bedding. Do not contaminate food or use on household pets. Cover fish tanks prior to application. Dilute the product in water.				

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Food Processing (non-food/feed areas)	Fleas	Do not contact until dry	None	None
Inject cracks and crevices and/or voids where these insects may be harboring or hibernating. Do not apply to humans or their clothing or bedding. Do not contaminate food or use on household pets. Cover fish tanks prior to application. Dilute the product in water. Not for use in USDA meat and poultry plants.				
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Treat infested areas. Will not provide residual control. Dilute in water and spray onto outdoor surfaces and into cracks and crevices, and into voids. Can be used as a perimeter treatment to help prevent infestations.				
P.I. Contact Insecticide (Formula 1) (Aerosol)		Pyrethrins + Piperonyl Butoxide - 0.5 + 4.0%		
Structures	Fleas	None	None	None
Apply as space treatment.				
Food Areas of Food Handling Establishments	Fleas	None	None	None
Apply as space treatment. When applying as a space treatment in food areas, the operation being treated should be shut down. All food utensils and equipment must be covered or cleaned after treatment.				
Hospitals	Fleas	None	None	None
Apply as space treatment. Patients should be removed from room prior to treatment. Room should be ventiated for at least 2 hours after spraying. Do not return patients to room until after ventilation.				
Nursing Homes	Fleas	None	None	None
Apply as space treatment. Patients should be removed from room prior to treatment. Room should be ventiated for at least 2 hours after spraying. Do not return patients to room until after ventilation.				
Permethrin CDS Pour-On (Ready-to-Use Liquid)		Permethrin (Synergized) - 7.4%		
Cattle Barns, Dairies, Swine Housing, Beef Housing	Fleas	None	None	None
Use undiluted in a mist sprayer. Apply directly to surface to leave a residual insecticidal coating.				
Permethrin II (Emulsifiable concentrate)		Permethrin - 10.0%		
Cattle Barns, Dairies, Feedlots, Horse Stables, Milking Parlors, Swine Housing, Beef Housing, Sheep Housing, Poultry Housing	Fleas	None	None	14 days
May be applied as a spray, mist or fog. Do not spray feed, food or water.				

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Permethrin II Dairy Cattle & Barn Spray (Emulsifiable concentrate)		Permethrin - 10.0%		
Cattle Barns, Dairies, Feedlots, Horse Stables, Milking Parlors, Swine Housing, Beef Housing, Poultry Housing	Fleas	None	None	14 days
Apply as a spray, mist or fog. Do not spray feed, food or water.				
Dogs	Fleas	None	None	14 days
May be used as a dip or spray. Do not use on puppies less than 3 months old or sick, old or debilitated animals.				
Pestab (Wettable/soluble powder)		Lambda-cyhalothrin - 10.0%		
Animal Areas/Quarters, Kennels	Fleas	Do not contact until dry	None	3 weeks
Do not apply when animals are present. Allow applications to dry before restocking the facility. Apply as a general and/or crack and crevice treatment.				
Outdoor & Perimeter	Fleas	None	None	3 weeks
Barrier treatments: To prevent infestations of building, apply to a band of soil and vegetation 6-10 feet wide around and adjacent to outside surfaces of buildings. Also may be applied to lawn areas around residential/nonresidential buildings. Apply as a coarse spray to thoroughly and uniformly wet the foundation and/or band area.				
Prelude (Emulsifiable concentrate)		Permethrin - 25.6%		
Structures	Fleas	Do not contact until dry	None	None
During indoor application, do not allow dripping or runoff to occur. Do not apply when occupants are present in the immediate area.				
Food Processing (non-food/feed areas)	Fleas	Do not contact until dry	None	None
Do not apply in food/feed areas of food/feed handling establishments. Not for use in federally inspected meat and poultry plants. During indoor application, do not allow dripping or runoff to occur. Do not apply when occupants are present in the immediate area.				
Food Storage Areas (warehouses)	Fleas	Do not contact until dry	None	None
Do not apply in warehouses while raw agriculture commodities for food or feed are being stored. During indoor application, do not allow dripping or runoff to occur. Do not apply when occupants are present in the immediate area.				
Outdoor & Perimeter	Fleas	None	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Prescription Treatment 565 Plus XLO (Aerosol)		Pyrethrins + d-trans Allethrin + Piperonyl Butoxide + MGK264 - 0.25 + 0.25 + 1.00 + 1.00%		
Structures	Fleas	Do not contact until dry	None	None
Direct mist toward floor. Keep area closed for 15 minutes. Open and ventilate before reoccupying.				
Food Processing (non-food/feed areas)	Fleas	Do not contact until dry	None	None
Apply only when plant is not in operation. Direct mist toward floor. Keep area closed for 15 minutes. Open and ventilate before reoccupying.				
Pro-Control Plus Total Release Aerosol Insecticide (Aerosol)		Pyrethrins + Cyfluthrin + Piperonyl Butoxide - 0.5 + 0.1 + 1.0%		
Structures	Fleas	2 hours	None	None
Open doors, drawers, and closets. Shut off fans and air conditioning. Set fogger on stand. Immediately leave treated area. Keep area closed for at least 2 hours. Allow treated area to air for 30 minutes.				
Hospitals, Nursing Homes	Fleas	2 hours	None	None
Do not apply this product in any rooms while occupied by patients, the elderly, or infirmed. Open doors, drawers, and closets. Shut off fans and air conditioning. Set fogger on stand. Immediately leave treated area. Keep area closed for at least 2 hours. Allow treated area to air for 30 minutes.				
Day Care Centers, Schools	Fleas	2 hours	None	None
Do not apply in classroom when in use. Open doors, drawers, and closets. Shut off fans and air conditioning. Set fogger on stand. Immediately leave treated area. Keep area closed for at least 2 hours. Allow treated area to air for 30 minutes.				
Pro-Control Total Release Aerosol Insecticide (Formula 1) (Aerosol)		Pyrethrins + Piperonyl Butoxide + MGK264 - 0.535 + 1.050 + 1.710%		
Structures	Fleas	2 hours	None	None
Open all doors, drawers, and closets. Shut off fans and air conditioners. Set fogger on stand and leave treated area. Keep area closed for 2 hours. and allow area to air for 30 minutes.				
Sensitive Environments	Fleas	2 hours	None	None
Open all doors, drawers, and closets. Shut off fans and air conditioners. Set fogger on stand and leave treated area. Keep area closed for 2 hours, and allow area to air for 30 minutes. Ventilate patient areas for 2 hours before returning patients to their rooms.				
Purina Hard Hitter Aerosol (Aerosol)		Permethrin - 0.50%		
Dogs	Fleas	None	None	7 days
Using protective gloves, start at the tail, stroke against the lay of the hair, spraying the parted fur in short bursts, directly behind the hand to insure penetrating the coat. Not recommended for puppies less than four weeks old.				

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Purina Hard Hitter Aqueous Spray (Emulsifiable concentrate)		Permethrin - 0.50%		
Dogs	Fleas	None	None	None
Do not spray into eyes and face. Avoid contact with genitalia. Not recommended for use on puppies less than four weeks old.				
Purina Hard Hitter Dust (Dust)		Permethrin - 0.25%		
Cats	Fleas	None	None	None
Dust animals thoroughly working the dust into the hair down to the skin. Pay close attention to legs and feet. Avoid getting dust in pet's eyes. Dust sleeping area including bedding and cracks and crevices.				
Dogs	Fleas	None	None	None
Dust animals thoroughly working the dust into the hair down to the skin. Pay close attention to legs and feet. Avoid getting dust in pet's eyes. Dust sleeping area including bedding and cracks and crevices				
Purina Residual Livestock and Poultry Insecticide (Emulsifiable concentrate)		Tetrachlorvinphos - 24.0%		
Poultry Housing	Fleas	None	None	None
Apply to droppings under cages.				
Pyrenone (Ready-to-Use Liquid)		Pyrethrins + Piperonyl Butoxide - 1.0 + 5.0%		
Animal Housing	Fleas	None	None	None
Fill the area with mist and direct the spray into tall grass and shrubbery where pests rest. Avoid wetting foliage. Repeat as necessary. Direct spray towards upper portions of enclosure filling the room with mist. Keep area closed for at least 15 minutes. Vacate area and ventilate before reoccupying.				
Structures	Fleas	Do not contact until dry	None	None
For indoor and outdoor applications as a space, area or contact spray. May be applied by conventional spraying or fogging equipment. Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area to be treated must be vacated by unprotected persons. Do not enter treated areas without protective clothing until sprays have dried. Space and contact application-- Close doors and windows and shut off ventilating systems. Use a mechanical aerosol generator or a fogger. Direct spray first into cracks and crevices and behind equipment. Then treat as a space spray, directing the spray towards ceiling and upper corners of the area and behind any obstructions. Keep closed for 1 hour. Vacate treated area and ventilate before reoccupying. This product can be diluted in deodorized petroleum solvent for fogging.				
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None
Do not apply spray while food processing is underway. When applied as a surface treatment, food processing operations may continue.				

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
USDA Inspected Facilities	Fleas	Do not contact until dry	None	None
When applied in federally inspected Meat, Poultry and Shell Egg, and Egg products Inspection plants, food processing must stop during application.				
Saga WP Insecticide (Wettable/soluble powder)		Tralomethrin - 40.00%		
Structures	Fleas	Do not contact until dry	None	None
Apply emulsion to rugs, carpets, upholstered furniture, pet beds, floor coverings, pet resting areas and other infested habitats. Provide uniform coverage, apply until infested area is moist. Thoroughly apply this product to infested areas.				
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None
Apply emulsion to rugs, carpets, upholstered furniture, pet beds, floor coverings, pet resting areas and other infested habitats. Provide uniform coverage, apply until infested area is moist. Thoroughly apply this product to infested areas. Applications are permitted in food/feed areas of food/feed handling and processing establishments as a general spray, spot, or crack and crevice treatment.				
USDA Inspected Facilities	Fleas	Do not contact until dry	None	None
Apply emulsion to rugs, carpets, upholstered furniture, pet beds, floor coverings, pet resting areas and other infested habitats. Provide uniform coverage, apply until infested area is moist. Thoroughly apply this product to infested areas. Apply only when facility is not in operation. Do not apply directly to food/feed or food/feed handling surfaces.				
Aircraft	Fleas	Do not contact until dry	None	None
Do not apply when passengers or non-essential personnel are present in area to be treated. Apply emulsion to rugs, carpets, upholstered furniture, pet beds, floor coverings, pet resting areas and other infested habitats. Provide uniform coverage, apply until infested area is moist. Thoroughly apply this product to infested areas.				
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Perimeter treatment-- To help prevent infestations of buildings, apply product where pests are active and may find entrance. Residual spray-- Apply to surfaces of buildings, porches, screens, window frames, eaves, patios, refuse dumps, and garages.				
Synergized Delice Pour-On Insecticide (Ready-to-Use Liquid)		Permethrin + Piperonyl Butoxide - 1.0 + 1.0%		
Cattle Barns, Dairies, Horse Stables, Kennels, Swine Housing, Beef Housing, Sheep Housing, Poultry Housing	Fleas	None	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Use undiluted in a mist sprayer. Apply directly to the surface to leave a residual insecticidal coating, paying particular attention to areas where insects crawl or alight. One gallon will treat approximately 7,300 square feet.				
Veterinary Clinics	Fleas	None	None	None
Pens: Use undiluted in a mist sprayer. Apply directly to the surface to leave a residual insecticidal coating, paying particular attention to areas where insects crawl or alight. One gallon will treat approximately 7,300 square feet.				
TKO Diazinon Capsule Suspension (Microcapsulated suspension)		Diazinon - 23.0%		
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
For treatment of localized infestations of these insects in outdoor areas which are landscaped, planted, mulched, or unmaintained. For control of pests on outdoor surfaces and perimeters of buildings and on ornamental plants around the home only. Do not use this product on outdoor ornamentals other than around the home. Do not spray on windy days. Perimeter treatment-- To help prevent infestations of buildings by pests.				
Talstar Lawn & Tree Flowable (Emulsifiable concentrate)		Bifenthrin - 7.9%		
Building Exteriors	Fleas	Do not contact until dry	None	None
Apply as a residual spray to outside surfaces of buildings.				
Tri-die Pressurized Silica + Pyrethrin Dust (Aerosol)		Pyrethrins + Piperonyl Butoxide + Amorphous Silica Dioxide - 0.6 + 4.8 + 8.0%		
Structures	Fleas	None	None	None
Treat pet bedding, floor and floor coverings and all areas where pests may inhabit. Use with the supplied actuator and tubes to inject product where insects may be harboring, living and breeding.				
Food Areas of Food Handling Establishments	Fleas	None	None	None
Treat pet bedding, floor and floor coverings and all areas where pests may inhabit. Application of this product in the food areas of food-handling establishments other than as a crack and crevice treatment are not permitted. Use with the supplied actuator and tubes to inject product where insects may be harboring, living and breeding.				
Outdoor & Perimeter	Fleas	None	None	None
Treat cracks around doors and windows, under siding and voids foundation level, beneath guards on loading docks, into cracks in foundations and floors and in other places where these pests may enter building.				
ULD BP-100 Contact Insecticide (Formula 1) (Ready-to-Use Liquid)		Pyrethrins + Piperonyl Butoxide + MGK264 - 1.00 + 2.00 + 2.94%		
Structures	Fleas	2 hours	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Use full strength or dilute product as desired according to dilution table. Apply using a mechanical aerosol generator. Do not remain in treated areas after application, and leave room closed for at least 1 hour. Ventilate thoroughly before occupants are allowed to re-enter.				
ULD BP-50 Contact Insecticide (Ready-to-Use Liquid)		Pyrethrins + Piperonyl Butoxide - 0.5 + 5.0%		
Structures	Fleas	None	None	None
This product may be applied through mechanical aerosol or ULV generators, as well as thermal and conventional fogging or spraying equipment. Use as a space or contact spray.				
Food Areas of Food Handling Establishments, USDA Inspected Facilities	Fleas	None	None	None
Designed for use in edible product areas of official establishments operating under the federal meat, poultry, shell egg grading and egg products inspection programs and in other food processing plants. This product may be applied through mechanical aerosol or ULV generators, as well as thermal and conventional fogging or spraying equipment. Use as a space or contact spray.				
ULD BP300 Contact Insecticide (Formula 1) (Ready-to-Use Liquid)		Pyrethrins + Piperonyl Butoxide + MGK264 - 3.00 + 6.00 + 10.00%		
Structures	Fleas	2 hours	None	None
Do not apply product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons. Do not enter treated areas without protection until thoroughly ventilated or sprays have dried. For indoor application as a space, area, or contact spray. This product may be applied through mechanical aerosol or ultra low volume cold aerosol generators as well as thermal and conventional fogging or spraying equipment. As a space spray, use undiluted to kill accessible stages of insects infesting food in storage or being processed. Close room or warehouse and shut off all ventilating systems. Do not remain in the treated area after application and leave room closed for at least 1 hour. Ventilate thoroughly before occupants are allowed to re-enter. This product may be diluted using a white mineral oil or an odorless light petroleum hydrocarbon.				
Outdoor & Perimeter	Fleas	None	None	None
Use diluted to kill flies, mosquitoes and gnats. Fog areas where insects are to be controlled.				
Ultracide Pressurized Flea IGR & Adulticide (Aerosol)		Pyriproxyfen + Pyrethrins + MGK264 + Permethrin - 0.1 + 0.05 + 0.4 + 0.4%		
Structures	Fleas	Do not contact until dry	None	None
Kills active flea infestations and prevents infestations from developing. Prevents reinfestation for 7 months. Treat infested areas or areas which could be infested. Treated areas should be vacated during application. Except for the applicator, do not permit humans or pets to contact treated surfaces until the spray has dried.				
Aircraft	Fleas	Do not contact until dry	None	None

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %		
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Do not use in aircraft cabins. Kills active flea infestations and prevents infestations from developing. Prevents reinfestation for 7 months. Treat infested areas or areas which could be infested. Treated areas should be vacated during application. Except for the applicator, do not permit humans or pets to contact treated surfaces until the spray has dried.				
Ultraguardian Flea Foam (Prescription Treatment 410) (Aerosol)		Pyrethrins + Piperonyl Butoxide - 0.15 + 0.70%		
Cats	Fleas	None	None	None
Do not use on kittens under two weeks of age.				
Dogs	Fleas	None	None	None
Do not use on puppies less than two weeks old.				