**ENY-205** 

 ${f I}$ nstitute of  ${f F}$ ood and  ${f A}$ gricultural  ${f S}$ ciences

# Fleas<sup>1</sup>

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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.

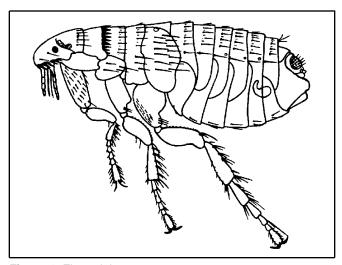


Figure 1. Flea adult.

# **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.

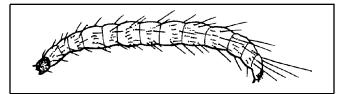


Figure 2. Flea larvae.

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.

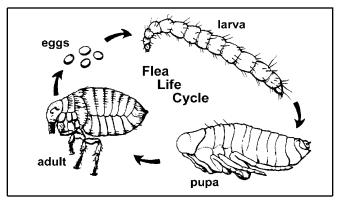


Figure 3. Flea life cycle.

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

rrade 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 Insecticid	e (Aerosol)	Pyrethrins + d-trans MGK264 - 1.0 + 1.0 +	Allethrin + Piperonyl 4.0 + 4.0%	Butoxide +	
Structures	Fleas	2 hours	None	None	
- <del>-</del>	ea to be treated. Turn off air coned of harboring the greatest inse			-	
Archer (Emulsifiable concen	trate)	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	
Structures Prior to treatment, vacuum thomay harbor pests.	Fleas roughly and dispose of vacuum			<u> </u>	

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 Contr	ol for Dogs (Pour-on)	Permethrin - 45.0%		
Dogs	Fleas	None	None	None
-	ut consulting a veterinarian. Apply 1 tube of solution to the	oply 1 tube of solution (dog's back between the	dogs less than 33 lbs) to shoulder blades and a	to the dog's back apply a second
Buzz Off Equine Spray and R Liquid)	ub-On (Ready-to-Use	Pyrethrin + Methoxy	chlor - 0.05 + 0.5%	
Horse Stables	Fleas	None	None	None
Use undiluted in a mist sprayer areas where insects crawl or a	. Apply directly to surface to le light.	ave a residual insecticion	dal coating, paying part	cicular attention to
Conquer (Emulsifiable conce	entrate)	Esfenvalerate - 3.489	%	
Apartments/Houses/ Dwellings/Structures/ Garages	Fleas	Do not contact until dry	None	14 days
similar protected locations in flo	surfaces where these pests are pors and walls. Spray directly contact with food. Prior to treatmarea. Do not spray pets.	on insects when possible	e. Do not apply this sp	ray to surfaces or
Hotels/Motels, Office Buildings, Theaters	Fleas	Do not contact until dry	None	None
Apply as a coarse wet spray to similar protected locations in flutensils that may come into coas canaries, removed from the	oors and walls. Spray directly contact with food. Prior to treatm	on insects when possible	e. Do not apply this sp	ray to surfaces or
Hospitals, Schools, Railroad Cars/Box Cars/Trains, Trucks/Trailers	Fleas	Do not contact until dry	None	None
similar protected locations in flo	ntact with food. Prior to treatme	on insects when possible	e. Do not apply this sp	ray to surfaces or
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
to cover the entire lawn surfact young or flowering plants. Rep	be mowed a day or two before see where the pets will normally froeat treatments may be necessaldings and the building foundation	equent. Spray under of ary at 7 to 14 day interv	rnamentals and trees, tales. Treat a 12-18 inch	out avoid soaking band of soil and
Countdown (Wettable/solubl	e powder)	Cyfluthrin - 20.0%		
Cattle Barns, Horse Stables, Beef Housing	Fleas	None	None	10 days
	or a crack and crevice spray. C with perimeter exterior treatmen			
Kennels, Swine Housing, Poultry Housing	Fleas	Do not contact until dry	None	10 days
	or a crack and crevice spray. C with perimeter exterior treatmen			
Cynoff EC Insecticide (Emulsifiable concentrate)  Cypermethrin - 24.8%				
Cynoff EC Insecticide (Emul	sifiable concentrate)	Cypermethrin - 24.89	% •	
	sifiable concentrate) Fleas	Cypermethrin - 24.89 None	None	None
Outdoor & Perimeter  Apply to surfaces of buildings,	1	None es, eaves, patios, lawns	None s, vegetation, refuse du	<u></u>
Outdoor & Perimeter  Apply to surfaces of buildings, in other areas where pests are	Fleas porches, screens, window fram found. Wear impermeable glove	None es, eaves, patios, lawns	None s, vegetation, refuse duwhen spraying.	<u></u>
Outdoor & Perimeter  Apply to surfaces of buildings, in other areas where pests are  Cynoff WP Insecticide (Wetta	Fleas porches, screens, window fram found. Wear impermeable glove	None es, eaves, patios, lawns wes made of neoprene v	None s, vegetation, refuse duwhen spraying.	<u></u>
Outdoor & Perimeter  Apply to surfaces of buildings, in other areas where pests are  Cynoff WP Insecticide (Wetta)  Outdoor & Perimeter	Fleas  porches, screens, window frame found. Wear impermeable glovable/soluble powder)  Fleas  urfaces of buildings, porches, sc	None es, eaves, patios, lawns ves made of neoprene ves  Cypermethrin - 40.00  Do not contact until dry	None s, vegetation, refuse du when spraying.  None	Imps, garages and
Outdoor & Perimeter  Apply to surfaces of buildings, in other areas where pests are  Cynoff WP Insecticide (Wetta Outdoor & Perimeter  Apply as a residual spray to su	Fleas  porches, screens, window frame found. Wear impermeable glovable/soluble powder)  Fleas  urfaces of buildings, porches, sc	None es, eaves, patios, lawns ves made of neoprene ves  Cypermethrin - 40.00  Do not contact until dry	None s, vegetation, refuse du when spraying.  None  None eaves, patios, lawns, re	Imps, garages and
Outdoor & Perimeter  Apply to surfaces of buildings, in other areas where pests are  Cynoff WP Insecticide (Wetta  Outdoor & Perimeter  Apply as a residual spray to sugarages and other areas where  DeltaDust (Dust)	Fleas  porches, screens, window frame found. Wear impermeable glovable/soluble powder)  Fleas  urfaces of buildings, porches, sc	None  es, eaves, patios, lawns ves made of neoprene	None s, vegetation, refuse du when spraying.  None  None eaves, patios, lawns, re	Imps, garages and
Outdoor & Perimeter  Apply to surfaces of buildings, in other areas where pests are  Cynoff WP Insecticide (Wetta Outdoor & Perimeter  Apply as a residual spray to sugarages and other areas where DeltaDust (Dust)  Outdoor & Perimeter	Fleas  porches, screens, window frame found. Wear impermeable glovable/soluble powder)  Fleas  Infaces of buildings, porches, screen pests are found.  Fleas  Infaces of buildings, porches, screen pests are found.	None  es, eaves, patios, lawns ves made of neoprene	None s, vegetation, refuse duwhen spraying. None None eaves, patios, lawns, refuse duwhen spraying.	None None None
Outdoor & Perimeter  Apply to surfaces of buildings, in other areas where pests are  Cynoff WP Insecticide (Wetta  Outdoor & Perimeter  Apply as a residual spray to sugarages and other areas where  DeltaDust (Dust)  Outdoor & Perimeter  Make residual treatment around	Fleas  porches, screens, window frame found. Wear impermeable glovable/soluble powder)  Fleas  Infaces of buildings, porches, screen pests are found.  Fleas  Infaces of buildings, porches, screen pests are found.	None  es, eaves, patios, lawns ves made of neoprene	None s, vegetation, refuse duwhen spraying. None None eaves, patios, lawns, refuse duwhen spraying.	None None None

Apply this product uniformly to home lawns, shrubbery, and other ornamental recreational grassy areas. Immediately after application, water the lawn throroughly 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 (Microcapsulate	d suspension)	Lambda-cyhalothrin - 9.7%			
Animal Housing	Fleas	Do not contact until dry	None	3 weeks	
	e present. Do not apply to animer in and around livestock, poultry			o not contaminate	
General Structures, Hotels/Motels	Fleas	Do not contact until dry	None	3 weeks	
For use as a general surface s immediate surroundings.	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 cor	icentrate)	Cypermethrin - 25.39	<b>%</b>		
Building Exteriors	Fleas	Do not contact until dry	None	None	
	and of soil and vegetation 6-10 for eet. Retreat as necessary to ma				
Demon TC (Emulsifiable con	icentrate)	Cypermethrin - 25.3%	<b>%</b>		
Building Exteriors	Fleas	None	None	None	
	nd of material per acre per year. o, treat foundation to a height of		il and vegetation 6-10 f	t wide around and	
Dumps/Landfills/Garbage Areas	Fleas	None	None	None	
Do not apply more than 1 pour	nd of material per acre per year.	<u>,                                    </u>		,	
Demon WP (Wettable/soluble	e powder)	Cypermethrin - 40.09	<b>%</b>		
	Fleas	Do not contact until	None	None	
Building Exteriors	11000	dry			
	urfaces of buildings. Barrier trea	J	of soil and vegetation	6-10 feet around	
Apply as a residual spray to su	urfaces of buildings. Barrier trea	J		6-10 feet around	

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %			
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval	
	rfaces of buildings. Barrier treadlding. Also, treat the building for			6-10 feet wide	
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 (Wetta	able/soluble powder)	Bendiocarb + Pyrethrins - 29.45 +3.06%			
Structures	Fleas	Do not contact until dry	None	None	
bedding. Avoid breathing and deposit. However, if unevenly in conduits, motor housings, jui	Do not treat pets or their beddir working in spray mist or dust. V applied, or sprayed to run-off, a nction boxes, and switch boxes ables, or other feed or food crop	Vith proper spraying, thi visible deposit may occorr ther electrical equipm	s product does not pro cur on some dark surfa	duce a visible ces. Do not apply	
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None	
bedding with this product. Do idust. With proper spraying, thirun-off, a visible deposit may o	crack and crevice treatment onlong apply to humans, their clothing product does not produce a viccur on some dark surfaces. Does a product because of possible services.	ng or bedding. Avoid b sible deposit. However o not apply in conduits,	reathing and working in , if unevenly applied, o motor housings, junction	n spray mist or r sprayed to on boxes, and	
		dry			

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 usereas. Do not treat pets or the	use in non-food areas of Federal ir bedding with this product.	lly inspected Meat and	Poultry Plants. Apply s	spray to infested
Outdoor & Perimeter	Fleas	None	None	None
Apply as a residual spray to su	rfaces of buildings. Barrier trea	tments will help preven	t infestations of buildin	gs.
Flee Insecticide (Emulsifiable	e concentrate)	Permethrin - 36.8%		
Structures	Fleas	Do not contact until dry	None	None
Use only in well ventilated area crops, firewood or sources of e	as. Do not treat where food is explectricity.	xposed. Do not use in	fogging equipment. Do	o not apply to pets,
Food Processing (non-food/feed areas)	Fleas	Do not contact until dry	None	None
-	as. Do not treat where food is explectricity. Do not use in food are ants.			
Sensitive Environments	Fleas	Do not contact until dry	None	None
	as. Do not treat where food is e.m. Do not apply to classrooms v		-	-
Outdoor & Perimeter	Fleas	None	None	None
Apply as a residual spray to ou	utside surfaces of buildings. Rep	peat treatment as neces	ssary.	,
Frontline Top Spot for Dogs	(Pour-on)	Fipronil - 9.7%		
Dogs	Fleas	None	None	4 weeks
product must wear latex gloves the skin level between the sho	racticing veterinarians. Apply to s. Snap applicator tip away from ulder blades. Squeeze tube, ap nimal's hair. One pipette per tre	n face and body. Place plying entire contents in	applicator tip through a single spot to the a	animals's hair to
Kicker (Emulsifiable concen	trate)	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, mo	outh, 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	
Can be used with residual inseinsecticidal components of this	a tank -mix to increase flushing ecticides. This product may also product are classified as food a control thoroughly spray surfactuling and flying insects.	o be used as a space spadditives and establishe	oray or undiluted ULV t d tolerances will not be	reatment. The exceeded when	
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None	
Can be used with residual inse- insecticidal components of this used as directed. For residual a space spray to control crawlin crevice treatment in both food	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				
USDA Inspected Facilities	Fleas	Do not contact until dry	None	None	
Can be used with residual inserinsecticidal components of this used as directed. For residual	a tank -mix to increase flushing ecticides. This product may also product are classified as food a control thoroughly spray surfacing and flying insects. The use con.	b be used as a space spadditives and establishe es where insects are us	oray or undiluted ULV t d tolerances will not be sually found. This prod	reatment. The e exceeded when uct may be used as	
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None	
Microcare Pressurized Pyreti (Aerosol)	hrum Capsule Suspension	Pyrethrins + Piperon +0.336%	yl Butoxide + MGK26	64 - 0.300 + 2.200	
Structures, Food Processing (non-food/feed areas), Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None	
Apply to pet beds and resting of other areas where pests may be	juarters, adjacent cracks and cr e present.	evices, between and ur	nder cushions of uphols	stered furniture and	
Utilities	Fleas	Do not contact until dry	None	None	
1	puarters, adjacent cracks and cr pe present. Use actuator to treat		•	stered furniture and	
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
	quarters, adjacent cracks and crope present. Close all windows ar		·	
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
Treat outdoor areas which are	landscaped, planted or mulched	d or unmaintained.	,	,
Campgrounds/Recreation Areas	Fleas	Do not contact until dry	None	None
Treat outdoor areas which are from user that allows the fog to	landscaped, planted or mulched or drift into areas of infestation.	d or unmaintained. Trea	at in the direction of a s	light breeze away
Microcare Pressurized Pyret (Formula 1) (Aerosol)	hrum Capsule Suspension	Pyrethrins + Piperon 0.336%	yl Butoxide + MGK26	4 - 0.300 + 2.200 +
Structures	Fleas	None	None	None
treatments are permitted for ce	actuator and tubes. Inject this portain applications. To make a son adjacent cracks and crevices	pot treatment release p	roduct onto surface. A	Apply this product
Mobile Homes/Travel Trailers/Recreational Vehicles, Vessels (Boats/Ships)	Fleas	None	None	None
treatments are permitted for ce	actuator and tubes. Inject this partain applications. To make a s s, adjacent cracks and crevices or 15 minutes.	pot treatment release p	roduct onto surface. A	Apply this product
Outdoor & Perimeter	Fleas	None	None	None
For treatment of localized infes	tations in outdoor areas. Treat	areas where insects are	e likely to enter building	gs.
Campgrounds/Recreation Areas	Fleas	None	None	None
Treat so that slight breeze allow	ws fog to drift into areas of infes	tation. Allow spray to d	lry before re-entering a	rea.
Optem Cyfluthrin CS (Prescr (Microcapsulated suspension		Cyfluthrin - 6.0%		
Structures	Fleas	Do not contact until dry	None	None
	for voids where these insects manner on the contract of the co	•		

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
clothing or bedding. Do not co	for voids where these insects man ntaminate food or use on house n USDA meat and poultry plants	hold pets. Cover fish to		
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None
1	provide residual control. Dilute in the used as a perimeter treatmen			nto cracks and
P.I. Contact Insecticide (Forn	nula 1) (Aerosol)	Pyrethrins + Piperon	yl Butoxide - 0.5 + 4.0	)%
Structures	Fleas	None	None	None
Apply as space treatment.				
Food Areas of Food Handling Establishments	Fleas	None	None	None
	en applying as a space treatmenuipment must be covered or clean	-	peration being treated s	should be shut
Hospitals	Fleas	None	None	None
	ents should be removed from ro eturn patients to room until after	•	Room should be ventia	alted for at least 2
Nursing Homes	Fleas	None	None	None
1	ents should be removed from ro eturn patients to room until after		Room should be ventia	alted for at least 2
Permectrin CDS Pour-On (Re	eady-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 lea	ave a residual insecticio	lal coating.	
Permectrin II (Emulsifiable co	oncentrate)	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, mis	st or fog. Do not spray feed, foo	d or water.		

Table 1. Pesticides Available

Trade Name	(Formulation)		Common Name - %	
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval
Permectrin II Dairy Cattle & concentrate)	Barn Spray (Emulsifiable	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 wate	r.		
Dogs	Fleas	None	None	14 days
May be used as a dip or spray	. Do not use on puppies less th	an 3 months old or sick	, old or debilitated anim	nals.
Pestab (Wettable/soluble po	wder)	Lambda-cyhalothrin	- 10.0%	
Animal Areas/Quarters, Kennels	Fleas	Do not contact until dry	None	3 weeks
Do not apply when animals are crack and crevice treatment.	e present. Allow applications to	dry before restocking th	ne facility. Apply as a g	eneral and/or
Outdoor & Perimeter	Fleas	None	None	3 weeks
adjacent to outside surfaces o	t infestations of building, apply to f buildings. Also may be applied roughly and uniformly wet the fo	d to lawn areas around	residential/nonresident	
Prelude (Emulsifiable conce	ntrate)	Permethrin - 25.6%		
Structures	Fleas	Do not contact until dry	None	None
During indoor application, do r area.	not allow dripping or runoff to occ	cur. Do not apply when	occupants are presen	t in the immediate
Food Processing	Fleas	Do not contact until	None	
(non-food/feed areas)	rieas	dry	NOTIC	None
(non-food/feed areas)  Do not apply in food/feed area	s of food/feed handling establishtion, do not allow dripping or run	dry nments. Not for use in f	ederally inspected mea	at and poultry
(non-food/feed areas)  Do not apply in food/feed area plants. During indoor applications	s of food/feed handling establish	dry nments. Not for use in f	ederally inspected mea	at and poultry
(non-food/feed areas)  Do not apply in food/feed area plants. During indoor application immediate area.  Food Storage Areas (warehouses)  Do not apply in warehouses w	s of food/feed handling establishtion, do not allow dripping or run	dry  nments. Not for use in foff to occur. Do not app  Do not contact until dry  for food or feed are be	ederally inspected meaning when occupants are None ing stored. During inc	at and poultry e present in the  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. Kee	ep area closed for 15 minutes. O	pen and ventilate befor	e reoccupying.	,
Food Processing (non-food/feed areas)	Fleas	Do not contact until dry	None	None
Apply only when plant is not before reoccupying.	in operation. Direct mist toward f	loor. Keep area closed	for 15 minutes. Open	and ventilate
Pro-Control Plus Total Rele (Aerosol)	ease Aerosol Insecticide	Pyrethrins + Cyfluth 1.0%	rin + Piperonyl Butox	ide - 0.5 + 0.1 +
Structures	Fleas	2 hours	None	None
	osets. Shut off fans and air condi 2 hours. Allow treated area to ai		stand. Immediately lea	ve treated area.
Hospitals, Nursing Homes	Fleas	2 hours	None	None
mospitals, Nursing Homes	1.000		110110	TVOTIC
Do not apply this product in a	any rooms while occupied by patiening. Set fogger on stand. Imme	ents, the elderly, or infir	med. Open doors, dra	wers, and closets.
Do not apply this product in a Shut off fans and air conditio	any rooms while occupied by patiening. Set fogger on stand. Imme on minutes.	ents, the elderly, or infir	med. Open doors, dra	wers, and closets.
Do not apply this product in a Shut off fans and air conditio Allow treated area to air for 3  Day Care Centers, Schools  Do not apply in classroom where the second secon	any rooms while occupied by patiening. Set fogger on stand. Imme on minutes.	ents, the elderly, or infir diately leave treated ar 2 hours , and closets. Shut off	med. Open doors, dra ea. Keep area closed f  None  fans and air conditionin	wers, and closets. for at least 2 hours.  None  g. Set fogger on
Do not apply this product in a Shut off fans and air conditional Allow treated area to air for 3 Day Care Centers, Schools Do not apply in classroom what stand. Immediately leave treated to see the second	any rooms while occupied by patiening. Set fogger on stand. Immed minutes.  Fleas  The property of the patients of the patient	ents, the elderly, or infir diately leave treated ar 2 hours , and closets. Shut off at least 2 hours. Allow	med. Open doors, dra ea. Keep area closed f  None  fans and air conditionin	None  Set fogger on minutes.
Do not apply this product in a Shut off fans and air conditional Allow treated area to air for 3 Day Care Centers, Schools Do not apply in classroom what stand. Immediately leave tree Pro-Control Total Release (1) (Aerosol)	any rooms while occupied by patiening. Set fogger on stand. Immed on minutes.  Fleas  Then in use. Open doors, drawers ated area. Keep area closed for	ents, the elderly, or infir diately leave treated ar 2 hours , and closets. Shut off at least 2 hours. Allow	med. Open doors, dra ea. Keep area closed to None fans and air conditionin treated area to air for 3	None  Set fogger on minutes.
Do not apply this product in a Shut off fans and air conditional Allow treated area to air for 3 Day Care Centers, Schools Do not apply in classroom which is and. Immediately leave tree Pro-Control Total Release (1) (Aerosol)  Structures  Open all doors, drawers, and	rany rooms while occupied by patiening. Set fogger on stand. Immediant of minutes.  Fleas  Then in use. Open doors, drawers ated area. Keep area closed for the standard of th	ents, the elderly, or infir diately leave treated are 2 hours , and closets. Shut off at least 2 hours. Allow Pyrethrins + Piperor 1.710% 2 hours	None  None  Mone	None  Set fogger on minutes.  None  None
Do not apply this product in a Shut off fans and air conditional Allow treated area to air for 3 Day Care Centers, Schools Do not apply in classroom which is and. Immediately leave tree Pro-Control Total Release (1) (Aerosol)  Structures  Open all doors, drawers, and	riny rooms while occupied by patiening. Set fogger on stand. Immedian minutes.  Fleas  The particular of the patients of the p	ents, the elderly, or infir diately leave treated are 2 hours , and closets. Shut off at least 2 hours. Allow Pyrethrins + Piperor 1.710% 2 hours	None  None  Mone	None  Set fogger on minutes.  None  None
Do not apply this product in a Shut off fans and air conditional Allow treated area to air for 3 Day Care Centers, Schools Do not apply in classroom where the stand. Immediately leave tree Pro-Control Total Release 1 (Aerosol)  Structures  Open all doors, drawers, and area closed for 2 hours. and Sensitive Environments  Open all doors, drawers, and area closed for 2 hours, and area closed for 2 hours, and	riny rooms while occupied by patiening. Set fogger on stand. Immedium minutes.  Fleas  The particular of the patients of the p	ents, the elderly, or infirit diately leave treated are diately leave	None  None  Mone  Mone  Mone  Mone  Mone  Mone  None  None	None  Set fogger on an inutes.  None  None
Do not apply this product in a Shut off fans and air conditio Allow treated area to air for 3 Day Care Centers, Schools  Do not apply in classroom what stand. Immediately leave tree  Pro-Control Total Release And (Aerosol)  Structures  Open all doors, drawers, and area closed for 2 hours. and Sensitive Environments  Open all doors, drawers, and Sensitive Environments	any rooms while occupied by patiening. Set fogger on stand. Immed on minutes.  Fleas  The part of the	ents, the elderly, or infirit diately leave treated are diately leave	None  None  Mone  Mone  Mone  Mone  Mone  Mone  None  None	None  Set fogger on an inutes.  None

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 fac	e. Avoid contact with genitalia.	Not recommended for	use on puppies less th	an four weeks old.
Purina Hard Hitter Dust (Dus	t)	Permethrin - 0.25%		
Cats	Fleas	None	None	None
	ng the dust into the hair down to ng area including bedding and o		tention to legs and feet	. Avoid getting
Dogs	Fleas	None	None	None
	ng the dust into the hair down to ng area including bedding and c	-	tention to legs and feet	. Avoid getting
Purina Residual Livestock ar (Emulsifiable concentrate)	nd Poultry Insecticide	Tetrachlorvinphos - 24.0%		
Poultry Housing	Fleas	None	None	None
Apply to droppings under cage	s.			,
Pyrenone (Ready-to-Use Liqu	uid)	Pyrethrins + Piperonyl Butoxide - 1.0 + 5.0%		
Animal Housing	Fleas	None	None	None
	ct the spray into tall grass and sids upper portions of enclosure fillate before reoccupying.			
Structures	Fleas	Do not contact until dry	None	None
equipment. Do not apply this parea to be treated must be vachave dried. Space and contactaerosol generator or a fogger. directing the spray towards cei	tions as a space, area or contact product in such a manner as to cated by unprotected persons. It application Close doors and Direct spray first into cracks an ling and upper corners of the arre reoccupying. This product of	directly or through drift of Do not enter treated are windows and shut off vo d crevices and behind of ea and behind any obst	expose workers or other as without protective clentilating systems. Use equipment. Then treat tructions. Keep closed	or persons. The othing until sprays a mechanical as a space spray, for 1 hour. Vacate
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None
Do not apply spray while food pontinue.	processing is underway. When	applied as a surface tre	eatment, food processi	ng operations may

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 inspostop during application.	ected Meat, Poultry and She	ell Egg, and Egg products l	nspection plants, food p	orocessing must	
Saga WP Insecticide (Wettable/soluble powder)		Tralomethrin - 40.00	Tralomethrin - 40.00%		
Structures	Fleas	Do not contact until dry	None	None	
Apply emulsion to rugs, carpet Provide uniform coverage, app		<b>.</b>	•		
Food Areas of Food Handling Establishments	Fleas	Do not contact until dry	None	None	
Apply emulsion to rugs, carpet Provide uniform coverage, app permitted in food/feed areas of crevice treatment.	oly until infested area is mois f food/feed handling and pro	st. Thoroughly apply this processing establishments as	roduct to infested areas a general spray, spot, c	s. Applications are or crack and	
USDA Inspected Facilities	Fleas	Do not contact until dry	None	None	
Apply emulsion to rugs, carpet Provide uniform coverage, app facility is not in operation. Do	oly until infested area is mois	st. Thoroughly apply this p	roduct to infested areas		
Aircraft	Fleas	Do not contact until dry	None	None	
Do not apply when passengers upholstered furniture, pet beds until infested area is moist. The	s, floor coverings, pet resting	g areas and other infested h			
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None	
Perimeter treatment To help Residual spray Apply to surfa				-	
Synergized Delice Pour-On I Liquid)	nsecticide (Ready-to-Use	Permethrin + Pipero	onyl 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	
-	r. Apply directly to the surface and alight. One gallon will treat a			particular attention	
Veterinary Clinics	Fleas	None	None	None	
	sprayer. Apply directly to the starts crawl or alight. One gallon w		•	paying particular	
TKO Diazinon Capsule Suspension (Microcapsulated suspension)		Diazinon - 23.0%	Diazinon - 23.0%		
Outdoor & Perimeter	Fleas	Do not contact until dry	None	None	
unmaintained. For control of ponly. Do not use this product	stations of these insects in outoests on outdoor surfaces and pon outdoor ornamentals other testations of buildings by pests	perimeters of buildings as than around the home. I	nd on ornamental plants	s around the home	
Talstar Lawn & Tree Flowab concentrate)	le (Emulsifiable	Bifenthrin - 7.9%			
Building Exteriors	Fleas	Do not contact until dry	None	None	
Apply as a residual spray to ou	utside 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 floinject product where insects m	<u>~</u>		se with the supplied act	cuator and tubes to	
Food Areas of Food Handling Establishments	Fleas	None	None	None	
	oor coverings and all areas who ts other than as a crack and cr ere insects may be harboring,	evice treatment are not p			
Outdoor & Perimeter	Fleas	None	None	None	
	d windows, under siding and von		neath guards on loading	g docks, into cracks	
ULD BP-100 Contact Insecticide (Formula 1) (Ready-to-Use Liquid)		Pyrethrins + Piperonyl Butoxide + MGK264 - 1.00 + 2.00 + 2.94%			
. ,					

Table 1. Pesticides Available

Trade Name (Formulation)		Common Name - %			
Site(s)	Pest(s)	Re-Entry Time	Preharvest Time	Retreatment Interval	
	uct as desired according to diluti		-		
ULD BP-50 Contact Insecticion	de (Ready-to-Use Liquid)	Pyrethrins + Piperon	yl Butoxide - 0.5 + 5.0	)%	
Structures	Fleas	None	None	None	
This product may be applied th spraying equipment. Use as a	rough mechanical aerosol or UL space or contact spray.	V generators, as well a	as thermal and convent	ional fogging or	
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 of 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.						