

Fleas

Fleas have been around for since the age of the dinosaurs. Today they can be found throughout the globe. The estimated number of various species of fleas throughout the world is approximately 2500. In the United States and Canada alone, there are 325 identified species. It is interesting to note that only 22 of these bite humans; the most common being dog fleas, cat fleas and human fleas. There are 19 various types of Flea species in Florida alone.

The most popular areas where fleas reside are in global regions at warm latitudes that have moderate climates, between tropical and polar locations. They are found to a much lesser degree in the tropics or North Pole. The technical term for what most people refer to as fleas is Siphonaptera, which represents all insects that fly. Siphonaptera is a Greek word that literally means a pipe or tube (Siphon) and the second part, aptera means wingless. A pipe without wings portrays a realistic image of how we visually would describe a flea's appearance. The term "flea" has been around for about three quarters of a century.

There are two primary reasons that fleas are important to people and their pets. The first is related to health concerns, and the second is in reference to flea infestations' effect on the economy. Fleas can jump great distances in relation to their body mass. They have long hind legs that are especially equipped for jumping. Fleas are ranked #2 out of all animals' jumping ability, only surpassed by the froghopper. Fleas can jump up to 100 times their height!

COMMON SPECIES OF FLEAS IN THE UNITED STATES

The cat flea is the most common species that a pesticide applicator will encounter. Occasionally applicators will have a problem with one of several other species.

The Cat Flea: (*Ctenocephalides felis*) occurs throughout the U.S. They are commonly found in homes, in barns, under houses, in back yards and any area that animals frequent. The cat flea feeds readily on man, cats, dogs, young calves, rats and many wild animals.

The Dog Flea: (*Ctenocephalides canis*) is less common than the cat flea. It is found in much the same location as the cat flea and will feed on the same hosts.

The Sticktight or Southern Chicken Flea: (*Echidnophaga gallinacea*) is found throughout the Southern part of the U.S., from the Pacific to the Atlantic. It will feed on man, dogs, cats, horses and on chickens and turkeys.

The Oriental Rat Flea, (*Zenopsylla cheopis*) is the primary vector of bubonic plague. This flea was first found in Egypt, along the Nile Valley. It is now found throughout the U.S. It feeds mainly on rats but will readily feed on man.

The Human Flea, (*Pulex irritans*) occurs mainly in the South and Midwest, It will feed on man and is a common pest of swine. It can also be found on dogs, coyotes, prairie dogs, ground squirrels and burrowing owls.

LIFE CYCLE OF FLEAS

The flea's body is well adapted for its way of life and facilitates the fleas movements through the body hairs of its host. Externally, fleas are very different from all other insects. Snodgrass, an early insect morphologist said, "No part of the external anatomy of the adult flea could ever be mistaken for that of any other insect."

Fleas have complete metamorphosis. They go through four life stages; the egg, larval, pupal and adult stage. Searching the literature, you will find a great difference in the length of time it takes for fleas to complete a life cycle. The difference ranges from 2 weeks to 2.5 years. The length of their life cycle varies with the species. It is also greatly affected by temperature and humidity. Other factors affecting flea development include the availability of a suitable host and other factors which occur under certain conditions.

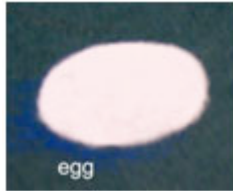
ADULT STAGE



The adult flea varies in size from species to species. The smallest are about 1/25 of an inch long. Some of the larger species can be about 1/4 of an inch long. They are reddish-brown to black in color. They are smooth, shiny, very strong and hard. All fleas are wingless. Some species have eyes and others do not. Fleas have piercing-sucking mouthparts that are rather short and strong. Adult fleas are compressed laterally and appear very much flattened, when viewed vertically. The hind legs of the flea are exceptionally long and are modified for jumping. A few species of fleas, found on birds and squirrels, have their legs modified for crawling around on the body of the host. The body of the flea and it's legs are covered with many stiff hairs and spines. These spines and hairs are directed backwards, towards the rear end of the flea. This body form permits the flea to move freely through the hairs or feathers of their host.

Some adult fleas live for only 20-30 days. Others have been known to live for more than 2 years depending upon species and environmental conditions.

EGG STAGE



Flea eggs are minute and are hardly visible to the naked eye. The eggs are slightly elongate, oval in appearance and milk-white in color. The egg shell is very shiny. The eggs of most species are not sticky. This allows them to fall freely off the host and into an environment more suitable to the hatching larvae. Some species have eggs that are sticky and can adhere to nesting or bedding materials in nests or burrows. Eggs can hatch in as little as 3 days, but if conditions are less than optimal, it can take more than 5 weeks for eggs to hatch.

LARVAL STAGE



Flea larvae resemble tiny worms about 1/16 of an inch long. They are elongate, cylindrical in shape and tapered slightly at each end. They are white to cream colored and have a brownish head. The larvae are legless and have no eyes. They have chewing mouthparts, and their body is covered with long stiff hairs. Some larvae have been known to live and feed for only 15 days before they pupate. Depending upon species and environmental conditions larvae can live for several months before pupating. When full grown, larvae construct a silken cocoon.

PUPAL STAGE



Flea pupae are formed within the silken cocoon within a few days after the cocoon is constructed by the larva. The silken cocoon is about 1/16 of an inch long. It is elliptical in shape and appears roughened because of the debris woven into it by the larvae. This makes the cocoon very hard to find and difficult to identify. The pupal stage generally lasts for about 1 week. Under certain conditions, the pupae may last for longer than a year before becoming an adult.

NOTE: Fleas cannot complete a life cycle at a temperature of 50 degrees F or lower.

At a temperature of 55 degrees F fleas can complete a life cycle in 140 days.

At a temperature of 95 degrees F fleas can complete a life cycle in 14 days.

Data published by Ohio State University show that the mortality rate of immature fleas is very great, and in a population of fleas the percentage of individuals in each life stage varies tremendously. This can clearly be seen in the table below.

PERCENTAGE OF EACH LIFE STAGE IN A POPULATION OF FLEAS

LIFE STAGE	*PORTION OF POPULATION
EGG	50%
LARVAL	35%
PUPAL	10%
ADULT	5%

HABITS OF FLEAS

All species of fleas are obligate ectoparasites of animals or birds. This means that they feed externally on animals and birds and must have these hosts in order to develop and reproduce. Many species are host specific, being able to develop and reproduce only on one single host species. Some species have a certain preferred host but are capable of developing and reproducing on one or more alternate hosts. Other species can reproduce only on one specific host but will feed reluctantly on a few other hosts.

Of the 2,259 species of fleas only 6% attack birds. Another 74% attack rodents. The remaining 20% feed on a wide variety of animals. One species, *Pulex Irritans* (the human flea) will attack man, badgers, foxes, rats and several other animals.

Flea populations are dispersed by the dispersion of their host. As their host moves from place to place, part of its baggage is its resident fleas.

Adult Fleas

Most fleas emerge from the pupal cocoon in response to one of, or a combination of three environmental factors. These are an increase in temperature, an increase in carbon dioxide or the exposure to vibrations.

People moving into homes left vacant for months may soon experience tremendous flea populations. This occurs when vibrations from people moving around and moving furniture cause pupae to break dormancy and become adults. A temperature increase could come about as the result of a natural seasonal change. It could also occur as a result of an occupant turning on the heater after being absent for a period of time or when the person is moving into a house that has been vacant. When a host animal returns to a burrow or nest or when it moves into an abandoned burrow containing a population of flea larvae and pupae, it may trigger adult emergence as the body heat of the animal raises the temperature, it's breathing increases the carbon dioxide content in the air and the host's activity creates vibrations. This can also occur in a home that has been without a pet for a period of time and then acquires one.

Normally, flea populations increase dramatically in the spring and early summer. At this time, adults can accumulate and may occur in incredible numbers. Fleas can be found on their host throughout the winter months. Survival is attributed to the body heat of the host.

Newly emerged adults immediately seek out a host and begin to feed. Both males and females feed only on blood. When no host is available, the adults are capable of going 50 to 100 days without feeding.

Females lay most of their eggs while they are still on their host. Egg laying usually takes place after the female takes a blood meal and the host is at rest. The eggs are laid in batches of 3 to 50, averaging from 25 to 30 in a batch. A female may lay up to 500 eggs in her lifetime.

The eggs of most species fall off the host. They may be found in the soil, in bedding material, rugs, on floors and on furniture.

Adult fleas are very active and freely move from one host animal to another. The adults do not spend all of their time on their host. When a host leaves its dog house, nest, favorite chair or other resting place, the most fleas jump off. When the host returns, the flea hops back on and usually begins to feed. When a preferred host leaves or is taken away from a population of fleas, the fleas begin to hunt for a new host. This often causes an apparent great surge in the flea population in a home.

I love steak, but if I am hungry and cannot find a steak, I will gladly eat a hamburger. When fleas cannot find their preferred host, (their steak), they will readily feed on man, (their hamburger). This is often the reason why a flea population appears to be surging.

We can live amid a large population of fleas and never be aware of it until their preferred host is eliminated. Then in a few days we can experience a great flea problem. Just as rats leave a sinking ship, fleas will leave a dying or dead host. If a home loses a pet or a pet dies the home may experience a great flea problem within a few days. This may also happen when an animal dies under a home, barn or other structure.

Flea Larvae

Flea larvae have a tooth-like spine on their head that they use to break out of the egg shell. Newly hatched larvae exposed to a temperature of 70 to 90 degrees F will crawl around and feed for about 5 to 15 days before pupating. They develop faster at a higher temperature. The larvae propel themselves in a worm-like fashion by flexing their elongated body. They can also use certain stiff hairs on the tail end of their body to help them move along.

The larvae are scavengers and feed mostly on dried blood and the fecal material of the adult flea. They will feed on almost any form of organic matter and have been successfully reared on powdered dog food. They have also been reared successfully on scrapings from cracks and crevices in a wood floor.

Flea larvae are not equally distributed within an area. They seek out an area that has favorable temperature, humidity and light. Even though they do not have eyes, they do have photoreceptors on their body that detect light. The larvae have a negative response to light and seek out dark areas. High numbers of larvae may be found in dark protected areas with a relative humidity above 75%. When the larvae are mature, they construct a silken cocoon, working into it bits of fibers and organic materials. The larvae will pupate inside this cocoon.

Although larvae are highly active, they are seldom observed because of the secretive habitat they frequent; cracks and crevices in a floor, under and in rugs, under cushions, on furniture and among all kinds of bedding materials. When the larvae are mature, they construct a silken cocoon, working into it bits of fibers and organic materials. The larvae will pupate inside this cocoon.



The term "flea-dirt" is often used to describe the debris associated with flea infestations. It is found in cracks and crevices in floors, in nests, animal burrows, in bedding materials, under rugs and carpets, on mattresses, under sofa and chair cushions and many other places. Flea-dirt is composed of soil, sand, fibers, fecal material, food particles and almost any

kind of organic matter. Some flea-dirt has been found to contain glitter, bits of plastic and other synthetic materials.

MEDICAL IMPORTANCE OF FLEAS



Historically, fleas have been one of the most important insect pests of man and domestic animals. They are very important vectors of diseases of man as well as domestic and wild animals. Even though flea bites may not be felt immediately, the bite can later cause considerable itching and pain. A bite can be irritated and sore for a week or more. The delay in causing pain facilitates the flea's opportunity to take a blood meal before being discovered.



Flea bites will appear as a small round spot that is reddish in color. Surrounding the red spot, there is usually a halo-like area that is lighter in color. When dealing with a high population of fleas, the irritation can be maddening and even cause a form of dermatitis. Some individuals are allergic to flea bites and can have serious reactions when bitten.

BUBONIC PLAGUE (BLACK DEATH)

Since the invention of gun powder, fleas have been responsible for more human deaths than bullets, including deaths occurring in all of the wars. This is due to the fact that fleas transmit certain serious diseases. The most noted is the Bubonic Plague, often referred to as "The Black Death".

The first pandemic of the plague occurred during the 6th century. It lasted about 50 years and killed an estimated 100 million people. In the 14th century the plague killed about 50 to 75 percent of the people of Great Britain. Then in 1664 to 1666, "The Plague of London" killed 70,000 of London's total population of 450,000.

It was not known until 1898 that the plague was transmitted by fleas, from rats to humans.

The first plague reported in North America was in San Francisco, California on March 6th, 1900. From 1900 to 1904, 121 cases were recorded: 118 of these cases were fatal. On average, there are seven cases per year, although in 2006 there were 17 cases. Plague occurs in rural and semirural areas of the Western United States, most commonly New Mexico, Arizona and Colorado. The plague usually occurs from late spring to early fall but can be found any time of the year.

Symptoms in humans develop between two and six days after exposure to the bacteria. They include an overall feeling of sickness, sudden fever, abdominal pain, swollen lymph nodes, nausea and vomiting.

The plague can be successfully treated with antibiotics, but only with a prompt diagnosis and treatment. It's important to get to the doctor as soon as possible if you are experiencing symptoms and have been in an area where the plague has been found. The death rate is 16% among patients who have been treated, and between 66% and 93% among those who are not treated, according to the CDC.

Fleas also transmit a number of other diseases and parasites that infect man and animals.

Diseases And Parasites Transmitted By Fleas	
Certain Protozoa	Heart Worms of Dogs
Microfilaria	Numerous Tapeworms
Tularemia	Murine Typhus

FLEA CONTROL

In the pest control industry, when it comes to treating fleas, there are two very distinct kinds of pesticide applicators. There are those that love to treat flea problems and those who refer flea problems to other applicators. This difference in attitude toward flea treatment can be purely economic and stems from the fact that, in order to obtain satisfactory control, a flea job can often cost more than the applicator can charge for it.

In order to obtain satisfactory control, an applicator must know certain facts about the life cycle and habits of fleas. Without this knowledge, it is almost impossible to obtain effective control of a flea population for any length of time, and your efforts generally end in poor control and poor customer satisfaction.

Poor control results in having to treat one or more times, than you had planned for. This results in higher labor cost, higher chemical cost and a loss of valuable time. It also strains customer relationship, often resulting in the loss of customers and thus a loss of future business.

Not all flea problems can be treated in the same way. Each problem must be analyzed and treatment adjusted to fit each infestation. A thorough knowledge of the habits and life cycle of fleas will enable a pesticide applicator to greatly increase not only the effectiveness of their flea control opportunities, but the efficiency as well. Fleas have always been a problem in the U.S. Early settlers migrating west often mentioned the problems that they had with fleas. In one area along their westward journey fleas were so bad that the area was called "Camino del pulgo," or in English, the road of the fleas.

During the past 40 to 50 years there has been a noticeable increase of flea problems in the U.S., especially in the southern states. Several factors have been cited as contributing to this phenomena. These are:

1. A greater pool of host animals, caused by the increasing numbers of pets and the different species of pets that now occur in the U.S.
2. The quality of sanitation in homes, which is attributed to the increase in women in the workplace, reducing the amount of time spent in housekeeping.
3. The increase in popularity of thick carpets and rugs in the home, creating a more favorable flea habitat.
4. A human population that is spreading into suburban and rural areas, where people are in closer and more frequent contact with wild hosts of fleas and where larger properties enable pets to roam in larger areas.

CONTROL STRATEGIES

The control of an existing flea population has generally been approached in three different ways.

CHEMICAL CONTROL - Using the proper pesticides in the proper way is the quickest, most convenient and perhaps the cheapest way to eliminate fleas. However, if not used in the proper way, chemicals may affect pets and people and pollute the environment.

NON-CHEMICAL CONTROL - Controlling an existing flea infestation can be difficult at its best. Trying to control an infestation with only natural pesticides or other natural means is very difficult. It can take a long time to see results and requires a lot of patience, energy and diligence. If and when control can be achieved, maintenance of the situation is a perpetual problem.

INTEGRATED PEST MANAGEMENT (IPM) - IPM is a strategy that utilizes all available techniques and resources. It could make use of synthesized chemicals, natural chemicals, insect growth regulators, repellents, traps, deterrents and any other technique that will work. Sanitation plays a great part in and is a very effective part of the IPM strategy.

The IPM strategy often emphasizes target population management rather than population elimination.

Population Management

Population management, as related to fleas, most often refers to lowering flea populations to a level that they are not causing any discomfort to pets or their owner and maintaining them at this level. This could also be called the tolerance level. One thing that must be understood is that every pet and every person involved will not have the same tolerance level.

Flea control is multifaceted. If you are to have successful control in a home or other structure you must consider the following:

1. Treatment of pets (host animals for fleas).
2. Treatment of the interior of the structure.
3. Treatment of yard, dog-run, sheds or any other area that is frequented by pets.

4. Elimination of wild hosts such as mice and rats, raccoons, opossums and squirrels.

An applicator must know what situation he is dealing with before he can accurately quote a price for the job. It is not uncommon for a pest control operator to have a check-list of factors affecting control. Listed below are some of the facts that an applicator must know.

1. Location and size of the area to be treated.
2. How bad is the infestation?
3. Will it take two or more applications to control the infestation?
4. How good are the existing sanitary practices (good, very good, nonexistent)?
5. Do pets go in and out of the home, freely?
6. Could there be problems with wild host animals or wandering pets?
7. How long will this job take to complete?

Pet treatment is applied for the control of adult fleas only, that is except for the use of systemic IGR formulations that affect egg development. The other stages of fleas are rarely found on the host and when found, they are usually in very small numbers. Treating the host animal (pet), is perhaps the easiest and most successful control strategy to use for adult fleas. You do not have to go looking for the pests. You might say that they come looking for you, that is, a host animal.

Due to the liability involved, all treatments to pets should be made by a veterinarian or by the pet owner acting under the direction of a veterinarian. The label of all pesticides should be read and understood before any application is made.

A number of pesticides are registered and marketed for use on pets. Some are formulated to be used as dusts and some as sprays. Other formulations include treated pet collars, oral medications and systemic spot-on. Some of the most popular formulations contain an IGR. These compounds disrupt the development of the immature stages and prevent them from becoming adults.

Nonchemical control of fleas on pets can be effective when used in the right way and at the right time. It is best used as a way to maintain control once it has been achieved.

NOTE: Research has shown that of the methods given below, none are effective control methods for fleas.

1. Vitamin B (thiamine hydrochloride) supplements --- to prevent flea feeding.
2. Brewer's yeast --- to prevent fleas from feeding.
3. Herbal collars or electric devices --- as a repellent for fleas.

When we speak of flea control in the home, we need to remember that the main target is not the adult but the immature stages of the flea. Even if we could eliminate every adult flea in a home, within a few days the home could again become heavily infested with adults. These adults would be coming from fleas that were in immature stages that existed when all of the adults were eliminated. As the eggs and pupae are inactive and are found in rather protected areas, the larval stage becomes our primary target for control in the home.

The population of immature fleas is not equally distributed in any given area. It is common, when inspecting an area to find eggs, larvae or pupae in very high concentrations in one or two areas and very low numbers or even nonexistent in other areas. This distribution is influenced greatly by temperature, moisture and by light intensity. A thorough inspection of all areas inside and outside of a home, prior to treatment, is essential in determining where fleas are accumulating and where treatment should be applied.

You can find immature fleas almost anywhere that their host frequents. Unlike cockroaches, ants and many other household pests, immature fleas are most commonly found on the floor of the home. When searching for flea larvae, you need to be diligent and very thorough. Larvae may be found under rugs, under appliances, in carpets, beneath cushions of chairs and couches, in a pet's bedding or even in your own bedding. They are commonly found in cracks and crevices and in any accumulation of debris found on the floor.

Sanitation

Sanitation is not a one-time cure for fleas. It is a continuous action which in many cases should include scheduled events, such as cleaning and or replacement of a pet's bedding, cleaning, vacuuming, washing and disinfecting floors. Removing all lint, particles of pet food and other debris reduces the potential for development of immature fleas.

Vacuuming

Vacuuming can be an important tool in flea prevention, control and maintenance . However it is not a stand-alone control measure.

In 1986, the National Pest Control Association, published data on the use of vacuuming on flea control. The data showed that vacuuming was a useful tool when used before and after treatment; however, it was not to be relied on as a stand-alone method of control. Four reasons were given that supported its usefulness:

1. It removes some flea eggs.
2. It removes some flea larvae.
3. It removes some larval food.
4. It helps the carpet pile to stand up, thus aiding in effectiveness of pesticide treatment.

Percentage of Immature Fleas Removed by Vacuuming		
Immature Stage	High Density Pile	Low Density Pile
Egg	32	59
Larval	15	27

NOTE: When vacuuming is used as a tool in flea control, flea eggs, larvae and larval food are taken into the vacuum cleaner bag and the bag becomes a virtual flea nursery. Adults emerging from within the bag can begin to accumulate, creating the source of a future flea infestation. Pesticide applicators should inform customers of this problem and encourage them to burn or properly dispose of the bag immediately after vacuuming and not to store the vacuum with the bag still in it. This would help reduce the number of call-backs.

OUTDOOR CONTROL

Outdoor flea populations can originate from rodents, squirrels, raccoons, opossums, stray dogs and cats and even from your own pets. Populations can be extremely heavy, providing a vast reservoir of fleas that readily attack any available host animal, including pets that go in and out of homes.

Sanitation plays an important role in outdoor flea control, just as it does in indoor flea control. A good thorough cleaning of all infested areas should be completed prior to initiating any other control measures. Applicators should inspect and consider treating all infested areas such as: places where pets lounge, paths, sidewalks, barns, garages, storage areas and anywhere else to which pets have access.

Dog houses, dog-runs and other areas where pets lounge or rest, are very likely to harbor heavy populations of fleas. These areas often require periodic treatment just to keep flea infestations at a tolerable level.

Literally dozens of pesticide formulations are available for use in flea control. Some are approved for use on animals, others are approved for use in homes, and some are approved for outdoor use only. There are formulations that target adult fleas, others target the immature stages of the pest. Some of the common types of formulations are given in the table below.

Common Formulations that are Available for use on Fleas		
Dusts	Aerosols	Oral Liquids
Sprays	Spot-ons	Food additives
Dips	Treated collars	Treated Shampoos

Numerous other methods have been used to control fleas. These include repellents, deterrents, light traps, water traps, sticky traps and electrical devices.

Each flea infestation should be investigated and analyzed. A target stage(s) should be determined and a plan developed for treatment . Pesticides should be carefully chosen to best suit the situation at hand.

PRECAUTIONS

1. Before purchasing any pesticide, read the label. Be sure that the formulation is labeled for the use that you need it for.
2. If you do not understand all of the directions on the label, contact your distributor or the manufacturer.
3. Be sure that no person is in the treatment area during treatment and that no one enters the area until the pesticide dries.

4. Before treatment, remove all pets, birds, fish in tanks, snakes, lizards or other pets in terrariums.
5. The solvents in some formulations can damage or kill plants. Remove potted plants that may be damaged.
6. Pesticides should be applied as carefully and as accurately as possible. This will help:
 1. Prevent contaminating sensitive areas.
 2. Make sure that all infested areas are treated.
 3. Prevent the application of more chemical than is needed.

Advice to give to customers with pets: (Fleabites.net)

- **Treat the pet as well as its surroundings** like the house, car, garage, kennel as well as the yard. Work from inside-out. If some eggs or larvae are left over anywhere in the house or outside, the problem will simply occur again and require another full round of treatment. So make sure to vacuum the floor thoroughly and regularly underneath shelves, drapes, and furniture; as well as around the edges of beds and furniture. Discard the contents of the vacuum bag immediately since the vacuum cleaner would have picked up grown fleas, eggs and larvae.
- **Use only approved products.** Mosquito and tick (or other insect repellent) products often have no effect on fleas whatsoever. Use products specifically meant for fleas. A flea treatment product must be able to kill all grown fleas and also neutralize eggs and their larvae as well.
- **Keep your pet hygienic** and wash its bedding and toys regularly. If you are already fighting fleas, treat all items with a good flea treatment product after you are done washing and drying the pet's toys, bedding and blankets etc.
- If your pet already has fleas, **treat your pet for intestinal worms** as well. Get rid of both fleas and worms at the same time to keep your pet healthy.
- When applying lotion and shampoo on your pet, **aim at getting the product on the skin**, not just the fur. Since fleas feed on blood, they are more likely to be found clinging to the skin than moving about in the fur. Treat your pet regularly and frequently as directed by the vet or as per the instructions on the package.

5 things NOT to do when dealing with fleas

- When using a vacuum cleaner to get rid of fleas (after treating the house with dusting powder or spray), **do not place mothballs and flea collars** in the vacuum cleaner. This could create noxious fumes in the house.
- **Do not use the same product for all your pets.** Use products meant for cats on cats and products meant for dogs on dogs. Same principle applies to small pets like hamsters and rabbits.

- **Do not treat the pet first and the environment later.** Always treat the environment first in order to get rid of existing eggs, larvae and grown fleas that might infest later on and then finally treat your pet to prevent it from bringing in new fleas in your home.
- **Do not let your pet lick or bite the areas the product is applied on.** These products are not meant for ingestion and may cause health problems if licked.
- **Don't wash off the product too soon.** Follow the instructions on the product label or the directions given by the vet. Products take time to act and washing or rinsing off too soon will not get rid of the fleas.