

Protecting Your Cats and Dogs from Pesticide Poisoning

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This NebGuide discusses concerns about pesticide poisoning in pets, how to prevent accidental exposure, and what to do if poisoning does occur. Examples include pesticide poisoning through contact with pesticides in yards or homes (including ingestion of snail/slug baits), and misuse of flea and tick collars or spot-on treatments.

Pets are an integral part of our lives (Figure 1), and historically, pets have been recorded as living with humans for thousands of years. The American Veterinary Medical Association estimates there are over 76 million dogs and



Figure 1. Pets are an integral part of our lives; protect them from pests and pesticide poisoning. Photo: University of Nebraska–Lincoln

58 million cats in the United States, with 38.4 percent of U.S. households owning dogs and 25.4 percent owning cats in 2017. Pet owners wish to keep their pets healthy, which includes preventing and treating infestations by pests such as fleas and ticks, and reducing the potential for accidental poisonings from household or yard pesticides. This NebGuide will discuss how dog and cat pesticide poisonings occur, how they can be prevented, and what precautions to take when using pesticides on or around pets. It also will examine how to reduce the risk of exposure to humans when handling pets that have been treated with pesticides. This publication focuses on pet dogs and cats; many of the same precautions apply when preventing poisoning in other pets, such as reptiles, birds, rabbits, or rodents.

How Cat and Dog Pesticide Poisoning Occurs

Dogs and cats can be exposed to pesticides that are used in and around the home, including antibacterial/anti-microbial cleaning products, garden and lawn care products, and snail/ slug and rodent baits. Homeowners and pesticide applicators must read and follow the label when using these products, and store pesticides out of reach of pets and children. This can significantly reduce the risk of exposure.

Some common pesticides that can cause poisoning in dogs and cats are products used to control rodents, baits applied for slug and snail control, herbicides applied to lawns, and insecticides used in flea collars and spot-

on products. Rodenticides and insecticides were in the American Society for the Prevention of Cruelty to Animals' list of top 10 causes of pet poisonings in 2018 and 2019.

Outdoor Pesticide Applications

If other approaches have been tried and applying a pesticide is the most effective choice for controlling pests in or around the home, take precautions to protect your pet. Pick up all toys and food and water dishes from areas to be treated to avoid contaminating these objects with pesticide residue. Confine animals to areas where they will not be exposed. For example, keep them inside when applying pesticides to the yard until liquid pesticides are dry, granular pesticides have been incorporated into the soil, or dusts have settled. This may take several hours. When walking dogs, keep them on the sidewalk and away from yards that have been treated (Figure 2).

Baits

Baits commonly used in pest control that can be harmful to animals include those for rodents and snails/slugs. Put any rodent baits used indoors or outdoors in tamper-proof stations in places inaccessible to pets. Dogs and cats are very susceptible to poisoning if they eat rodenticides such as brodifacoum, as these products are formulated to kill mammals. Additionally, a pet can be poisoned if it eats a rodent that has been poisoned by a rodenticide. Such exposures are called secondary poisonings because pets are not the intended target of the rodenticide use. Promptly remove rodent carcasses to prevent such secondary poisonings.

Preferably, use snap traps instead of bait, but still keep traps in tamper-proof stations to prevent injury.

If controlling snails or slugs using molluscicides, such as metaldehyde, be especially careful applying these products around dogs. Dogs are much less picky about what they eat than are cats, so they are more likely to consume baits, especially those containing bran or molasses. Many times, baits are formulated with bran or molasses to make them more attractive to slugs and snails.

Indoor Pesticide Applications

To control pests like cockroaches indoors, use crack and crevice treatments, such as gel baits or dust treatments, to reduce the risk of exposure to pets. In general, these are less toxic products and are formulated for use in areas where pests hide but that people and animals can't access. Household cleaners designed to kill microbes are consid-



Figure 2. Keep pets off the yard after applying pesticides; wait for pesticides to dry or be integrated into the soil before allowing access. Photo: University of Nebraska–Lincoln

ered pesticides and could be harmful to pets. Be sure to keep these chemicals in locations that are locked or otherwise inaccessible to dogs and cats.

If other types of pesticide treatments are necessary, keep pets in another area of the home, away from the treated site, until the liquid pesticide is dry. Remember that the label is the law. When using any pesticide, follow the label information on the proper application procedure for that product, as well as how to protect people and your pets from exposure.

Spot-on Treatments

A spot-on treatment is a pesticide-containing solution that is applied somewhere on the animal's body that the animal cannot lick, such as between the shoulder blades (Figure 3). These products may contain pyrethrins, fipronil, imidacloprid, selamectin, dinotefuran, or permethrin, plus, in some products, additives that make the active ingredient more effective. These pesticides help control adult insects, but some products also contain an insect growth regulator (IGR), which stunts or prevents growth of insects or keeps them from developing properly, thus controlling the insects' immature life stages. IGRs might include methoprene, fenoxycarb, or pyriproxfen.

After application, some pesticides can penetrate the skin and enter the blood stream (e.g., selamectin, which also controls heartworm), spreading throughout the pet's body. Other pesticides can remain in the sebaceous (oil) glands of the skin or on skin surrounding the shafts of hair (e.g., fipronil). Either way, a flea or tick that contacts or bites the treated animal is exposed to the pesticide and killed. This



Figure 3. Applying spot-on treatment to a small dog. Photo: University of Nebraska–Lincoln

reduces irritation caused from pest bites and the diseases transmitted by them. Pet owners must use these products according to label directions or as directed by a veterinarian. The spot-on treatments may be used for several months (follow a vet's recommendation) during times when fleas or ticks are known to be active in the pet's locale.

Spot-on products are generally safe when used as directed, but excessive or unintended exposures may occur. For example, over-application may occur when one person does not know another has already applied a treatment, or there is pet-to-pet or human-to-pet contact with the treated site. Follow application instructions provided by the product manufacturer or consult a veterinarian if you have questions.

Pet-to-pet Transfer—Pet-to-pet transfer can occur if one animal comes in contact with the spot-on treatment site on another animal. Risk of exposure would be greater if oral contact is made; this might occur during mutual grooming. Dog-to-cat transfer of permethrin can result in a neurotoxic reaction. Keep a treated pet separated from other pets until the pesticide product has had time to dry.

Pet-to-human Transfer—The potential for human exposure to spot-on treatments exists when people handle the dog or cat soon after treatment. Children are especially vulnerable because they often sit at the animal's level and interact with the pet at close range, making them more apt to touch the spot-on application site. In addition, children are less likely to wash hands after petting the animal and before eating, using the restroom, or sucking a thumb. Because of children's developing bodies, including respiratory, endocrine, nervous, and other systems, they are more susceptible to the effects of pesticides (Gouge and Lee-Melk, 2008; Green and Gouge, 2015). Keep children away from the pet

until the pesticide has dried and been absorbed into the animal's skin and fur. This may take several hours. The pesticide label will provide instructions for proper and safe use.

Pet Weight and Age—Because of the wide variety of dog and cat breeds, spot-on treatments are available for different animal weights. The owner must know the weight of the pet before purchasing and using a product. Many spot-on products give a weight range (for example, up to 22 lbs or 23–44 lbs) for applying the product, and have separate products available for different weight ranges. Do not divide a product meant for a larger breed into two doses for a smaller breed; the dosage amount may be too high for the smaller dog and such use violates label directions.

Product labels may state age and weight restrictions for use of the product (Figure 4). For example, you may not be able to apply a pesticide to very young puppies. Other restrictions may apply for pregnant or lactating females. It is very important to follow these instructions closely.

A product labeled for use in one species should not be used in another unless specifically instructed by a veterinarian. For example, cats are more susceptible to poisoning by certain active ingredients than dogs, so if a spot-on treatment intended for a dog is used on a cat, the cat may be excessively exposed to these ingredients. One example of this is permethrin, used in some spot-on dog formulations. Exposed cats can exhibit signs involving the nervous system, such as tremors, muscle twitches, and seizures (Richardson, 2000). If these signs occur and a cat has been around permethrin, take the animal to the vet for assessment and treatment.

Consult your veterinarian if you have questions about your particular pet's needs and follow label directions carefully to ensure the product is used effectively and safely (Figure 5).

Protect Yourself when Applying Spot-on—To reduce risk of exposure when applying spot-on treatments, wear chemical-resistant gloves to prevent absorption into the skin. Immediately after applying the pesticide, dispose of the product applicator by enclosing it in plastic wrap or, if you wore disposable gloves, wrap those around it, before discarding. Deposit this waste in a trash container outdoors, not in the house or garage. Finally, thoroughly wash your hands.

Flea and Tick Collars

Some flea and tick products are impregnated in a collar that the pet wears for several months. These collars slowly release the pesticide to provide pest control over an extended period. Using a flea collar is less messy than applying spot-on treatments and may require fewer

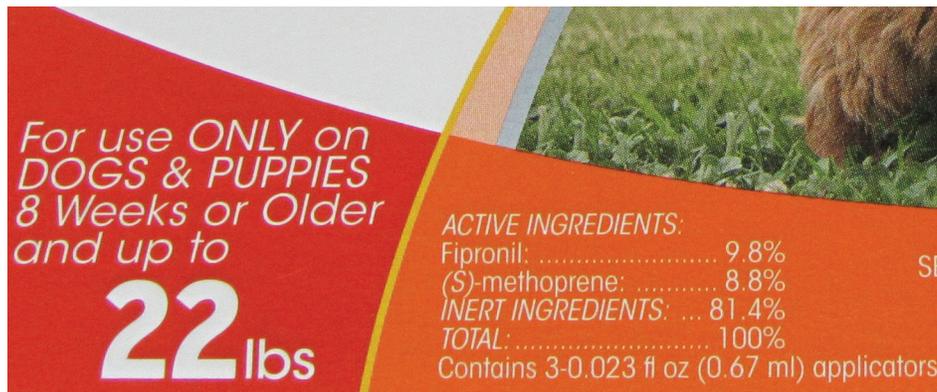


Figure 4. Age and weight requirements will be listed on flea and tick products. Photo: University of Nebraska–Lincoln

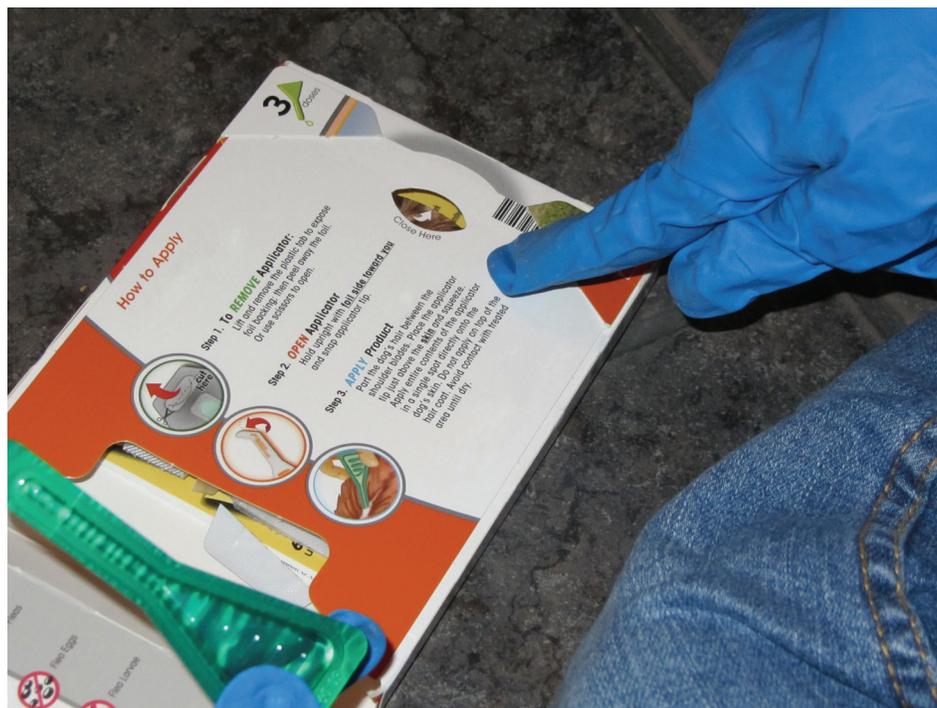


Figure 5. Always follow label directions when applying flea and tick products to pets. Photo: University of Nebraska–Lincoln

applications, as these collars provide treatment for 3–8 months, depending on the active ingredient, compared to 1–2 months with spot-on. However, some studies have shown that pesticide residues from flea and tick collars can remain in the pet’s fur, exposing the pet, other household pets, and the owners to pesticides (Dyk, Liu, Chen, Vega, & Krieger, 2012). Some pets dislodge and chew their own or other pets’ collars, thus ingesting pesticide. You may wish to discuss the disadvantages and advantages of flea and tick control options with your veterinarian before deciding on a product formulation.

Signs of Pet Poisoning

Because animals are unable to tell their owners that they aren’t feeling well, they can’t describe symptoms, or what they are experiencing. Instead, the owner or vet must rely on signs, or observations of physical changes, seen in the cat’s or dog’s behavior. Some common signs seen in pets after being exposed to pesticides include drooling, vomiting, diarrhea, tremors, uncoordinated walking, and seizures. If you observe any of these signs in your pet and have recently applied pesticides in or around the house or yard or through a spot-on or flea and tick collar treatment, seek advice from a veterinarian and consider bathing the pet to remove surface residue that could contribute to ongoing exposure, before taking further steps. If signs indicate a severe reaction, don’t wait, take the pet to the vet immediately for assistance.

Poisoning Prevention

One way to reduce the risk of pesticide poisoning in dogs or cats is to use an Integrated Pest Management (IPM) approach. Sometimes pesticides are necessary, but IPM can minimize pesticide use. IPM uses a variety of methods to control pests, including sanitation, exclusion, trapping, and using less toxic pesticides. For example, using snap traps for

mice instead of rodenticides, or sticky traps instead of spraying to kill insects can greatly reduce the risk of accidental pet poisoning. Place these traps out of reach of children and pets.

In addition to considering IPM strategies, consider these ideas to reduce the risk of pesticide poisoning in dogs or cats:

- Keep pets out of areas (yard or home) when liquid or granular pesticide products are being applied. Remove any food and water, toys, or bedding from the treatment area prior to application.
- After the application, let the pesticide solution dry completely or let granular dust settle before allowing

- pets into the area. The label may provide guidance on re-entry intervals.
- Keep pesticide containers tightly sealed and stored out of reach of pets. A good location is a locked cupboard. Many pets can figure out how to open doors in lower cabinets and therefore encounter pesticide containers or flea/tick treatment boxes. After use, deposit pesticide-related trash in outdoor trash containers.
 - Put rodent and snail/slug baits in tamper-proof stations in areas that are out of reach. Rodenticides are poisonous to all mammals if swallowed. Secondary poisoning can occur if pets eat poisoned rodents.
 - Apply flea and tick products according to the label and only on the animal intended (Figure 3). Do not use a dog product on a cat, a product meant for a large animal on a small animal, or a product intended for an adult on a very young animal. In addition, do not apply a product on an animal that is intended for application to indoor or outdoor sites, even if the active ingredient is the same.
 - Notify all family members when a pet or a yard will be treated.

What to Do in Case of Poisoning

If you suspect your pet has been poisoned by flea and tick products or other pesticides, follow the label directions for first aid and take the pet to your veterinarian immediately. If you know the source of the poisoning, bring the label with you to help medical personnel determine the proper treatment.

You can call the National Animal Poison Control Center (University of Illinois) at 1-800-548-2423, the ASPCA Animal Control Center at 1-888-426-4435, or the Pet Poison Helpline at 1-800-213-6680 in case of emergencies. A fee may be charged for services. When calling an emergency hotline, provide as much of the following information as possible:

- Your contact information, including name, address, and telephone number;

- Information concerning the pesticide exposure (when the exposure occurred, the amount of product swallowed, etc.);
- The species (cat or dog), breed, sex, age, and weight of the animal(s);
- The name of the pesticide your pet was exposed to, and;
- The signs of exposure your animal is showing.

DISCLAIMER

Reference to commercial products or trade names is made with the understanding that no discrimination is intended of those not mentioned and no endorsement by Nebraska Extension is implied for those mentioned.

REFERENCES AND RESOURCES

- American Veterinary Medical Association, <https://www.avma.org>
- ASPCA, Animal Poison Control, <http://www.aspcapetcare.org/animal-poison-control>
- Dyk, M.B., Y. Liu, Z. Chen, H. Vega, & R.I. Krieger (2012). Fate and Distribution of Fipronil on Companion Animals and in their Indoor Residences Following Spot-on Flea Treatments. *Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes.* 47:10, 913–924.
- Gouge, D.H. & J. Lee-Melk (2008). Kid Issues and the Importance of IPM. Presentation given at National IPM Workgroup Meeting, Reno, Nevada. November 2008.
- Green, T. & D.H. Gouge, Eds. (2015). *SCHOOL IPM 2020: A Strategic Plan for Integrated Pest Management in Schools in the United States.* Version 3.0. 307 pages. <https://ipminstitute.org/wp-content/uploads/2016/05/School-IPM-2020-Pest-Management-Strategic-Plan-V3.0.pdf> IPM Institute of North America, Inc. and Department of Entomology, University of Arizona.
- OSU Extension Publication, *Keep Pets Safe Around Pesticides* (Stone & Bunch, August 2012).
- National Pesticide Information Center, *Pesticide Use Around Pets*, <http://npic.orst.edu/health/pets.html>
- Peterson, M.E. & P.A. Talcott (2013). *Small Animal Toxicology.* Saunders. Third edition.
- Richardson, J.A. (2000). Permethrin Spot-On Toxicoses in Cats. *The Journal of Veterinary Emergency and Critical Care.* 10:2, 103–106.

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