# Pesticides and Pets

## What you should know to keep your pets safe

**By Ian Santino**

Some of our closest companions are pets. According to the American Pet Products Manufacturers Association, approximately 142.6 million cats and dogs are cared for in the United States. Despite the level of care Americans have given their furry friends, pets are at high risk of being poisoned due to our everyday home and garden and pet hygiene practices. The culprit? Pesticides. The smaller bodies of companion animals make them more susceptible to chemicals, and their behavior patterns make them more likely to be exposed to toxic pesticides. In fact, in the summer of 2001 half of all cases at the American Society for the Prevention of Cruelty to Animals (ASPCA) Animal Poison Control Center involved pesticide poisoning. Chemicals that may seem harmless can be a real life and death matter for cats, dogs, birds, horses, rabbits, and other pets. The good news is that by being conscious about your pet's environment and behavioral patterns, and reducing potential pesticide exposures, you can help to protect your pets.

### Is Your Pet at Risk?

Companion animals are more vulnerable to pesticides for several reasons. They walk through chemically-treated areas unknowingly, absorb pesticides through their mouth, nose, and eyes, and can absorb through their skin any powder that sticks to their fur. For example:

- Cats will wander half a mile or more to hunt, thereby becoming exposed to any pesticide-treated area within that radius.
- Dogs and cats use their noses to poke around and explore. The nose is a mucous membrane and an easy place for pesticides to enter their bodies.
- Dogs, in particular, absorb pesticide residues by chewing or eating plant material that was treated with pesticides.
- Cats absorb more chemicals than dogs due to their grooming habits.
- Cats are especially sensitive to organophosphates and permethrin, both of which are used in lawn and garden products.
- Because cats are specialist carnivores, they lack certain enzymes in their liver that decontaminate chemicals, making them especially vulnerable to the effects of toxic chemicals.

### Secondary Poisoning

Although it is quite common for dogs and cats to walk through toxic lawns or sniff pesticide-treated weeds, a perhaps quicker way to consume large doses of pesticides is by catching and eating poisoned prey. Dogs and cats both eat rodents, mollusks, and insects, all of which are considered undesirable species and are frequently controlled through the use of pesticides. If a cat eats a mouse that has just been poisoned by a rodenticide, the cat will absorb the poison also. This is called secondary poisoning. Consider these facts:

- Cats and dogs hunt, and it is natural for hunters to pick the weakened animals as prey. Animals that have been poisoned are easy targets for predators because they are easier to catch.
- Symptoms of secondary poisoning may not occur for weeks after a dog or cat eats a poisoned animal, and may not be recognized as such.
- As companion animals eat more and more toxic prey, the poison becomes more and more concentrated in their body. This process is known as bioaccumulation.

Especially at risk of secondary poisoning are cats that hunt birds. Birds can travel longer distances after eating a pesticide and often eat grains from fields that have been sprayed. In fact, every year an estimated 672 million birds in the U.S. are exposed to pesticides from agriculture alone. Only ten percent die, meaning 90% of those poisoned birds are still alive long after consuming pesticides, and are potential prey for cats. Some common pesticides used on grain eaten by birds are:

- Captan, which is carcinogenic.
- Diazinon, which attacks the nervous system.
- Lindane, which is carcinogenic and is a neurotoxin. (EPA requested voluntary cancellation of agricultural Lindane use in 2006.)
- Malathion, which is a nerve poison.

This shows how pesticides can bioaccumulate up the food chain, in this case from grain to birds to cats. Perhaps this is a reason cancer is a leading cause of death for pets.

## What Do Pesticides Do to Pets?

It's surprising how many pesticide products can have adverse effects on animals. A product meant for a dog, for instance, can be highly toxic to a cat, and something with mild effects in humans can have disastrous effects on companion animals. Here are some risks of pesticides to domestic animals:

■ In 1993 a study by Colorado State University researchers found significantly higher levels of 2,4-D among dogs who live near treated lawns. A study published in 1995 in the academic journal *Environmental Research* shows a "statistically significant" increase in the risk of canine malignant lymphoma in dogs when exposed to herbicides, particularly 2,4-D, commonly used on lawns and in "weed and feed" products.

■ In one case study by the Association of Aviary Veterinarians, indoor use of chlorpyrifos caused pet birds to lose weight and die.

■ One product of particular concern is snail bait. A common active ingredient, metaldehyde, is tasty and attractive to mammals. Unfortunately, it is also highly toxic to all mammals, and causes blindness, excessive salivation, seizures, and sudden death.

■ A case report published from the Harvard Medical School linked cholinesterase inhibitors with excessively aggressive behavior in both cats and humans. Organophosphate (e.g. dichlorvos, malathion) and carbamate (e.g. aldicarb, carbaryl) insecticides are both known to inhibit cholinesterase.

■ A study by Purdue University found that Scottish Terriers exposed to pesticide-treated lawns and gardens are more likely to develop transitional cell carcinoma of the bladder, a type of cancer.

Specific pesticides that are toxic to dogs include:

■ Avermectin B1: An insecticide used for fire ants, causes lethargy and tremors in dogs.

■ Allethrin: Used on flies and mosquitoes, linked with liver cancer in dogs.

■ Bendiocarb: This insecticide and cholinesterase inhibitor causes muscle tremors, chest discomfort, and excessive salivation. It is used to control cockroaches, ants, fleas, and crickets. It is currently being phased out of use.

■ DCPA: An herbicide used in lawns and gardens, it is suspected to cause adverse effects in the liver of dogs.

■ Diazinon: An organophosphate insecticide that is a cholinesterase inhibitor, used in agriculture.

■ Malathion: This insecticide is an organophosphate and a cholinesterase inhibitor, and is used in agriculture and for public health uses to control a wide range of insects, such as mosquitoes.

■ Rotenone: An insecticide used in agriculture and in gardens that has been linked to vomiting and weight loss in dogs when exposed continuously.

Remember that pesticides that are toxic to dogs will have adverse effects in cats also, due to their more delicate digestive system. Some other pesticides to look out for if you have cats or other pets are:

■ Warfarin: A rodenticide that causes internal bleeding, it is acutely toxic and is also a reproductive toxin.

■ Difenacoum and Brodifacoum: These rodenticides are anticoagulants and are both acutely toxic.

■ Benomyl: This fungicide is a possible carcinogen and a reproductive toxin.

■ Methiocarb: An insecticide that is both acutely toxic and a cholinesterase inhibitor.

## Flea Control Products

Another known area of risk for pets is from flea and tick control products. These products are designed to kill, so it follows that they could be harmful to put on pets. In fact, Hartz flea products were blamed for at least 200 pet deaths in 1988 and thousands more in 2002. These incidents illustrate the dangers of using poisons near pets.

A number of studies have also shown the adverse health effects caused by flea products. Significant studies include:

■ A 2003 study by University of Massachusetts researchers found that cats that wear flea collars have five times the risk of oral squa-

mous cell carcinoma (a form of skin cancer) than those that do not wear flea collars.

■ A study by researchers at the University of Pennsylvania found that risk of bladder cancer in household dogs is "significantly increased by topical [applied externally to an animal's body] insecticide use." Cancer is a leading cause of death for pets.

■ A case report published from the Harvard Medical School tells of a cat becoming intensely aggressive after being exposed to a tick powder used on a dog.

Many flea control products include organophosphate insecticides. Organophosphates work by interfering with nerve signals in the body, therefore harming the nervous system. This kills insects, and in larger doses can kill humans and pets as well. They are known to be neurotoxic. However, even with the doses applied in flea control products, pets may be in danger. The two common organophosphates that still remain on the market are dichlorvos and tetrachlorvinphos, which are in a variety of tick and flea control products. Be sure to avoid these chemicals! Be forewarned that checking a product's label for ingredients can be misleading because "inert" ingredients, which are routinely not disclosed, are often also toxic. Using non-chemical methods to control undesirable species is the safest way to protect yourself and your pet.

## Keeping Your Pets Safe: Alternatives for treating fleas and managing your home and garden

Despite the prevalence of toxic pesticides, many safe and effective alternatives do exist. Ranging from increased prevention to least-toxic alternatives, there is a healthy, non-poisonous way to treat your pets' problem.

### Fleas

**Prevention**: First and foremost, it is important to treat the root of the problem—that is, keep fleas from getting to your pets in the first place! Here are some easy ways to prevent fleas:

■ Vacuum daily during flea season with a strong vacuum cleaner. Change the collection bag often.

■ Groom pets with a flea comb daily. After each stroke, dunk any fleas in soapy water.

■ Bathe pets frequently with soap and water.

■ Restrict pets to a single bed and wash bedding frequently to kill larvae.

**Control**: If you already have a flea infestation, there are many non-toxic and least-toxic ways to get rid of them without using toxic pesticides.

■ Give pets vitamin B1, which is shown to reduce flea bite frequency.

■ Heat treatment: Cat flea larvae die after exposure to 103°F for one hour. Certain pest control companies use a common heating unit modified to include special blowers and flexible ducts to heat areas of the house that are infested.

■ Either dry, or saturate with water, infested areas of the house or yard.

■ Nematodes can be applied to the lawn as a spray. Nematodes are a biological control that enters the fleas bodies, feed on tissues and release harmful bacteria. Nematodes occur naturally in soil, and do not affect people, pets, or plants. Treat areas where you have seen pets often, be sure to water the area before and after the application.

■ Diatomaceous earth or silica aerogel: Choose a garden/food grade pyrethrin-free variety. Apply this powder in dry areas suspected of harboring fleas, wait a couple days, and vacuum it up. Wear a mask while applying.

■ Boric acid can be rubbed into carpets and applied to other places where fleas reside. Make sure not to put it in a place where pets will come in direct contact with the chemical.

■ D-limonene and linalool are citrus extracts that kill adult and larval fleas. Remember to read the label carefully, as some are too strong for cats or young animals. Also, be careful about breathing in the fumes, as they will cause irritation. People with sensitivities should consider using another alternative.

### Lawns, Landscapes and Gardens

**Prevention**: Again, the most effective way to treat unwanted plants is to stop them from establishing themselves on your property at all.

**Do this by creating a thick, healthy turf:**

■ Mow at 3-3.5 inches to shade out weed germination and foster deep roots.

■ Leave the grass clipping on the lawn after mowing. Grass clippings are a free natural fertilizer and will improve soil conditions!

■ Aerate your lawn in order to help air, water, and fertilizer to enter.

■ After aerating, fertilize lightly in the Fall with a natural, slow-release fertilizer. Request organic fertilizers at your local nursery or order online.

■ Overseed with a grass species that is naturally resistant to fungal diseases and/or insects. Use native species.

■ Use corn gluten meal on weed prone areas in the early spring and early fall. Corn gluten keeps selected weed seeds from germinating, yet is high in nitrogen so it fertilizes your lawn at the same time. Do not seed at the same time.

**And by promoting healthy landscapes and gardens:**

- Consider alternative ground covers such as clover, wildflowers, herbs, and shrubs.
- In gardens, use high quality mulches to suppress weeds. Good mulches include mowed leaves, bark, or plastic mulches free of PVC.
- Use native species. Native plants are adapted to your climate, and therefore require little maintenance, and they compete well against weeds.
- You can also use netting or plastic barriers to keep weeds from growing, and these can be put under mulch, stone, pebbles, and other landscaping materials.

**Control**: In addition to prevention, there are easy and direct ways to control unwanted plants without the use of toxic herbicides.

- Hand pull weeds from the roots.
- Flame weeding machines use a targeted flame to kill weeds. This option is not advisable for drier climates.
- High-pressure steam and boiling water can both be used to kill weeds.
- Goats and geese can both be used to remove weeds.
- Horticultural vinegar is a powerful acid that will non-selectively kill weeds. You can buy horticultural vinegar at a plant nursery or even make your own. Avoid contact with skin, as it is an acid.
- Herbicidal soaps are refined soaps that dry out plants and kill them.

## In The Home

There are many alternatives to using insecticides and rodenticides in the house. Beyond the basic pest control services most pets naturally provide, basic sanitation techniques can prevent most problems.

- Look for entry points where ants, rodents, or other creatures could be getting in the house. Seal or block these places.
- Keep clean! By sweeping up bits of food from the floors and by decluttering nooks and crannies, insects and rodents won't be lured into the house.
- Don't leave crumbs on the floor—most dogs will ensure this doesn't happen, but anything edible that can be reached by insects and other species is an open invitation.
- Vacuum regularly—this can remove pest habitat and many insects lay eggs in carpeting.

If the problem becomes severe, there are least-toxic solutions, such as boric acid and diatomaceous earth (both work for indoor and outdoor control), that can be used safely and effectively.

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