

Mouse and Rat Poisons: Dangers to your dog and cat

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Poisoning from rodenticides (mouse and rat poisons) is one of the most common types of toxicities managed by Pet Poison Helpline. These poisons are easy to obtain and used anywhere there might be rodents—in homes, garages, stables, farms and even parks or wildlife areas. There are many different types of mouse and rat poisons available in a wide variety of colors (green, blue, tan, red, etc.) and formulations (pellets, bait blocks, grain-based baits, etc). Products which look similar and have similar names may contain very different types of poison. Thus, if a pet ingests mouse or rat poison, accurate identification of the active ingredient is crucial as this will determine the risk of poisoning and the need for treatment. If the active ingredient is not clearly visible on the packaging, another important identifier is the EPA registration number (EPA Reg. No.) – this number will allow Pet Poison Helpline veterinarians to correctly identify the active ingredient.

Below are the four most common active ingredients in mouse and rat poisons along with their mechanism of action, signs of poisoning, toxic doses and treatment options. If a dog or cat ingests one of these poisons, call your veterinarian or Pet Poison Helpline immediately! Rapid action can often save a pet's life and prevent the need for costly medical care.

LONG-ACTING ANTICOAGULANTS (LAACS): Long-acting anticoagulants (LAACs) are the most common and well-known type of mouse and rat poisons.

- **Mechanism of action:** This type of poison prevents the blood from clotting, resulting in internal bleeding. Long-acting anticoagulants work similarly to the “blood thinner” medications that people take (e.g., warfarin or Coumadin®). When dogs or cats ingest LAACs, it typically takes 3-5 days before signs of poisoning are visible; however, if the pet has been chronically exposed to the product, the onset of clinical signs may be sooner.
- **Common signs of poisoning:** Signs of internal bleeding include lethargy, exercise intolerance, coughing, difficulty breathing (due to bleeding into the lungs), weakness, and pale gums. Less common signs include vomiting, diarrhea (with or without blood), nose bleeds, bruising, bloody urine, swollen joints, inappetance, and bleeding from the gums.
- **Antidote and treatment:** Fortunately, this specific type of mouse and rat poison does have a prescription antidote called Vitamin K1. Over-the-counter medications or food with high vitamin K content will not be sufficient substitutes. Most pets need to be treated with Vitamin K1 for 30 days. Two days after the last dose of Vitamin K1 is administered, a blood clotting test called a prothrombin (PT) should be checked to make sure the clotting is normal.
- **Threat:** The dose needed to cause poisoning from LAACs varies greatly between active ingredients. With some types (e.g., brodifacoum), it only takes a very small amount to cause poisoning. Other types have a wider margin of safety (e.g., bromadiolone) and it takes a larger amount to cause poisoning. The age and health of the pet may be another factor determining whether or not the amount ingested will be poisonous. Animals with underlying liver or gastrointestinal disease, as well as the very young or very old, are more at risk. Certain species, such as cats, are more resistant to the effects of LAACs and rarely suffer poisoning. Dogs, on the other hand, can be quite sensitive and often require veterinary intervention.

CHOLECALCIFEROL (VITAMIN D3): This is one of the most dangerous mouse and rat poisons on the market and seems to be gaining in popularity.

- **Method of action:** This poison causes a very high calcium and phosphorus level in the body, resulting in severe, acute kidney failure.
- **Common signs of poisoning:** Increased thirst and urination, weakness, lethargy, a decreased appetite, and halitosis (“uremic” breath). Acute kidney failure develops 2-3 days after ingestion. Often by this point, significant and permanent damage has already occurred to the body.
- **Antidote and treatment:** This type of poisoning can be one of the most challenging to treat since hospitalization, frequent laboratory monitoring and expensive therapy is often required for a positive outcome. There is no specific antidote, but poisoning generally responds well to aggressive IV fluids (for 2-3 days) and specific drugs (e.g., diuretics, steroids, calcitonin and bisphosphonates) to decrease calcium levels in the body. Frequent monitoring of blood work (calcium, phosphorus, and kidney values) is often needed for a period of 2-6 weeks after ingestion.

- Threat: Cholecalciferol has a very narrow margin of safety, and even small ingestions of this poison can result in severe clinical signs or death. Toxic ingestions must be treated quickly and appropriately to prevent kidney failure.

BROMETHALIN: This type of mouse and rat poison causes swelling of the brain. Because the ingredient name looks similar to many of the LAAC poisons, it can easily be mistaken for a LAAC.

- Method of action: Bromethalin works by uncoupling oxidative phosphorylation in the brain and liver mitochondria and can result in brain swelling (cerebral edema).
- Common signs of poisoning: Incoordination (ataxia), tremors, seizures, paralysis, and eventually death. The more an animal eats, the more severe the clinical signs may be. Signs can develop within 2 hours, but may be delayed as long as 36 hours. Thus, medical monitoring for at least 24 hours after ingestion is often necessary.
- Antidote and treatment: In-hospital care for a few days may be necessary because this poison has long-lasting effects. Treatment includes decontamination (administering multiple doses of activated charcoal to bind up the poison), IV fluids, and specific drugs to decrease brain swelling.
- Threat: With bromethalin, cats are more sensitive than dogs. As this type of mouse and rat poison has a narrow margin of safety, prompt therapy is often needed in all species.

ZINC AND ALUMINUM PHOSPHIDES: These poisons are more commonly found in mole or gopher baits, but they also may appear in mouse and rat baits. This poison is of particular concern as inhalation of the fumes from a pet's vomit may cause lung irritation to both the pet and the pet owner.

- Method of action: Once in the stomach, this poison releases phosphine gas. Food in the stomach will increase the amount of gas produced and, therefore, increase the toxicity of the poison. Therefore, feeding of pets after ingestion of this poison is never recommended.
- Common signs of poisoning: The phosphine gas produced by this poison can result in stomach bloating, vomiting, abdominal pain, shock, collapse, seizures and liver damage.
- Antidote and treatment: This poison does not have an antidote and immediate therapy should be sought by calling Pet Poison Helpline and seeking veterinary attention. Administration of antacids (e.g., Maalox[®]) soon after ingestion may help to decrease the amount of gas produced. Prompt decontamination of the stomach [by inducing vomiting or performing gastric lavage (pumping the stomach)] is necessary. During decontamination, care should be taken to prevent hospital personnel from being exposed to the phosphine gas. Given the potential risk this gas poses for people, vomiting is best induced by veterinary professionals (not pet owners) in a well-ventilated area or outdoors.
- Threat: The toxic dose is very small and nearly all patients ingesting this poison need to be examined by a veterinarian to determine if treatment is necessary. If the pet vomits in the car while en route to the veterinary clinic, the windows should be rolled down to prevent inhalation of phosphine gas.

The best thing any pet owner can do is to be educated on the poison dangers both in and outside of the house. One should to keep all rodenticides away from pets. "Pet-proof" your homes, yards, gardens, and garages. If you think your pet has been poisoned, contact your veterinarian or **Pet Poison Helpline at 800-213-6680** with any questions or concerns.

Resources: Pet Poison Helpline (PPH) is an Animal Poison Control that provides treatment advice and recommendations relating to exposures to potential dangerous plants, products, medications, and substances, to veterinarians, veterinary staff and pet owners 24 hours a day, 7 days a week. Please be aware there is a **\$39.00**/per case consultation fee. Pet Poison Helpline is located in Minneapolis, Minnesota. The Helpline number is **800-213-6680**. For further information regarding services, visit the PPH website at www.petpoisonhelpline.com

Pet Poison Helpline has an **iPhone application** with an extensive database of plants, chemicals, foods and drugs that are poisonous to pets. A powerful indexing feature allows users to search for toxins and includes full-color photos for identifying poisonous plants and substances. With a direct dial feature to Pet Poison Helpline, the app is called "**Pet Poison Help**," and is available on iTunes.

