Bell LABORATORIES, INC.
3699 KINSMAN BLVD.
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RAMPAGE®
RAT AND MOUSE BAIT

AN INNOVATIVE ACUTE RODENTICIDE FROM BELL LABORATORIES

Vitamin D_3, also known as Cholecalciferol, is a naturally occurring compound produced by most mammals after exposure to sunlight. Vitamin D_3 is also found naturally in such dietary sources as fish, eggs, and cod liver oil. It is thought that exposure to as little as 10 minutes of sun a day will prevent many health deficiencies. As with so many things in life, a little may be good, but too much is bad. This is the case with Vitamin D_3. A little provides substantial health benefits, but excessive amounts can lead to an overdose and cause severe health problems or death.

Bell Laboratories, Inc combined the characteristics of Vitamin D_3 and years of research and development experience to formulate Rampage. The application of accumulated knowledge and the quality, efficacy and effectiveness that have long characterized Bell products is well represented in Rampage.

Vitamin D_3 is the only rodenticide active ingredient on the U.S. Departments of Agriculture's National Organic Program (NOP) List. This naturally occurring active ingredient has been combined with Bell Lab's more than 35 years of research and development to create a truly special product.

KEY BENEFITS OF RAMPAGE BAITS

1) Laboratory and field data suggests that Vitamin D_3 baits like Rampage have not shown any potential for secondary poisoning. As a result, dead or dying rodents represent a substantially reduced risk to companion animals and wildlife.

2) Vitamin D_3 is recognized as a better choice for use around birds because of their hollow bone structure.

3) The active ingredient in Rampage, Vitamin D_3, has a recognized stop-feed action. This lowers the need for extensive and continued baiting, thereby reducing long term baiting costs.

4) Vitamin D_3 functions in a manner that makes reduces the chance of any bait shyness.

5) Rampage controls anticoagulant-resistant rats and mice since its mode of action is physiologically different from anticoagulants.

6) Rampage is only rodenticide registered by the U.S. EPA that has an active ingredient, Vitamin D_3, on the NOP list.

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MODE OF ACTION

Vitamin D_3 metabolites increase the absorption of calcium and phosphorus in the intestines, resorption of calcium and phosphorus by the kidneys and increased bone turnover (needed for proper bone formation and mineralization, but also specifically promotes bone resorption). Most importantly, Vitamin D_3 metabolites stimulate calcium and phosphorus transfer from bone to plasma. This increase in plasma concentration results in deposition of calcium and phosphorus in soft tissues all over the body, often called mineralization. The disposition of calcium in tissues of the heart, blood vessels and kidneys causes significant damage including high blood pressure. Extreme toxicities, as observed in rodenticide toxicosis, result in calcium deposition in and damage to lungs, tendons and ligaments. Mineralization of the kidneys, gastrointestinal tract, cardiac muscle, skeletal muscle, blood vessels, and ligaments causes structural damage that leads to decreased functional capacity of these tissues and organs.

Signs of acute toxicosis develop within 12 to 36 hours after ingestion. With high doses, acute renal failure can occur within 24 to 48 hours. Death typically occurs from acute renal failure in severely affected animals in 3 to 5 days. Other signs include loss of renal or musculoskeletal function, loss in pulmonary function and the development of heart arrhythmias that can result in death from cardiac failure.

HARMFUL DOSE LEVELS FOR DOGS OF RAMPAGE BAITS

When animals consumed a lethal dose of Vitamin D_3-containing bait, effects can occur as soon as 24 to 48 hours causing the animal to exhibit the following symptoms depression; lack of appetite, increase in drinking and urinating, heart rhythm abnormalities, increased blood pressure, weakness, vomiting and diarrhea which may have blood in it and seizures. Death commonly occurs with 3 to 5 days of ingestion.

It must be emphasized that if any animal owner observes any consumption of Rampage, or any other rodenticide containing Vitamin D_3, they should immediately take the animal to a vet for treatment.

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MINIMUM HARMFUL DOSE: **17.0 g/Kg** (Approximately 0.3 to 3.7% of body weight)
(Minimum amount of bait eaten for an animal to appear sick; i.e. loss of loss of appetite, vomiting and lethargy)

Dog Body Weight	**5 lbs. (2.3 Kg)**	**15 lbs (6.8 Kg)**	**30 lbs (13.6 Kg)**	**>60 lbs (27.3Kgs).**
Amount of Bait (pellets) eaten	39 gm	117 gm	234 gm	468 gm
Equivalent Amount of Rampage 28 gm Blox	1.5 blox	4.5 blox	9 blox	18 blox

It should be noted that the harmful dose is provided as a guideline of the minimum dose where overt toxic symptoms will normally be observed.

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DIAGNOSIS AND TREATMENT OF RAMPAGE BAIT EXPOSURE

Antidote

- Although Rampage does not have a specific chemical antidote to reverse the effects of ingestion, accidental exposure can still be treated.

- A treatment can be as effective as an antidote if presented to the patient in sufficient time for it to work.

- Even in the case of anticoagulants that do have specific chemical antidotes, an antidote given a patient in the final stages of a poisoning can be completely ineffective.

Diagnosis/Treatment of Vitamin D_3 Exposure

- The only true method of certainty of Vitamin D_3 exposure is a direct observation of bait consumption by affected animal.

- If an animal has ingested Vitamin D_3-containing bait near or in excess of the harmful dose, the following steps are recommended:

1) Seek Immediate Medical Attention

- Bring the affected animal to a veterinarian or animal hospital immediately.

2) Prevent Absorption in the Stomach

- For decontamination of the gastrointestinal tract to reduce Vitamin D_3 absorption, administer an emetic and activated charcoal with a saline or osmotic cathartic. Apomorphine for dogs and xylazine for cats may be somewhat effective.

3) To reduce the hypercalcemic state:

- Salmon calcitonin should be administered until serum calcium concentration normalizes. Higher calcitonin dosage may be required in refractory animals.
- Maintain levels after calcium concentration has stabilized using furosemide and prednisone.
- In severely uremic or hypercalcemic animals, peritoneal dialysis with a calcium-free dialysate solution can be used to lower serum calcium concentration even if other methods have failed.
- Seizure control, treatment of arrhythmias and other symptomatic treatment may be required in rare cases.

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SECONDARY POISONING

Scientific studies have shown that target animals that have ingested a lethal dose of Vitamin D_3 do not present a secondary hazard to predators.

1) In New Zealand, Vitamin D_3-containing baits are used for possum and rodent control. In secondary poisoning studies most dogs and cats fed carcasses of possums poisoned with Vitamin D_3 were unaffected but repeat exposures for 5 days induced some reversible signs of toxicosis in dogs. The most distinguishing feature of Vitamin D_3 is a lower risk of secondary poisoning when compared with 1080 and brodifacoum.

2) Groups of Norway rates were fed free choice diets of Vitamin D_3 bait versus EPA Challenge Diet. The test was designed to best simulate actual field conditions. All rats died from ingestion of the test material, were skinned and the carcasses were ground. The meal was offered as dog food.

   Six beagle-type dogs were placed under laboratory conditions. In order to ensure that these animals were not affected by any other food material, the animals were fasted for 24 hours. After the conclusion of the fasting period, the dogs were fed the ground rat meal under no-choice conditions for 14 days or until death occurred. All dogs survived the 14-day feeding period and displayed no signs of Vitamin D_3 intoxication or hypervitaminosis D_3. No overt sign of toxicity or pathological abnormalities were detected. It was concluded that the dogs did not receive a sufficient amount of Vitamin D_3 despite consuming the poisoned rats exclusively for 14 days. The study concluded that Vitamin D_3 does not pose a potential secondary threat to canines.

REFERENCES

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3) Eason, C.T., *et al*.; ***Non-Target and Secondary Poisoning Risks Associated with Cholecalciferol***; New Zealand Plant Protection, 53, (2000) pp. 299-304.