

# Oregon Department of Fish and Wildlife

## Anticoagulant Rodenticide Fact Sheet

### What are anticoagulant rodenticides?

- Anticoagulant rodenticides are chemical baits used to reduce rodent problems. They are used both indoors and outdoors, and are often found in both urban and rural settings. They are usually formulated into pellets or dusts that are often bright blue-green in color. <sup>1, 10, 11</sup>
- Anticoagulant rodenticides can be classified into two different categories: first and second generation rodenticides. First generation anticoagulants are usually less toxic and more than one dose needs to be eaten by the animals for the product to be effective. Rodenticides in this category are made from chemicals such as warfarin and diphacinone. Second generation products are much more potent and act faster than first generation products. They kill rodents with just one dose and include chemicals such as brodifacoum, difethialone, and bromadiolone. <sup>1, 10, 11</sup>

### How do anticoagulant rodenticides work?

- Vitamin K is an important vitamin that both animals and humans need to make blood clot effectively. For the normal coagulation to occur, vitamin K is needed to work with protein enzymes to recycle factors involved in the coagulation cascade. Anticoagulant rodenticides work by blocking the body's ability to conserve vitamin K which in turn stops the body from producing and activating new factors needed for coagulation. The result is widespread bleeding throughout the body and eventual death. <sup>3, 10</sup>

### Why is wildlife at risk for anticoagulant poisoning?

- Many different species of wildlife, such as owls, hawks, wild canids and felids (such as foxes, bobcats, cougars, etc.), and mustelids (such as fishers), can be at risk for accidental anticoagulant poisoning. In Oregon we have documented cases in multiple raptors and bobcats around the state, and studies in California show that in some fisher populations, most of the animals have ingested anticoagulant rodenticides. <sup>1, 6, 11</sup>
- One way wildlife can ingest anticoagulant rodenticides by eating the bait itself (primary poisoning). Most anticoagulant rodenticides are formulated to taste good to rodents in order to attract them to the bait, but unfortunately these same flavorings make them attractive to wildlife as well. Baits are also often placed in areas that are easily accessible to wild animals, and this increases the risk of accidental poisoning. This is known to occur in children and pet dogs as well. <sup>1, 6, 10</sup>
- Another very common way that wildlife is poisoned is by eating a rodent that ingested rodenticide (secondary poisoning). This occurs in species such as raptors, bobcats, and fox because rodents are a natural part of their daily diet. Poisoned rodents also become more lethargic and exhibit abnormal behavior such as sitting out in the open and making little to no attempts to escape from predators, and this increases the chance that they will be caught and eaten by a predator. <sup>1, 11</sup>
- Lastly, wild animals suffer from chronic intoxication when they regularly ingest low levels of anticoagulants in their prey. This exposure is not fatal by itself, but it does cause anticoagulant levels to increase in the animal's body over time. This decreases overall health and makes the animal more susceptible to other health problems and diseases. <sup>1, 11</sup>

### What is being done to reduce this problem?

- The EPA has instituted new safety standards for consumer use rodenticide products to help reduce the chances of accidental intoxication. These standards indicate how bait should properly be used (indoor and/or outdoor), whether it is tamper resistant for children and dogs, and what type of anticoagulants can be used. The only anticoagulant rodenticides currently allowed under these safety standards are first generation chemicals. While these are still poisonous to wildlife species, the adverse effects are somewhat lower than second generation products because the chemicals don't stay in the rodent as long. The EPA is currently seeking to cancel any consumer products that do not meet these standards, including ones that still contain second generation chemicals.<sup>4</sup>
- More information regarding these products can be found on the EPA's website at <http://www.epa.gov/pesticides/mice-and-rats/>

### **What are the clinical signs of anticoagulant poisoning?**

- The clinical signs that are seen depend on how much of the anticoagulant rodenticide was ingested. In severe cases, there may be bleeding from the nose or mouth, small hemorrhages on mucous membranes such as the lips and gums, and areas of bruising may be present. There may also be difficulty breathing, vomiting and nausea, or bloody diarrhea. It is important to realize that these signs do not occur immediately after ingestion, but instead usually begin 1-7 days later. This is because it takes time for any vitamin K present in the body before intoxication to be depleted and for the normal clotting process to become affected.<sup>3, 8, 10</sup> Therefore any animal or child who is known or suspected to have recently ingested an anticoagulant may not yet show any clinical signs, but it is still important that they are seen by a physician or veterinarian as soon as possible.
- Wild animals suffering from secondary poisoning can be affected in multiple ways. If they have eaten a large number of affected rodents, or the rodents had high levels of anticoagulant present in their body, they will exhibit the same severe signs noted above.<sup>1, 11</sup> One of the problems in wildlife poisonings is that by the time an ill animal is found, it may be in very severe shape and treatment can be very difficult. It is also very likely that many animals that are poisoned in this way are never seen at all.

### **What do I do if I find a sick wild animal?**

- If you find a sick or injured wild animal, please contact an approved wildlife rehabilitator, the Oregon Department of Fish & Wildlife, or the Oregon State Police. They will be able to safely assess the situation, determine if the animal needs further treatment, and safely transport it to the proper facility. Please do not pick it up or move it on your own.<sup>9</sup>
- More information regarding ill or injured wildlife can be found on our website at <http://www.dfw.state.or.us/resources/viewing/FAQs.asp>.

### **What can I do to help protect Oregon wildlife?**

- One of the best things you can do is to prevent potential rodent problems. This includes plugging any holes that may provide entrance points in and out of buildings and reducing potential food sources or nesting areas. You can also use mechanical rat and mouse traps for rodent control. If you must use rodenticide baits, be sure to use them according to manufacturer directions and current EPA safety standards, or contact a professional pest control service.<sup>2, 5</sup>
- More information on preventing rodent infestation can be found at the following websites
  - <http://www.epa.gov/opp00001/controlling/rodents.htm>
  - <http://www.cdc.gov/rodents/>

## References

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