

## Appendix 2: Lethal control

### A2.1. Overview

Lethal control of prairie dogs is the deliberate killing of these animals by humans. Prairie dog management plans should always require applying non-lethal techniques at the outset of a management issue, and the best non-lethal management is conflict prevention (Appendix 1). By predicting where conflicts with prairie dogs will occur in the future, managers can reduce or, ideally, eliminate lethal control. The organizations authoring this document do not support lethal control (Part 2, Section 3.8.).

The majority of lethal control methods are not considered euthanasia. Euthanasia is generally understood to mean ending a sick or dying animal's suffering. Healthy prairie dogs are therefore not technically "euthanized." Sikes & Gannon (2007), in contrast, describe euthanasia as "[t]he act of killing animals by methods that induce rapid unconsciousness and death without pain or distress." While it may be difficult to assess whether an animal is in pain, it is generally accepted that whatever would cause pain to a human would cause pain to an animal (Sikes & Gannon, 2007).

While eliminating all sources of distress may not be practical or possible, under Sikes and Gannon's definition of euthanasia, the selected method of lethal control should minimize sources of potential distress. Wild-caught animals should be handled and killed in the manner least stressful to the animals. Termination of life dictates that the most humane, rather than the most convenient, methods be used (AVMA, 2013). Table 1 elaborates on the relative humaneness of common methods currently in use and the potential consequences to both target and non-target wildlife.

Individuals applying pesticides must comply with federal laws as well as each individual state's laws concerning pesticide use and labeling. As with many federal regulatory programs, FIFRA cedes primary compliance, monitoring, and enforcement power to states. Typically, a state's department of agriculture has the primary responsibility to regulate certified pesticide applicators.

**Table 1. Comparison of common lethal prairie dog control methods**

Product	Product Form and Method of Use	Certification Required	Effect on Animal	Euthanasia	Humaneness Categorization	Affects Non-target Species	Secondary Poisoning
Aluminum phosphide (brand names: Gastoxin, Phostoxin, Fumitoxin) <sup>1, 2, 3, 8, 9, 12 &amp; 14</sup>	Tablet or pellet placed into burrow	Yes	Emits hydrogen phosphide gas upon contact with moisture. Gas is absorbed through respiratory passages, entering the bloodstream. Causes internal hemorrhage leading to convulsions, paralysis and coma. Efficacy affected by burrow moisture, temperatures and soil porosity. Length of death from time of exposure is unknown in field conditions.	Not approved by AVMA <sup>3</sup>	Severely inhumane: should never be used	Yes. Kills most animals within burrow. Primary exposure possible for any animal or human that reopens burrow while gas still active or where soils are highly porous and dry	No. Gas dissipates from carcass of target or non-target species with no bioaccumulation
Burrow Blocker™	Pumps a slurry of water and sand into the burrow	No	Animals are trapped in filled tunnels, leading to death by suffocation.	No	Severely inhumane: should never be used	Yes. Kills most animals within burrow	No
Carbon dioxide (CO <sub>2</sub> ) <sup>3, 5, 7, 10 &amp; 11</sup>	Animal is live-trapped and placed in sealed chamber into which gas is delivered	No	Causes anxiety to animal due to live capture and handling, concerns about overcrowding in tanks and release of stress pheromones. Animal suffocates and may exhibit signs of seizures, compulsive chewing, nasal hemorrhage and excessive salivation. Neonates require extended exposure times. Death by asphyxiation may take as long as 5.4 minutes. Difficulty in determination of death. Decapitation recommended after first application to ensure animal does not revive and require repeat application.	Not approved by the Humane Society. <sup>5</sup> Conditionally approved by AVMA <sup>3</sup>	Less inhumane	No	No
Carbon monoxide (CO) gas cartridge <sup>1, 3, 4 &amp; 14</sup>	Ignited gas cartridge placed into burrow or Pressurized Exhaust Rodent Controller (PERC™)	Yes, in Colorado	In controlled conditions, CO rapidly induces lethargy, loss of consciousness and eventual death from suffocation with minimal discernable discomfort. Death occurs rapidly when appropriate concentrations are used but concentrations are difficult to control in field conditions. In some cases, gas may only take partial effect and animals could become sick and disoriented, not immediately dying. Efficacy affected by burrow moisture. Use of clean and cooled CO causes less agitation and irritation on rodents.	Conditionally approved by AVMA <sup>3</sup>	Less inhumane	Yes. Kills most animals within burrow	No

**Table 1 (continued).**

Product	Product Form and Method of Use	Certification Required	Effect on Animal	Euthanasia	Humaneness Categorization	Affects Non-target Species	Secondary Poisoning
Chlorophacinone & diphacinone (brand names: Rozol & Kaput) <sup>1</sup> , 6, 13 & 15	Treated grain bait placed inside of burrow. Seasonal restrictions	Yes	Anticoagulant causing widespread internal hemorrhaging. Death prolonged over a period of days or weeks.	No. Causes significant suffering	Severely inhumane: should never be used	Yes. Kills any animal that consumes bait	Yes, if non-target animal consumes poisoned animals
Live burial	Bulldozing prairie dogs into the ground	No	Animals are crushed or trapped in collapsed tunnels, leading to death by suffocation. Lacks scientific data.	No	Severely inhumane: should never be used	Yes. Kills most animals within burrow	No
Shooting <sup>3</sup>	Shooting, generally with high-powered rifles	Some states require a hunting license.	Animals may die instantly or if maimed may die a prolonged death.	No (unless shooters are properly trained) <sup>3</sup>	Very inhumane  (Shooting may be considered humane if the shot kills the animal instantly, but in practice this is rare; poor marksmanship will inevitably lead to suffering.)	No	Yes, if lead bullets are used. Lead fragments are easily digested and can lead to lethal or sub-lethal effects.
Vacuuming (“Sucker Upper”) <sup>9</sup>	Street sweeper modified to vacuum prairie dogs out of burrows	No	Removed animals may be killed with carbon dioxide or relocated. Scientific studies unavailable.	No. Highly likely to be distressing to prairie dogs	Very inhumane	Yes. May vacuum up other species within the tunnel system	No
Underground gas explosives (brand name: Rodenator™ or Varmitgetter™)	Oxygen and propane mix injected into burrow and then ignited	No	Animals may die instantly or become trapped in collapsed tunnels. Partial dismemberment likely. Lack of published scientific data.	No. Likely causes significant suffering	Severely inhumane: should never be used	Yes. May kill and/or maim most animals within burrow	No

**Table 1 (continued).**

Product	Product Form and Method of Use	Certification Required	Effect on Animal	Euthanasia	Humaneness Categorization	Affects Non-target Species	Secondary Poisoning
Zinc phosphide <sup>10 &amp; 14.</sup>	Treated grain bait	Yes	Grain bait releases phosphide gas in the stomach, which is absorbed into bloodstream. Causes internal hemorrhage, convulsions, paralysis, and coma. Time of grain consumption to death is unknown under field conditions.	Not approved by the AVMA <sup>3</sup>	Severely inhumane: should never be used	Yes. Kills all animals that consume bait	Yes, if non-target species consumes animals when toxicant is still active in gut

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## A2.2. Donations to Wildlife Recovery Centers

Prairie dogs are sometimes donated to black-footed ferret or raptor recovery centers to serve as a food source (carcasses) or as live prey. While donations may be considered a better option than wasting (poisoning) an important food source, particularly in the case of black-footed ferrets, this practice is not immune to criticism. The issue for many species in recovery programs is a lack of prairie dog complexes. Both ferrets and raptors need wide open ranges with live wild prairie dogs to fulfill their true function in the grasslands. Therefore, conserving prairie dogs where they live is ultimately a better solution to the problem of declining ferrets and raptors.

## A2.3. Reducing risks to non-target species

Rodenticides and most other lethal control methods have inherent risks to non-target species. Both the landowner and the hired applicators must exercise due diligence to prevent or reduce killing of non-target wildlife. While the label instructions on rodenticides are considered the law, some state wildlife departments provide additional protocols. For example, Colorado Parks and Wildlife (CPW) has prepared additional recommendations to avoid non-targets in a document entitled “Controlling Prairie Dogs: Suggestions for Minimizing Risk to Non-Target Wildlife Species” (2007). The entire document is available at this link: <https://tinyurl.com/yda9dkt5>. Some of these protocols (truncated below) may be useful to consider in local management plans:

1. Consult with wildlife agencies. Contact the state wildlife agency and the U.S. Fish and Wildlife Service to determine if federal or state endangered, threatened, or species of special concern are in the area.
2. Inspect area prior to treatment. Rodenticides pose different threats to different species, and non-target wildlife should be considered when selecting control methods. This should include an interview with the landowner or site manager and at least one on-site inspection. The interview should include what species have been observed, and when during the day and season non-targets are present, as non-target presence can be influenced by the time of day, time of year, weather, and disturbance. Site inspections should include review of tracks, scat, pellets, feathers, burrow type, calls, etc.
3. The applicator is responsible for following the label directions, which includes only applying rodenticides to active burrows. Any failure to abide by label directions is a violation of state and federal laws.
4. Applicators should conduct a post-application site inspection of all treated areas to determine possible impacts to non-target wildlife species. Any take of non-target wildlife species should be reported to the state wildlife agency.

## A2.4. Recommendations

- As a matter of protecting the public’s health, safety, general welfare, and the environment, local governments should be keenly interested in when, where, and why pesticides are applied. Many local governments have adopted pesticide management plans that provide details about application and require permitting.

- Adopt ordinances and policies that reduce the use of toxicants on public and private lands and require a permitting process that clearly states penalties imposed for non-compliance. Penalties could include: fines, jail time, suspension of development permits, etc.
- Local governments may not be able to entirely prohibit pesticide use, but they can place restrictions on landowners requiring them to seek non-lethal control services first before permitting lethal control.
- Engage in conflict prevention strategies to predict and prevent prairie dog conflicts before they become an issue in as many locations as possible.
- Adopt a notification period to review alternative actions before toxicant use. A 12-month waiting period is reasonable.
- The intentional extermination of any declining species is a poor management choice; however, the understanding that prairie dogs feel pain too, and that care during the death of any animal is important, is a better approach than inhumane killing. Consider the most humane option first.
- Support private landowners that want to conserve prairie dogs or are willing to pay into mitigation funding programs for lost occupied habitat.
- Track and record the number of animals killed or burrows treated.
- Local governments cannot require additional posting and warning requirements on state licensed applicators, but they could require additional restrictions on the landowner; for example, larger signs and longer posting periods.
- Local governments should read the label of each pesticide considered.
- Fumigants (gas emitting agents) may travel through tunnels causing unintentional death or harm to occupants (humans or animals) in buildings. Read label instructions for special precautions about aluminum phosphide and carbon monoxide.

## A2.5. Bibliography

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