

Possums

...the Pros and Cons of Different Poisons

Possums can be controlled by shooting, trapping, and poisoning. A range of toxic bait formulations are available, containing one of the six poisons currently registered for possum control: 1080, phosphorus, cholecalciferol, cyanide, brodifacoum, or pindone. The properties, advantages and disadvantages of each poison are summarised below.

Use of bait formulations containing cyanide, 1080, phosphorus and some formulations of pindone requires a controlled substances licence. More information about the application of vertebrate toxic agents is available from ERMA (www.ermanz.govt.nz/hs/index.html) and ACVM (www.nzfsa.govt.nz/acvm/). In all cases bait formulations should be used according to the manufacturers' label instructions.

1080 (Sodium fluoroacetate)

Compound 1080 is the most widely used poison (in carrot, cereal and paste baits) for situations where possum numbers need to be reduced rapidly over large areas. Carrot baits are screened to remove small pieces so as to reduce the risk of birds eating baits. Cereal baits are used for both aerial and bait station control. Paste baits are used extensively for ground-based follow-up maintenance control. Cinnamon is sometimes added to possum baits to act as a lure and mask the taste of 1080.

Advantages	Disadvantages
Highly effective for achieving a rapid reduction in possum numbers	Controversial, especially aerial operations
Registered for aerial broadcast in mainland sites	Secondary poisoning risk from possum carcasses (especially to dogs)
Biodegradable in the environment, ongoing monitoring of waterways following aerial operations	No effective antidote
Residues in sublethally poisoned animals do not have prolonged persistence	Generates bait shyness if target animal gets sublethal dose
Its broad-spectrum toxicity can be an advantage in targeting multiple pest species, e.g. possums, rodents	Broad-spectrum toxicity can be a disadvantage where non-target species access bait, e.g. deer, birds, invertebrates
Proven track record in possum control – high-quality efficacy data exist to support both aerial and ground-baiting techniques, with ongoing potential to reduce application rates	Concerns about relative humaneness of poisoning



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Phosphorus

Phosphorus is used as a paste and is generally applied to turf spits on the ground.

Advantages	Disadvantages
Effective (kills of >90% achieved)	Risks to operators and risk of fire
	Antidotes of limited value
	Broad-spectrum toxicity can be a disadvantage where non-target mammals or birds access bait
	Persistence in sublethally poisoned animals unknown
	Fate and persistence in the environment not well understood
	Concerns about relative humaneness of poisoning

Cholecalciferol

All registered bait formulations (pellets, paste and gel formulations) contain 0.8% cholecalciferol (vitamin D3) for field application in bait stations for possum control and do not require a licence to use.

Advantages	Disadvantages
Low risk of secondary poisoning to dogs and birds	Treatment for accidental poisoning is available, but is complex
Lower toxicity to birds than mammals reduces primary poisoning risk to birds	Fate and persistence in the environment not well understood
Residues in sublethally poisoned animals do not have prolonged persistence	Concerns about relative humaneness of poisoning



Cyanide

Cyanide has been used by pest management agencies throughout New Zealand for several decades for ground-based possum control, and is available to licensed users in paste and pellet formulations containing 475–600 g/kg cyanide. Cyanide paste baits are applied at times and in locations where exposure to rain or moisture is minimised. Pastes are generally applied with lures in various types of weatherproof bait station above ground level but may also be applied as an ‘unprotected’, roughly pea-sized portion of paste. Feratox® (a pea-sized encapsulated cyanide pellet) was developed to minimise cyanide emissions seen in early paste formulations, which could pose a hazard to operators and contribute to bait shyness in possums. The pellets are placed in a bait station with either similar sized cereal feed pellets, or in a peanut-butter paste.

Advantages	Disadvantages
Humane (very rapid action)	Can be hazardous to users
Suitable for skin/carcass recovery	Sublethal exposure can induce bait shyness in possums
Low secondary poisoning risk	Antidotes are available but their use is controversial†
Achieves moderate to high kills (70–90%) Biodegradable in the environment	Broad-spectrum toxicity can be a disadvantage where non-target birds access bait; i.e. primary non-target risk to some bird species, e.g. weka

Hydroxycobalamin and kalocyanor antidotes are reasonably effective but are not appropriate in a first-aid context. Amylnitrite is available but is not very effective.

Anticoagulants (Brodifacoum and Pindone)

Anticoagulant cereal baits containing brodifacoum (second-generation anticoagulant) and pindone (a first-generation anticoagulant) are registered for use against possums. These baits are generally used to maintain low possum numbers following use of fast-acting poisons (e.g. cyanide, 1080, or cholecalciferol) for the initial population reduction. The slow action of this poison overcomes the problems associated with bait shyness. However, it is essential that wildlife or livestock do not gain access to areas where these baits are being used.

Cereal baits containing brodifacoum are registered for use against possums in bait stations. Brodifacoum can persist (> 1 year) in the liver of sublethally poisoned wildlife or livestock. Hence it is important that the risk of contamination of wildlife or livestock is recognised and the product is used carefully to minimise non-target contamination.

Pindone was developed as a pesticide in the early 1940s. Pellet baits contain 0.05% pindone by weight are generally used in bait stations around residential or pastoral land. Until March 2006 this product was only registered for the control of possums, but rats have now been added to the label as a target species. Broadcast application of these pellets by hand or aircraft to control possums requires a controlled substances licence.

Advantages	Disadvantages
Is effective against possums that have developed poison/bait shyness	Broad-spectrum toxicity can be a disadvantage where non-target mammals or birds access bait
Vitamin K an effective antidote	Concerns about relative humaneness of poisoning
Less toxic to invertebrates than to birds and mammals	Brodifacoum
Pindone	Persistent (> 1 year) in liver of vertebrates (can enter food chain and put meat for human consumption at risk)
Residues in sublethally poisoned animals (particularly liver) are less persistent than brodifacoum	High risk of secondary poisoning of non-target species

For analyses of these compounds in baits or other material, contact:

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