



NSWFOX SOP1

Ground baiting of foxes with sodium monofluoroacetate (1080)

Background

Lethal baiting with sodium monofluoroacetate (1080) is used to minimise the impact of the introduced European red fox (*Vulpes vulpes*) on native fauna and agricultural production. Lethal baiting is considered to be the most effective broad-scale method currently available. Foxes are amongst the most sensitive species to the effects of 1080. Good baiting technique helps to minimise the risk to non-target species and maximise the effect on targeted fox populations.

1080 is an odourless, tasteless, concentrated solution that has a coloured dye added for identification of the toxin. It is used for poisoning of foxes by incorporating it into fresh, dried or processed meat baits. Poisoned baits are distributed either on the ground by hand or from the air in a helicopter or fixed-wing aircraft. Aerial baiting procedures are described in NSWFOX SOP2 *Aerial Baiting of Foxes with 1080*.

This standard operating procedure (SOP) is a guide only; it does not replace or override the relevant NSW or federal legislation. The SOP should only be used subject to the applicable legal requirements (including WHS) operating in the relevant jurisdiction.

Individual SOPs should be read in conjunction with the overarching Code of Practice for that species to help ensure that the most appropriate control techniques are selected and that they are deployed in a strategic way, usually in combination with other control techniques, to achieve rapid and sustained reduction of pest animal populations and impacts.

Application

- 1080 baiting is subject to an authorised control officer (ACO) risk assessment
- Baiting with 1080 should only be used in a strategic manner as part of a co-ordinated program designed to achieve sustained effective control.
- Ground baiting is used on rural properties or national parks and forestry estate that are accessible by road.
- Baiting with 1080 must not be used in areas where there is an unacceptably high risk to humans and companion animals, such as urban/residential landscapes.
- 1080 use is restricted in areas where there is a high risk of poisoning domestic stock and wildlife.

- Timing of baiting programs on agricultural lands depends on farm management practices and will often occur at or before lambing/kidding. Baiting is also carried out at times when juvenile foxes are dispersing. In contrast, 1080 baiting may be continuous and ongoing in most programs targeting the conservation of native fauna.
- Baiting of foxes with 1080 can only be carried out under conditions set down in a specific permit issued by the Australian Pesticides & Veterinary Medicines Authority (APVMA) under Commonwealth legislation (*Agricultural and Veterinary Chemicals Code Act 1994*).
- In NSW, 1080 must also be used in accordance with the *Pesticides Act 1999* and the relevant Pesticide Control Orders (that include distance restrictions, signage and notification requirements).
- 1080 is a restricted chemical product (under Regulation 45 of the Agricultural and Veterinary Chemicals Code Regulations 1995) and is listed as a Schedule 7 – Dangerous Poison under the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP). These listings require special precautions in the manufacture, handling, storage and use of 1080, along with specific regulations regarding labelling or availability.
- Handling of 1080 concentrated solution and preparation of baits must only be performed by an authorised person who has the appropriate training.
- Prepared and manufactured 1080 baits can only be obtained through an ACO employed by Local Land Services, National Parks and Wildlife Service, Border Fence Maintenance Board of NSW and other NSW public authorities.
- The 1080 user should refer to the [NSW Vertebrate Pesticide Manual](#) for all relevant legislation and its application.

Animal welfare implications

Target animals

- The toxicity of 1080 is due to the conversion of fluoroacetate to fluorocitrate, which inhibits the tricarboxylic acid cycle – a mechanism necessary for cellular energy production. In general, herbivores experience cardiac failure, whereas carnivores experience central nervous system (CNS) disturbances and convulsions and then die of respiratory failure. Some species, usually omnivores such as pigs, can be equally affected by both CNS and cardiac signs.
- After a fox has ingested 1080 there is a latent period of around 30 minutes to 3 hours before initial signs such as hyperexcitability, vocalisation, manic running and vomiting/retching are observed. Although the precise nature and extent of suffering after ingestion of 1080 is unknown, it is likely that the animal will experience distress and possibly pain during this initial stage. In the final stages of toxicosis, signs of central nervous system disturbance are marked and include collapse, convulsions and tetanic spasms. During periods of prolonged convulsions, it is possible that animals are lucid between seizures, however this is difficult to assess. If animals are conscious during the convulsive episodes or if they become conscious afterwards it is possible that they may experience pain and anxiety. There is also potential for injuries to occur after the appearance of clinical signs. Death occurs around two hours after the onset of clinical signs.

- To minimise the animal welfare implications of orphaning dependent cubs, where possible, it is preferable not to undertake baiting programs when vixens are lactating. This is also the time when vixens are moving around least within their territory thus reducing the likelihood of finding baits. To maximise the effect of fox control prior to spring lambing for example, baiting should be conducted during June and July when foxes are mating and more mobile.

Non-target animals

- 1080 is toxic to a wide range of species including birds, mammals and reptiles; however, there are marked differences in sensitivity. Dogs are extremely sensitive, and most other mammalian carnivores are highly sensitive to 1080 poisoning. Herbivores are less sensitive, and birds and reptiles increasingly more tolerant.
- Poisoning of non-target species can occur either directly by eating baits intended for foxes (primary poisoning) or through the scavenging of tissues or vomitus from a poisoned animal (secondary poisoning).
- At the conclusion of the baiting program collect and destroy any remaining baits by burial with a minimum of 500 mm of soil.
- Any fox (or dog) carcasses found after poisoning should be destroyed by burial with a minimum of 500 mm of soil
- The susceptibility of non-target species to 1080 poisoning is determined by many factors including sensitivity to the poison, body weight, concentration of 1080 in the bait, bait placement, bait type and palatability, timing of baiting and level of exposure to toxic baits.
- In agricultural areas where the risk to non-target species is unknown, especially where sensitive native carnivores are likely to be present, bait stations using buried, unpoisoned baits should be established and monitored. If baits are taken or disturbed by non-target animals, then poison baiting should not be commenced in the area. In conservation areas where native carnivores are known to be present, operators should consult relevant guidelines when planning a baiting program.
- Camera traps – devices that detect heat-in-motion – can be used to assess visitation. The camera is triggered to take photos as the subject moves within the detection zone i.e. vicinity of bait station.
- Tethering of baits can also be used where there is concern that removal or caching (storing) of baits may result in unacceptable non-target risks. To minimise caching by wild dogs and foxes, bait stations should only contain a single bait.
- To minimise the potential for toxic baits to be lethal to non-target animals, the following baiting strategies are recommended:
 - *Bait size and concentration of 1080* – baits should be large enough so that small native animals cannot eat enough of them to ingest a lethal dose. Each bait should contain a precise amount of 1080 (3 mg) that is sufficient to deliver a lethal dose to a fox. The rate is calculated to minimise sub-lethal doses and overdosing.
 - *Burial placement of baits* – baits should be buried in a shallow hole and covered with soil or organic material, so they are less likely to be removed by native species, particularly birds.

- *Distance between bait stations* – to minimise the risk of native animals finding multiple baits place 1080 baits no more than ten (10) per kilometre of trail or no more than twenty (20) 1080 fox baits per 100 hectares. Also, foxes may be less likely to cache baits when they are placed a distance apart.
- *Palatability and attractiveness of baits* – ensure that bait types used are highly attractive to foxes and less attractive to non-target species. Some native animals may not be attracted to meat or may be unable to eat some bait types. Domestic livestock are unlikely to eat meat baits. Presenting baits that are highly palatable to foxes reduces the likelihood of caching and thus potential for non-target consumption.
- *Marking of bait stations* – mark the location of buried baits so that any baits remaining at the end of the program can be collected and destroyed.
- *Timing of baiting* – this can be adjusted to reduce exposure to potentially susceptible species.

First aid for dogs

- Fox baits are highly attractive to other carnivores such as dogs. Care must be taken to ensure that working dogs and pets do not come into contact with fox baits. The prognosis for poisoned dogs is extremely poor unless vomiting can be induced shortly after ingestion of the bait and before clinical signs are evident.
- If a working dog or pet is known to have consumed a bait but is NOT yet showing signs of poisoning, induce vomiting by giving one of the following emetics by mouth:
 - washing soda crystals (sodium carbonate) – 3 to 5 crystals orally, DO NOT use laundry detergents or powders
 - table salt – 2 teaspoons of salt in 1 cup of water; more or less depending on the size of the dog
 - dilute hydrogen peroxide (3% solution) – 3 to 5ml
 - If the dog has vomited, clean it up immediately as the vomit is toxic.
- THEN SEEK VETERINARY ATTENTION IMMEDIATELY. The sooner action is taken following poisoning the better the prognosis.
- If these emetics are not immediately to hand or you are not having success in making the dog vomit it is better to seek veterinary attention immediately rather than waste time.
- If the dog has already begun to show signs of toxicosis (retching and vomiting, frenzied behaviour such as running and howling, convulsions, difficulty breathing etc.), DO NOT induce vomiting, but seek veterinary attention without delay.
- Veterinary intervention aims to decrease 1080 absorption and facilitate excretion; control seizures; and support respiration and cardiac function.
- See *First Aid – 1080 and your dog* for more information: https://pestsmart.org.au/wp-content/uploads/sites/3/2020/06/1st_aid_booklet-1.pdf

Workplace health and safety considerations

- If poisoning occurs, contact a doctor or the Poisons Information Centre (Ph 13 11 26) IMMEDIATELY. Urgent hospital treatment is likely to be needed. There is no effective antidote to 1080.
- For further information refer to the Material Safety Data Sheet (MSDS), available from the supplier, the Pesticide Control (1080 Bait Products) Order, and the NSW DPI Vertebrate Pesticide Manual.

Procedures

- An ACO must conduct a risk assessment to determine if it is appropriate to supply 1080 baits to any person. Risk assessments must consider threats to non-target species particularly domestic dogs, human health and the environment.
- ACOs must conduct a risk assessment of planned group baiting programs where baiting occurs less than the prescribed minimum distances provided in the current 1080 PCO.
- Users of 1080 must always refer to any risk assessment and to specific permit, approved label, [Pesticide Control \(1080 Bait Products\) Order](#) (PCO) and the [NSW DPI Vertebrate Pesticide Manual](#) for up-to-date information on conditions of use including distance restrictions, public notification and bait preparation, distribution, storage, transportation and disposal.

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