

Wild dog facts

1080-Sodium fluoroacetate

1080 (sodium fluoroacetate) is used to control wild dogs, feral pigs, foxes, cats and rabbits in Queensland. It occurs naturally in a number of native plant species including *Acacia georginae* (Georgina gidgee) and members of the *Gastrolobium* and *Oxylobium* genera. Sodium fluoroacetate is a fluffy white material at room temperature, which forms colourless solutions with water and is normally odourless.

How to access 1080

Only authorised persons can supply 1080 baits to landholders. The use of 1080 is subject to strict regulatory control according to which:

Minimum distances

- No baits are to be laid within 5 m of a fenced boundary.
- No baits are to be laid within 50 m of the centre line of a declared road.
- No baits are to be laid within 20 m of permanent or flowing water bodies.

There are minimum notification requirements however these can be increased as an additional risk mitigation measure. Consult the relevant local government for further information on specific examples. These can be summarised as follows:

- Before baits are laid, the bait user must give at least 72 hours notice, either verbally or in writing, to all neighbours whose property boundary is within 1 km of the proposed baiting site, as well as those whose property adjoins or fronts the holding either across a road or a waterway.
- Notwithstanding the above all habitation occupiers (including schools, dwellings and public facilities, but not including the dwelling of the person laying the baits) within 1 km of the bait site are to be notified in writing.
- The notification must specify the dates between which baiting will occur. If baiting does not commence within 10 days of notification, another 72 hours notice is required.

Signage is required for all land on which baiting occurs.

- The owner must ensure that signs are put up immediately before any 1080 baits are put out on the property.
- The signs must be placed at all entrances to the property and at the extremities of property boundaries that front a public thoroughfare. This must be done even if the adjoining property is carrying out 1080 baiting.
- Signs must remain in place for a period of 4 weeks after baits are laid and permanent signs are required for on-going or extended baiting program.

Toxicity of 1080

Dogs and foxes are highly susceptible to 1080, and the small amount required to target these species poses a minimal threat to non-target species. Feral pigs and rabbits are also susceptible, although higher doses are required. Table 1 compares the susceptibility of different animals to 1080.

Table 1: Toxicity of 1080 (LD₅₀ values)

Animal	Mg/kg body weight	Relative resistance (dog =1)
Dog	0.1	1
Fox	0.2	2
Cat	0.3	3
Wallaby	0.3	3
Sheep	0.3	3
Cattle	0.4	4
Rabbit	0.4	4
Pig	0.6	6
Tiger quoll	1.8	18
Human	2.0	20
Rat	7.0	70
Hawk	10.0	100
Goanna	55.0	550

Note: LD₅₀ values represent the lethal dose for 50% of a population.

How 1080 works

Acetate is an essential component in the diet of animals. However, the addition of fluorine makes the substance toxic, as fluoroacetate interferes with the citric acid (Krebs) cycle. In mammals, fluoroacetate poisoning can cause death in a number of ways.

Carnivores (dogs, cats, foxes) generally suffer failure of the central nervous system; herbivores (rabbits, cattle, sheep) suffer heart or lung failure; and in omnivores (pigs) the central nervous system, heart, or lungs can fail.

Minimising risks

To minimize the impact on non-target species, bait materials are impregnated with concentrations of 1080 specific to the target species. The concentration used depends on:

- the lethal dose rate required
- body weight
- amount of bait likely to be consumed.

The potential danger to non-target species is further minimised by:

- using a specific bait type
- estimating likely bait consumption
- placing bait appropriately (including burying or otherwise concealing it)
- bait tying - where a bait is tied with wire then tied onto stakes or nearby vegetation This prevents birds and goannas from taking the bait.
- stipulating a minimum bait size
- using an appropriate strength of fluoroacetate.

Advantages

The single greatest advantage of 1080 over other vertebrate poisons is that it is much more target-selective. As dogs are highly susceptible to it, they require much less for a lethal dose than many other animals (see Table 1). This target-specificity, and the fact that it does not persist in the environment, make 1080 an effective toxin for controlling vertebrate pests.

Disadvantages

The single greatest disadvantage of 1080 is that there is no known antidote for sodium fluoroacetate poisoning, so working dogs and domestic dogs can be killed if they eat a bait. Due to the time it takes for the fluoroacetate to be absorbed and to disrupt the Krebs cycle, the onset of symptoms can be delayed anywhere from 30 minutes to 20 hours depending on the species and the individual animal.

The best protection for working dogs is plan ahead, use muzzles, and restrain working dogs when they are not working.

Persistence in the environment

Fluoroacetate is rapidly broken down into harmless compounds in natural soil and water systems.

Symptoms of poisoning

Key symptoms commonly used to assign 1080 poisoning as the cause of death in a dog are vomiting, convulsions, coma and death. Despite the distressing symptoms, anecdotal evidence from human poisoning cases overseas suggests that there is little, if any, pain associated with 1080 poisoning.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland (call 13 25 23 or visit our website at www.biosecurity.qld.gov.au).

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