



19-E-0707 / DOC 6108948

4 November 2019

Email: [REDACTED]

Dear [REDACTED]

We refer to the Official Information Act (OIA) request you submitted to the office of Hon Dr Megan Woods on 18 September 2019, regarding 1080 and technologies to tackle the risks you allege are associated with the use of 1080 in pest control operations.

Those parts of your request which relate to 1080 have been transferred to the Department of Conservation because that information is more closely connected to the functions of the Department. The aspects of your request relating to technology have not been transferred to the Department, and therefore, we have not considered, or responded to, those parts of your request.

Before we consider your request, we set out the following contextual information that is relevant to the issues you have raised in your request.

Why the Department uses 1080

1080 is a natural biodegradable compound – it dilutes rapidly to harmless levels in waterways and is broken by microorganisms in soil. It therefore provides an effective method of controlling introduced predators such as rats, mice and possums, as well as stoats (through secondary poisoning). 1080 is suited for use in New Zealand owing to the fact that New Zealand has no native land mammals (except for bats). Therefore, 1080 can be used in New Zealand without having a negative impact on native species at a population level.

Aerial 1080 operations are the only effective option currently available to us to control pest populations in vast, remote or rugged areas (such as areas covered in thick forests). Trapping in these areas is not feasible because of the number of traps needed and the trap lines that would have to be cut, walked regularly and maintained.

1080 is saving our native species

Monitoring studies and peer-reviewed research carried out over more than 20 years show that aerial 1080 operations are highly effective at keeping predator numbers down and protecting our native species.

For example, monitoring results have confirmed that up to 60% of kiwi chicks are likely to survive to breeding age in areas with pest control, whereas only around 5% of kiwi chicks will survive to breeding age in areas without pest control.

Who monitoring results have shown that three times as many who ducklings are likely to survive to fledge in areas with pest control, in comparison to ducklings in habitats that do not have pest control.

More information about how 1080 helps to save our native species can be found on the following webpage on the Department's website:

<https://www.doc.govt.nz/nature/pests-and-threats/methods-of-control/1080/proof-that-1080-is-saving-our-species/>

1080 breaks down in water

Published research has confirmed that 1080 is highly water-soluble.¹ If a 1080 bait enters a waterway, the 1080 will quickly leach out and break down into harmless non-toxic products. Microorganisms and plants in the waterways will then break down the 1080 into other, harmless, compounds.

Extensive scientific research has determined that there is no evidence of significant or prolonged 1080 contamination in surface waters. Between 1990 and 2018, 1,380 water samples (taken from New Zealand drinking water supplies, including streams with water intake points) were tested for 1080. Only five of those 1,380 samples showed harmless traces of 1080 (which were all well below the Ministry of Health's contamination standards for drinking water). The remaining 1,375 samples showed no detectable trace of 1080.

A summary of various scientific studies on the effects of 1080 on water can be found in the following published article: <https://newzealandecology.org/nzje/2968.pdf>.

Measures to mitigate the risk of 1080 bait entering water

The Department uses GPS technology to ensure that 1080 baits are not applied near large rivers and lakes. This further reduces the risk of 1080 baits entering waterways in the first place.

Local Public Health Units ("PHUs") set conditions around the application of 1080 to mitigate the risk of 1080 baits entering domestic and public water supplies. These conditions may include:

- Verifying the location of water supply intakes within, and near, the treatment block;
- Notifying people that source their water supply from within the treatment block that a 1080 operation is scheduled to take place in; and
- Setting exclusion zones around water supply intakes.

In addition to the permissions issued by PHUs, contractors are also issued permissions by the Department to apply 1080 over public conservation land. These permissions contain performance standards that help to further mitigate any risk of 1080 baits entering waterways (for example, by specifying exclusion zones for the aerial application of 1080).

¹ RL Parfitt et al (1995) "Sodium monofluoroacetate (1080) leaching through soils", *Bulletin of Environmental Contamination and Toxicology* 55:162–169.

1080 degrades in soil

1080 is water soluble, so when it rains after a 1080 operation, residues from uneaten baits leach into the soil where they are degraded to non-toxic metabolites by soil microorganisms, including bacteria (e.g. *Pseudomonas*) and the common soil fungus (*Fusarium solani*). Researchers have examined the effects of 1080 in soil and concluded that any 1080 residue that reaches the soil will be destroyed within a few weeks.²

1080 degrades in animal carcasses

1080 breaks down in carcasses of poisoned animals. This breakdown may be facilitated by microorganisms, degradation of fluoroacetate in the carcass, leaching of 1080 from the carcass into the soil and/or tissue autolysis.³

Scientists have studied the degradation of 1080 in carcasses of animals that have succumbed to 1080 poisoning. Around 40 – 75 days after a 1080 operation in the Wairarapa region, scientists observed that carcasses of poisoned possums were decomposing. They also observed that the levels of 1080 in the carcass stomachs had reduced from 30.6mg/kg (25 days after the application of 1080) to 4.9mg/kg (75 days after the application of 1080).⁴

Scientists have also observed that levels of 1080 residue found in the muscles of a sheep carcass declined exponentially 4 hours after exposure to 1080.⁵ In a separate study, scientists also observed that the presence of blowfly maggots increased the rate of loss of 1080.⁶

1080 metabolites

Researchers have studied the biodegradation of 1080 and have found that it is 'defluorinated' (stops being toxic) by microorganisms and broken down into various metabolites. Under favourable conditions, 1080 in baits may be defluorinated within 1-2 weeks.⁷ The metabolites that produced from the breakdown of 1080 are non-toxic and are unlikely to cause harm to plants or animals.

Your OIA request

We now consider your OIA request. You have raised concerns regarding the persistence of 1080 residue in water, soil and animals.

We consider the information set out above to address the issues you have raised in respect of 1080, and that information forms our response to your request.

² WAL David and BOC Gardiner (1996) "Persistence of Fluoroacetate and Fluoroacetamide in Soil", *Nature* Vol 209 Issue 5030.

³ C Eason et al (2013) "Secondary poisoning risks from 1080-poisoned carcasses and risk of trophic transfer - a review", *New Zealand Journal of Zoology* Vol 40 Issue 3.

⁴ See 3, above.

⁵ CG Rammell (1993) "Persistence of compound 1080 in sheep muscle and liver", *Surveillance* Vol 20 Issue 1.

⁶ See <https://www.epa.govt.nz/assets/FileAPI/hsno-ar/HRE05002/9917ed4348/HRE05002-054.pdf>.

⁷ C Eason et al (2011) "An updated review of the toxicology and ecotoxicology of sodium fluoroacetate (1080) in relation to its use as a pest control tool in New Zealand", *New Zealand Journal of Ecology* 35(1): 1-20.

You have the right to seek an investigation and review by the Ombudsman of this decision. Information about how you can make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Please note that this response (with your personal details removed) may be published on the Department's website.

Yours sincerely



Erik van Eyndhoven
Director (Acting), Biodiversity Threats
For Director-General