Toxicology Report Q & A

Background and context

An aerial 1080 operation was carried out over the Rakeahua Valley from 6 - 8 July 2025. This predator control is to protect the critically endangered pukunui/southern New Zealand dotterel and work towards a Predator Free Rakiura.

Following the operation, a small team of people explored the site, to see the impact of the operation firsthand. One Predator Free Rakiura Engagement and Advisory Group (EAG) member, one DOC ranger and a community member visited the Rakeahua Valley two days later to look for animal carcasses, focusing on dead birds. This group found one dead tomtit, the remains of one seabird, two deer carcasses, two dead possums, and one dead rat. Samples were taken from each of these animals, and these were sent to Maanaki Whenua Landcare Research for independent toxicology analysis.

A third deer carcass was found a day after this trip by the EAG member. Samples were also taken from this deer and sent away for toxicology analysis.

Each sample tested positive for fluoroacetate (1080) apart from the seabird. The toxicology report is attached in full.

The values of 1080 detected in the results fluctuated between 0.27 µg/g and 69 µg/g. This is because of the differences between the animals being tested and several other factors:

- the feeding behaviour of the species (1080 baits are designed to be attractive to rats and possums, but repel birds)
- the feeding behaviour of the individual animal (some individuals are more cautious about new foods than others, some individuals will be bolder or hungrier than others, so will eat more bait)
- when the animal died
- the size of the animal
- how much 1080 the animal consumed
    - ❖ a 70kg deer would need to ingest six 6-gram pellets to die, but if it managed to eat more pellets before it died then it would display a higher toxic value when tested
- where the sample had been taken from (at the time of death, stomach contents sometimes contain a higher proportion of undigested toxin than muscle tissue).

There is extensive pre and post control monitoring being undertaken associated with this predator control programme both by the Department and Zero Invasive Predators (ZIP), which will provide robust information on the efficacy of the control activity in the Rakiura environment on removing the target predators and outcomes for non-target species. DOC and ZIP look forward to engaging on the outcomes of the operation once the information has been collected and analysed. We will update the timeframes for this after the operation has been delivered.

DOC's technical experts have answered questions from the EAG about the toxicology results:

Q: How many kiore does a cat need to eat to die?

A: Targeting rats with aerial 1080 is a good way to control feral cats. Consumption of one kiore is sufficient to kill two cats depending on which parts of the kiore the cats eat.

Q: How many kiore would a morepork need to eat to die?

A: Morepork are unlikely to be killed by ingesting 1080. Morepork generally eat live prey. A total of 47 radio tagged morepork have been monitored through six different 1080 operations and none died from poisoning.

Q: How many tomtits does a cat need to eat to die?

A: An average sized feral cat would have to find and eat more than 80 tomtits in one sitting to be poisoned. That is because the muscle mass of a tomtit is tiny compared to a cat.

Q: How much venison does a cat need to eat to die?

A: It is unlikely that feral cats would be killed by eating dead deer. A cat would need to consume 500g of venison to receive a deadly dose.

Q: How much possum does a cat need to eat to die?

A: Feral cats that eat dead possums will likely be killed. A cat would need to consume 148g of possum muscle tissue to receive a lethal dose.

Q: How much venison would a human need to eat to die?

A: It is practically impossible for a human to be killed by eating a deer killed by 1080. Using the average from the toxicology report of residual levels of 1080 in the deer muscle tissue, an average-sized human would need to consume 30kg of venison in a single sitting i.e. not consumed over several days or weeks.

Q: Is the amount of 1080 in the tomtit consistent with others tested from other drops?

A: Small numbers of dead tomtits are occasionally found after 1080 operations. Unfortunately, some tomtits will peck at 1080 baits that they find on the ground. This does not impact tomtit populations, which benefit overall from the removal of predators. The amount of 1080 in tomtit muscle tissue is consistent with tomtits tested in 1080 drops at other sites.

Q: Is the amount of 1080 in the whitetail consistent with tests from other drops?

A: The muscle tissue residue level recorded in white-tail deer from Rakiura is consistent with other monitored deer species. The stomach residue results are a mix of below and above average. Deer repellent will reduce the number of deer that eat 1080 baits; however, it will not stop every deer from eating them.

Please direct any further questions to pukunui@doc.govt.nz.

Toxicology Laboratory Analysis Report

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Report No: T8764

CLIENT: ., Mike Douglass, 174 Horseshoe Bay Road, Oban 9818 Stewart Island

CLIENT REFERENCE No.: **Telephone No:**

SAMPLES: Ten tissue samples

REQUIREMENT: Examine for fluoroacetate

RECEIVED: 17 July 2025

Sample/s were received for analysis. The details were entered into the laboratory sample system and the sample/s given a reference number. The sample details and results are as follows:

No. samples: 10

LabNo.	Description	Fluoroacetate, µg/g
28887	Muscle tissue, Dead doe, 1157 hr, 11/7,25	3.08
28888	Stomach contents, Dead doe, 1157 hr, 11/7,25	42
28889	Muscle tissue, Female possum. 11/7/25	4.74
28890	Muscle tissue, Juvenile male Tomtit, 10/7/25	1.63
28891	Muscle tissue, Seabird wings, 10/7/25	<MDL
28892	Muscle tissue, Dead doe 2, 12/7/25	0.27
28893	Stomach contents, Dead doe 2, 12/7/25	0.33
28894	Muscle tissue, White tail buck, 10/7/25	0.85
28895	Muscle tissue, Kiore rat, 11/7/25	69
28896	Stomach contents, White tail buck, 10/7/25	51

The determination was carried out using TLM005, the assay of fluoroacetate in water, soil and biological materials by GLC. The method detection limit (MDL) is 0.001µg/g and the uncertainty (95% c.i.) is ± 9%.

TESTED BY: amg **WORKBOOK REF:** 40/6

TEST PERIOD: 17-22/7/25

AUTHORISED BY:

L.H.Booth, A.M.Gibbs

Date: 23/07/2025

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These results are confidential to the client and relate only to the samples as received and tested. This report may be reproduced in full only. The samples relating to this report will be disposed of after two months from the report date unless requested otherwise by the client. Where appropriate, the above results will be included in anonymised form in the National Vertebrate Pesticide Residue Database.