



OIA 19-E-0071 – docCM5707775

22 February 2019

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Dear ██████████

Thank you for your Official Information Act request to the Department of Conservation, dated 31 January 2019. We understand your questions follow up on answers we sent for your previous OIA 18-E-0395. Your latest request asks:

I have since discovered through an OIA that there is still no test currently available in New Zealand for the 1080 toxic metabolite, Fluorocitrate. Nor is there one under development. You will, of course be able to confirm if this is incorrect.

According to your own unpublished document, that you have sent me here, the only tests on the potential rate and time of 'biodegradability' of 1080 is either over 20 years old (when technology available for testing at these levels was either not developed or inaccurate), or (more recently) conducted in a science laboratory (which obviously cannot reproduce accurately the environmental conditions). Furthermore, the metabolite fluorocitrate is not mentioned in the section on the claimed 'biodegradability'.

Please therefore confirm that your claims for 'biodegradability' of 1080 are not scientifically robust (hence, I assume why this report is not peer-reviewed and published). And that there is an unknown elements to the fate of 1080 once it is dissolved in stream water, and/or uptaken by plants and subsequently by aphids or birds.

*Finally, there seems to be a paragraph or section missing at 5.1.8 page 65 of the attached document: this section is about the **Human** impact of the 1080 poison and yet sublethal effects are only mentioned in regard to animals (e.g. rats). Please explain why this is missing and forward the relevant information separately.*

Another quick follow-up question about the report you enclosed, on page 12 a number of situations where tests for 1080 poison itself (not it's metabolites) was measurable in drinking water sources. Can you please confirm whether there were any follow-up investigations into the health of the public who were unwittingly drinking from these contaminated water sources, (or their pets or cattle) whether any long-term studies or questions have been carried out (either directly or via the local DHBs or hospitals, midwives or MPI testings etc) and if so, what the outcomes were and how they will be addressed?

If there were NO follow-up studies of any kind on any of these areas, please define the rationale and please also supply any correspondence between DoC and the MoH about this issue (copied to MoH for response too)."

Your questions and our responses are listed below, but for context I will first note some general points about your request.

Firstly, your questions conflate two different biological processes; biodegradation and metabolism. This gives the impression you think that toxic metabolites of sodium fluoroacetate do not biodegrade and are accumulating in the environment and contaminating food chains.

The department does not consider this to be a credible risk. As noted in the article we recommended you read for your previous OIA, prolonged persistence of 1080 in animals after sub-lethal exposure is unlikely, and this has been confirmed in studies of animals such as rabbits, goats, possums, and sheep in which 1080 was readily absorbed and excreted (Eason et al., 2011, p.4)¹.

Articles such as this, and many others, are publicly available from peer-reviewed, open access journals, for example <https://newzealandecology.org/nzje>

Furthermore, at the current rate of sowing, which is less than a teaspoon (3gms) per hectare of the toxin sodium fluoroacetate (not counting the non-toxic bait), it is not feasible that such bio-accumulation could occur.

Secondly, the document you refer to, which we sent for your previous request² is an internal working document, regularly updated with any new information by one or more experts in the field of toxicology. This review is compiled for use by departmental staff. *We strongly refute your insinuation that we have not presented it for peer-review and publication because it makes claims about biodegradability of 1080 that are not scientifically robust.*

You will have noticed that the review cites over 265 scientific reports and articles, most of which are peer-reviewed, published and fully recorded in the 18 pages of reference list at the end of the review. Following up on these references will give you many examples of robust research on biodegradability.

Thirdly, as you know, for obvious reasons the Department of Conservation does not register Vertebrate Toxic Agents (VTAs) or regulate their use. These functions are the responsibility of other agencies, as described on our website. Therefore, the

¹ Eason, C., Miller, A., Ogilvie, S., & Fairweather, A. (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.

² Fairweather, A.A.C.; Broome, K.G.; Fisher, P. 2018: Sodium Fluoroacetate Pesticide Information Review. Version 2018/2. Unpublished report docdm-25427, Department of Conservation, Hamilton, NZ. 113p.

department does not necessarily or exclusively hold information pertaining to public health and safety, environmental risks or experimental studies of 1080.

Given this context, your questions and our responses are listed below:

1. *I have since discovered through an OIA that there is still no test currently available in New Zealand for the 1080 toxic metabolite, Fluorocitrate. Nor is there one under development. You will, of course be able to confirm if this is incorrect.*

It appears you have already obtained an answer to this question. The department does not hold information on what specific toxicological tests are or are not available through the laboratories providing toxicological assay services.

2. *Please therefore confirm that your claims for 'biodegradability' of 1080 are not scientifically robust (hence, I assume why this report is not peer-reviewed and published). And that there is an unknown elements to the fate of 1080 once it is dissolved in stream water, and/or uptaken by plants and subsequently by aphids or birds.*

The biodegradability of 1080 has been well established by robust science. As part of the 1080 re-assessment process the Environmental Risk Management Authority sought an independent expert review of the degradation of 1080 in water and soil, with the conclusion that the substance meets the criteria in the Hazardous Substances and New Organisms Act 1996 (HSNO Act) for rapid degradation in both soil and water. (Evaluation and Review Report (2007): Reassessment of 1080 (HRE05002)

This report is publicly available at www.epa.govt.nz/everyday-environment/1080/

Also, Booth et al. (1999), cited in Eason and Wickstrom 2001, found that the disappearance of fluorocitrate (the active metabolite of 1080) detected in aquaria spiked with 1080, paralleled that of 1080. They concluded that absence of 1080 in environmental samples would indicate a very low risk of fluorocitrate being present.

Eason, C.T. and Wickstrom, Mark. 2001. *Vertebrate pesticide toxicology manual (poisons). Information on poisons used in New Zealand as vertebrate pesticides.* Department of Conservation Technical Series 23. This report is available on the department website www.doc.govt.nz/about-us/science-publications/series/doc-technical-series/

3. *Finally, there seems to be a paragraph or section missing at 5.1.8 page 65 of the attached document: this section is about the Human impact of the 1080 poison and yet sublethal effects are only mentioned in regard to animals (e.g. rats). Please explain why this is missing and forward the relevant information separately.*

There is no missing paragraph. This section summarises the evidence regarding sub-lethal effects on target organs and includes the known NOEL³ value for these effects. For obvious reasons, it is not feasible to perform studies on the limits of these toxicological effects on human subjects. Therefore, studies of these effects on the organs of rats have been used to provide understanding that may be applied to other eutherian mammals, including humans. Animals have been extensively used for testing the effects of drugs (e.g. in medical science) to enable for modelling of the effects on humans.

4. *Another quick follow-up question about the report you enclosed, on page 12 a number of situations where tests for 1080 poison itself (not it's metabolites) was measurable in drinking water sources. Can you please confirm whether there were any follow-up investigations into the health of the public who were unwittingly drinking from these contaminated water sources, (or their pets or cattle) whether any long-term studies or questions have been carried out (either directly or via the local DHBs or hospitals. midwives or MPI testings etc) and if so, what the outcomes were and how they will be addressed?*

The department does not hold the information you are seeking. As stated, 5 out of 1299 samples contained detectable levels of 1080 residues, all of which were 15 to 25 times below the Ministry of Health maximum level for drinking water.

Please note that this letter (with your personal details removed) and enclosed documents will be published on the Department's website.

Yours sincerely



Amber Bill
Director Biodiversity Threats
for Director-General

³ No-observed-effect-level