

[REDACTED]

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6 July 2018

SUBMISSION

Please accept this as my submission in relation to how EPA conducts its risk assessments for new and existing hazardous substances.

I am currently the Waikato Regional Councillor for Taupo-Rotorua and the Chair of WRC's Environmental and Services Performance Committee. Although some of my knowledge of the issues addressed here have come through my council role, I am not submitting this on behalf of Council. It is my personal submission.

My comments are primarily in relation to vertebrate toxic agents, sodium fluoroacetate and brodifacoum, as I believe that the risks involved in individual operations are much greater than you have assessed and this highlights the deficiencies in the risk assessment methodology. This is partly due to:

1. **Vital studies not having been done (in a range of areas, but especially epidemiology)** - Official Information Act requests submitted in 2008 and 2018 confirmed that no epidemiological studies have been conducted on 1080 (see appendix). These are studies that should have been done to determine health risks to people, livestock, pets and wildlife, before approval was ever granted to use 1080. No one has required this to happen over the more than six decades of 1080 use. Epidemiological studies should be a requirement as part of a risk assessment;
2. **Our technology not being as advanced as other countries** - pesticides have been deemed as harmful to mitochondria especially to the foetus at parts per trillion (UK), but in New Zealand we only assess harm from 1080 at 2 parts per billion. This inadequacy in testing technology prevents us from being able to do meaningful risk assessments in terms of human and wildlife health;
3. **Not having testing facilities available for a number of essential tests** - for example, we cannot test for fluorocitrate in New Zealand, which is a metabolite of sodium fluoroacetate. Because the test isn't available in New Zealand, it's unlikely that the test is ever done, let alone it being part of a testing protocol. Penny Fisher, previously of Landcare Research, told me the fluorocitrate test is an important test for assessing the risk of 1080. I believe that failure to provide facilities that can do such a test, when it's known that this test would probably produce positive results in many 1080 poisoning incidents, is in my opinion, negligent;
4. **Agencies failing to follow Landcare Research protocols in terms of sampling and testing water for 1080**, leading to inaccurate analysis of total water testing results and distorted risk assessments. The Landcare Research protocol states that tests should be done within 8

hours (when a test is most likely to be positive) and 24 hours after a 1080 drop (when the toxin is likely to be diluted and undetectable). However the Medical Officer of Health does not require the 8 hour test even though this is in the protocol. Agencies are not even asked to state on the form what amount of time passed before the samples were taken. However when I asked NIWA for information about this, I was told that all of the samples recently taken for OSPRI were taken at 24 hours. As very few water tests are done at a time when 1080 is most likely to be detectable in water (within 8 hours) and all tests are lumped together when reported no matter what time they are taken, statistics are skewed towards negative results and a general conclusion that “1080 in water is safe.” This gives people a false sense of security about 1080 in water, and has in fact led to more 1080 being discharged to water. Imagine if people were not tested for alcohol in their breath until 24 hours after they had consumed it. It would be inaccurate to conclude that it is safe to consume alcohol and drive, based on these test results. It would only tell us that alcohol is no longer detectable. The reason for me using this analogy is in the following point.

5. **A lot of people have unregistered water takes, which is allowable under the RMA. These people are at risk of 1080 poisoning because they continue to draw water via pipes from streams, on the day of a poison drop because they have not been notified of the day and time of the drop, and they have not been offered water mitigation.** See appendix. The Medical Officer of Health does not require DoC, OSPRI or other agencies to walk the streams to identify unregistered people who are drawing water from streams (see DoC correspondence). Many of these unregistered people are supplying water to large numbers of people for domestic use and watering livestock. On the Coromandel Peninsula, we identified one such person who was supplying water to 70 households plus stock. He had not been advised to stop drawing water while the 1080 drop happened. This failure to identify unregistered water takes, the failure to notify them of the need to stop drawing water, and the failure to offer them an alternative water supply, is a huge risk to human- and livestock-health. The EPA does not take this into consideration in a risk assessment. These large numbers of unregistered water users are at risk of poisoning in the hours immediately after a poison drop because baits are dropped across almost all waterways, as confirmed by official GPS toxin flight-charts of poison operations (see appendix flightcharts);
6. **People are unaware that 1080 is discharged into most waterways.** Most people are unaware that pest contractors are permitted to discharge 1080 baits across land and water. There is nothing on the warning signs to indicate this, and there is no reason for people to think that this would be allowed, given our attitudes to effluent and hazardous substances in water. Warning signs and all correspondence should make it clear to people that poison baits and carcasses may be present in water; entitlements to water mitigation should also be made clear. This needs attention within your risk assessment methodology.
7. **Agencies not being fully transparent about by-kill numbers** – there are numerous cases in the Poisoning Incident Register (see working document at https://docs.google.com/document/d/18c9NXa4NsZp5bzEm4WM8aP_Us41DjXXMuxkHHcqap3U/edit?usp=sharing), and in correspondence with agencies involved in poisoning, that indicate lack of transparency about pets, livestock and wildlife that are killed unintentionally in poison operations

https://youtu.be/K7vtWj_5Utg The disparity between official records and veterinary surveys, showing the number of dog deaths from 1080, for instance highlight that risk assessments and decision-making has been flawed (see the article about the National Poison Centre and Otago University survey regarding dog deaths by 1080).
<http://www.scoop.co.nz/stories/SC1111/S00030/at-least-65-dogs-in-a-year-poisoned-by-1080-in-new-zealand.htm>

8. **Pest contractors not following label requirements** – the manufacturer’s label and the Safety Data Sheet in all its iterations over time, have made it clear that pest contractors should avoid contaminating water with poison baits, and that where practicable, poisoned carcasses should be removed or buried. This has recently been endorsed by Charles Eason as best practice, but neither of these things are being done. Failure to remove poisoned carcasses increases the secondary and tertiary risks of contaminating the food chain.
9. **Food chain contamination risks** – pigs in particular are at risk from scavenging poisoned carcasses (1080 and anticoagulants such as brodifacoum), but many other animals are also at risk, such as eels and trout. There is a current warning out not to consume trout for a week after a 1080 poison drop. Scientists have also warned recently that pigs can consume large amounts of 1080 before succumbing to the toxin. Most people are not aware of such risks. See appendix.
10. **Maori concerns re 1080 contamination of mahinga kai, rongoa, and wahi tapu have been widely ignored, as has the mauri of water.** No one is able to guarantee that food sources such as puha and watercress, pigs, koura and tuna have not been contaminated, or that spiritual sensitivities have been protected.
11. **A NES was not possible for 1080 because of the potentially significant adverse effects of individual poison operations.** This was a statement in the business case analysis of options for streamlining the regulatory regime for 1080. Despite this, the government in 2017 pushed on to EXEMPT 1080, brodifacoum and rotenone from the protection of the RMA, through their passing of the Exemptions Regulations. This legislation change has dramatically increased the risk profile of 1080 because there are no longer resource consents with conditions applied for individual operations. Consultation has reduced and tensions have risen. This is something that needs seriously addressing in a risk assessment methodology.

Benefits – the assessment of benefits versus costs has ignored the following:

1. **There is no evidence of long-term population benefit for native wildlife populations from use of 1080** – Didham and Ruffell in 2016 investigated 195 pest-controlled locations in the upper North Island, and declared that only two bird species had benefited at a population level from pest control. “Pest control was found to affect surprisingly few species with only kereru and tui being more abundant
<https://newzealandecology.org/nzie/3296.pdf> Negative unintended consequences are

common from pest control (Ruscoe study). Rat numbers often explode within six months of a 1080 drop.

- 2. Underestimating the risks of 1080 or other toxins to birds that are small, vulnerable, in low numbers, or are slow to breed.** Kea for instance are at high risk in areas where 1080 is used. Their populations have dwindled significantly from being high numbers at a time when there were also plenty of possums, rats and stoats, to being extremely low numbers at a time when money spent on toxins in pest control has never been higher. The risk assessment for kea has failed, because toxins continue to be used in these areas despite OIA records proving that high numbers of kea have been found dead with 1080 residues.
- 3. Areas where 1080 has not been used are not being adequately studied to enable quality cost-benefit analysis and comparisons.** For instance, the Okahu Valley (where no 1080 is used) has healthy populations of kiwi. Kiwi chicks and eggs are often translocated from this unpoisoned area to poisoned areas. In contrast, in places where vast quantities of toxins have been used, such as the Pukaha sanctuary (Mt Bruce) and the Tongariro National Park, there have been very poor results in terms of kiwi surviving to adulthood. The costs of using 1080 are high, not just in economic terms. The benefits are exaggerated. See the following videos about high numbers of kiwi deaths in Pukaha <https://youtu.be/yGTVaTATbOg> and Tongariro <https://youtu.be/1gR674m7a00>
- 4. The risk of 1080 to our Clean, Green 100% Pure brand** - we have no idea how much our country's widespread use of 1080 has impacted on people's ability to make a living and export products. We know people who have been prevented from using possum meat and fibre, and wild venison in products destined for overseas markets, but we don't know how many opportunities we have missed because people know that we use one of the world's deadliest poisons aerially near and on farms. There have also been scares where products such as butter have been quarantined. Any risk assessment should also consider the opportunity costs and benefits to our country's brand.

Regards

Kathy White

APPENDIX

PowerPoint Slide Show - [Kaw Māta presentation] - PowerPoint

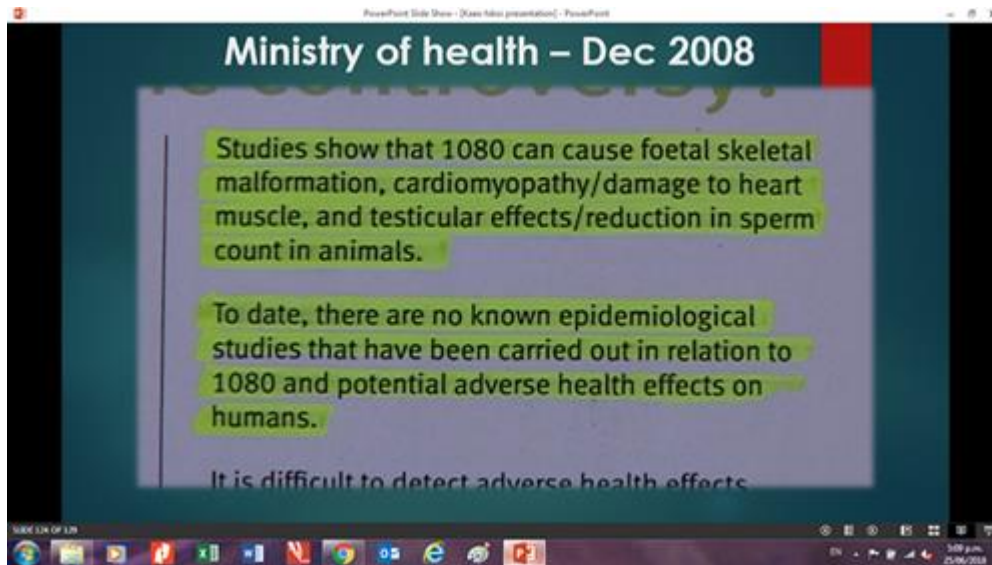
Ministry of health – Dec 2008

Studies show that 1080 can cause foetal skeletal malformation, cardiomyopathy/damage to heart muscle, and testicular effects/reduction in sperm count in animals.


To date, there are no known epidemiological studies that have been carried out in relation to 1080 and potential adverse health effects on humans.

It is difficult to detect adverse health effects

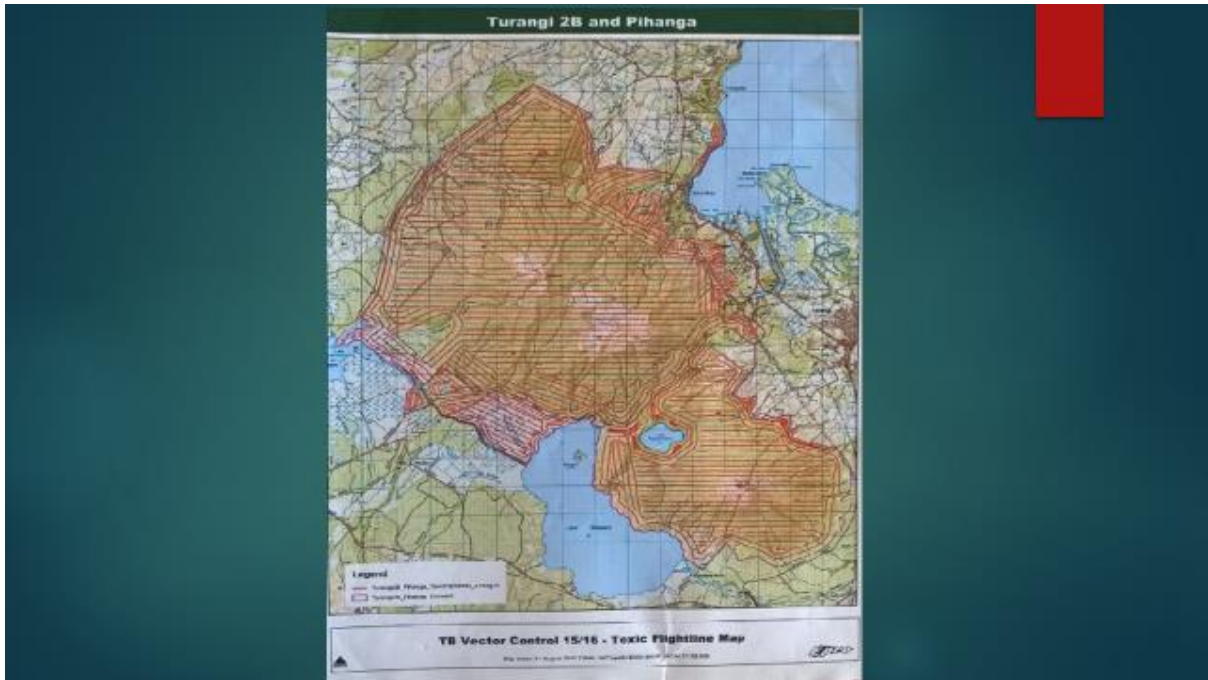
MINISTRY OF HEALTH



Mt Pirongia toxin flight lines



Aerial flightchart of where helicopters dropped 1080 poison



Section 14 (3b) of the RMA allows people to draw water from streams for their domestic needs without a resource consent, or to be registered

Permission issued by the Medical Officer of Health for discharge of 1080

25. Domestic Water Supply: Mitigation

For an aerial application of 1080, applicants must provide mitigation to all households and huts/camping areas that:

- source water from inside the operational area; or
- source their domestic water supply within 3 km of the operational area where the water source is a surface waterway that flows through or rises within the operational area if mitigation is requested by household occupiers or managers of huts/camping grounds.

Mitigation shall involve either or both of the following:

- i. No 1080 shall be applied within 50 m of the water supply intakes. For flowing surface waterways, the 50 m exclusion shall extend for a length of 200 m upstream from the point of intake.
- ii. The domestic water supply shall be temporarily disconnected until such time as water testing finds no VTA contamination above 50 percent of the Ministry's PMAV.* If no temporary water source is available, an adequate alternative potable water supply (to be used for drinking and cooking) will be provided to the affected household; the amount per day to be agreed with the household, until testing is completed.

public water supplies who:

- source their public water supply from within the operational area; or
 - source their public water supply within 3km of the operational area where the water source is a surface waterway that flows through or rises within the operational area.
- The notice must be given sufficiently prior to, but within two months of, the proposed application of the VTA(s).

If requested by the person notified, notification shall be repeated at a mutually-agreed time before the proposed application.

28. Public Water Supplies: Location

The applicant shall mutually verify the location of public water supply intakes with all water supply managers who:

- source their public water supply from within the operational area; or
- source their public water supply within 3km of the operational area where the water source is a surface waterway that flows through or rises within the operational area.

A GPS waypoint file of water supply intakes shall be recorded and made available to Population Health of Waikato District Health Board on request.

29. N/A

“It was not a requirement from the Waikato District Health Board for us to walk all streams to find unregistered water intakes to undertake mitigation as part of the southern Coromandel pest control operation”

Correspondence - DoC 2015

1080 poison coverups - farmers speak out

Dear Mr and [REDACTED]

Settlement of Damages Claim

This is to confirm that the sum of [REDACTED] has today been deposited in your bank account (no. [REDACTED]) as full and final settlement of your claim for damages against the Council as agreed in mediation on 1 May 1997.

May I remind you of our agreement to maintain strict confidentiality about this matter.

I trust this is satisfactory.

1:34 / 6:06



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27 February, 2018

Kathy White
Councilor, Taupo-Rotorua General Consistency
Chair, Environmental and Services Performance Committee
Waikato Regional Council

Re: email

Dear Kathy,

Kochmans poisoning case

I have listened to the TV interview with the poisoned family and considered the symptoms they and their doctors describe following consumption of possibly contaminated wild pig.

The symptoms described in summary are:

Shaking, vomiting, shivering arms and legs, fever, confusion, agitation, eyes rolling upwards, erratic limb movement, N/ing.

The symptoms of 1080 (fluoroacetate) poisoning are:

nausea, vomiting, abdominal pain, sweating, confusion, agitation,

and the symptoms of botulinum toxin (BT) poisoning are:

difficulty swallowing, difficulty speaking, dry mouth, facial weakness, drooping eyelids, trouble breathing, nausea, paralysis.

These two sets of symptoms are consistent with the mechanisms of toxicity of 1080 and BT toxin respectively. BT toxin inhibits neurotransmission by preventing the release of a key neurotransmitter (acetylcholine) from the pre-synaptic terminal. This means that nervous impulses cannot be transmitted to muscles and other sites that utilize cholinergic transmission (e.g. salivary glands). Paralysis, dry mouth, difficulty speaking, drooping eyelids, facial weakness, breathing difficulties, etc. are all consistent with neurotransmission failure.

On the other hand, 1080 works by blocking a key biochemical pathway (Krebs' Cycle) due to the lethal synthesis of fluoroacetate in the body. Fluoroacetate inhibits a key enzyme in Krebs' Cycle. The result is severely perturbed cell function consistent with sweating, confusion, agitation, nausea, etc.

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Cont'd

In my opinion, the affected members of the family's symptoms are consistent with 1080 and not BT poisoning. Interestingly, it appears that the initial (albeit tentative) diagnosis was indeed 1080 poisoning, why this was dismissed in favour of BT poisoning is very difficult to understand when the symptoms are considered and the later negative BT tests are taken into account.

If the 1080 poisoning hypothesis had been followed, early collection of urine for fluoroacetate analysis might have significantly assisted the diagnosis. In this case urine samples appear to have been stored some time (I think 10-days) prior to analysis giving a negative result that might be a false negative. Fluoroacetate is chemically quite stable and stable at elevated temperatures (below 200°C - its boiling point, but is very susceptible to bacterial breakdown (over its short environmental half-life), and so if the urine sample was contaminated with bacteria (which is possible) I would expect there to be significant loss of any fluoroacetate present in the urine during its long storage period.

In addition, early (for the bacterial contamination reasons outlined above) sampling and analysis of the food prepared from the pig, followed by fluoroacetate analysis might have provided useful exposure data.

In summary, I find the investigative strategy for this case somewhat awry. The symptoms point to 1080 poisoning not BT poisoning, but the investigation seemed to blindly follow the BT route. I base this conclusion on limited information and no access to the full clinical notes and analytical results.

Good wishes.

Yours sincerely,

Ian C. Shaw FRSC, FRCPath
Professor of Toxicology

PowerPoint Slide Show - [Name Here presentation] - PowerPoint

Department of Conservation Tackles Rats ...

- QUOTE -

"The interaction between pest species is poorly understood. For example, rodent numbers sometimes increase following possum control operations, which may lead to an increase in stoat populations and a consequent decrease (through predation) of some bird populations...

G. Nugent et al., Kararehe Kino Vertebrate Pest Research, 2008

2:55 / 6:24

8:52 pm, 25/01/2018

Department of Conservation Tackles Rats ...

- QUOTE -

"Intermittent control of possums and ship rats may have the nett effect of increasing ship rats for most of the time."

J. Innes et al., NZ J Ecology 2010

1:49 / 6:24

8:52 pm, 25/06/2018

A screenshot of a PowerPoint presentation slide. The slide has a black background with a large red oval in the center containing white text. The text is a quote from J. Innes et al. (2010) in the New Zealand Journal of Ecology. The quote states that intermittent control of possums and ship rats may have the net effect of increasing ship rats for most of the time. The slide is part of a presentation titled 'Department of Conservation Tackles Rats ...'. The video player interface at the bottom shows the slide is at 1:49 of a 6:24 minute video. The system tray at the bottom right shows the date and time as 8:52 pm on 25/06/2018.

Department of Conservation Tackles Rats ...

- QUOTE -

"Now, 18 months after the initial 1080 operation, possum numbers remain low but rat numbers have increased to higher levels than prior to baiting and compared with sites that weren't poisoned."

G. Nugent et al.,
Kararehe Kino Vertebrate Pest Research, 2008

3:37 / 6:24

8:52 pm, 25/06/2018

A screenshot of a PowerPoint presentation slide, similar to the one above. It features a black background with a large red oval containing white text. The text is a quote from G. Nugent et al. (2008) in the Kararehe Kino Vertebrate Pest Research. The quote reports that 18 months after an initial 1080 operation, possum numbers remained low, but rat numbers increased to higher levels than before baiting and compared to non-poisoned sites. The slide title is 'Department of Conservation Tackles Rats ...'. The video player interface shows the slide is at 3:37 of a 6:24 minute video. The system tray at the bottom right shows the date and time as 8:52 pm on 25/06/2018.