

Qualifications and Experience.

- Graduated Summa Cum Laude with double major (BA's) in mathematics and chemistry (Honours).
- Did graduate work up to a PhD dissertation at the California Institute of Technology in mathematics (Infinite Abelian P-groups)
- **MA** California Institute of Technology (mathematics).
- Pre-med undergraduate courses included: **genetics, ecology, comparative anatomy and mammalogy**. Spent six months as a **field research assistant** studying mouse populations in Utah.
- During medical school, consulted with several departments on mathematical problems related to their biological research.
- As senior medical student, set up and ran a cell culture laboratory for the Chairman of Medicine.
- Graduated from medical school with an MD with the Dean's Award, second in a class of 100.
- **Board certification** in Internal Medicine (1978) and in Rheumatology (1980).
- Took a two year Robert Wood Johnson Foundation Clinical Scholarship, specialized in statistical inference and study design in complex systems. Wrote several papers on that subject during that period.
- **Associate Professor UCSF** with dual appointments in Medicine and Medical Information Science
- **Vice President of Development at Iameter**, a company specializing in cost of healthcare predictive statistical algorithms.
- **Authored over 35 scientific papers**, many focused on the issue of research design in complex systems and statistical inference.
- Regularly consult at John Hopkins University Medical School and UCSF on research design in complex systems.
- Fellow of the American College of Medical Informatics.
- In 2008, spent 8 months studying the aerial 1080 scientific literature and its implications.
- Ongoing work since 2002 on the design and analysis of medical and clinical experiments and a co-author on papers on this topic.
- Full time resident of NZ for 14 years and a citizen since 2002.

I have read the High Court Rules, Schedule 4 containing the code of conduct for expert witnesses and I agree to comply with it.

Monofluoroacetate (know as Compound 1080)

Monofluoroacetate was originally developed and marketed as an insecticide. It functions primarily by interfering with the citrate step in the Krebs cycle [5]. The Krebs cycle is the major and an essential mechanism by which all air breathing creatures utilize food to produce energy. It is therefore universally toxic to all animals, essentially every living thing except plants and some micro-organisms. The degree of toxicity of 1080 is extreme, but varies somewhat among species. It is categorised by the World Health Organization (WHO) as 1A,

their highest rating, "extremely toxic" [1,2]. The PAN pesticide database classifies 1080 as one of the few "PAN Bad Actor Chemicals", by which it means "highly acutely toxic" [2]. It can kill every air-breathing animal. One hundred milligrams is sufficient to kill an adult human [1]. In theory, one could kill at least 20 million people with the amount being dropped into New Zealand Forests every year.

New Zealand uses approximately 90% of the world's supply of monofluoroacetate. It is banned in most countries in the world and severely restricted in every country except New Zealand [3]. The only other country using significant amounts is Australia which uses a small amount in pest control, but in Australia it is "severely restricted" [4]. It was used as an insecticide in the United Kingdom for a short time in the 1950's, but was quickly banned outright because it kills over too broad a spectrum. As noted, because 1080 poisons through interfering with such a fundamental metabolic pathway as the Krebs cycle, 1080 kills everything that eats enough of it.

Eisler [5] in a definitive review article written in 1995 documented the banning of 1080 in the United States in terms virtually identical to those in which many are questioning New Zealand's use today.

"The use of 1080 as a rodenticide was disallowed in 1985 for three reasons; (1) lack of emergency treatment, namely a viable medical antidote; (2) high acute toxicity to non-target mammals and birds; and (3) a significant reduction in populations of non-target organisms and fatalities to endangered species (EPA 1985)."

However, it must be emphasized that the compound monofluoroacetate by itself is not the problem. It is quite similar in its universality to sodium or potassium cyanide, except that it kills slower and there is no antidote. The problem is with the way NZ is using it, i.e., placing toxic amounts into high quality food and dropping it indiscriminately into forest ecosystems. The same problems and objections to the Department of Conservation's (DoC) practice would exist if they were using cyanide or any other broad spectrum poison*.

The Use of aerial 1080 as a Pest Management Tool.

There are two major reasons given for the use of mass poisoning from the air in New Zealand:

- To control bovine tuberculosis (TB) among domestic livestock, mainly cattle, and
- To prevent feral possums and rats from preying upon native birds and thus to encourage biodiversity.

Controlling Bovine TB

Although there has never been a controlled experiment that demonstrated that possums function as a vector, or that has shown the degree to which they may do, there is considerable circumstantial evidence to the effect that controlling possum populations in the forest pasture margin is associated with lower infection rates in cattle herds [6,7,8]. There is good[†] evidence that there is no additional benefit gain by controlling possums in the deep forest beyond 3 to 7 km from the pasture margin since such control has an insignificant effect on infection rates among cattle [9].

* However, in my opinion, it is doubtful that mass aerial distribution of cyanide would be politically possible, even in New Zealand. It is the obscurity of 1080 that enables DoC to mass poison with it.

[†] . . . at least better than the evidence to the contrary.

To accomplish this level of population control in the forest pasture margin, there are several clear, probably cheaper alternatives to the highly risky, indeed certainly damaging, practice of aerial 1080.

Alternatives

DoC/AHB denies there are alternatives and resists considering them.

DoC/AHB denies that there are alternatives to aerial 1080. Their spokespersons often flatly claim that there are no alternatives [10, 11]. DoC and AHB often assert without serious consideration or trials that there are no economically viable effective alternatives [12].

In fact, there are at least two general categories of obvious alternatives: 1) Ground-based hunting, trapping and baiting by contract without byproduct recovery, and 2) government encouraged development of possum fur and meat industries, which could be cash and foreign exchange positive and still provide effect possum control.

Ground-based bait stations (with 1080 or another poison) are clearly possible [13, 14]. Ground-based alternatives have the enormous advantage of not subjecting native vertebrate and invertebrate species, domestic animals, humans and indeed whole forest ecosystems to exposure to a universally toxic poison. The well-documented damage to native species, both primary and secondary, as well as unintended consequences, both known and unknown are obviated. There is little or no risk to humans.

Ground-based methods can be equally effective [20], so the question is why have DoC and AHB been so persistent in pursuing aerial 1080? Two explanations are given. The first proffered by DoC/AHB is that ground-based techniques are more costly (see below for an analysis of that claim). The second is offered by people and organizations opposed to aerial 1080: money. A substantial chunk of DoC's and AHB's budgets are supplied by parliament out of public coffers and dedicated to "pest" control, at least \$70 million[‡] in DoC's case. These are enormous bureaucratic incentives as was pointed out by one Rand Corporation study on bureaucratic behavior done for the United States Defense Department [15]:

"While agreeing that bureaucrats hold a variety of personal goals, each of these goals is attainable through increasing the agency's discretionary budget. Thus, it is in the bureaucrat's self-interest to work toward budget maximization. It is assumed that by doing so the bureaucrat will be able to attain a variety of subsidiary goals, such as increasing salary, perquisites, reputation, power, patronage, productivity, convenience, and ease of management."

The budgetary boost provided by massive pest control operations may be creating a perverse bureaucratic incentive to those organizations to continue the practice. The DoC web site actually notes [16] the effect of the first \$50 million appropriated by parliament in 1993:

"Field centres around the country joined the lolly scramble to inject more cash into their programmes."

[‡]I have not been able to determine the exact number, but \$70 million is almost certainly a minimum figure, especially if one were to include the propaganda, legal and administrative costs.

Evidence that DoC/AHB discourages consideration of alternatives to aerial 1080

There is considerable evidence that DoC and AHB have actively discouraged consideration of alternatives. For example, the minutes Doc AHB Steering Committee (DASC) [17] created in preparation for the ERMA 1080 reassessment clearly document a conscious decision to avoid reference to alternatives in the renewal application. Much time was spent in these meetings discussing how not to deal with alternative approaches in the futures without 1080 scenario [18]. DoC and AHB representatives agreed to delete references to possible alternatives as documented in their reassessment pre-application meetings since they did not want to " ... give the impression that there is currently a potential alternative out there that could be used in the near future"[17]. It is evident in this discussion that the only alternative the DoC/AHB committee members were willing to consider was another mass poisoning regime possibly with another poison, but otherwise substantially unchanged from aerial 1080.

The cost of ground-based versus aerial methods

The reason invariably offered by DoC/AHB for using aerial 1080 is that it is cheaper. The whole rationalization for aerial 1080 rests on this premise and despite hundreds of millions of taxpayer dollars being spent in the last 15 years on aerial 1080 operations, there is no documented and detailed accounting of the cost per hectare of distributing aerial 1080 from any department of the NZ government, much less versus ground-based alternatives. The ERMA application did not give an estimated cost per hectare much less a comparison with ground-based methods. Several attempts using OIA and ombudsman have thus far failed to induce DoC to produce a comprehensive account [19].

The only comparative study (not done by an institution having obvious bias) of aerial versus ground-based control was by DoC [20] in 1995 prior to its first \$50 million grant from parliament for pest control. In this study, the types of terrain varied from forest pasture margin to deep forest. The results are startling. The average cost per hectare for aerial 1080 control was \$22.86, whereas for ground-base control was \$9.94/ha, in 1993 dollars, more than double. The kill rates were comparable.

The DASC minutes of 20 July 2006 give insight into the DoC/AHB lack of precision in this regard [21]. The original proposal made a claim of \$14/ha. The minutes note that this is inconsistent with other estimates of between \$26-\$35/ha and they ultimately decided not to include any estimate of cost for aerial 1080 in the ERMA application.

The actual cost of the Hokonui drop in 2004, was obtained by Shirley Hudson [22] on an OIA request from Senior Biosecurity Officer Mark Hunter [23] and AHB Communications Manager, Nick Hancox [24]. The reported cost per hectare as calculated by Hudson was \$56.40/ha. However, that estimate did not include staffing, overseeing personnel, spare helicopter, diggers to upgrade road, graders to prepare site, freight, security contracts, insurance for public liability, resource consent, administration, consultation, shifting of stock if necessary, compensation for losses, litigation costs, and other costs associated with managing such operations. These costs of course would add greatly to the \$56.40/ha helicopter plus bait cost. A firm quotation by hunters and trappers to do the pest control in the area covered by the Hokonui drop for \$16/ha was ignored by Environment Southland and AHB, i.e., neither organization responded to the offer [22].

The only recent systematic comparison was undertaken by Epro, the organization with contracts to distribute aerial 1080 for AHB and Waikato Regional Council. Epro clearly has

a financial incentive to under estimate the cost the aerial 1080. This study found that the cost per hectare for "contractors" choice (either cyanide bait stations, trapping and/or dog) was \$36.77 [25].

Summary of Aerial 1080 Versus Ground-based Cost

| Source | Reference | Aerial 1080 Cost/Ground-based Cost (%) * |
|-------------------------------------|------------|--|
| DoC (1995) | 20 | 220 ** |
| DASC minutes pre-application (2005) | 21 | 40 * |
| DASC minutes, concern (2005) | 21 | 83 * |
| OIA Hokonui (2004) | 22, 23, 24 | 150-180 * |
| Speedy (2003) | 25 | 75 * |

Notes:

* The ground-based value for cost was Speedy's Epro-financed study [25].

** Otherwise, the ground-based value (i.e., the denominator) comes from the Reference column.

From this table it is apparent that the DoC/AHB claim that aerial 1080 is cheaper is dubious at best, and maybe totally false.

The cash positive alternative: develop the possum fur and meat industry.

Other approaches have not been systematically tried, such as government-managed and controlled trapping and the development of fur and meat industries both of which involve essentially zero environmental, avoid the certain collateral ecological damage of aerial 1080 [26] (see below), and could be cash positive [14, 27] rather than costing the New Zealand government over \$70,000,000 per year that is currently being expended on aerial operations.

What is the dollar value of the potential industry?[]

Only recently have alternative approaches begun to be tested systematically [28].

Biodiversity

There is no credible scientific evidence that mass poisoning the forest ecosystems with aerial 1080 is of net benefit to so much as one native species [29, 40, 30]. Even less so is there evidence that there is a net ecosystem benefit [31]; no ecosystem-level, multi-species, controlled study has ever been done [30]. The positive effects claimed by DoC for New Zealand's biodiversity simply have not been demonstrated. The claims are based almost entirely on internally generated anecdotes [29] and poorly designed research [32,33] that often fails to demonstrate what DoC claims it shows [30, 34].

On the other hand, there is considerable evidence that some native species are harmed by the indiscriminate distribution food laced with a universal toxin into our native forest

ecosystems. The evidence shows that it is exactly as one would expect given the nature of the practice: ground-feeding birds and invertebrates have access to this enticing food and are killed in large numbers [5, 35, 36]. There is no doubt about this since the evidence comes almost entirely from DoC which has consistently been reluctant to admit that the problem of "collateral" damage exists [34].

In short, exposing humans and whole segments of the forest to systematic poisoning is globally traumatic to their ecosystems, is risky, is not necessary to protect biodiversity and is unnecessarily costly.

Dangers with Aerial Applications of 1080

Unprecedented Practice

The main danger associated with aerial applications of 1080 devolves from the fact that the substance has a wide killing spectrum and extreme lethality. For this reason, nearly every other country in the world has banned 1080, does not use it all or has severely limited its use []. No other country is or ever has carried out an aerial campaign of mass poisoning such as has been carried out in New Zealand. This started in the mid-1950s but significantly intensify since the mid-1990s after Parliament provided \$50 million for pest control. What New Zealand is doing is unique and unprecedented. This is despite the fact that several other places have similar problems with feral pests, e.g., most Pacific Islands, including the US state of Hawaii [37, 38].

Australia is the only other country to use aerial application of 1080, approximately 200 kg/year versus New Zealand's approximately 5,000 kg/year, and even then in exceptional circumstances only and in remote outback areas using pest-targeted baits. Even Australia does not repeatedly poison the same areas every three years as DoC and AHB do.

Evidence of Harm

DoC's contention that one can lace food with tonnes of a universal poison, drop it indiscriminately wholesale into forest ecosystems and negatively affect only two feral target species is scientifically and ecologically implausible. It would require the highest quality of scientific evidence to support such a claim, which certainly does not exist. It is simply impossible to confine an aerial application of 1080 in such a way as to avoid loss of native species beyond the targeted possum in any area that is subjected to a 1080 drop. I liken it to bombing a city to get rid of the criminals.

Most of the source research is DoC- or AHB-funded and hence NZ-based. This is true because no other government in the world believes in, or practises, New Zealand-style mass poisoning of forests [39]. Thus, they neither use nor study 1080, much less put 1080 into food and drop it wholesale into forest ecosystems. Because both organizations are strong advocates of aerial 1080, they tend to understate and often deny outright the harm actually being done, for example, when 7 out of 17 kea on Fox Glacier died of 1080 poisoning following an aerial drop it was only disclosed to the public when a whistleblower leaked the facts to a newspaper [45].

Some of the evidence of harm is in the form of video recording by private citizens of 1080 drops and their sequelae. Although these observations are not controlled and cannot be subjected to statistical analysis, they represent valid snapshots of what can happen and is happening [40].

Notwithstanding this, there is overwhelming published scientific evidence of harm to many native species including: Robins [41, 42, 43], Wekas [44], Keas [45], Tomtits [41, 46], Fernbirds [47], Moreporks [41, 47, 48] and others.

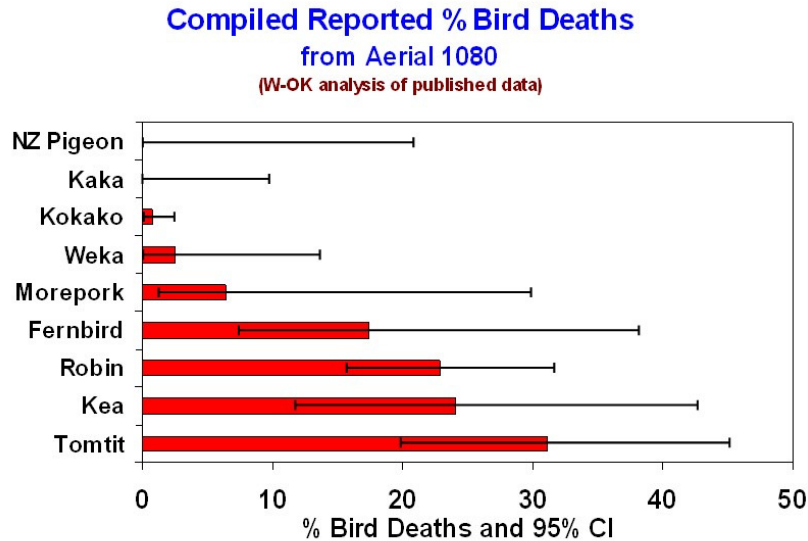


Figure 1. Compiled Reported % Bird Deaths from Aerial 1080 (with Confidence Intervals)

To call this a "risk" is to greatly diminish the extent of the danger. It is not a risk; it is a known certainty that is well documented in DoC's own publications, such as by Veltman in 2010 [48]. Occasionally even DoC admits that effects on populations are not known [49].

To compound the direct killing of native birds there is strong evidence of unanticipated negative effects and other collateral damage, such as,

- secondary poisoning of predators species such as the Morepork, New Zealand's only native owl [22],
- mustelids switching their food to native birds when their usual prey of rats is killed by 1080 drops [50],
- a three-fold increase in rat populations 24 months after a 1080 drop [51], and
- as much as 50% mortality among native invertebrates [52].

None of this is surprising. These are exactly the kinds of effects that ecological science predicts will certainly occur when an ecosystem is presented with the kind of global disruption that DoC's use of aerial 1080 represents. In fact, it is nothing short of ecological insanity.

The 2007 ERMA assessment

In 2007, ERMA did re-assess the continued use of the aerial application of 1080. I, along with many others sent submissions to the review committee, but I believe the process was flawed as follows:

1. Only one biological scientist, Richard Sadleir, sat on the committee but he withdrew following objections that he had a conflict of interest due to his previous position as

Director of Science and Research at DOC between 1987 and 1995 when the policy of widespread use of aerial 1080 was developed. Notwithstanding his resignation from the committee, he continued to act in an advisory role to it. He was not replaced on the committee by any biological scientist. Thus, the review process in no way could scientifically validate the safety of the use of aerial 1080 in New Zealand, especially with regard to the potential negative effects on native species.

2. The chief executive officer of ERMA, Rob Forlong, is an ex-DoC employee.
3. ERMA staff actually attended at least one of the DoC/AHB 1080 (Reassessment) Steering Group/Project Meetings with the applicants on 14 March 2002, thus raising questions of ERMA's independence and of collusion between the applicants and ERMA [53].
4. ERMA's decision to approve the continued use of aerial 1080 was actually made and published prior to the public hearings on the issue.
5. ERMA's decision emphasized the risk of acute poisoning to humans, failed to acknowledge the evidence of damage to native species, and largely ignored testimony regarding almost risk-free alternatives.

Human Health

The approval of the Medical Officer of Health for the use of aerial 1080 is based on the risk of acute intoxication of humans and is dependent on the assumption that strict safety procedures will always be followed. They often are not [40]. There are numerous cases of 1080 being dropped out of the intended area, of livestock and pets being killed, food contaminated, and similar events [40, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64][§]. There is no official government accounting or compilation of all such accidents and incidents. Indeed, there is even evidence that there have sometimes been efforts to suppress public knowledge [40, 45]. People have occasionally been asked to misrepresent the reasons for damage payments [40, 65].

One particularly flagrant violation of mandated procedures was documented following a drop in 2006 at Kaingaroa forest where 1080 laced carrot baits were dumped and buried at the statement launch site. Puddles of green standing water were clearly visible in photos and adjacent carrot baits in the soil could be seen.

[§] The preceding list of citations are from a variety of sources, such as newspaper articles, television news reports, individual observations, government officials obtained under OIA requests, etc. They have been vetted for accuracy, but do not constitute a formal investigation. There has never been an official compilation or reporting of these numerous incidents.



It was photographed, sited on maps and reported to the regional council Environment Waiakato(EW) in November 2006. When EW responded in Jan 2007, they acknowledged that bait bags had been left on the ground and that carrot residue had been buried with carrot residue apparent on the surface around the site. No testing for any residue was undertaken. [66, 67, 68]

DoC and AHB acknowledge that small amounts of 1080 gets into the water. Additionally toxic amounts are resident in carcasses for months after a drop [40, 60, 69]. This is true because 1080-poisoned carcasses kill the insect and other invertebrate populations that would ordinarily be major contributors to carcass breakdown. The net effect is much slower breakdown by bacteria only.

We do not know with any certainty the effects of chronic and sublethal doses of 1080 on human health, fertility, endocrine function and teratogenicity, but there is evidence of interference with endocrine function and fertility in animal models [70, 71] . It simply has not been studied, not by New Zealand and not by any other country because no other country uses significant amounts of the 1080, much less exposes whole populations to it. So we are left with huge gaps in our knowledge of its potential harm, but experience with other programs of mass poisoning of environments (such as the US Army's use of dioxin in Vietnam [72, 73, 74] or the mass use of DDT to control malaria [75]) strongly suggests that evidence of such harm from aerial 1080 would emerge if it were looked for.

Of course the risk remains for children to pick up pellets in and around drop areas and eat them. There is no antidote. Thus, for example, assuming a bait concentration of 1.5 gm of 1080 per kilogram of bait (which is typical), should a 20kg child ingest as few as four pellets [5], it would mean agonizing death or severe pain convulsions and possible neurological damage. The failure to remove the carcasses of dead animals killed by 1080 in aerial drops [40] also remains as a significant and concerning public health issue in relation to aerial applications of 1080.

Economic dangers

Because the DoC/AHB policy is so extraordinary, it is likely that if the outside world ever becomes aware of what we are doing it will react very negatively Dropping enough poison into our forest ecosystems every year to kill 20 million people is inconsistent with our "100% Pure" labeling and will probably to seem like outright deception to many foreigners which

could have significant negative effects on our tourism business [76, 77]. The New Zealand prime minister was taken to task in a BBC interview [78] for inconsistency with the "100% pure" claim for the relatively minor offense of having excessive agricultural runoff in some rivers. One can only imagine what would have happened if the interviewer had been aware of DoC's the aerial 1080 program.

If 1080 is ever found in our export food products as it easily could [79, 80] be, given its use right up to and sometimes into pastures, we would almost certainly face considerable damage to our meat export business [40]. I know of at least one publically documented instance of milk contamination with 1080. In June 1998, Kiwi Dairies was alerted of possible milk contamination after milk from nine dairy cows that had subsequently died from 1080 poisoning had been processed into milk powder [81].

Instances of dead stock animals occur frequently. One case occurred in 1995 and resulted in the death of 252 sheep plus a number of stillborn lambs that were discovered a month later at lambing time. Authorities attempted to confiscate the evidence, and barring that, finally compensated the farmers under conditions of confidentiality. The stock deaths and a report of compensation were publically documented in the Southland Times. [82]

Conclusion

It is important to realize that any one of the above mentioned major points is sufficient. Whether it be the inherent ecological implausibility of DoC's claims, the unprecedented nature of DoC/AHB aerial 1080 practice, the lack of evidence of benefit to native species, the overwhelming evidence of harm to some native species, or the existence of clear alternatives to aerial 1080. Any one of these in a rational world would be quite sufficient to stop DoC/AHB's aerial 1080 program, at least until its relative benefit had been scientifically established by scientists who were not financially dependent on DoC or AHB. Any one should do, it does not require that they all be correct or that even a majority ... just one being true should carry the day.

Summary

Thus, it is my view that the scientific and other evidence supports the following conclusions regarding New Zealand's use of aerial monofluoroacetate to control feral species:

- Monofluoroacetate (1080) is a metabolic poison that is extremely toxic to all air-breathing organisms
- New Zealand is virtually the world's only consumer of 1080, in most other countries 1080 is banned outright or severely restricted because of its lethality and its indiscriminate killing power, or it is simply not used.
- 1080 is not the problem as such; putting large amounts of 1080 into attractive food and distributing it indiscriminately into forest ecosystems where it can be, and often is, eaten by many forest dwelling organisms is the problem.
- Possums may be vectors of bovine TB, but aerial 1080 and its attendant risks and collateral damage are not necessary to achieve protection from possum vectored TB, which has been shown to be most effective and only necessary in the forest pasture margin.
- Clear alternative methods of pest control are available, are used successfully in other countries, are cost effective or possibly cost saving, and are showing great early promise in New Zealand.
- Aerial 1080 is costly, possibly more costly than ground-based alternatives. NZ is spending through Doc and AHB at least \$50 million per year on aerial 1080

operations, which may be providing a perverse bureaucratic incentive to those organizations to continue the practice.

- There is no credible scientific evidence that mass poisoning the forest ecosystems with aerial 1080 is of net benefit to so much as one native species.
- New Zealand's use of aerial 1080 is completely unprecedented. No other country is or ever has carried out an aerial campaign of mass poisoning such as that being carried out in New Zealand.
- There is overwhelming evidence of harm to some native species from aerial 1080 operations, and there is considerable evidence of ecological disruption, as one would expect given the indiscriminate nature of the aerial 1080 programme.
- There is no credible evidence of countervailing net ecosystem benefit. Neither DoC nor AHB has ever undertaken a study that would provide the kind of hard experimental evidence that there is net native biodiversity benefit from their mass poisoning program with aerial 1080.
- The ERMA evidence reassessment in 2007 was flawed because of committee composition, executive control by potentially biased ex-DoC employees, prejudgement, and failure to acknowledge or hear countervailing evidence.
- In the absence of accidents, a significant threat to human health is unlikely. In this regard DoC is correct. However, accidents, and mishaps are common. There are numerous reasonably well documented cases of 1080 being dropped out of the intended area, of livestock and pets being killed, food contaminated, and similar events.
- It is also possible that a child could ingest the 1080 laced bait pellets that are being distributed close to populated areas and become lethally intoxicated.
- In addition, there is a huge gap in our knowledge of the chronic and sublethal effects of exposure to the concentrations of 1080 that appear in effluent runoff after 1080 drops and to which hundreds of thousands of people are now being exposed. Historical precedent would indicate that when such effects are possible in cases of mass exposure to toxins they eventually appear if they are looked for. In this case, there has been almost no published effort to find such effects.
- Finally, there are several potential risks to the New Zealand economy, not documented and not yet realized, but nonetheless potential. There is considerable opinion that important damage could be done to NZ tourism and its brand name "100% Pure" labelling if DoC's 15-year long mass poisoning campaign with 1080 were widely known outside New Zealand.
- In addition, if 1080 were even found in exported food products, as it has been occasionally internally, in milk, beef, cheese and other food products, it could have important impact on our ability to export these products.

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