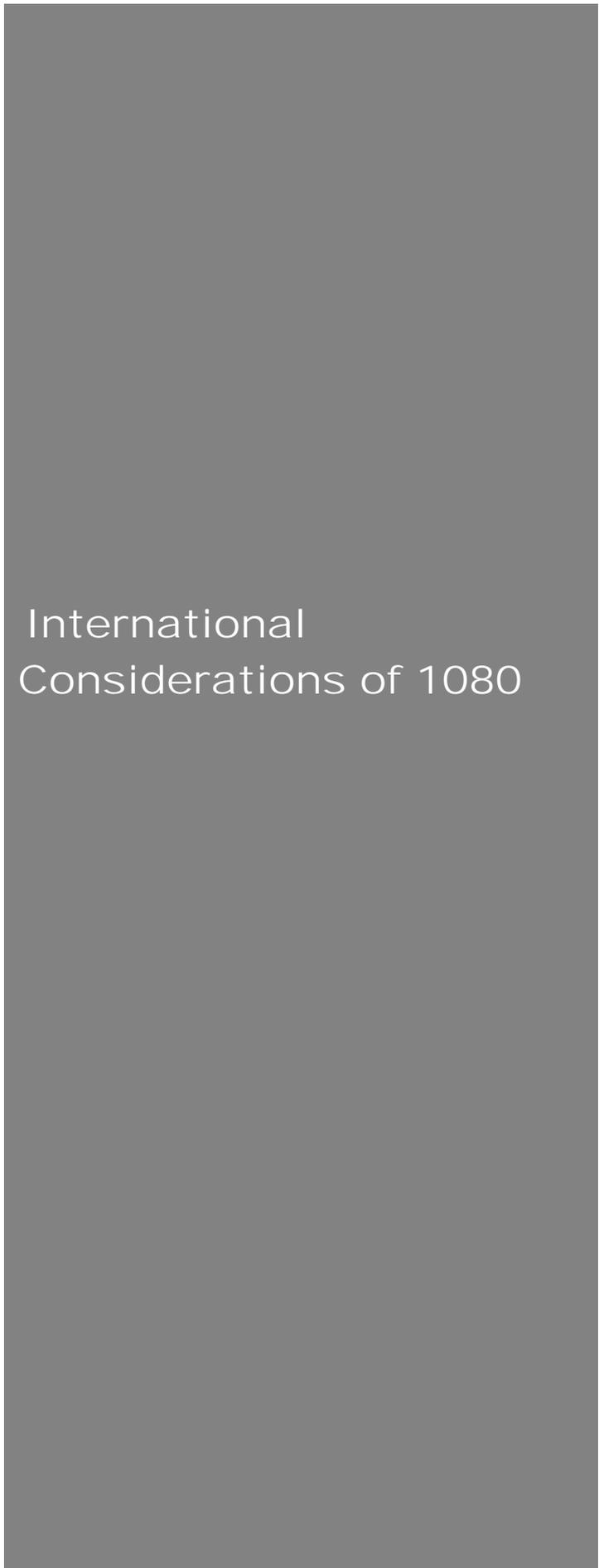


Section 5 International
Considerations of 1080



This section outlines the use and regulatory status of 1080 in countries other than New Zealand. It was prepared by Landcare Research, Lincoln, for this application.

1. Summary of Findings

- 1080 is a restricted-use pesticide with tight controls on its use internationally.
- The most extensive use of 1080 occurs in New Zealand, which uses approximately 80% of the world's production of manufactured 1080 – around 2300 kg per year. In New Zealand 1080 is used for the control of introduced pest animals (eg. brushtail possums) for the protection of biodiversity and agricultural production values.
- Outside of New Zealand, 1080 is registered for use in Australia, Israel, the United States, South Africa, and, pending the outcome of reviews, in Canada.
- Additionally, 1080 is probably used in a number of other countries, including Mexico, but definite confirmation has proved difficult.
- After New Zealand, Australia is the next biggest user of 1080, with 200 kg estimated to be used annually. Rabbits and wild dogs are the primary pests being controlled.
- The specific nature of the controls surrounding 1080 use is largely driven by the application of 1080. In Canada, the United States, and South Africa, 1080 is primarily used in livestock protection collars for predator control (e.g. wolves, jackals, coyotes) in an agricultural production context.
- In Israel 1080 is used as a rodenticide, and for control of both predators and browsing animals for the protection of biodiversity and agricultural values. In Australia 1080 primarily targets introduced pests (eg. foxes, rabbits).

2. Objective and Methods

A literature and Internet search was undertaken to seek information on the registered or other use of the poison 1080 throughout the world. In addition, representatives from some international agencies were also contacted to confirm the regulatory status and use of 1080 in specific countries.

3. International Regulatory Status of 1080

The confirmed current regulatory status of 1080 internationally is summarised in Table 1.

Table 1 | Known regulatory status of 1080 internationally

Registered for use	Not registered for use ¹	Banned ²	
Australia ³ Canada ³ Israel ⁴ South Africa USA	Africa	Laos Thailand Slovenia Belize Cuba	
	Burkina Faso Cameroon Cape Verde Chad The Gambia		Madagascar Niger Tanzania Uganda
	Asia and the Pacific region		
	India ⁵		Philippines
	Europe and Central Asia		
	Denmark Finland Germany Hungary		The Netherlands ⁶ Portugal United Kingdom
<p>¹ Information sourced from Orme & Kegley (2004) unless otherwise noted. ² Sourced from Orme & Kegley (2004), confirmed by sourcing original reference documents (Prior Informed Consent Circulars X, XI (1999, 2000) United Nations Environment Program). ³ Registration currently under review, see Section 4. ⁴ Dr Shmuel Moran, Min. Agric. and Rural Development, Plant Protection and Inspection Services, Israel. ⁵ Not listed as registered for use according to the website of the Pesticides Manufacturers & Formulators Association of India (http://www.pmfai.org/statsdec03.htm), accessed 25 September 2004. No response was received from the association to confirm this status. ⁶ Not registered for use (B. Jansen, College voor de toelating van bestrijdingsmiddelen (CTB, Board for the Authorisation of Pesticides), Wageningen, email correspondence 23 September 2004).</p>			

More information on the current applications of 1080 as a vertebrate pesticide in the five countries where it is registered for use is provided in Section 4. Countries for which informal or anecdotal information provided some indication of the regulatory status of 1080 are discussed in Section 5. For all other countries, the regulatory status of 1080 is unknown.

4. Current Registered Applications of 1080

4.1 Australia

Regulatory status

The supply and use of 1080 in Australia is regulated by a combination of Commonwealth and state legislation. The Australian Pesticides and Veterinary Medicines Authority (APVMA, previously known as the National Registration Authority for Agricultural and Veterinary Medicines – NRA) regulates 1080 up to and at the point of retail sale. Once sold, or supplied to an end-user, it comes under regulation of individual state legislation, which may take the form of legislative initiatives, codes of practice manuals, or standard operating procedures.

The APVMA released a preliminary review of products containing 1080 and their labelling (APVMA 2005 a, b). The APVMA review concluded that the use of 1080 in Australia did not give rise to widespread or serious impacts on non-target fauna, and that bait placement, including laying baits in the right place at the right time, was essential for avoiding non-target impacts. Recommendations from the review largely centre on the provision of information to facilitate the safe use of 1080 products, and a regulatory framework for product supply and use was proposed (Table 2). This framework was based on consideration that all currently registered products fall into one of the three formulation categories, and that registration of short-life baits was often impractical.

Table 2| **Proposed regulatory framework for 1080 product supply and use instructions**

Product	Regulatory status	Information to user
Aqueous solution	Registered	Label instructions on how to use concentrate in bait medium
Shelf-stable baits	Registered	Label instructions on how to lay baits. Labels can include leaflet to State Code of Practice
Short-life baits	Permits	Supply of leaflets on how to lay bait and adherence to State Code of Practice is a condition of the permit
Source: APVMA 2005a.		

Proposed variations to labelling provide for the inclusion of appropriate instructions including:

- Deletion of all use of general terminology, e.g. 'vermin' and 'vertebrate pest(s)', and replacement with specific target species
- Neighbour notification about imminent baiting
- Minimum distance requirements for bait placement
- Requirement of signage in baiting locations
- 1080 dose rates
- Bait materials and size
- Bait preparation
- Storage and transportation of baits.

In addition new registration conditions were proposed. These were:

- Registrant must make an approved 'Code of Practice for the Use of 1080' available on its website
- and as hard copies at the point of sale.
- A code of practice, other than that specified in the conditions of registration, must not be supplied or made available until the APVMA has been notified of any changes.

Applications and use patterns

At the time of the commencement of the Australian review 1080 was approved for the control of vermin, wild dogs/dingoes, agile wallabies, feral pigs, foxes, rabbits, feral cats and foxes (NRA 2002). 'Vermin' is not defined and appears to refer to any species that is viewed as a 'pest' in a given area. For example, 'vermin' known to be controlled using 1080 but which do not appear specifically on approved labels include dingoes, Bennett's wallabies, rufous wallabies, rats and brushtail possums. The pests for which 1080 products are registered for use, or used, in the different Australian states and territories are summarised in Table 3. The pests for which 1080 is likely to be registered for use as a result of the review are rabbits, wallabies, possums, foxes and wild dogs.

Table 3 | Vertebrate pests for which 1080 is registered for use in Australia, or that are known to be controlled using 1080

State	Pests for which 1080 is registered for use	Pests known to be controlled using 1080 ¹
Australian Capital Territory	vermin	foxes, rabbits
Queensland	wild dogs, foxes, vermin	rats, rabbits, feral pigs, dingoes
New South Wales	rabbits, wild dogs, foxes, vermin	feral pigs, dingoes
Northern Territory	foxes, vermin, rabbits	dingoes
South Australia	rabbits, dingoes, wild dogs, foxes, vermin	
Tasmania	rabbits, vermin ²	
Victoria	wild dogs, foxes, rabbits, feral pigs, agile wallabies, vermin	dingoes
Western Australia	rabbits, foxes, vermin. Experimentally has also been used for feral goats, feral pigs, feral cats ¹ , agile wallabies ¹ and sulphur-crested cockatoo	dingoes, wild dogs

Source: Compiled from Anon. (2002) and NRA (2002).
¹ Primarily used for Bennett's and rufous wallabies, and brushtail possums, with occasional use on feral cats.
² 'vermin' covers a wide range of pests, hence more information on what animals are controlled using 1080 is provided.

The total annual use of 1080 active ingredient in Australia is estimated to be 200 kg (APVMA 2005a). Across mainland Australia rabbit control is the predominant use of 1080, followed by wild dog control. In Tasmania 1080 is mainly used for control of native browsing

and grazing animals (primarily wallabies and brushtail possums) in forestry applications. However, all use of 1080 in Tasmania is being progressively phased out through a programme known as 'Tasmania *Together*', which establishes targets for the reduced use of 1080 in Tasmania, as an indicator for 'reduced reliance on chemical use by primary, secondary and tertiary industry, and the domestic sector' (Tasmania *Together* undated). Significant progress has been made in the reduced usage of 1080 and the target of the reduced use of 1080 of 7.6 kg by 2005 was reached 12 months early. Future use of 1080 in Tasmania may be required as part of the ongoing contingency programme to detect and eliminate red foxes (*Vulpes vulpes*), which may have been recently introduced to Tasmania (e.g. Mooney et al. 2005).

The 1080 products used in Australia are primarily baits of different types (e.g. carrots, oats, dried meat) for different pests, and aqueous solution to make the baits. A more detailed list of 1080 products and formulations registered for use is provided in APVMA (2005a). The application of 1080 products is regulated by state or territorial agencies. Some of the controls and documentation surrounding the use of 1080 in different states and territories include:

- Code of Practice for the use of 1080 for Browsing Animal Control (Department of Primary Industries, Water, and the Environment, Tasmania)
- Commercial Operator Licence, Certificate of Competency (Tasmania)
- Code of Practice for the Safe Use and Management of 1080 (Health Department of Western Australia)
- '1080 - characteristics and use' (Farmnote no. 28/2002. Departments of Agriculture, Conservation and Land Management and Health, Western Australia)
- Dingo control policy (Parks and Wildlife Commission, Northern Territory)
- 'Sodium fluoroacetate (1080)' (Pest series fact sheet, Department of Natural Resources, Mines and Energy, Queensland)
- Pesticide control (1080 foxbait) Order 2002 (Environmental Protection Agency, New South Wales)
- Pesticide control (1080 feral pig bait) Order 2002 (Environmental Protection Agency, New South Wales)

Additionally, a report to the Vertebrate Pests Committee (Anon. 2002) outlines the policies, practices and procedures in place with regards use of 1080 in Australia.

4.2 Canada

Regulatory status

In Canada, 1080 has a restricted-use status as an animal toxicant for vertebrate pest control. It is registered for use in the provinces of Alberta and Saskatchewan for coyote and wolf control. Sodium fluoroacetate has recently been approved for continued registration under the Pesticide Management Regulatory Authority (PMRA) re-evaluation programme (PMRA 2005). Proposed continuation of registration was based on consideration of the US EPA Re-evaluation Eligibility Decision on 1080 (US EPA 1995), and the Canadian use pattern (PMRA 2004). Continued registration is approved 'provided that the mitigation

measures specified in the PACR (Proposed Acceptability for Continuing Registration) are implemented'. However, the PACR (PMRA 2004) does not provide explicit mitigation measures other than that provided in a section describing the use of sodium fluoroacetate, and discussed below. Additional data requirements specified in the PACR are the registration of a technical source for each end-product; and specifying the requirement for additional data if expansion of current uses is sought (PMRA 2004).

Applications and use patterns

The 1080 is formulated as a solution in livestock collars or as tablets. Livestock collars are attached to goats and sheep and can only be transported and used by provincial government officials in Alberta. Tablets are placed in small drop baits (meat, viscera, chicken heads) and are used by trained personnel from the Alberta and Saskatchewan provincial governments. The landholder must approve its use and tablets must be used no closer than a distance of 400 m from a residence (except for that of the landholder) and 800 m from a town boundary. Warning signs must be posted at all normal entry points to the land where 1080 is used. Baits must be regularly inspected, at least every 7 days, and complete records for the use of the product must be maintained. Baits must be stored under lock and key. The baits must be removed within 15–90 days, depending on when predation is expected.

4.3 Israel

Regulatory status

In Israel 1080 is currently registered for use as 0.05% whole-wheat baits to control rodent species (Dr S. Moran, Ministry of Agriculture and Rural Development, Israel, pers. comm.). Restrictions on the use of 1080 for this purpose are specified on the label.

Applications and use patterns

The three rodent species controlled using 1080 baits are *Microtus socialis* (= *M. guentheri*), *Meriones tristrami*, and *Mus musculus*. Baits may be aerially applied, applied using a tractor-mounted spreader, or by hand. The aerial and tractor-mounted-spreader baiting rate is 2.5–3.0 kg/ha. For hand baiting the rate is 6–8, 10–12 and 4–5 grains for *Microtus socialis*, *Meriones tristrami* and *Mus musculus* respectively (Dr S. Moran, Ministry of Agriculture and Rural Development, Israel, pers. comm.).

4.4 South Africa

Regulatory status

Currently 1080 is only registered for use in livestock protection collars (T. Snow, Endangered Wildlife Trust Poison Working Group, South Africa, pers. comm.). It is classified as a Group 1 hazardous substance and controlled under the Hazardous Substances Act (Act 15 of 1973). Conditions for possession and use etc., and for sale of poison collars are defined in Government Gazette No. 18412 of 14 November 1997, regulations R 1488 and R 1489 (T. Snow, Endangered Wildlife Trust Poison Working Group, South Africa, pers. comm.).

Applications and use patterns

There is currently one producer of 1080 livestock collars in South Africa (T. Snow, Endangered Wildlife Trust Poison Working Group, South Africa, pers. comm.). No

information on the amount of 1080 used for this purpose was sourced. Other pesticides, such as carbofuran, have primarily been used in livestock collars.

Proposed use

The Endangered Wildlife Trust Poison Working group (South Africa) is currently conducting research into the viability of a single-lethal-dose bait, using 1080, along the lines of the Australian FOXOFF® baits. The National Department of Health, the National Department of Agriculture, the SA Woolgrowers Association, Cape Wools, Onderstepoort Veterinary Institute, Kwazulu-Natal Wildlife and several agricultural unions have given the Poison Working Group their full support in investigation of Compound 1080 as a potential active ingredient in single-lethal-dose poison baits. Three bait formulations are anticipated to be developed: one for the black-backed jackal, one for the caracal, and one for feral dogs, with each containing the maximum lethal dose for the particular target animal as well as a species-selective attractant.

If the products are commercially viable, registration under an 'Agricultural Remedy' under the Fertilisers, Farms Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) will be sought. Act 36 of 1947 has stringent control mechanisms for products registered under its banner and therefore affords the Poison Working Group the full backing of the law in terms of prosecuting perpetrators (Verdoorn, not dated). The proposed baits would be subject to strict distribution controls, be used in small numbers (<10) per event, and specifically placed to minimise risk to non-targets (T. Snow, Endangered Wildlife Trust Poison Working Group, South Africa, pers. comm.). The Poison Working Group is hoping that such a product would reduce the secondary poisonings of wildlife caused by current random use and dosages with farm chemicals unregistered for use as predacides (T. Snow, Endangered Wildlife Trust Poison Working Group, South Africa, pers. comm.).

4.5 United States

Regulatory status

In the United States 1080 is currently a restricted-use pesticide, only registered for use in livestock protection collars for coyote control, and may be used only by trained certified applicators. The US Environmental Protection Agency (US EPA (2003) indicates that currently there are 75 pesticide applicators certified to use 1080 collars for livestock protection: state agencies in New Mexico, South Dakota, and Wyoming that implement a 1080 collar monitoring programme; and five registrants of 1080 collar products in the United States. The 1080 products are registered for use in the following states: South Dakota, Wyoming, New Mexico, Texas, Idaho, Ohio, Utah, Virginia, and West Virginia (J. Eiseman, National Wildlife Research Center, USDA, pers. comm.). The U.S. Department of Agriculture (USDA 2004) is one registrant, and indicates that 1.5 oz (~40 g) of 1080 is used annually in livestock protection collars, although it is not specified whether this is for the whole of the United States or just by the USDA.

Applications and use patterns

In the United States 1080 was banned from widespread use as a predacide in 1972, although its use as a rodenticide was more widespread (Connelly 2004). Continued use of 1080 as a rodenticide was allowed until 1989 when registrations were cancelled due to lack of supporting data, and by 1990 all pending applications for Federal registration were denied (US EPA 1995). Registration of 1080 livestock protection collars was granted in 1985, and

remains the only approved use of 1080 in the United States. Fagerstone et al. (1994) outline the provision of data to the US EPA to maintain the registration of the 1080 technical product for use in livestock protection collars.

Registered 1080 end-use products are injected into the rubber reservoirs of the livestock protection collars, which are strapped to the neck of sheep or goats. There are restrictions on the number of livestock collars that can be used, e.g. when predation is expected, up to 20 collars can be used in fenced pastures up to 100 acres in size, and up to 100 collars can be used in pastures 641–10 000 acres. Due to concerns about the effects of 1080 in livestock collars on threatened and endangered species, including the gray wolf and grizzly bear, specific areas where collars cannot be used have been identified and included in the conditions of use (US EPA 1995). All certified applicators of 1080, state agencies that implement 1080 monitoring programmes, or registrants of 1080 collar products are required to keep records of 1080 collar use (US EPA 2003).

5. Unconfirmed Status of 1080 Use in Other Countries

Informal indication on the use (or misuse) of 1080 in other countries was obtained from the scientific literature, unpublished reports, and personal communication. The unconfirmed use or regulatory status of 1080 is shown in Table 4.

Table 4| Unconfirmed use or regulatory status of 1080

Use/regulatory approval indicated		Not approved/ Prohibited	Status unknown
Country	Organisation		
Ecuador (Galapagos Is) ^{1,2} Japan ^{3,7} Mexico ^{3,8} New Caledonia ¹ Portugal ¹ Qatar ⁹ Saudi Arabia ¹ Seychelles ^{1,10} United Kingdom (Ascension Is) ¹ West Indies ¹¹	World Health Organisation ³ Charles Darwin Foundation (Galapagos Is) ³	Taiwan ⁴ Colombia ⁶	China ⁵

¹ Personal communication with Animal Control Products, New Zealand, regarding countries to which technical grade 1080 or 1080 products have been exported from New Zealand over the last two years.

² Cruz et al. (2005) describes the use of 1080 for control of feral pigs in the Galapagos

³ Van Zijl (2004). Note that this information was derived from Livingstone & Nelson (1994) (T. Snow, Endangered Wildlife Trust, South Africa, pers. comm.), and as such may not reflect the current regulatory status of 1080 in these countries.

⁴ Chi et al. (1996, 1999) indicate that the use of 1080 is prohibited in Taiwan, although illegal use has resulted in human poisonings.

⁵ Cai et al. (1997) indicate that until at least 1997 the legal or illegal use of 1080 has resulted in human poisonings.

⁶ Email correspondence to C. Eason (Landcare Research, 10 Feb 2004) indicates 1080 is not approved for use in Colombia, although its illegal use has previously resulted in human poisonings.

⁷ Requests for information on the regulatory status of 1080 in Japan (and Asia) were emailed to the OECD office in Tokyo. No response was received.

⁸ Requests for information on the regulatory status of 1080 were emailed to OECD office in Mexico City and the Subsecretaria de Agricultura; no responses were received.

⁹ Import of 1080 occurred at least until 1993 (table 5.4, PCE 1994).

¹⁰ Nogales et al. (2004) indicate that 1080 had been used in the Seychelles as recently as 2000.

¹¹ Mitchell et al. (2000) describe the use of 1080 for cat eradication on a number of islands in the British West Indies.

A number of these reports are on pest eradication programmes undertaken on islands to restore indigenous biodiversity (e.g. Mitchell et al. 2000; Nogales et al. 2004; Cruz et al. 2005) and it is difficult to ascertain the exact regulatory status of the 1080 products used.

In addition, requests for information on the regulatory status of 1080 were emailed to OECD offices in Moscow and Bonn to ascertain use in Russia and Austria, Switzerland and Eastern Europe respectively, but no replies were received despite repeated follow-up emails.

In Mexico, pesticides are regulated by the Intersecretarial Commission for the Control of the Process and Use of Pesticides, Fertilisers, and Toxic Substances (CICOPLAFEST), and registered pesticides are listed in an official pesticide catalogue. Translation of the relevant legislation and classification of pesticides, fertilisers, and toxic substances can be purchased.

6. Conclusions

Generally speaking, 1080 is a restricted-use pesticide with tight controls on its use internationally, with the most extensive use occurring in New Zealand. Outside New Zealand, it is known to be registered for use in Australia, Canada, Israel, the United States and South Africa. Additionally, the use of 1080 in a number of countries, including Mexico, is supposed although unconfirmed. New Zealand is currently indicated to use approximately 80% of the world's production of manufactured 1080, which is approximately 2.3 tonnes of raw powder per year. In contrast, 200 kg of 1080 is estimated to be used annually in Australia (NRA 2002), the next biggest user.

The specific nature of the controls surrounding 1080 use is largely driven by the application of 1080. In Canada, the United States and South Africa, 1080 is primarily used in livestock protection collars for predator control (e.g. of wolves, jackals, coyotes) in an agricultural production context. In Israel 1080 is used as a rodenticide, and for control of both predators and browsing animals for the protection of biodiversity and agricultural values. In Australia 1080 primarily targets introduced pests (e.g. foxes, rabbits). In New Zealand, the use of 1080 is primarily for the control of introduced browsing animals (possums, rabbits) for the protection of biodiversity and agricultural production values.

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