

1080 & Fish: The Facts

Studies of native and introduced freshwater fish have shown that fish are highly resistant to 1080, even when exposed in field trials to very high concentrations of 1080 in water and food. Read the facts here and visit www.1080facts.co.nz.

Do 1080 baits in water harm fish?

No. Studies on multiple fish and aquatic species show that fish in water where 1080 is present are not affected.

The evidence: NIWA monitored 16 sites across 4 streams before and after 1080 baits were added to the water at 10x the possible quantity that might fall into a stream during a 1080 drop. Three species of native fish, longfin eels, koaro, and upland bullies were monitored following the addition of 1080 to the water. **No fish died or suffered adverse effects.**¹

In a Landcare study, **no 1080 residue was detected** in the flesh of longfin eels exposed to 1080 cereal baits, and 1080 dissolved in water.²

A NIWA study of the effects of exposing koura (native crayfish) to 1080 baits showed that **koura did not absorb 1080 from the water.**³

In another study fingerling trout subjected to water with 1080 concentrations of 500 and 1000mg per litre **showed no visible effect.**⁴

In a US study fingerling bream and bass **survived indefinitely** in water containing 370mg of 1080 per litre, with no sign of any toxicity.⁵

What happens when fish eat 1080 bait?

Some fish do not eat 1080 baits whereas others do. In several studies fish have been force-fed 1080 to study its effects. In those studies no fish died or showed visible adverse effects, although some temporarily absorbed 1080 in very low concentrations.

The evidence: In the Landcare study, **no 1080 bait was eaten** by any of the longfin eels exposed to 1080 baits in water.⁶

In the NIWA study on koura, it showed that they **did eat some 1080 bait**. If they ate bait soon after it was dropped into the water, there would be traces of 1080 in their gut and tail muscles, though this had **no visible adverse effects** on them.⁷

Fingerling and adult trout force-fed with cereal pellets containing 4 to 8mg of 1080 also **showed no visible effect.**⁸

In a study for DOC, which analysed the uptake and elimination of 1080 in trout that were force-fed high doses of 1080 gel, no trout died or showed ill effects, although **trout flesh had taken up low levels of 1080**. DOC referred the results to the Ministry for Primary Industries (MPI) to assess food safety.⁹

What happens if fish eat an animal that has eaten 1080 bait?

In the Landcare study, longfin eels were also fed possum meat that contained 1080 residue. None died or suffered adverse effects, although **low concentrations of 1080 were found in the flesh of some eels** shortly after they had eaten the poisoned possum gut meat.¹⁰

Is there a risk to humans from eating fish with 1080 residues?

If you catch and eat fish from areas where there has been a 1080 operation, the risk of 1080 poisoning is **extremely low**.

The evidence: MPI found that the peak 1080 levels temporarily reached within the force-fed trout, fall well short of breaching internationally accepted standards for human health.¹¹

The concentrations of 1080 found in eels are so low that to risk death a **60kg person would need to catch and eat 5.5 tonnes of eel** that had eaten 1080 contaminated possum.¹²

The concentrations found in koura would require an **85kg adult to eat 2,840 small or 720 large koura tails** to risk death. Given that koura are nocturnal, and noting that 1080 leaches rapidly from baits in water, the **baits would need to be dropped very close to koura shortly before nightfall**. This is highly unlikely in a 1080 operation, further reducing any potential risk.¹³

FACT #1

Humans are at extremely low risk of 1080 poisoning from fish.

FACT #2

Some fish species temporarily absorb 1080 in their flesh.

FACT #3

1080 does not kill or harm fish.



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References

1. A.Suren & P.Lambert (2006): Do toxic baits containing sodium fluoroacetate (1080) affect fish and invertebrate communities when they fall into streams?, *New Zealand Journal of Marine and Freshwater Research*, 40(4), 531-546
2. P.O'B. Lyver, J.Ataria, K.Trought & P.Fisher (2005): Sodium fluoroacetate (1080) residues in longfin eels, *Anguilla dieffenbachia*, following exposure to contaminated water and food, *New Zealand Journal of Marine and Freshwater Research*, 39(6), 1243-1252
3. A.Suren & M.Bonnett (2006) Consumption of baits containing sodium fluoroacetate (1080) by the New Zealand freshwater crayfish (*Paranephrops planifrons*), *New Zealand Journal of Marine and Freshwater Research*, 40(1), 169-178
4. C.Eason, A.Miller, S.Ogilvie & A. Fairweather, (2011): A 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
5. *Ibid.*
6. P.O'B. Lyver, J.Ataria, K.Trought & P.Fisher (2005)
7. A.Suren & M.Bonnett (2006)
8. A.Fairweather, K.Broome & P.Fisher (2013): Sodium fluoroacetate pesticide information review. Version 2013/1. Unpublished report docdm-25427, Department of Conservation, Hamilton, NZ. 109p.
9. Department of Conservation: Trout and 1080 research, October 2014. Accessed online October 2014, <http://www.doc.govt.nz/conservation/threats-and-impacts/animal-pests/methods-of-control/1080-poison-for-pest-control/trout-and-1080-research/>
10. P.O'B. Lyver, J.Ataria, K.Trought & P.Fisher (2005)
11. Ministry for Primary Industries: Preliminary risk assessment of 1080, 8 October, 2014. How safe is Trout to eat if caught in areas where 1080 has been dropped? Accessed online Octobr 2014, <http://www.foodsmart.govt.nz/elibrary/consumer/mpi-preliminary-risk-assessment-of-1080.pdf>
12. P.O'B. Lyver, J.Ataria, K.Trought & P.Fisher (2005)
13. A.Suren & P.Lambert (2006)