Ministry for Primary Industries
Manatū Ahu Matua

8 October 2014

How safe is Trout to eat if caught in areas where 1080 has been dropped?

The Ministry for Primary Industries (MPI) has recently become aware of a research trial being conducted to establish a model allowing the estimation of levels of 1080 in trout caught in waterways that have flowed through areas where 1080 had been used to control pests. This research trial involves in the laboratory dosing of trout with 1080 at very high levels so that the decline in levels of residues in flesh can be established for modelling purposes. After that, the model will be used to predict a realistic level of 1080 residues that might be found in trout exposed in the wild. A key point to note is this laboratory research trial is not representative of what would normally occur in the wild as a very large loading dose of 1080 was used – the equivalent of an individual trout eating 30 poisoned mice over a short period of time. A trout would have to eat almost its body weight in *poisoned* mice (excluding other food sources) for this intake to happen.

While the research trial has not been finalised, there is sufficient information available for MPI to undertake a preliminary food safety risk assessment. Factors that will affect the level of intake of 1080 in poisoned mice in the diet of trout have yet to be assessed. However, it is likely that a more detailed risk assessment will show that the possible intake of residues in the human diet is even further below the safe levels predicted here.

The trout in this laboratory research trial were dosed with 1080 by gavage (meaning directly injected into the stomach), a technique that enables accurate intake to be determined, but gives rise to more rapid and higher peak levels of the substance being dosed than could occur from a mouse that is eaten. The peak level of 1080 in the gavaged trout was 4.7 mg/kg of trout flesh. As stated above, this is very much a gross overestimate of any likely residue in wild caught trout from water flowing through an area that had been treated with 1080.

We use the globally-accepted (Codex) chemical risk assessment methodology to predict what the consequences might be in terms of dietary intake in humans. This involves taking the 1080 toxicological end point, its residue level in trout and amount of trout consumed.

In this case, the toxicological end point is the level that caused no toxicity in test animals dosed with 1080 for 90 days; this is 0.075 mg/kg bw/day.

Using a conservative high consumption (i.e. high portion in one sitting) value of 400g of trout by an adult (based on average weight of 70kg) with the above residue level, the dietary intake estimate is 1.88 mg 1080 per person. This equates to a dietary intake of 0.027 mg/kg bw, which is about a third of the toxicological end point of 0.075 mg/kg bw.

In summary, all of the assumptions made in a worst case risk assessment scenario are very much overestimates yet the estimated dietary intake of 1080 is still below the toxicological end point. **This strongly indicates that consumption of wild caught trout from areas that have had 1080 applied will not pose a food safety risk to humans.**

While the current New Zealand Maximum Residue Limits (MRLs) Standard for pesticides includes 1080 at 0.001 mg/kg food, which is at the limit of detection, this MRL is set so that pesticide residues in food are as low as possible while allowing the level of use of the chemical that has been shown to be necessary to control a particular pest. MRLs set at these levels are well below those that might be set according to the food safety risk assessment methodology described above. Thus a level of residue in a food that is in excess of the MRL should not in itself be perceived as a food safety risk to the consumer unless there were particular dietary intake conditions that indicated high levels of the residue being consumed on a regular basis.