

# Mercury level in Finnish Farmed Fish

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## Introduction

The most popular fish farmed in Finland is the rainbow trout (90% from the farmed fish). The remaining 10% consists of whitefish, trout, Arctic char and sturgeon. Nowadays rainbow trout is produced in the approximate amount of 10-12 million kilos per year.

The first priorities in fish farming is producing healthy food for consumers as well as protecting the welfare of the animals and respecting the environment. Manufactured feedstuffs are used to feed the fishes to ensure a balanced and healthy diet. In fish farming clean water and sanitary living conditions are the most important things.

In Finland fish farming is a strictly regulated and supervised activity. The purpose of the supervision is to secure the well-being of the environment, the fish and the employees. Based on the Environmental Protection Act, fish farms must have a fish farming license. In addition, the Water Act prescribes a building permit for structures in water areas. The activity of a fish cleaning facility or any other fish-handling facility is also subject to licensing.

Mercury is a ubiquitous, persistent and lipophilic contaminant detected world wide. Mercury is a metal that is released into the environment from both natural and anthropogenic sources. Once released, mercury undergoes a series of complex transformations and cycles between atmosphere, ocean and land. The three chemical forms of mercury are (1) elemental or metallic mercury (Hg), (2) inorganic mercury (mercurous (Hg<sub>2</sub><sup>2+</sup>) and mercuric (Hg<sup>2+</sup>) cations) and (3) organic mercury. Methylmercury is by far the most common form of organic mercury in the food chain.

## Materials and Methods

Fish samples were obtained from Finnish fish farms. The samples were collected regularly every month according to an annual plan. Ten samples per year were investigated for mercury and other contaminants. The samples were packed separately and sent to the laboratory in temperature-controlled chambers containing coolant canisters. The samples were stored at -18 °C prior to analysis. Sampling were carried out by official inspectors.

Samples were measured by mercury analyzer (AMA254 Advanced Mercury Analyze, LECO) using direct combustion in an oxygen-rich environment with no sample pre-treatment. The LOQ was 0,020 mg/kg.



Photo Seija Berg, Evira

## Results

Mercury in farmed fish has been investigated in Finland in connection with the national residue control programme. The Finnish farmed fish contains very low level of mercury (<0,020-0,060 mg/kg ww). The mercury content is much below the maximum level set by EU (Figure 1).

EU legislation sets maximum levels for contaminants, to ensure that the food is safe. These limits are the same for both farmed and wild fish. The maximum levels of mercury in fish are set in the Commission Regulations (EC) No 1881/2006 and No 629/2008. In fishery products the maximum mercury level is 0,50 mg/kg ww and in muscle meat of fish 0,5-1,0 mg/kg ww depending of the fish species. The level 0,50 mg/kg is used for the fish species farmed in Finland.

Rainbow fish is a really healthy and safe super food. Hence, according to nutrition specialists fish should be eaten twice a week. Fish contains lots of useful fatty acids, proteins and vitamins. The levels of mercury and also other harmful heavy metals are very low. Cultured fish from the domestic fish farms is real local food which is also an environmentally sustainable choice.

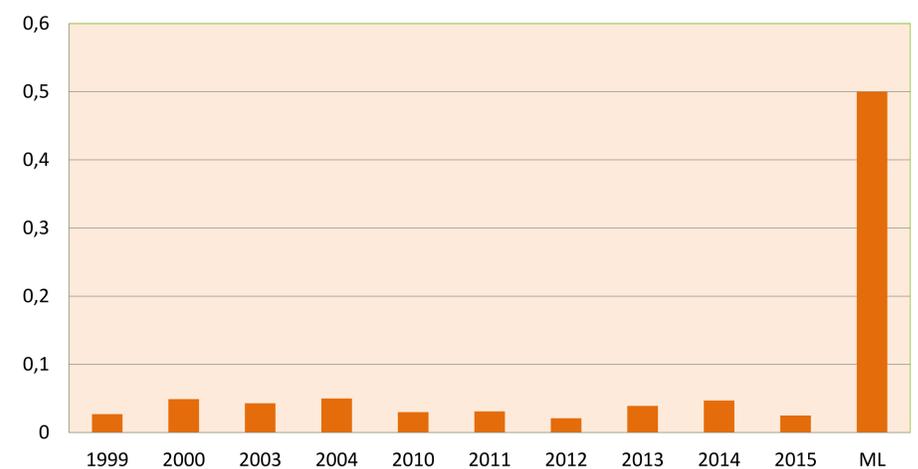


Figure 1. The mercury content (mean values) in Finnish rainbow trout in mg/kg ww.

## References

EU, 2006. Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.

EU, 2008. Commission Regulation (EC) No 629/2008 of 2 July 2008 amending Regulation (EC) No 1881/2006 setting maximum levels for certain contaminants in foodstuffs.

EFSA, 2012. Scientific Opinion on the risk for public health related to the presence of mercury and methylmercury in food. EFSA Journal 2012;10(12):2985.

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