

Site C Project

Fish and methylmercury in the reservoir

November 2023

What is methylmercury?

Mercury is found everywhere in the environment—in air, water, soil, plants, animals and fish. There are natural (e.g. volcanoes) and human (e.g. burning fossil fuels) sources of inorganic mercury contributing to the global mercury cycle.

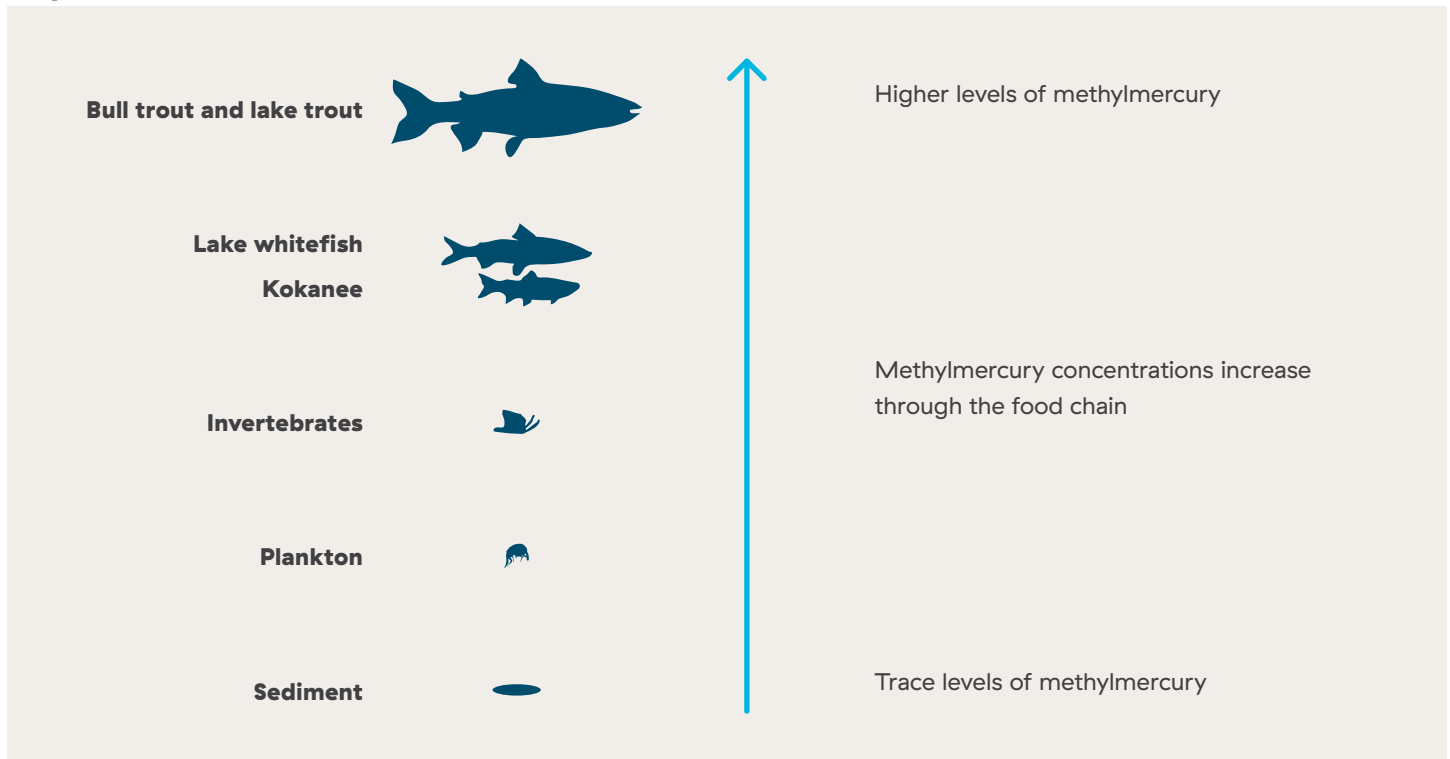
Methylmercury, an organic form of mercury, is created when microorganisms that live in aquatic environments react with the inorganic mercury that exists naturally in soil and plants. Once formed, methylmercury enters the food chain.

The process of converting inorganic mercury to methylmercury temporarily accelerates when a new reservoir is created due to the rapid decomposition of soil and vegetation previously on dry land. The amount of methylmercury increase depends on a range of environmental factors such as flooded area, reservoir size, water flow rates through reservoir, and type of soil and vegetation.

Methylmercury in fish

Because methylmercury is formed in aquatic environments, all species of fish contain methylmercury. The concentration of methylmercury found in a fish depends on species, age, size, and location (for example, in a lake or a river). In general, predatory fish (fish that eat smaller fish) are more likely to have higher levels of methylmercury due to accumulation through the food chain.

Aquatic food chain





Bull trout

Methylmercury and the Site C reservoir

Baseline levels of methylmercury in the Site C project area are relatively low. In fact, methylmercury levels of Peace River fish are similar to fish from other lakes and rivers in B.C.

When we begin filling the Site C reservoir in late summer / early fall 2024, there will be temporary changes in fish methylmercury levels. We predict fish methylmercury levels to increase by an average of three to four times the baseline level in the newly created reservoir, and slowly return to a new baseline after approximately 20–30 years.

Fish methylmercury levels downstream of the new Site C dam, possibly as far as Many Islands, Alberta, are predicted to initially double, on average, before returning to a new baseline level.

At their highest, levels of methylmercury in fish from Site C are expected to be similar to levels in fish found in many lakes and rivers elsewhere in Canada and lower than some types of fish sold in stores and restaurants.

Based on Health Canada's guidelines and BC Hydro's predictions of fish methylmercury levels, people who eat two or fewer servings of fish a month, on average, from the Site C reservoir, do not need to be concerned about the amount of methylmercury in the fish.

However, people who eat more than the recommended number of servings of fish from the Site C reservoir, or eat more than one kind of fish, may need to limit their consumption of large predatory fish, such as bull trout and lake trout, to stay within Health Canada's safe level of methylmercury.

The relatively low methylmercury levels expected in Site C reservoir fish are due to the low pre-existing levels of mercury and to the project's design. Because Site C will rely on the existing Williston Reservoir for most of its water storage, the extent of flooded terrestrial habitat—which drives methylmercury production—at Site C is relatively small.

In addition, we are mitigating against the production of methylmercury in the new reservoir by minimizing the disturbance of soils and removing most of the vegetation prior to reservoir filling.



Peace River

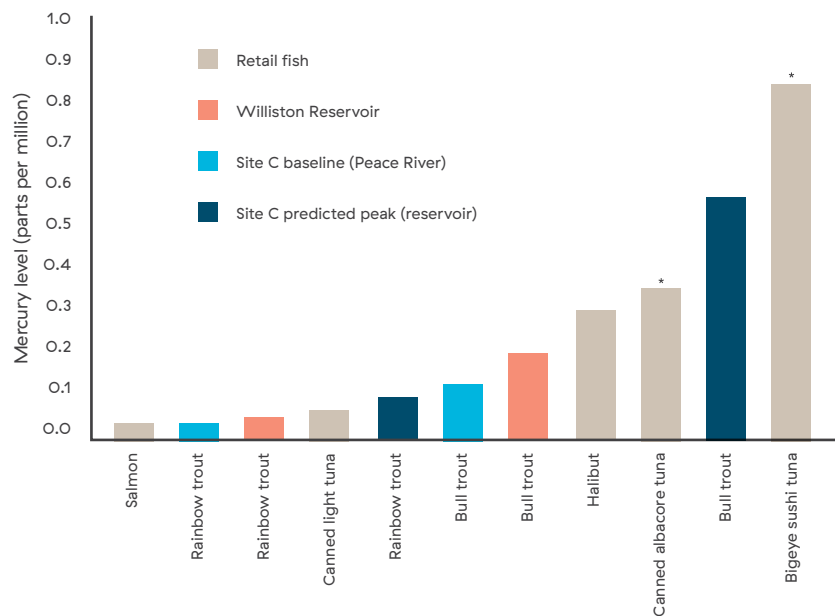
Fish & Wildlife Compensation Program: Peace Region Mercury Study

Recently the Fish & Wildlife Compensation Program completed a three-year study comparing the mercury levels of fish in Williston and Dinosaur reservoirs to fish in other lakes and rivers in B.C.

The study showed that reservoir fish have mercury levels similar to fish from other lakes and rivers in B.C. for which there is available data.

The FWCP is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and public stakeholders to conserve and enhance fish and wildlife in watersheds impacted by existing BC Hydro dams. Learn more about the study at fwcp.ca/mercury.

COMPARISON OF METHYLMERCURY LEVELS IN FISH



Data for retail fish (sold in restaurants and grocery stores) are from Health Canada (2007) and Lowenstein et al. (2010).

Note: *Refer to Health Canada for consumption guidelines for canned albacore tuna and fresh tuna. For more information visit:

canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/environmental-contaminants/mercury/mercury-fish-questions-answers.html#ca2

Monitoring the reservoir

Our current understanding of peak mercury levels in fish after filling of the Site C reservoir are based on scientific predictions. In collaboration with Indigenous Nations, communities and Health Authorities, BC Hydro developed a methylmercury monitoring plan for Site C to verify predicted levels of mercury in fish. The plan includes regularly measuring methylmercury levels in local fish and collecting information on how much fish people are eating. This information will be communicated, in partnership with health authorities, to Indigenous groups and the general public.