

Methylmercury and fish consumption information in the Peace River system

NOVEMBER 2021

Through our work with Indigenous Nations and local communities, we've heard concerns about how reservoir creation on the Peace River system has affected methylmercury levels in fish. The Site C project is the third dam on the Peace River and will result in temporary changes in fish methylmercury levels once the reservoir begins filling in 2023.

Explore this document to learn more about methylmercury in fish and consumption information for the Peace River as well as Williston, Dinosaur and Site C reservoirs.¹

Methylmercury occurs naturally

Mercury is a naturally occurring element that is found in low levels everywhere in the environment—in air, water, soil, plants, animals and humans. Mercury is released to the environment from natural sources such as volcanoes and forest fires, and from human activities such as burning fossil fuels.

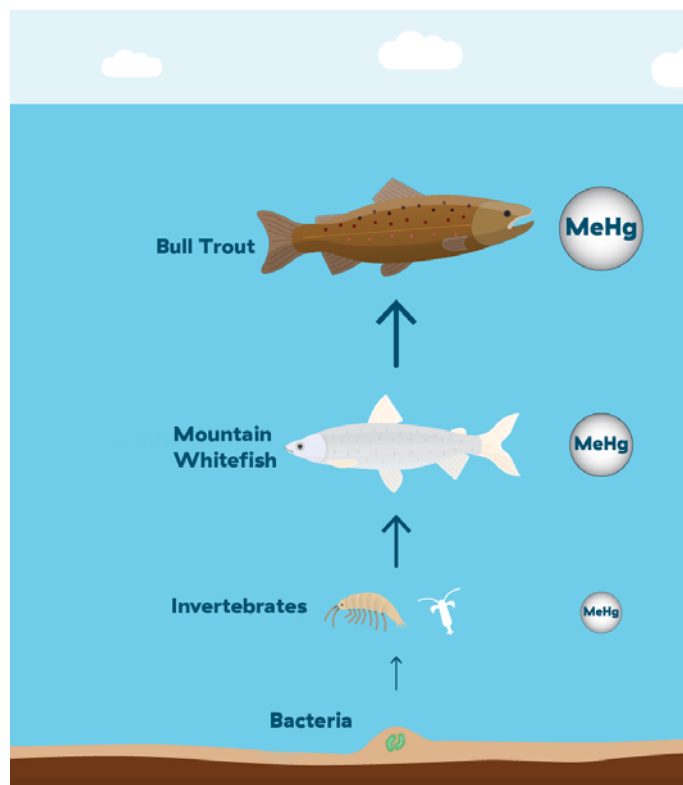
Mercury in oceans, lakes and rivers is naturally changed by bacteria into methylmercury. Methylmercury levels increase with each step up the food chain as animals absorb methylmercury from their food (e.g. invertebrates eat plankton, big fish eat small fish).

Some fish have more methylmercury than others

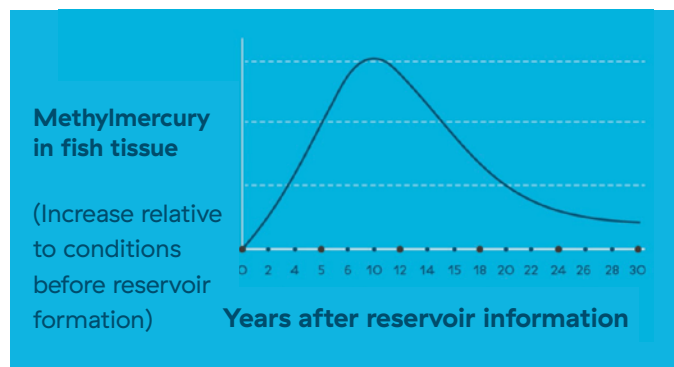
All fish contain methylmercury. Insect-eating fish like rainbow trout, kokanee and whitefish have lower levels of methylmercury than fish that eat other fish like bull trout, lake trout, northern pike (jackfish) and walleye. For a given species, large fish have higher levels of methylmercury than small fish.

Reservoir creation increases methylmercury levels in fish

When a reservoir is created, including Site C reservoir, the levels of methylmercury in fish gradually increase for approximately 10 years as bacteria in the newly submerged areas change mercury to methylmercury. Methylmercury levels in fish from the Site C reservoir are predicted to increase by 3–4 times current levels following reservoir filling in 2023. This is followed by a decrease over the next 20–30 years to levels that are similar to natural lakes and rivers in the area.



MeHg = methylmercury.



Methylmercury in fish tissue.

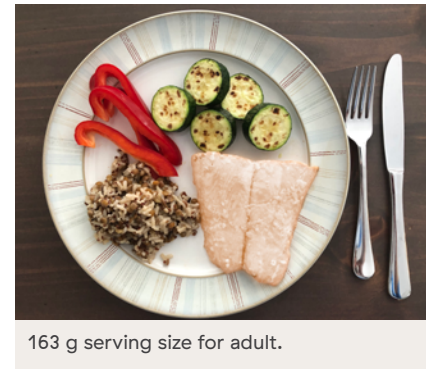
¹ Peace River consumption information applies for the Peace River between Hudson's Hope, B.C. and Many Islands, Alberta where fish mercury data have been collected.

Health Canada provides guidelines to safely eat fish

Although people are exposed to methylmercury when they eat fish, they can safely tolerate some exposure to methylmercury. Eating fish can provide health benefits including adding healthy fats, vitamins and essential elements to your diet.

Health Canada provides guidelines as to how much methylmercury Canadians can be exposed to without risk to their health. The amount differs depending on age, gender and weight.

HOW BIG IS A SERVING OF FISH?



The table specifies how many servings of fish you can eat to remain within Health Canada’s recommendations for methylmercury exposure.

General consumption information

- Safe to eat
- Every day
- Every second day
- Twice a week
- Once a week

Number of servings per month			
Fish type	Children under 12	Pregnant or could be	Others
Williston Reservoir and Tributaries			
Lake Trout (22")	7	12	28
Bull Trout (22")	7	12	28
Lake whitefish (12")	10	18	42
Kokanee (12")	19	33	78
Rainbow Trout (12")	30	53	124
Dinosaur Reservoir and Tributaries			
Bull Trout (22")	17	30	71
Lake Trout (22")	19	33	78
Rainbow Trout (12")	41	71	168
Peace River between Hudson’s Hope, B.C. and Many Islands, A.B.			
Bull Trout (22")	10	18	41
Mountain whitefish (14")	22	39	93
Rainbow Trout (12")	54	94	222

What if I eat more than one type of fish in a month?

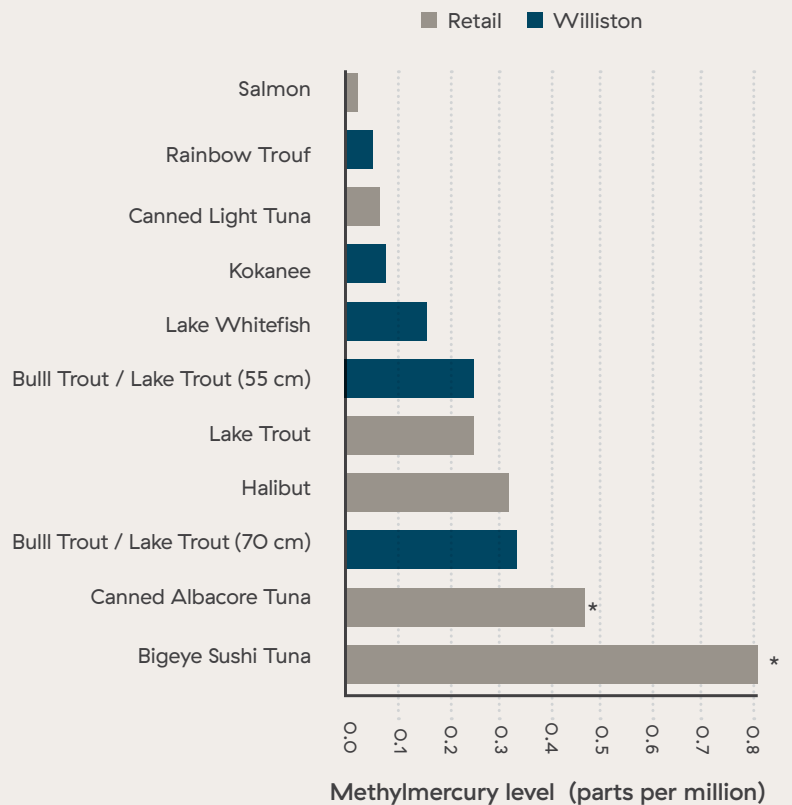
The consumption information is only for the type of fish shown and does not account for methylmercury from eating other types of fish. If you eat the indicated number of servings and you regularly eat other types of fish, you will go over Health Canada’s guidance for methylmercury intake.

Serving size recommendations are valid for the period prior to Site C reservoir filling beginning in 2023.

Methylmercury facts

- **Are fish from the Williston Reservoir and Peace River tributaries high in methylmercury?**
In a recent study, it was found that fish from Williston Reservoir and its tributaries have methylmercury levels similar to fish from natural lakes and rivers in B.C. Levels were also lower than the levels of methylmercury in some types of fish sold in stores and restaurants. The study² was funded by the Fish & Wildlife Compensation Program Peace Region.
- **Can you only eat fish once a month?**
Many types of fish are safe to eat more than once a month. Please see the map for details.
- **Does methylmercury cause cancer?**
Current scientific evidence has not linked exposure to methylmercury from eating fish as a cause of cancer. If exposed to high levels of methylmercury, it can harm the brain and nerves and cause issues with memory, concentration, coordination and balance.
- **Is methylmercury located in the belly fat of fish?**
Methylmercury occurs in all fish tissues, especially muscle, and cannot be removed by trimming belly fat or cooking the fish.

METHYLMERCURY LEVELS IN FISH CAN BE LOWER THAN SOME SPECIES SOLD IN STORES



* Refer to Health Canada for consumption guidelines for canned albacore tuna and fresh bigeye sushi tuna.

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

2 The 2016 – 2018 FWCP mercury study report can be found at fwcp.ca/mercury

To watch a video on this information visit:

- Sitecproject.com/methylmercury-program
- Fwcp.ca/mercury

Health Canada provides health information about the levels of mercury in fish bought from the store. For further information visit: canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/environmental-contaminants/mercury/mercury-fish.html

BC Ministry of Health provides health information about the levels of mercury in fish caught from rivers and lakes in B.C. For further information visit: healthlinkbc.ca/healthlinkbc-files/mercury-fish

Health Canada. 2007. Human Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption. Ottawa, ON, Health Canada, Health Products and Food Branch, Food Directorate, Bureau of Chemical Safety
Lowenstein, J H., J. Burger, C. W. Jeitner, A. George, K. Sergios-Orestis and M. Gochfeld. 2010. DNA barcodes reveal species-specific mercury levels in tuna sushi that pose a health risk to consumers. Biol. Lett. 6: 692–695