UNDERSTANDING QUÉBEC HYDROPOWER

MERCURY IN RESERVOIRS: A TEMPORARY, WELL-KNOWN AND WELL-MANAGED PHENOMENON

All forms of electricity generation have impacts. One of the impacts of hydropower development is the temporary increase in accumulation of mercury in fish in reservoirs. To generate hydropower, we flood areas of land that contain vegetation, some of which gradually decays over time. Inorganic mercury—already present in the vegetation—is then transformed into organic mercury (also called methylmercury), a neurotoxic substance that is bioaccumulative (in other words, concentrations build up in the animals that digest it).

Temporary…

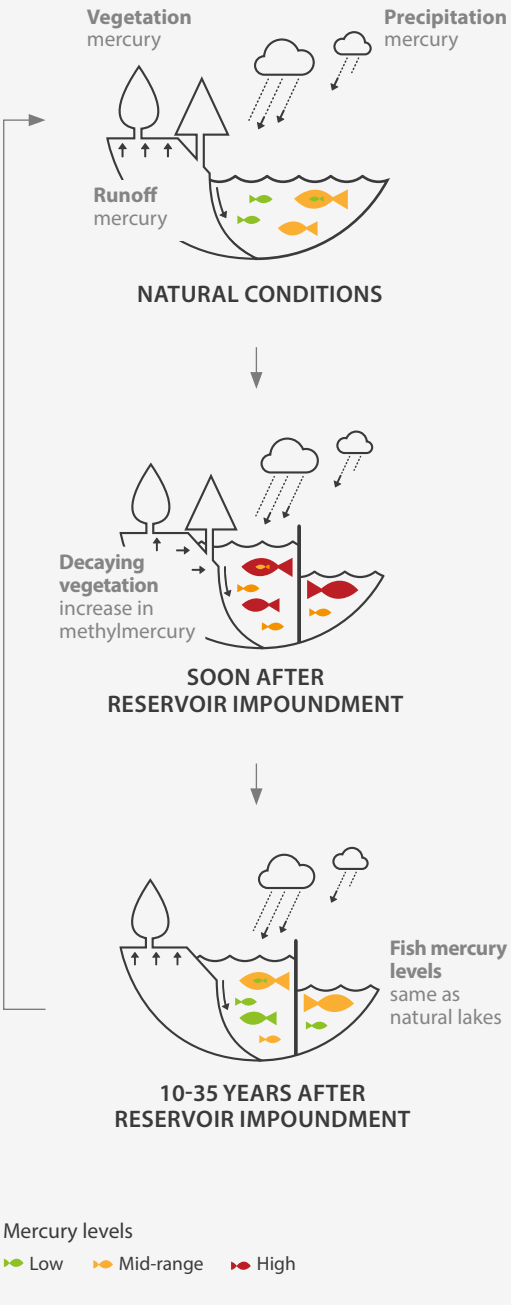
All fish naturally contain mercury at different levels, regardless of where they live (freshwater lakes, rivers or the ocean). After reservoir creation, levels of organic mercury in fish rise for several years, reach a peak after 4 to 14 years (depending on the species) when compared with fish from surrounding natural lakes, and then gradually decline until they return to **levels found in fish in natural lakes** after about 10 to 35 years.[1]

Well-known…

Over the last 40 years, Hydro-Québec has developed extensive expertise on the issue of mercury in hydroelectric reservoirs thanks to a **unique research program** set up with governments, health agencies, local communities, universities and private firms. In all recent hydroelectric projects, the mercury issue has been comprehensively evaluated during the environmental impact assessment phase, and obligations related to monitoring and mitigation measures are an integral part of our project authorizations. Studies have shown that the increase in mercury does not endanger populations of fish,[2] birds or mammals that eat fish.[3]

Well-managed…

While we cannot eliminate this phenomenon, we can make sure that impacts on human health are mitigated. In collaboration with public health agencies and our First Nations partners, we have developed and implemented specific **fish consumption guidelines**. Cognizant of the role traditional fishing plays in the lives and culture of First Nations and the health benefits associated with fish consumption, we encourage populations to continue fishing and, in some cases, we have opened access to new fishing sites.



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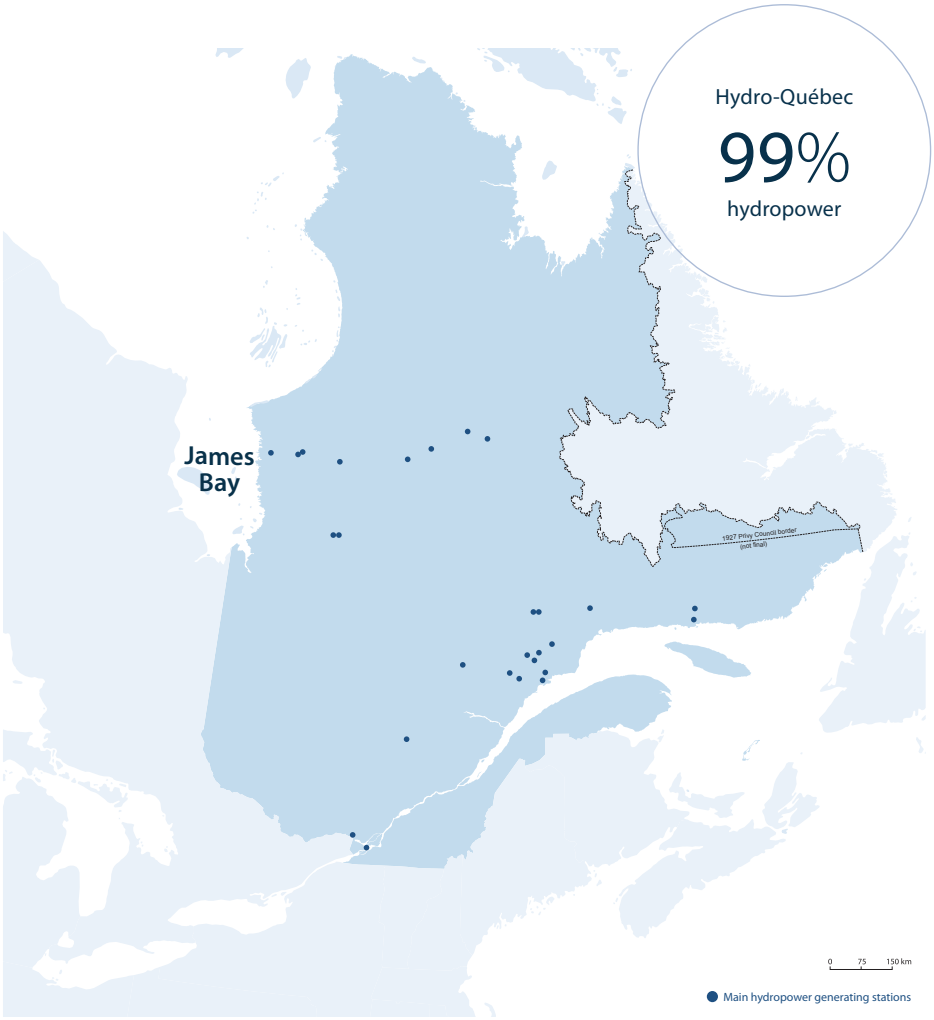
1 Schetagne and Therrien (2013); 2 Bilodeau et al. (2016); 3 Lucotte et al. (1999)



HYDROPOWER GENERATING STATIONS DO NOT EMIT MERCURY

Mercury is present naturally in the rock and soil. Airborne mercury that falls onto this region comes mainly from natural sources or human activity:

- Volcanoes and forest fires
- Coal-fired power plants and industrial activity

50,000

Number of measurements taken of mercury levels in fish in the James Bay region

40 years

Time that research into this phenomenon has been conducted by Hydro-Québec

0

Number of cases of mercury poisoning from fish consumption in Québec (to our knowledge)

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For more information on hydropower generation, the mercury issue and measures implemented to reduce health risks, please consult our Web site:

http://www.hydroquebec.com/sustainable-development/documentation-center/mercury.html

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