



CAN WE EAT THE FISH?

Generally yes, if appropriate fish consumption advisories are followed.

Fish are an important part of a healthy diet because they contain high-quality protein and essential nutrients, are low in saturated fat and contain omega-3 fatty acids.

The Issues

- There may be health risks associated with consumption of Great Lakes fish if the contaminant concentrations in the fish are above recommended levels. These health risks are particularly important for sensitive populations, such as women who are or may become pregnant, nursing mothers, young children and subsistence fishers.
- All eight Great Lakes states, Tribes, First Nations and the province of Ontario currently advise people to limit their intake of certain Great Lakes fish species or sizes of fish due to chemical contamination.
- Currently, the goal of unlimited human consumption of Great Lakes fish is not being met because of continued and past inputs of persistent toxic substances such as polychlorinated biphenyls (PCBs), chlordane, dioxin, mercury and toxaphene.

The Indicator

Levels of many persistent bioaccumulative toxic (PBT) chemicals in the Great Lakes basin have declined since the 1970s as a result of restrictions and bans on the use and production of some chemicals (e.g., PCBs, pesticides) and reductions in the release and emissions of other chemicals (e.g., dioxins, mercury). Because PBT chemicals persist, continue to be released in the environment and accumulate in organisms, these contaminants remain a significant concern.

Chemical contaminants are currently introduced into the waters of the Great Lakes primarily from

atmospheric deposition and contaminated sediment sources, although other sources exist. Once transferred to the water, some contaminants can be ingested, absorbed and accumulated in Great Lakes fish. This process is known as bioaccumulation. As these fish are ingested by other predator fish, the contaminants accumulate at increasingly higher concentrations. As a result, the large fish usually desired for human consumption are often those carrying the greatest amounts of contaminants. This process is called biomagnification.

As an indicator of chemical contamination of fish and to assess potential human exposure to PCBs through sport fish consumption, this report evaluates PCB levels in coho salmon and lake trout by qualitatively comparing these levels to the fish consumption guidelines found in the *Protocol for a Uniform Great Lakes Sport Fish Consumption Advisory*, developed by the eight Great Lakes states, and in the *Guide to Eating Ontario Sport Fish*. Although not intended as fish consumption advice, this report assesses the edibility of coho salmon and lake trout from the Great Lakes.



Coho salmon (left) and lake trout (right).

Photo Credits: U.S. Environmental Protection Agency, Great Lakes National Program Office and Department of Fisheries and Oceans Canada.

The Assessment

Concentrations of banned contaminants in fish tissue are decreasing over time, but many are still present at levels that can affect humans. In recent years, PCB concentrations in coho salmon and lake trout in all of the Great Lakes often exceeded health protection values set by the *Great Lakes Protocol* for unrestricted fish consumption or the *Guide to Eating Ontario Sport Fish* for consumption of eight meals per month (Figure 1).

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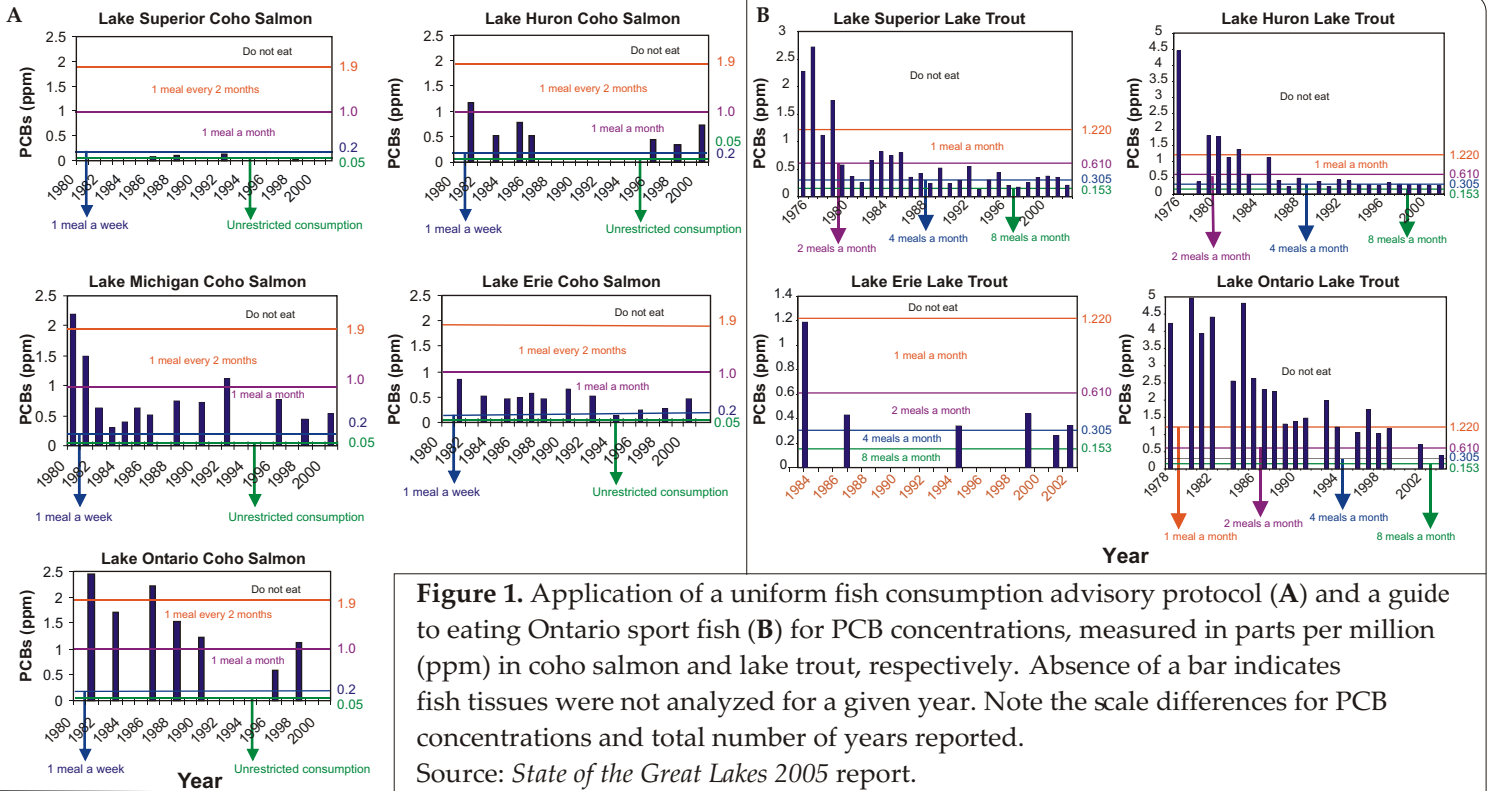


Figure 1. Application of a uniform fish consumption advisory protocol (A) and a guide to eating Ontario sport fish (B) for PCB concentrations, measured in parts per million (ppm) in coho salmon and lake trout, respectively. Absence of a bar indicates fish tissues were not analyzed for a given year. Note the scale differences for PCB concentrations and total number of years reported.
 Source: *State of the Great Lakes 2005* report.

Current Actions

Fish consumption advisories issued by Great Lakes states and the province of Ontario range from recommending limited consumption of specific sizes of fish, fish species and/or fish from particular water bodies, to unrestricted consumption of fish from various locations.

Actions Needed

Increased awareness of the fish consumption advisories by Great Lakes basin residents, especially in sensitive populations, is needed.

Monitoring of contaminant levels in human tissues must continue. More knowledge of the potential negative health effects from the exposure to PBT chemicals is needed.

Although concentrations of many contaminants have decreased in fish tissue, fish consumption advisories continue to be in effect in the Great Lakes for PCBs, mercury and other contaminants. Elevated concentrations of these compounds indicate that the domestic release of toxic chemicals, inputs from long range atmospheric transport and

remaining legacy sources of banned contaminants in the Great Lakes region (such as contaminated sediments, old agricultural fields, landfills and PCB transformer storage sites) continue to be a problem and must be remediated where possible.

Further research is needed regarding the control of non-native species and their ability to alter the pathways and fate of persistent toxic substances. Non-native species may change the contamination accumulation pattern among fish, particularly near the top of the food chain.

To Learn More

For further information related to Great Lakes sport fish contaminant monitoring, please refer to the *State of the Great Lakes 2005* report and other Great Lakes references which can be found at www.binational.net. For information on local fish consumption advisory programs, visit www.epa.gov/ost/fish (United States) and www.ene.gov.on.ca/envision/guide/index.htm (Ontario).

