



Mercury in Northern Pike from the Yukon Delta National Wildlife Refuge

U.S. Fish and Wildlife Service and Alaska Dept. of Health and Social Services – Division of Public Health



Why are we concerned about mercury?

Mercury is a neurotoxin - at high levels it can damage the developing brain of babies (including babies in the womb) and children. Mercury levels in most Alaska fish are low, so any health effects would be very subtle. Still, health officials recommend a margin of safety to protect our children's health.

Should I worry about eating fish?

Overall, mercury levels in Alaska fish are low, so the **only** people who need to think about limiting the amount of fish they eat are **women who are or can become pregnant, nursing mothers, and children age 12 years and under**. Women and children can still get the benefits of eating fish by choosing to eat fish that are low in mercury, like salmon.

Men, elders, and teenage boys are encouraged to eat unlimited amounts of most Alaska fish, including pike.

The State of Alaska has developed guidelines for women and children on how much of each fish they can safely eat, based on the amount of mercury in a variety of fish species. These guidelines:

- Reflect guidelines developed by other states and national agencies.
- Incorporate studies of dietary mercury effects on children.
- Include a large safety factor, so do not have to be viewed as strict dietary limits.

Why study mercury in pike?

There is more of the toxic form of mercury – methylmercury – in older fish and fish that eat other fish, like large pike. In this study, we measured mercury in pike muscle from traditional and well-used subsistence fishing sites and are sharing this information with you because you live in an area where people eat a lot of pike.

We collected 163 pike from 11 sites in the Yukon Delta National Wildlife Refuge in 2005 (on the Kuskokwim River) and 2006 (on the Lower Yukon River).

Fishing sites sampled in the Kuskokwim River area in 2005 (blue labels), and the Lower Yukon River area in 2006 (red labels).



How much pike from the Yukon Delta NWR should women and children eat?

Methylmercury Concentration in Fish (mg/kg)	Meals per month	Fresh Pike	Dried Pike
0 - 0.15	Unlimited		
>0.15 - 0.32	up to 16	Kuskokwim < 2 feet	
>0.32 - 0.40	up to 12		
>0.40 - 0.64	up to 8	Kuskokwim > 2 feet, All Lower Yukon	
>0.64 - 1.2	up to 4		Kuskokwim < 2 feet
>1.2 - 1.4	up to 3		
>1.4 - 2.0	up to 2		
>2.0 - 3.4	up to 1		Kuskokwim > 2 feet, All Lower Yukon

The most recent (2007) guidelines, *Fish Consumption Advice for Alaskans: A Risk Management Strategy to Optimize Public Health*, is available at: http://www.epl.hss.state.ak.us/bulletins/docs/r2007_04.pdf

For pike in the Yukon Delta National Wildlife Refuge, the recommendations for women and children are:

Kuskokwim River area pike *shorter than 2 feet* may be eaten in up to **16 meals per month if fresh**, and up to 4 meals per month if dried.

Kuskokwim River area pike *longer than 2 feet* may be eaten in up to **8 meals per month if fresh**, and in up to 1 meal per month if dried.

All Lower Yukon River area pike may be eaten in up to **8 meals per month if fresh**, and in up to 1 meal per month if dried.

A "meal" is one six-ounce portion of fish, dried or fresh.

Notes: Small pike (< 2 feet long) often have less mercury than large pike (> 2 feet long). Also, dried pike has a higher mercury concentration than fresh pike (the mercury is "diluted" with the water in the fresh pike), so the guidance allows fewer meals of dried pike than fresh pike.

Where does mercury in Alaska come from?

- *Anthropogenic* (human-caused) sources such as global air pollution from burning fuels and garbage, and mining runoff
- *Natural* sources such as forest fires, volcanoes, and local bedrock weathering into streams

Mercury gets into wetlands where it is transformed by bacteria into methylmercury. From there, it accumulates in fish and animals.

For more information on mercury in pike contact Angela Matz (angela_matz@fws.gov, 907-456-0442), U.S. Fish and Wildlife Service, 101-12th Ave., Room 110, Fairbanks, AK 99701.

Measuring Mercury in Humans

Although mercury concentrations in fish can give us an idea of possible mercury exposure, Alaska has a program that tests for actual mercury levels in human hair. **If you are a woman of child-bearing age, you can get your hair tested and find out your own mercury levels – for free!**

The Alaska Division of Public Health will analyze a small hair sample from any Alaskan woman of child-bearing age for mercury. Hair collection is done by a health care provider, and results are sent to the woman and her health care provider within two months. If you are one of the very few women in Alaska who has a high hair mercury level, the Alaska Division of Public Health and your health care provider will work with you to help reduce your mercury exposure.



A simple hair test can tell you how much mercury you may have in your body. For more information on hair mercury monitoring, or to arrange for testing, contact the Environmental Public Health Program at the Alaska Division of Public Health, 3601 C Street, Suite 540, Anchorage, AK 99503, 907-269-8000, <http://www.epl.hss.state.ak.us/eh/default/stm>

When Deciding What to Eat, Remember...

Subsistence foods, including almost all fish, are better for you and less expensive than store-bought foods. Also, the subsistence way of life helps keep Alaska Native cultures healthy and traditional ways alive.

Fish are nutritious, with vitamins A, E, and C, iron, zinc, protein, and very important omega-3 fatty acids. These nutrients help keep your nervous system, your immune system, and your heart healthy, and are important for a healthy pregnancy.

Subsistence foods are low in sugar and saturated fats. Store-bought foods can have unhealthy amounts of sugars and fats, which can contribute to obesity and diabetes, both of which are at epidemic levels in Alaskans, and heart disease. All these diseases are increasing among Alaska Natives.

Most subsistence foods are very clean. For example, all five species of Alaska salmon have very low contaminant levels and are safe to eat in unlimited quantities.

For more information on fish consumption guidelines, or the benefits of eating subsistence foods, contact Lori Verbrugge (lori.verbrugge@alaska.gov, 907-269-8086), Alaska Division of Public Health, 3601 C Street, Suite 540, Anchorage, AK 99503.