Fish Consumption Guidelines and the Hair Mercury Biomonitoring Program

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Maternal and Child Health Conference
Our Agreement:
I will nourish your future generations - as long as you protect mine.

Apayo Moore, Alaska Artist and Fisherwoman
Alaska Fish Consumption Guidelines

• In 2014 updated the Acceptable Daily Intake for mercury in fish
  – 7,900+ fish monitoring data points
  – Review of recent studies on neurodevelopmental, diabetes, and cardiovascular endpoints
• Recognized the importance of fish for nutrition, economics, sports, culture, community, religion, and identity
• Large amounts of fish consumed by Alaskans
Fish Consumption

Risks
• Contaminants
  – Mercury
  – Persistent Organic Pollutants
  – Other metals

Benefits
• Omegas-3 fatty acids
• Protein
• Selenium
• Numerous other nutrients
• Sport
• Culture
• Subsistence
Organic Mercury

- Formed in water and soil by bacterial action on inorganic mercury
- Methylmercury is the most common form
  - Bioaccumulates in individuals
  - Biomagnifies up the food chain
- Primary route of human exposure: ingestion
  - Readily absorbed
  - Distribution throughout the body
  - Found in hair within days of exposure
  - Elimination mainly in feces
  - Half-life in body ~2 months
The mercury cycle

Illustration by Connie J. Dean, U.S. Geological Survey
Most Susceptible: Fetuses and Children

Developing nervous systems

1. Mom eats fish containing mercury. Mercury can reach fetus
2. Measure mercury in mother’s hair
3. Mercury can be neurotoxic
4. Too much mercury can lead to adverse neurodevelopmental effects in offspring
Message Considerations

• Guidelines are ONLY for children and women who are pregnant, or plan on becoming pregnant
• Stress benefits, but communicate some caution from small number of fish (e.g., large halibut, shark)
• Communicate supporting programs
  – Hair mercury biomonitoring
  – Fish monitoring
Statewide guidelines incorporate fish species consumed by most Alaskans.

Guidelines for Alaska Women and Children

Mix and match your fish meals for up to:

12 POINTS PER WEEK

Note: A meal size is 6 ounces, uncooked weight (or roughly the size of a deck of cards).

Alaska fish is rich in nutrients and good for you. State health officials recommend that everyone eat fish at least twice per week. However, all fish contain some mercury, a toxic metal that can harm the developing nervous systems of unborn babies and children. Because of this, women who are or can become pregnant, nursing mothers and children should follow these guidelines to limit their mercury intake. Everyone else can eat as much seafood as they like.

**Unrestricted amounts**

- Arctic Cisco
- Big Skate
- Black Rockfish
- Broad Whitefish
- Dolly Varden
- Dusky Rockfish
- Grayling
- Halibut <40 pounds
- Humpback Whitefish
- Least Cisco
- Lingcod <35 inches
- Pacific Cod
- Pacific Ocean Perch
- Rainbow Trout
- Rougheye Rockfish
- Sablefish
- Salmon, Chinook (King)
- Salmon, Chum
- Salmon, Pink
- Salmon, Red (Sockeye)
- Salmon, Silver (Coho)
- Sheefish
- Walleye Pollock

**3 Points per meal**
- Halibut 40–80 pounds
- Lake Trout
- Lingcod 35–40 inches

**4 Points per meal**
- Halibut 80–140 pounds
- Lingcod 40–45 inches
- Longnose Skate

**6 Points per meal**
- Yelloweye Rockfish
- Halibut 140–220 pounds

**12 Points per meal**
- Halibut >220 pounds
- Lingcod >45 inches
- Salmon Shark
- Spiny Dogfish
Have you ever wondered how much mercury is in your body?

If yes, then ask your provider about the Hair Mercury Biomonitoring Program

Who can participate?
- Women aged 15-45
- Pregnant women of all ages

Why should I participate?
- High mercury levels can harm a developing fetus
- Knowing your mercury level can help you make health decisions for yourself and your child (if you are or plan to become pregnant)

Quick, Free and Painless
- Testing takes 5 minutes
- A small lock of 50 hairs is taken from the middle back of your head
- Results are mailed confidentially to you in about 1 month

For more information:  
www.epi.hss.state.ak.us/  
(907) 269-8000

Alaska Hair Mercury Biomonitoring Program
Purpose of Test

• To help women make healthful choices that maximize benefits from consuming fish and minimize risk from contaminants in fish.

• To help women get an idea about how much mercury they get from fish and marine mammals.

• Address concerns about mercury exposure from subsistence foods
Simple Sample Test Kit
Slip dental floss loop around hair and tighten knot approximately 1.5 inches from scalp.

Diameter of hair sample = 3–4 mm
Follow-up

• Samples sent to the Alaska State Public Health Laboratory in a pre-addressed envelope. Patients and their providers receive the results by mail within a month of sample submission.

• The Department of Health and Social Services performs follow-up activities to investigate hair mercury levels ≥5 ppm, and assists in devising strategies to reduce further exposure.

Number of Samples

Total Mercury (ppm)

5 ppm
Threshold Level of Concern
Regional distribution of hair mercury results (ppm) among women of child bearing age

57% of women above the 95th percentile hair mercury concentration were from the Southwest region.
Outreach
Statewide

- Press Releases
- Epidemiology Bulletins
- Conferences
- Conference calls
- Public Health Nursing
- State website
- Facebook and Twitter
Targeted Mid Kuskokwim River Advisory (English and Yu’pik)

Mercury in Northern Pike from the Yukon Delta National Wildlife Refuge

How much pike from the Yukon Delta area should we concerned about mercury?

Mercury in Fish from Copper, Tanada, and Summit Lakes
National Park Service, Alaska Dept. of Health and Social Services, Alaska Dept. of Environmental Conservation

How much fish from Copper and Tanada Lakes should women and children eat?

<table>
<thead>
<tr>
<th>Methylmercury concentration in fish (mg/kg)</th>
<th>Meals per month</th>
<th>Copper Lake</th>
<th>Tanada Lake</th>
<th>Summit Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 0.15</td>
<td>Unrestricted</td>
<td>All Kokanee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;0.15 - 0.32</td>
<td>up to 16</td>
<td></td>
<td>Lake Trout 16” to 22”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grayling</td>
<td></td>
</tr>
</tbody>
</table>

at high levels it can damage the nervous system (including unborn babies) and children.

eating fish?
Alaska fish are low, so the only people who need to think about fish they eat are women who are or can become pregnant, children age 12 years and under. Women and children can still eat fish by choosing to eat fish that are low in mercury, like salmon.

age boys may enjoy unrestricted amounts of most Alaska fish,
Mid Kuskokwim Village Community Meeting

March, 2014
Lower Kalskag, AK
March, 2014
Crooked Creek, AK
Additional Outreach is Needed

• Strengthening partnerships
  – Alaska Native Tribal Health Consortium
  – Public Health Nursing
  – Women's, Children's and Family Health

• Audiovisual educational materials

• Regional Immersion to Engage Community
  – In health clinics
  – With itinerant nurses
  – In community meetings
Additional Steps

• Engage health care providers to provide educational and hair monitoring options to women (e.g., medical centers and WIC clinics)
• Explore social media further
  • Facebook, Twitter, partner pages, other websites
Statewide Initiative by the Alaska Native Tribal Health Consortium
Division of Public Health Quality Improvement Initiative

• Great opportunity to collaborate with
  – Section of Public Health Nursing
  – Section of Women's, Children's and Family Health
• Existing collaboration is good, but needs to be stronger
Help from Public Health Centers

• 24 centers
• Itinerant nurses travel to surrounding locations
• Training videos
  – Importance of fish consumption
  – Importance of advisories
  – Fish monitoring program
  – Hair mercury biomonitoring
• Could also be used for health care providers, tribal officers, health aides, and environmental aides
Recommendations

• Health care providers should encourage women of child bearing age and parents of children to follow the state’s fish consumption guidance.

• Health care providers should encourage women of child bearing age, especially pregnant women, to participate in the Alaska Hair Mercury Biomonitoring Program.
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