

**Summary: 2004 National Forum on
Contaminants in Fish
San Diego, CA
January 25-28, 2004**

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February 10, 2004**

Forum - Agenda

- Monday:
 - Mercury Issues
 - Hg in commercial fish species (FDA and state data)
 - Gulf States Hg advisory for king mackerel
 - Update on Hg epidemiology
 - National mercury advisory
 - Description
 - Exposure Assessment
 - Peer Review
 - Focus Group Results
- Tuesday
 - Risk Management Issues
 - Evaluation of state Hg advisories
 - Risk communication - Case studies
- Tues. Cont..
 - Monitoring Contaminants in Fish
 - Contaminants in farmed salmon
 - Factors affecting contaminant exposure in fishes
 - Model applications
- Wednesday
 - Chemical Updates
 - PBDE's
 - Dioxin
 - As:Speciation and Hazard

Also, Regional break-out discussion sessions.

The Issue

- There are health benefits associated with a diet that regularly includes fish. However, contaminants found in fish requires balancing these health benefits with risks of exposure to contaminants.
- Balance achieved through:
 - Understanding the basis of health benefits of fish
 - Documenting fish contamination patterns
 - Limiting exposure of sensitive populations
 - Posting fish advisories
 - Public education on fish advisories
 - Monitoring efficacy of fish advisories

Mercury in Fish - Observations

- Correlation between fish length and MeHg differs among species - but in general, avoid eating larger fish.
 - Example Among Tuna: Albacore wt. and [MeHg] is not correlated while it is in Big-eye and Yellowfin. Does this happen in other species?
 - Canned albacore and white tuna have more MeHg than “light” tuna.
 - More species level information on fish size and MeHg concentration is needed.
 - FDA is monitoring a wide range of food - fish identified to species level.
 - Increase labeling of seafood?
 - MeHg content?
 - Origin?
 - How to develop easily understood advisories for the public?
- Location Specific Advisory vs. Fish Specific Advisory
 - N. Carolina has gone to a fish specific advisory for the state
 - Requires species level information on fish Hg.
 - Splits fish into low and high MeHg fish and advises on meals / week accordingly.
 - Discussion on practicality of a Gulf States wide advisory for King Mackerel

Mercury in Fish - Human Exposure

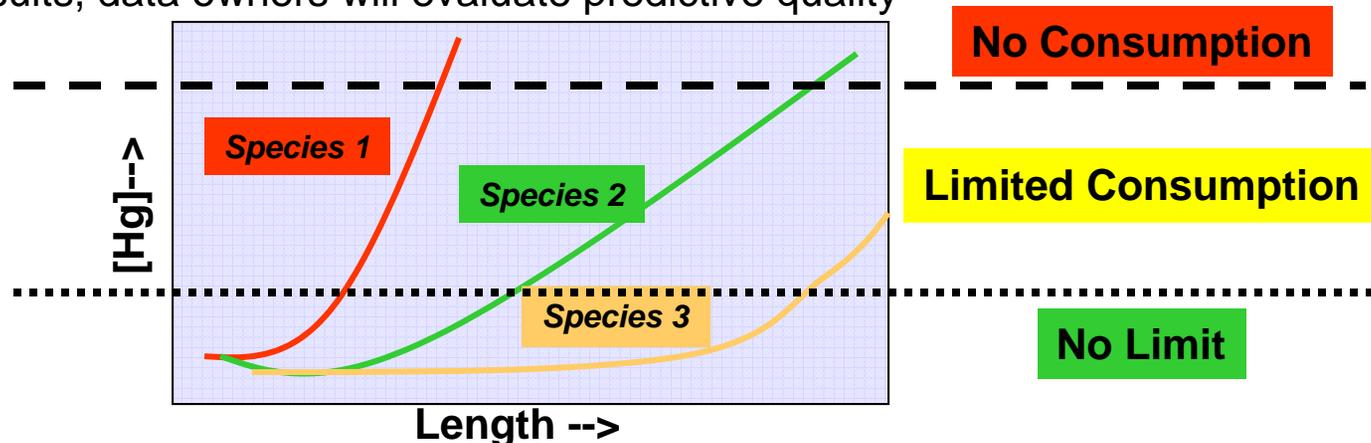
- **NHANES Organic Blood Hg**
 - Tested 1709 women of childbearing age representative of US population
 - 9% consumed fish at least once a week
 - $R^2=0.5 - 0.6$ between dietary total Hg and blood Hg
 - Blood Hg levels were higher in women who reported eating 9 fish/shellfish meals in past 30 d.
 - At blood levels above 4 ug /L most Hg is present as MeHg
- **Estimated Number of Newborns Exposed *In Utero* to MeHg above RfD**
 - Hg blood RfD = 5.8 ug /L
 - Cord blood Hg : Maternal blood Hg ranges from >3 to <1 (average ~1.7-1.8 in Japanese data)
 - Depending on cord blood to Maternal blood ratio used, estimates of infants exposed *in utero* to Hg levels above RfD ranges from ~300,000 to ~630,000
- **Effects of MeHg Exposure**
 - Seychelles Cohort - No effects
 - Amazonian Villagers and Cree Indian - Effects observed in adults exposed to MeHg
 - WHO reports parathesisas observed in 5% adults at 50 ppm Hg in hair
 - Dose response at low levels of MeHg needs to be further studied
 - Exposure to MeHg may be antagonistic to heart health benefits from omega-3 Fatty Acids found in fish diet

Revised Joint FDA and EPA Advisory

- Advisory Title: *Advice for women who are pregnant, or who might become pregnant and nursing mothers about avoiding harm to your baby or young child from mercury in fish and shellfish.*
- Three main elements:
 - Risk Message
 - Who is at risk
 - What is the risk
 - Consumer Advice
 - Benefits of fish in diet
 - Three rules to avoid Hg
 - Avoid shark, swordfish, king mackerel, tilefish
 - eat a variety of fish/ shellfish (up to 12 oz a week or 2-3 meals/week)
 - Check local advisories for information on sport caught fish
 - Additional Information
 - What is Hg and MeHg?
 - Tuna
 - Sources of additional information
- Advisory continues to be developed and refined through comments and results of focus group interviews.

Tools for Fish Advisories

- Web based guidance on risk communication developed at Cornell (B. Knuth).
 - Targeted for release in April 2004
- Modeling application for monitoring contaminants in fish: Mercury Pilot Project / USGS (S. Wentz)
 - “EMMA” Environmental Mercury Mapping, Modeling and Analysis
 - Models spatial - temporal trends in fish tissue Hg
 - Allows building of consumption advisories based on length
 - Model may be able to show trends not available in raw data
 - Will be presented in peer-reviewed publication
 - Data sets can be volunteered, USGS will apply the model and present the results, data owners will evaluate predictive quality



Risk Management - Ensuring and Assessing Effects of Fish Advisories

- **The public needs to be continuously reminded of fish advisories.**
 - Press releases
 - Signage
 - “Gimme” items like cups, coloring books etc.
- **Target advisory information to sources trusted by the public.**
 - Physicians
 - News media
 - Churches
 - Community Outreach
 - Market Outreach
- **Consider possible barriers to accessing and acting on information in a fish advisory.**
 - Literacy
 - Language
 - Cultural Practices
 - Availability of other food sources
- **Compliance / behavior changes can be assessed through observation, interviews and surveys**

Further Needs to Support Fish Advisories

- Funding at state level to help extend limited resources
- Data on Hg and other contaminants in fish species
- Data on spatial / temporal trends of contaminants in fish
- Assess possibility of including other contaminants in EPA/FDA's National Fish Advisory
- Consistency in in monitoring strategy and guidance on which labs / methods to use.
- Data on toxicity of mixtures of environmental contaminants
- Review of literature on health benefits of fish consumption
- Development of more sophisticated models for fish contamination