

Seafood Safety: Lessons Learned and Challenges Ahead

Elaine M. Faustman



Center researchers on the research vessel,
RV Thomas G. Thompson, in November 2004.
Courtesy of Cedar McKay, UW School of Oceanography

Pacific Northwest Center for Human Health and Ocean Studies

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Pacific Northwest Center for Human Health & Ocean Studies

Understanding
underlying mechanisms
of marine processes
and public health on
coastal and Puget
Sound regions.



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SeaWiFS, June 27, 2001. Photo courtesy Miles Logsdon, UW

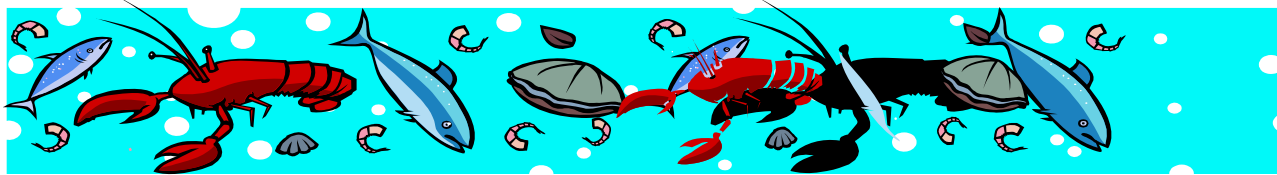
Outline

1. Cultural Context for Considerations of Seafood Safety
2. Complexity of the Public Health Issues
3. How are We Answering the Public Health Questions?



Fish Intake: Assessing
n-3 Fatty Acid Intake And Contaminant
Exposure In The Korean and
Japanese Communities

Arsenic Mercury Intake Biometric Study



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Institute for Risk Analysis and Risk Communication

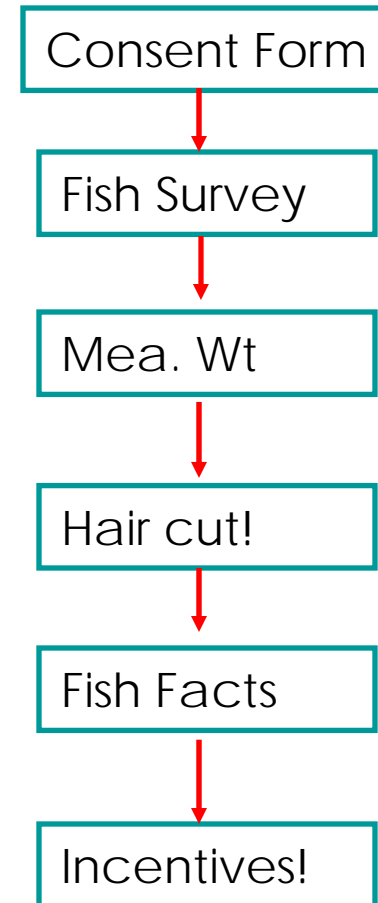


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Methods-Procedures

- Structural Interviews by a “trained” bi-lingual interviewer (either Japanese, Korean or English)
 - Fish consumption survey
 - Pregnancy Status
 - Demographic Information
- Body weight



Fish
Facts
for
Good
Health



健康のため
の魚の
知識



Method

Fish Consumption Surveys:

- Fish eaten (with pictorial)
- Frequency of consumption for each fish species eaten
- Usual portion size for each fish species (with models)

Mackerel さば 고등어



Flounder ひらめ/かれい 가자미



Pike Mackerel さんま 꽁치



Salmon さけ 연어



Eel うなぎ 뱀장어



Carp こい 잉어



Food Frequency Questionnaires (FFQ):

- Frequency and amount of foods intake in past 6 months
- Developed and validated by FHCRC



Hair Sample: from the nape of the neck

Fish Consumption Comparison: to National Statistics

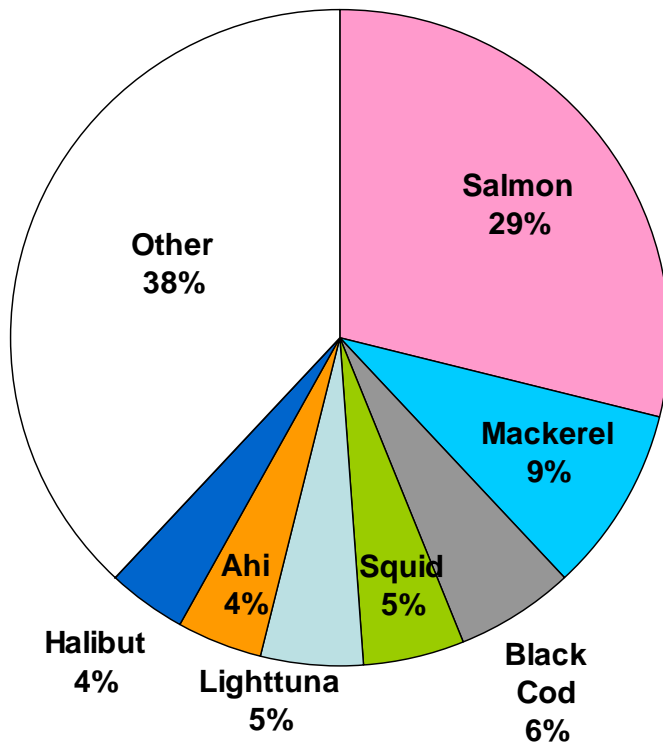
	Finfish			Shellfish			Finfish & Shellfish combined		
	Mean	50 th %	95 th %	Mean	50 th %	95 th %	Mean	50 th %	95 th %
Japanese (n=106)	60	43	159	14	9	59	73	55	188
Korean (n=108)	59	49	147	23	13	84	82	64	230
US General (CSFII¹)							14		72
US General (NHANES²)							1.8*		87

g/person/day

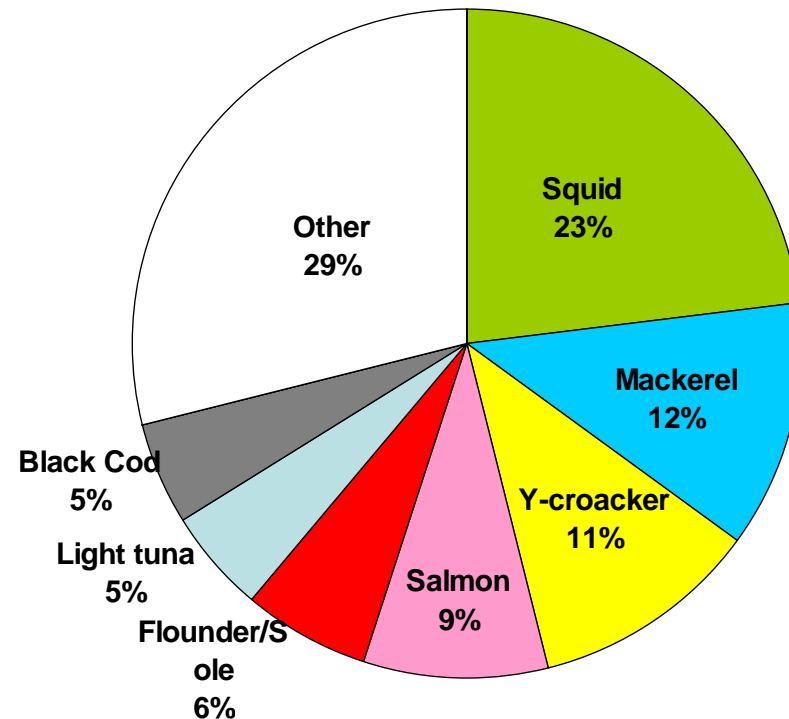
Fish Consumption Comparison: by weight

Species contributing the largest % to total consumption

Distribution of total consumption by Japanese participants

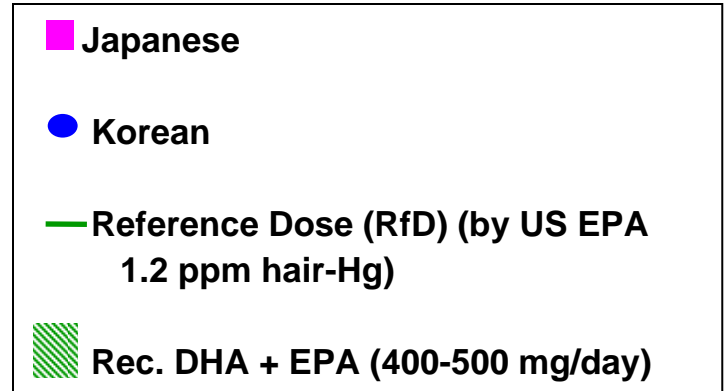
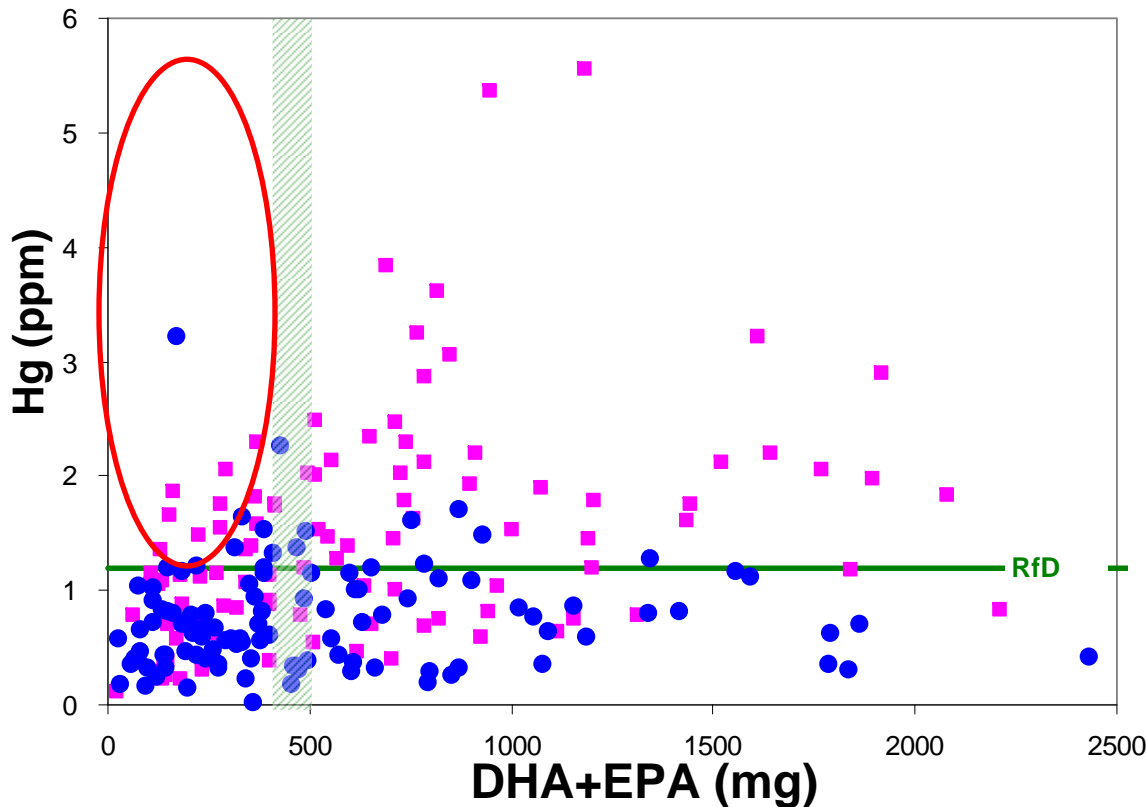


Distribution of total consumption by Korean participants



Even though two populations consume approximately same quantity, species they consume are quite different.

Omega-3 Fatty Acids intake & Mercury Exposure



	Japanese (n=106)	Korean (n=108)
DHA+EPA < 400mg/d	38 %	57 %
Hg >1.2ppm	53 %	13 %
Hg >1.2ppm & DHA+EPA < 400mg/d	11 %	5 %
Hg >1.2ppm & DHA+EPA >500mg/d	40 %	8 %
Hg < 1.2ppm & DHA+EPA <400mg/d	26 %	54%

Both populations have a percentage of individuals not obtaining their daily dietary requirement of DHA/EPA (400-500 mg/d) even people who are over exposed to mercury.

Next steps

- Determining shellfish consumption pattern by Korean and Japanese populations
 - Species, method of collecting, harvesting locations, preparation methods
- Nutrient intake and fish consumption
 - Macronutrients, vitamin, mineral intake by these 2 population
- Implications of cultural differences in seafood intake for potential fish contaminant risks
- Antioxidant
 - How antioxidant intake modifies toxicity in humans?

Public Health Questions -

The Seafood Dilemma:

Health Benefits vs. Biological and
Chemical Contaminants



Contaminants in seafood

Microorganisms

- Bacteria (*Vibrio*)
- Algal toxins (PSP & domoic acid) — mostly shellfish

Viruses

- Very little is known about these contaminants

Persistent Bioaccumulative Toxicants

- Mercury, PCBs, dioxins, DDT
- More of a problem in older, larger fish — “bioaccumulates”



Fish Consumption Advisories: Toxicological Risk and Nutritional Benefit Messages to Sensitive Populations

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Public Health Questions



Tribal Rights and Fish Consumption Workshop

On August 12-13, 2009 the University of Washington hosted the “Tribal Rights and Fish Consumption Workshop: Issues and Opportunities for the Pacific Northwest.”

Products include: An online fish consumption resources page containing articles, reports, contacts, select presentations, and links to other conferences relevant to workshop themes.



Participants listen to a presentation. Photo courtesy Sarah Fisher

The workshop successfully brought together 64 people including:

- 27 participants representing 14 tribes,
- 14 academicians,
- 14 government agency representatives,
- 6 members of the private sector, and
- 3 environmental advocates 18

Is it safe to eat the fish?



Image credit: Stock.XCHNG