
Portland Harbor Project: Interfacing with Oregon Health Authority

David Farrer, Ph.D.

Office of Environmental Public Health

Superfund Research Program Annual Meeting

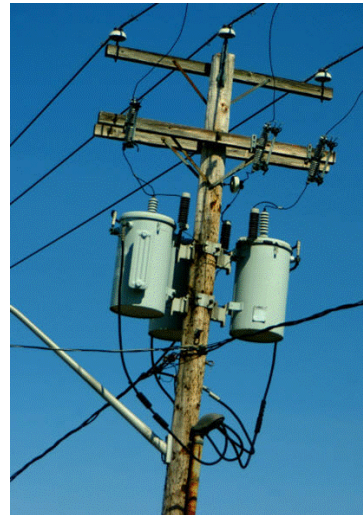
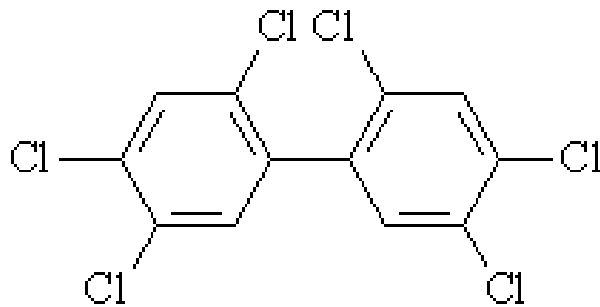
November 10, 2010



Overview




- Background polychlorinated biphenyls (PCBs)
- Research need: Select method to quantify risk to nursing infants
- Collaborative approach and application in Oregon

Polychlorinated Biphenyls (PCBs) – A Fat-Soluble Environmental Contaminant





Portland Harbor Fish Advisory

- Based on polychlorinated biphenyls (PCBs)
- Specific warnings for pregnant and nursing women
- Based on qualitative information
- Why not quantify?



OREGON FISH ADVISORY

Fish from these waters may be harmful to eat, especially for children and pregnant or nursing women.
For more information, call DHS at 503-731-4012.




Atención: Los peces de estas aguas pueden ser dañinos al comerlos, especialmente a mujeres embarazadas, mujeres que están lactando (amamantando) y a niños.

Chú ý: Ăn cá từ những vùng nước này có thể sinh nguy hại, nhất là cho trẻ em, phụ-nữ đang mang thai hoặc cho con bú.

注意: 食用這些水域的魚類，可能會使健康受損，尤其對兒童、懷孕婦女、或正在用母乳哺乳的母親影響更大。

Внимание: Рыба из этой воды может быть вредной для употребления, особенно для детей, беременных и кормящих женщин.

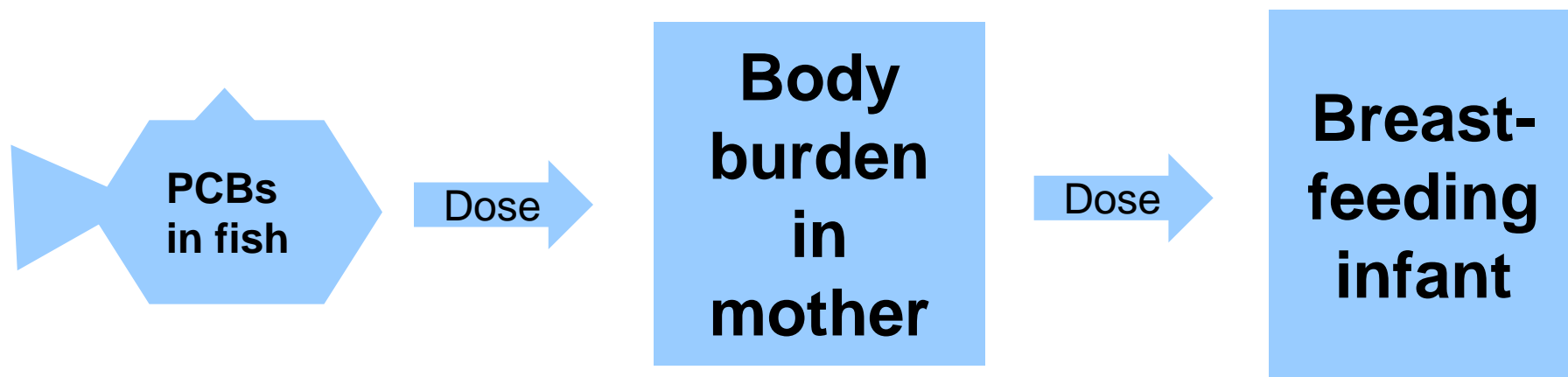
ປະໂຫຍດ: ການກິນປາໃນນ້ຳເຫຼົ່ານີ້ ອາດເປັນອັນຕະລາຍ, ໂດຍສະເພາະສຳລັບ ເດັກນ້ອຍແລະແມ່ຍິງທີ່ກິນນ້ຳ ຫລື ມີລູກນ້ອຍກິນນ້ຳເອງ



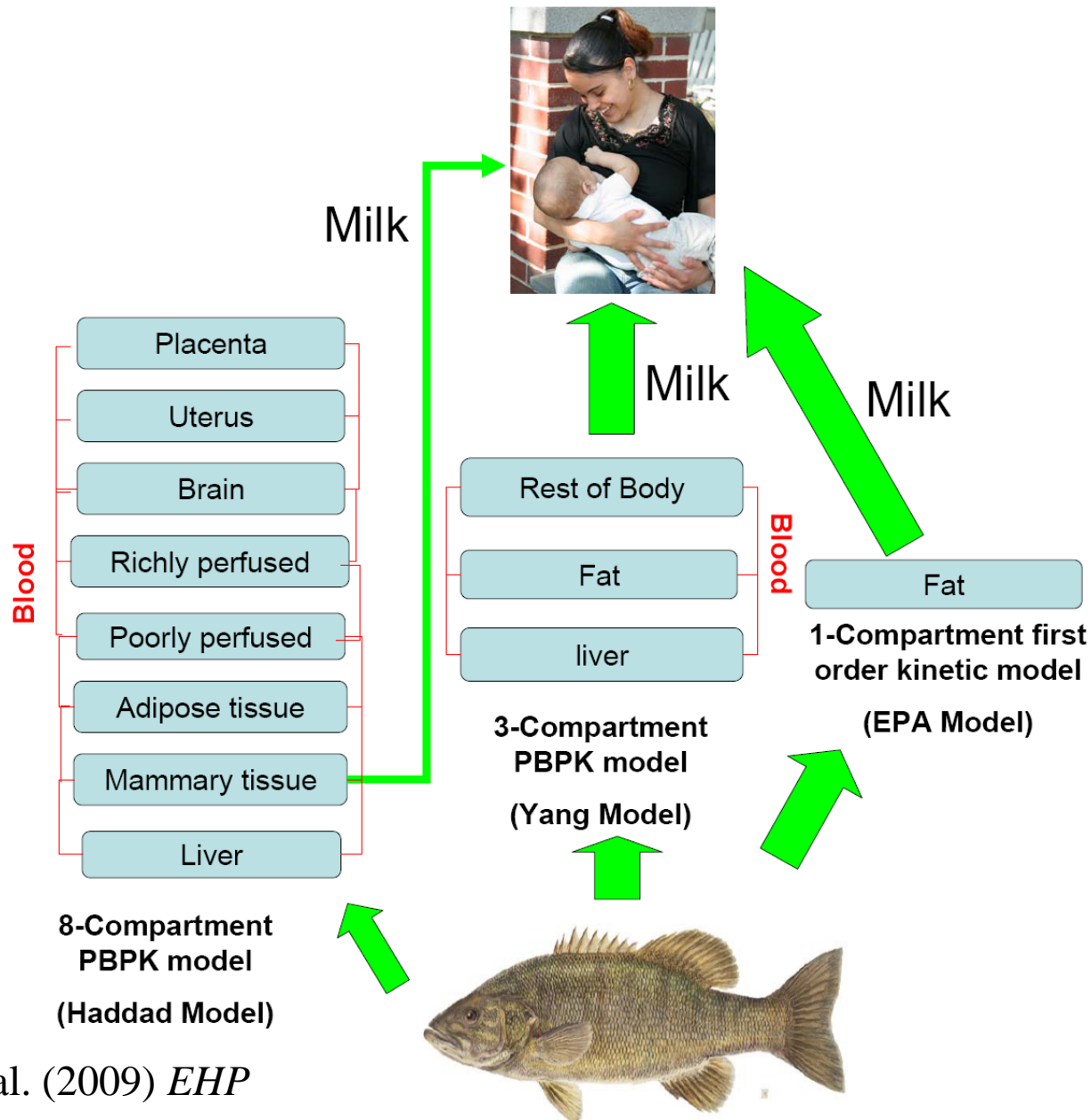
AVOID Evite comer Tránh 避免 ИЗБЕГАЙТЕ 禁食

Carp Bass Catfish Sturgeon

Conceptual Model



Method Selection (PCB-153)

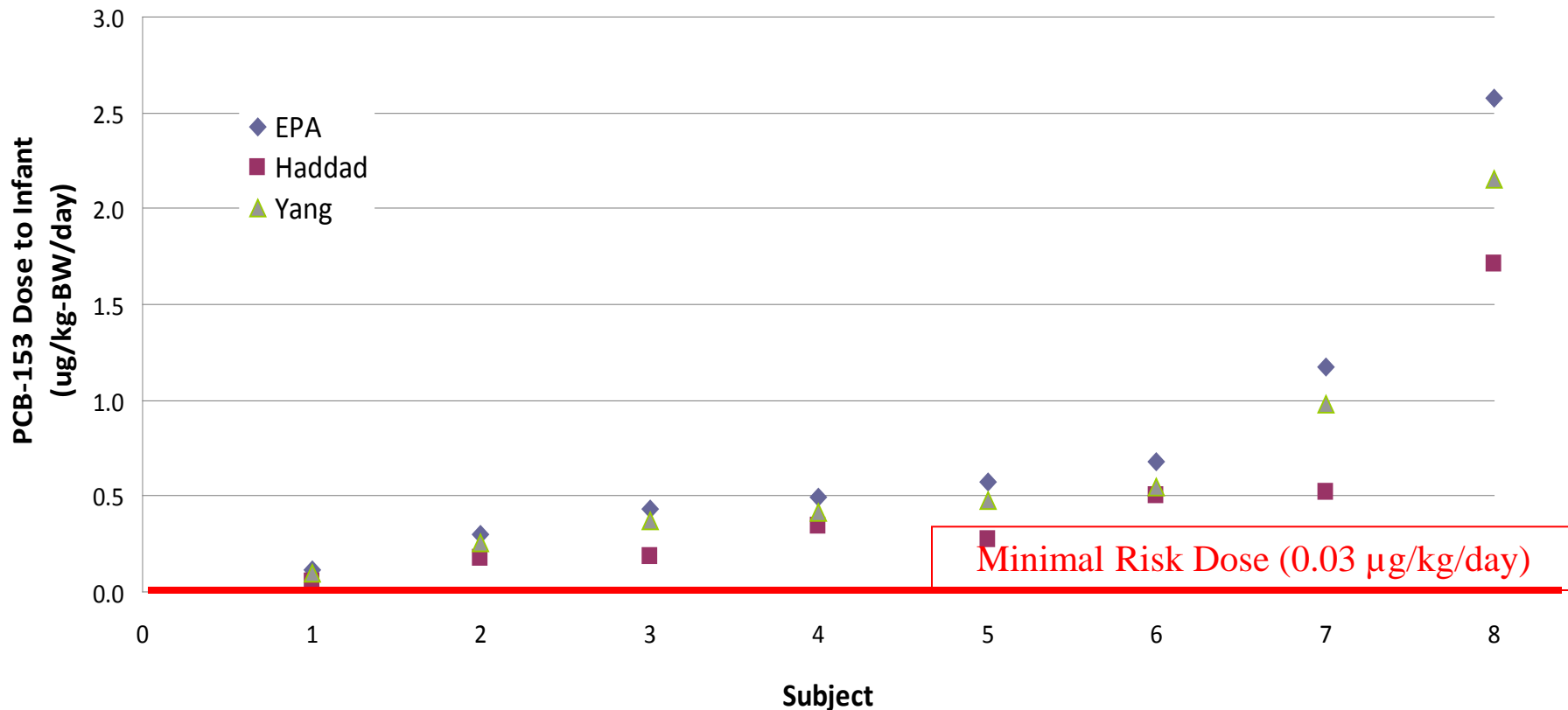


Comparison of 3 Models

- 8 Actual mother-infant pairs selected from larger study (N=75). Criteria for selection included:
 - Breastfed for at least 11 months
 - Equal number male and female infants
 - Good spread of milk concentrations across the range
- We calculated milk concentrations of PCB-153 and dose to infant using the three models
- Haddad model was validated against observed data from this study

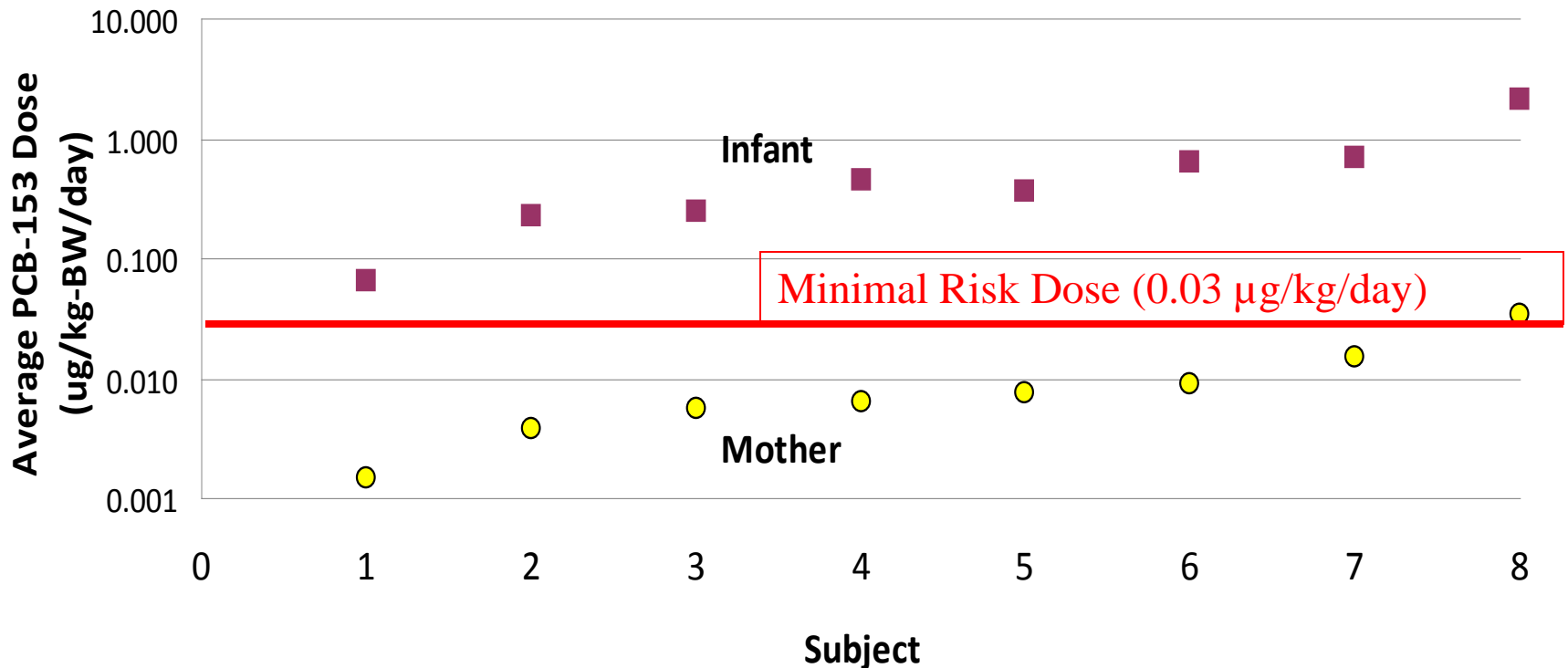
Simulated Doses to Infants Were Similar Across 3 Models

Model Comparison
1-Year Average PCB-153 Dose to Infant



Infant Dose Compared to Maternal Dose

Comparison of PCB-153 Average Dose to Mother
and Infant (at 6 Months) Calculated with Haddad Model



Infant Risk Adjustment Factor (IRAF)

$$\text{IRAF} = \text{HQ}_{\text{infant}} / \text{HQ}_{\text{mother}}$$

$$\text{HQ}_{\text{infant}} = \text{HQ}_{\text{mother}} \times \text{IRAF}$$

Oregon DEQ Human Health Risk Assessment Guidance

Chemical	IRAF
Dioxins	2
DDT	2
Total PCBs	25

Oregon DEQ Human Health Risk Assessment Guidance

- Oregon is the first state in the country to call attention to the quantitative assessment of risk to infants from PCB-contaminated human milk.
- OHA helped with model selection and crafted messaging around this guidance for nursing mothers, because...

Breast is Still Best

- Important to communicate that calculated risks are not intended to advise women about whether or not to breastfeed.
- Benefits still outweigh the risks
- Public health messages focus on reducing maternal exposure to contaminants to optimize benefits of breastfeeding
- The earlier maternal exposure to fat-soluble contaminants is reduced, the better for the future infant.

Project of Collaboration

Research

- Oregon Health Authority (OHA)
- Oregon DEQ
- Agency for Toxic Substances and Disease Registry (ATSDR)
- Environmental Protection Agency (EPA) Region 10 office staff in Seattle
- University of Montreal in Quebec
- Colorado State University

Application

- OHA
 - Office of Environmental Public Health
 - Office of Family Health
- DEQ
- ATSDR
- EPA

For More Information

David Farrer, Ph.D.
Toxicologist
Oregon Public Health Division
971 673-0971
david.g.farrer@state.or.us

Mike Poulsen, MS
Toxicologist
Oregon DEQ
503 229-6773
poulsen.mike@deq.state.or.us

