
Quantitative Assessment of Risk to Infants from Environmental Contaminants in Human Milk

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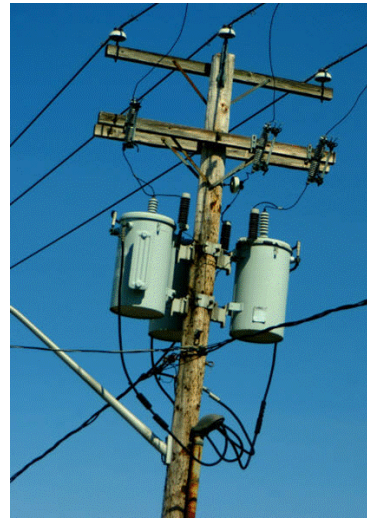
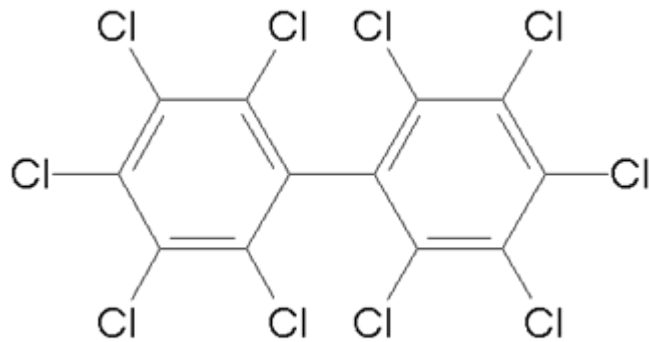
October 18, 2010



Overview


- What are polychlorinated biphenyls (PCBs), and why are we concerned about them?
- The nursing infant exposure pathway
- Selection of method to predict PCB levels in human milk
- Quantifying risk to infants
- Applications in Oregon and cross-cutting collaboration

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?




NOTICE!



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。



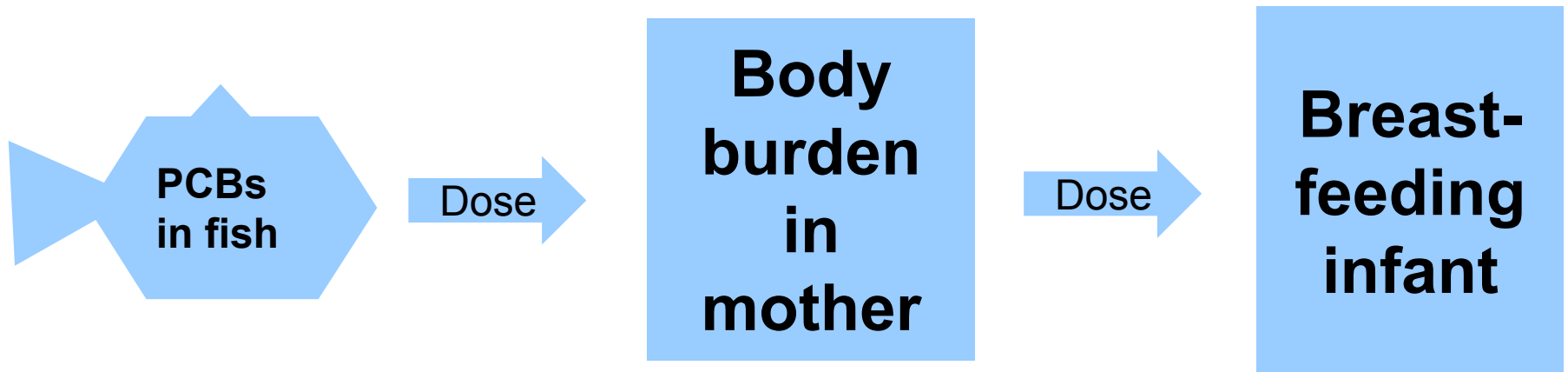
Внимание: Рыба из этой воды может быть вредной для употребления, особенно для детей, беременных и кормящих женщин.

ປິ່ປ້ອດຊາຍ: ການກິນປາໃນນ້ຳເຫລົ່ານີ້ ອາດເປັນອັນຕະລາຍ, ໂດຍສະເພາະສຳລັບ ເດັກນ້ອຍແລະແມ່ຍິງທີ່ກູ້ໄພາ ຫລືແມ່ຍິງທີ່ລ້ຽງດູລູກດ້ວຍນົມຕົນເອງ



| | | | | | |
|--|---|---|---|------------------|-----------------|
| AVOID | Evite comer | Tránh | 避免 | ИЗБЕГАЙТЕ | ຫລີກລ້ຽງ |
|  |  |  |  | | |
| Carp | Bass | Catfish | Sturgeon | | |

Conceptual Model



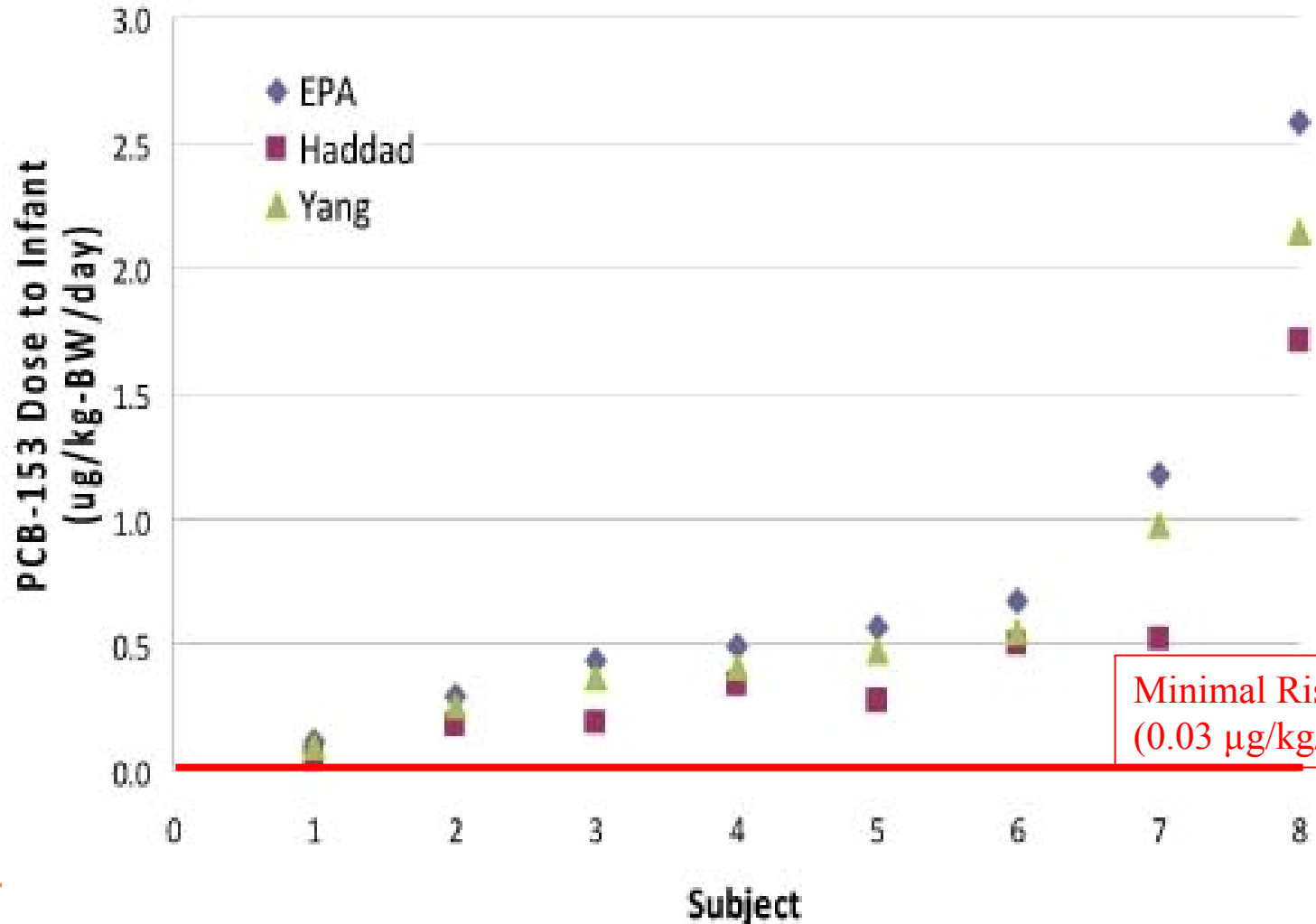
Comparison of 3 Models

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

Simulated Doses to Infants Were Similar Across 3 Models

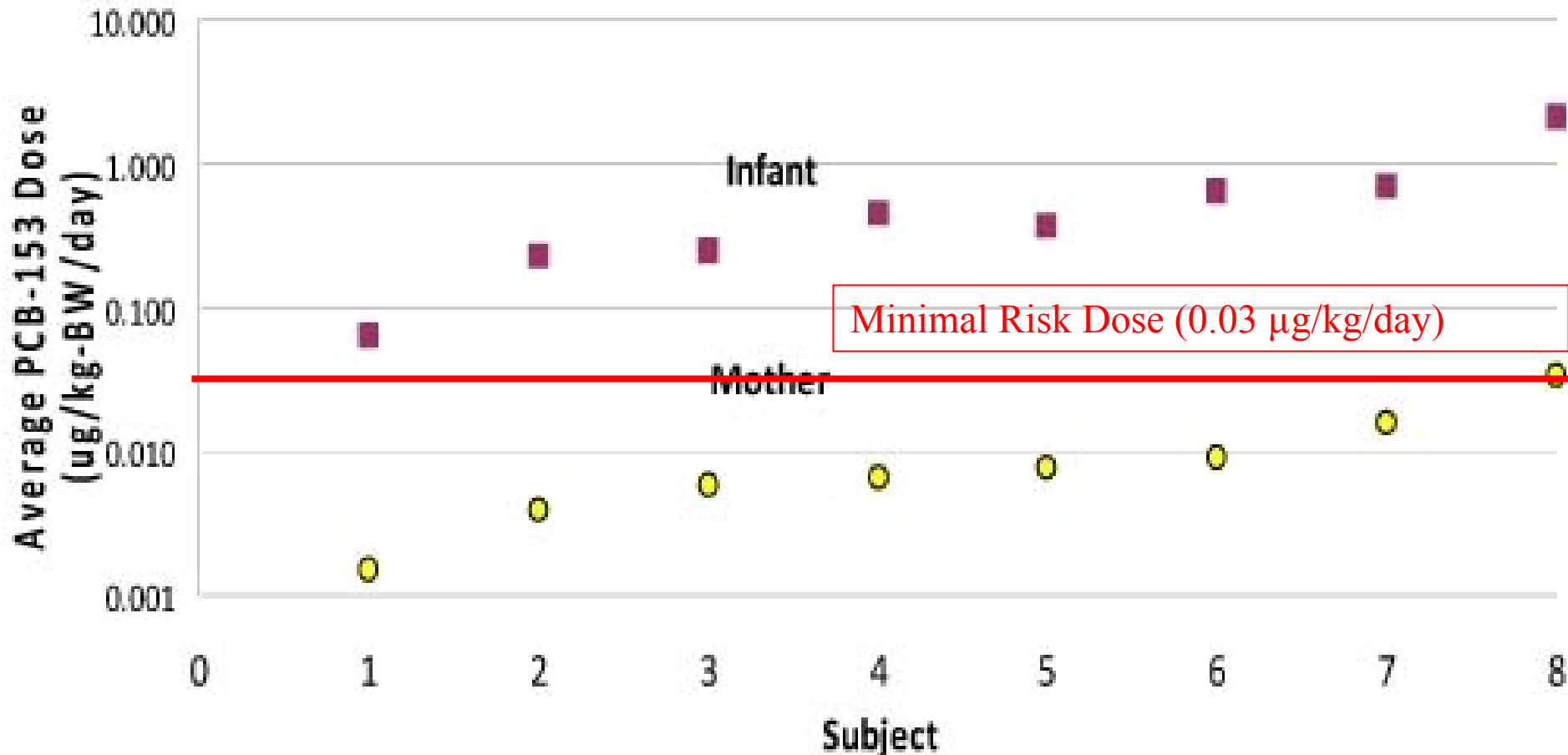
Model Comparison

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



Oregon DEQ Human Health Risk Assessment Guidance

- Oregon Department of Environmental Quality (DEQ) has included this nursing infant exposure pathway in their updated Human Health Risk Assessment Guidance: Appendix D.
- Oregon is first state in the country to require quantitative assessment of risk to infants from 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

- Oregon Health Authority
- Mike Poulsen, Oregon DEQ
- Clement Welsh, Agency for Toxic Substances and Disease Registry (ATSDR)
- Marcia Bailey, Environmental Protection Agency (EPA) Region 10 office staff in Seattle
- Dr. Sami Haddad, University of Montreal in Quebec
- Dr. Raymond Yang, Raymond Yang Consulting LLC.

Oregon
Health
Authority