

Mercury in the Aquatic Environment

Expert Panel Feedback



Question Posed to Expert Panel

- What critical gaps remain in our understanding of the South River aquatic environment that specifically impact remedial options selection and implementation?

Expert Panel Feedback - Ecological Effects

- Increase understanding of ecological effects
 - Are fish and macroinvertebrate communities similar to regional communities?
 - Does Hg in fish increase susceptibility to other environmental stressors?
- Develop more comprehensive set of metrics to quantify effects
- Re-consider characterization of reference conditions
- Explore additional statistical techniques
- Link structural measures to ecosystem processes

Key Considerations

- Multiple site-specific studies, programs, and publications from 1980s and 1990s; need to integrate findings
 - Assessments on densities, composition, growth, condition, survival, recruitment, production, physiology, and genetics for fish and macroinvertebrates
 - See briefing papers (e.g., Aquatic Study Matrix, Aquatic Food Web, Mercury in Aquatic Biota, etc.)

Expert Panel Feedback - Aquatic Food Web / Conceptual Model

- Increase understanding of IHg sources, MeHg production compartments, and linkages to base of aquatic food web
- Determine role of periphyton as source of Hg to grazing macroinvertebrates
- Consider nutrient spiraling framework as way to better understand Hg retention and transport

Ecological Study Update



Movement of Hg in Aquatic Environment

- Fish population / community, tissue, and stomach content analyses
- Trophic linkage studies: *In situ* Hg uptake and basal resource utilization by aquatic invertebrates
- Fish bioenergetics / bioaccumulation modeling



Assessing Potential Impacts to Benthic Macroinvertebrate Communities

- Sediment quality triad
- Field-based (*in situ*) microcosm study



Next steps

- NRDC consultation in February
- Data integration / evaluation
- Phase II report