Filling Data Gaps

Ongoing or Completed

- **Sediment Sampling and Coring – initial phase complete**
- **Corbicula Studies, Phase 1 (& intensive around plant site) - finished**
- **Fish Diet Studies - scheduled to be finished later this year June)**
- **DuPont Site Stormwater Investigation - round 1 complete. Round 2 in spring 2004**
- **Intensive Water Followup – done thru Jan 2004. Next steps?**
- **Tributary & Bridge Sampling- delayed, waiting for shake & bake results. Help answer floodplain & trip contributions of Hg to river. Ponds?**
- **Investigate Floodplain (& for purposes of CSM) / Vegetation / Biota - Ponds**
- **River / land use survey - done**
- **Food Crop Study, Phase 1 - done**
- **Publications (need some common definitions) – discussed. Need consistent nomenclature, river miles, etc. (manuscript subteam?)**
- **Water Column Sampling (ions, etc.) – DEQ did a limited amt during sweep. No indicators shown.**
- **Atmospheric Deposition Studies (summer 04 results)- Dean to have prelim data this summer/fall. Index, not absolute.**
- **Initial Estimate of Bird Exposure and Risk – Ralph did rough estimate last year. Need to revisit in 2004.**
- **Water and Flow Balance – Nancy did initial effort. Oct 2003 science team mtg. May expand**
- **Corbicula, Phase 2**
- Stormwater repeat for plant site
- Food crops, Phase 2
- Water column Hg at DuPont site and downstream
- Shake and bake of soils, sediments (maybe clams added)
- Modeling / geomorphologist
- Floodplain soil investigation (Annette)
- Minority outreach

Planned or Proposed

- **Investigate 2nd St. Landfill –initially use "sniffer" or other methods to see if data drive us to the landfill**
- Re-emergent Hg (globules under sediment surface in river bed) – guzzler, sniffer, other innovative methods…
-
- Sampling Periphyton / Aquatic Vegetation (Bill made presentation)
- Sediment Sampling & Analysis (DEQ experiments. Moving as time allows)
- Outreach (website, workshop)
- Sediment Traps – sedimentation rate - wait on geomorphologist
- Floodplain Ponds* (new item)
-
- Non Trust-fund Fish Sampling (forage fish for TL3 estimates) – in concert with 2005 collections?
- Bird exposure (feather or tissue analysis – geese, ducks) – Discuss in more detail for future data
- Develop set of bioindicators (including fish) -
- Modeling Help – John Green, Rudd, Stahl
- Hg Speciation -

Suggestions from 2003 Expert Panel meeting – testing hypotheses

1. Are floodplain soils a source of bioavailable mercury
   Shake and bake study using soils, river water and measuring MeHg production over time

2. Are river bed sediments a source of bioavailable mercury
   Shake and bake study using sediments, river water and measuring MeHg production over time (could combine with clam uptake studies)

3. In 1 and 2, add organic matter to provide food source for bacteria (to stimulate microbial activity) – stack the deck. Maybe have a streamside flow through system – soils / sediments, river water, and clams (and enhancements to microbes) to see if bioavailable mercury is released.

4. For slow drip hypothesis, or new source hypothesis: need intensive water column study with total and dissolved Hg along with low detection limit.

Sample at low flow period if possible. Include tributaries and other potential inputs other than the point at which the transect is specified. Need to check the ratio of total to methyl along with the change in this ratio downstream. Separate inorganic data from methyl data. The change in these will be reflective of new inputs to system – may need a statistical power test to help identify how many samples are needed to determine whether we'll be able to detect a difference.

5. For slow drip, hot spots of methylation: need intensive water column study and target areas in river conducive to methylation for MeHg analysis. Need to include flow measurements with this effort, particularly when going to areas where methylation might occurs. Have to combine upstream, in the zone, and downstream of these areas.

6. For hypothesis # 3, for this to work, there would have to be an erosional process in the sediments and soils that would provide the continued input of inorganic Hg to the system. In the absence of the erosional process, it is likely that the levels in fish would have gone down.

7. For the globules hypothesis – difficult to distinguish from other hypothesis. Headspace analysis in water, sediment or soil samples (using inert gas like Argon) and measure elemental mercury content. Might be able to use PIMS or similar type of sampler. Difficult to distinguish among various forms particularly when adding air or other medium drives changes in speciation. Soil / vapor analysis might be useful for soils but it is unlikely that elemental mercury will be present. Might be helpful for studies on the plant site, particularly along river bank that are wetted during rain events (but need 10-20 ppm in soils to be able to measure any elemental mercury; need to have about 100 ppm before able to measure anything in vapor).

8. Mass balance estimate: how much biomass is produced each year and knowing the MeHg, how much mercury would be required to maintain this level.