

**South River Mercury Program
Science Team Meeting
Feb 14, 2001**

Attendees. Va. Dept. of Environmental Quality (DEQ), DuPont, Va. Dept. of Game & Inland Fisheries (DGIF), Va. Dept of Health (VDH), Friends of the Shenandoah River. Individual names and affiliations are attached (Attachment 1, Page 3).

Introductions/Welcome. Brad Chewning, Director of DEQ's Valley Regional Office welcomed all attendees. Self-introductions were made.

Meeting Purpose and Recap of previous meeting. Brenda Kennell (DuPont) outlined the purpose of this meeting, summarized as follows:

- Review historical data
- Review apparent trends
- Discuss concerns around data
- ID uncertainties

Brenda also reviewed the discussions and action items from the November 29, 2000 meeting between DuPont and DEQ. The November 29 meeting initiated a dialog to explore various technical and communication issues beyond the scope of the ongoing DEQ mercury monitoring program. This meeting resulted in a proposal for the formation of a steering committee, a science committee, and a stakeholder team to ensure that all interested parties are involved in the communication loop. Tentative membership in the various groups and committees was briefly discussed, but will be finalized at a future date. Attachment 2 (Presentations folder) includes summary overheads used as Brenda's speaking points.

Science Team Charter. The group discussed and drafted an outline for a charter for the Science Team. This charter will define the makeup of the team its overall mission, and a number of specific objectives that the team will pursue. The discussion was recorded in outline format on a flip chart, and is presented in Attachment 3 (PAGE 4).

Data Discussion. Don Kain (DEQ) presented a graphic overview of DEQ's 1999 fish tissue data by location and species, along with a limited review of historic data for smallmouth bass over the life of the project. The material presented is included as Attachments 4 and 5, respectively (Presentations folder). DEQ's observations were that, relative to levels of concern for human health, mercury levels in 1999 were low at the upper South River stations (above and at the DuPont site), very high in South River below Waynesboro, and moderately high throughout the South Fork Shenandoah River. Levels in smallmouth bass in the mainstem Shenandoah River have been consistently below previous action levels (1.0 ppm total mercury), but appear to be approximately equal to VDH's proposed revised action level of 0.5 ppm.

Ralph Stahl (DuPont) led a discussion on data uncertainties. In particular, a list of potential areas to be explored by a DuPont staff statistician was developed by the group. This list is summarized in Attachment 6 (Presentations folder). It was proposed that the statistical reviewer present findings/recommendations at this group's next meeting.

Ralph also led a discussion of a number of "focus areas," with uncertainties identified for each area, and several potential or proposed actions or studies for each area. These "focus areas" are included as Attachment 7 (Presentations folder), and include such areas as:

- Data Compilation, Analyses, and Trends,
- Conceptual Modeling, particularly for methylation of mercury and sediment movement and deposition,
- Watershed Management issues
- Hazard and Exposure Assessment,
- Peer Review,
- Outreach and Communication, and

- The Potential for Fishery Management/Upgrading.

Other Case Studies. Erin Mack (DuPont) presented summaries of 5 case studies of environmental mercury contamination in a variety of environments. Methylation and particle transport were discussed as being highly variable between these cases. It appears that relatively small quantities of elemental mercury can lead to relatively high levels of mercury in fish tissue; the convers can also occur. It is not entirely clear which environmental, physical, and chemical factors determine these fates. Attachment 8 (Presentation folder) includes the slides used as the basis for this discussion.

Suggested Statistical Comparisons. (PAGE 4).

Health Issues. Dr. Khizar Wasti (VDH) (Attachment 10, Page 5)

Attachment 1: Attendees

South River Science Team Meeting – 2/14/2001

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Science Team Charter Outline (from flip chart):

- Science team composed of: DEQ, DuPont, DGIF, VDH, citizen groups, and academia working together in a collaborative process

Mission – to serve as focal point for technical & scientific issues in support of steering committee

Objectives

- Review data - trends, gaps, uncertainties
- Fate and transport issues
- Remediation potential
- Communication with stakeholders
- ID and prioritize additional study areas
- Evaluate risk and exposure
- Refine and develop conceptual models
- Develop plan to fill data gaps
- Explore watershed management options
- Consider fishery management options
- Monitor activities, science, remed., etc. at other sites
- Facilitate information transfer - “expert” lectures

Suggested Statistical Comparisons (from flip charts):

- By station - Is there a trend up or down?
- Normalize fish tissue data
- Trends of normalized tissues [] vs. model predictions - has the trend prediction occurred?
- Develop model predictions plot by year
- Precision/accuracy - power determinations...are we or are we not collecting sufficient numbers? And spatial determinations - robust enough
- Habitat comparisons by station - physical makeup
- Other data sets - H₂O chemistry bring in DEQ information
- Influence of major flood events or other phenomenon
- Study design for H₂O and sed (in addition to fish)
- Movement downstream (trends in fish tissue[], sed, H₂O)

Attachment 10. Proposed (for discussion purposes only) Fish Advisory Options (handout from Dr. Khizar Wasti).

< 0.5 -- No Advisory
 $0.5 - 1.0$ -- 2 meals/month
 $1 - 2$ -- 1 meal/month
 > 2 -- No consumption

Table 1. Average Mercury Concentrations in Fish (in parts per million) from the South and South Fork Shenandoah Rivers (1999 data)

SPECIES	S H E N A N D O A H														
	1	2	3	4	5	5B	6	7	8	9	10	11	12	13	14
Rock Bass	0.32	0.7													
Largemouth Bass									1.3					0.87	
Smallmouth Bass	0.21	0.52	2.21	2.59	2.31		0.21	1.59	1.08	1.1	1.68	1.43	1.21	1.21	0.54
Redbreast Sunfish			1.97	1.89	1.53		0.15	0.52	2.72	0.68	0.87	0.81	0.81	0.39	0.35
White Sucker	0.15	0.17	1.64	2.72	1.52		0.65	0.13							0.25
Redhorse Sucker							0.28			0.77					
Carp											0.71				
Northern Hog Sucker												0.67		0.59	
Rainbow Trout		0.14													
Channel Catfish						0.85			0.65		0.72				0.76

← Control Station → No Consumption ← Smallmouth - 1 meal/month
 Sunfish, Redbreast - 2 meals/month →

