

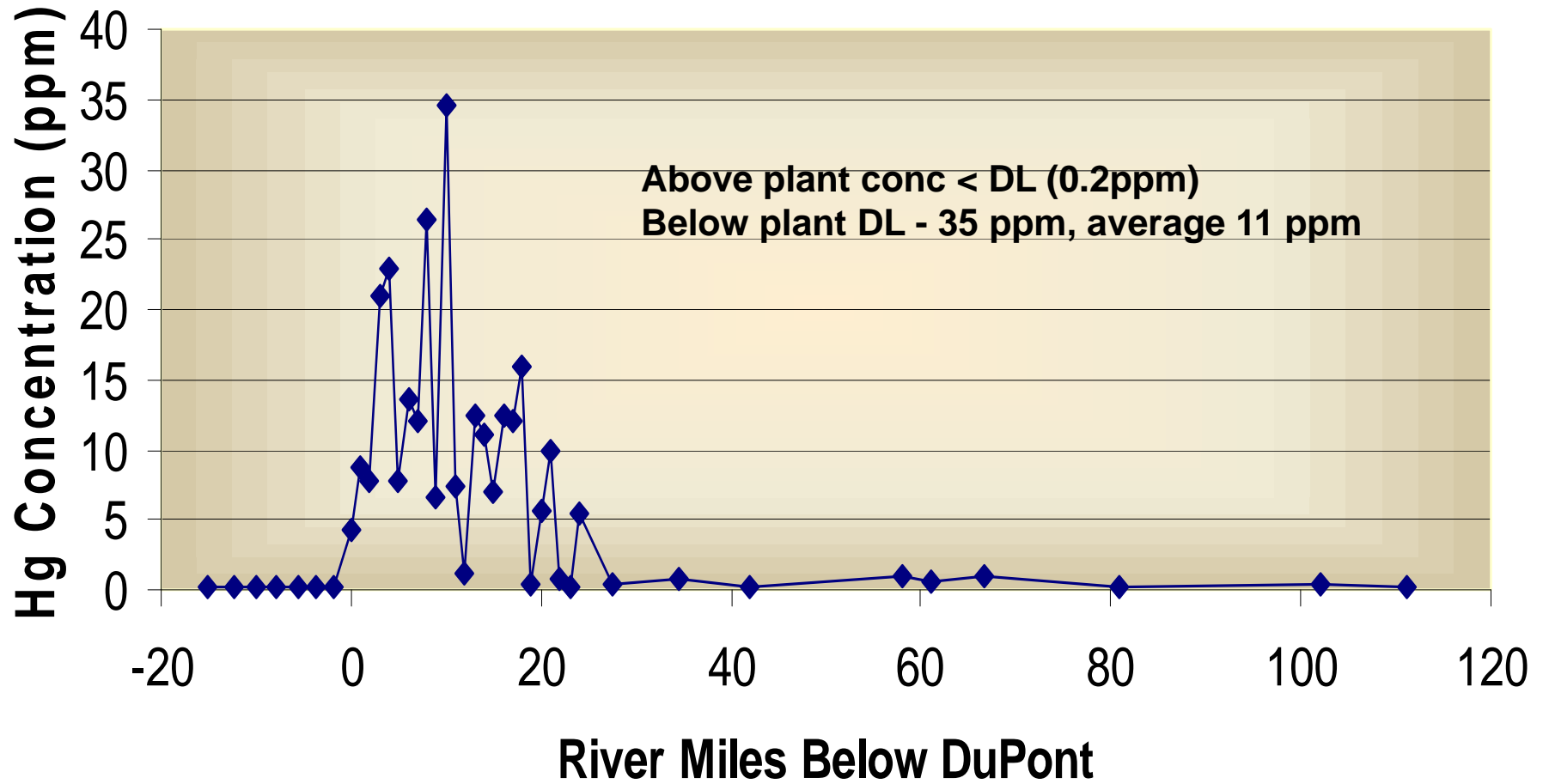
**Summary of Studies and
Information Related to the Presence
of Mercury in the Floodplain Soils**

December 11, 2001

State Water Control Board

- **Hg in soils discovered in 1976**
- **April 1977 - SWCB embarks on 4-part program to study river.**
 - Sediment/soil, surface water, fish, algae
- **June 1978 - Preliminary evaluation**
 - 12 samples in 100-yr floodplain, 3" deep, 40 ppm max conc
 - Estimates 57,000lbs of Hg in sediments / soils, 95% of which is in the above-bank flood plain
 - Compared to estimates of 10 gallons
 - Finds no other major sources of Hg than plant area
- **Summer 1980 - More comprehensive evaluation**
 - 500-yr floodplain, 100-yr floodplain above and below plant
 - 48 composite samples, 0.5 ft; 10 grab samples 1.0-1.25 ft
 - Estimates 82,000lbs, 2×10^8 ft³, 25 miles of riverbank

Hg Concentration in Floodplain Soils Summer 1980



Follow-up Activity

- **Additional sampling by LMS, 1981 on recommendation of SWCB**
 - Also follow-up to sampling by DuPont in 1977 (22 riverbank samples)
 - 5 new holes next to original, sampled to depth of 76'
 - Estimate revised 97,200 lbs (98%) in floodplain
 - Concludes that Hg in floodplain is stabilized
- **Virginia Dept of Agriculture**
 - Two letter reports 10/5/81 & 3/17/82
 - Analysis of livestock/poultry showed no contamination with Hg
 - Consistent with a study done by DuPont control animals and those exposed to pastures fertilized with sludge containing Hg
- **Virginia Dept of Health**

Other Information

- **James Madison Study**
 - Evaluation of terrestrial floodplain ecosystem, Waynesboro as example, growing seasons 1983-1985
 - Soil conc range 11- 84ppm, Average in test area 5 - 25 ppm
 - Hg widely distributed - found in greater levels in roots than leaves, detritus eaters than grazers
 - Flooding/river sediment an issue for terrestrial ecosystem
- **USEPA Biosolids “503” Rule**
 - Ceiling value of 57 ppm, based on direct ingestion by child
 - Hg as an example of “soil-plant barrier” - metals that sorb so strongly to soil (or plant roots) that they are not translocated, regardless of quantities in soil

Information Review

- **Mercury contamination of the South, South Fork Shenandoah and Shenandoah Rivers. State Water Control Board, Basic Data Bulletin 47, March 1980.**
- **Mercury contamination of the flood plains of the South and South Fork Shenandoah Rivers. Virginia State Water Control Board, Basic Data Bulletin 48, May 1981.**
- **Engineering feasibility study of rehabilitating the South River and South Fork Shenandoah River. Vol I., Lawler, Matusky & Skelly, 1981.**
- **Engineering feasibility study of rehabilitating the South River and South Fork Shenandoah River. Vol II., Lawler, Matusky & Skelly, 1982.**
- **Cooking, et al, 1991. Water, Air, and Soil Pollution 57-58: 159-170**
- **USEPA (1995) Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule, EPA/832-B-93-005**
- **NAS (1996) Use of Reclaimed Water and Sludge in Food Production**