

Mercury Sites in the Literature

Site	Hg Source	Sed. Hg (ppm)	Water Hg (pptril)	Water MeHg (pptril)	MeHg: Hg in Water	Fish Hg (ppm)	Notes
Carson River, NV	Mining	0.02 – 1,610	10 – 35,400	0.4 -21	0 – 0.12 (most < 0.01)	Up to 5.6	Alkaline, Arid
Everglades, FL	Atmos. Deposition	0.1 – 0.4 (d/w)	1 – 2.0	0.05 – 0.5	0.05 – 0.3	Some > 2.0	Nutrient gradient
Onondaga Lake, NY	Chlor – alkali Plant	1.08 – 49.5	2.7 - 22	0.19 - 12	0.06 – 0.68	~ 1.5	Eutrophic, Stratifies
Poplar Creek, TN	Oak Ridge Weapons Plant	0.042 – 140 (d/w)	0.1 - 560	0.05 – 0.7	0.1 - 100	~ 1	Confluence with Clinch River may limit Hg transport
Sudbury River, MA	Nyanza Mfg. Site	0.2 - 20	0.8 - 92	0.046 – 0.75	0.033 – 0.125	0.6 to as high as 7	Wetlands contribute significantly to MeHg loading

Carson River - Lahontan Reservoir System, NV

- ❑ Historic Hg contamination from mining
- ❑ < 90% of Hg in the river is particle associated
- ❑ Hg levels are high but concentration of MeHg in the environment is low
- ❑ Hg concentrations (and other naturally occurring elements) may be high enough to inhibit Hg methylation.
- ❑ However, MeHg is still efficiently bioaccumulated throughout the food-chain

Northern Everglades, FL

- ❑ Atmospheric deposition of Hg
- ❑ Relatively low levels of Hg result in high levels of MeHg in the foodchain
- ❑ Site conditions are important in determining mercury methylation (methylation of mercury increases as nutrient concentrations and degree of eutrophication decreases)
- ❑ Periphyton and sediment / water interface are important sites for mercury methylation
- ❑ Water column Hg species fluctuate in a diel pattern (efflux can account for as much as 10% of atmospheric deposition)

Onondaga Lake, NY

- ❑ Hg from Chlor-alkali plant and sewage discharge
- ❑ Hypereutrophic and stratifies to form an anoxic hypolimnion
- ❑ During stratification Hg and MeHg accumulate in the hypolimnion
- ❑ Highest fluxes of MeHg from the sediments was measured under anoxic conditions
- ❑ After Hg input was stopped, fish Hg burdens fluctuated and actually increased before decreasing to current (below 1 ppm) levels

Poplar Creek, TN

- ❑ Oak Ridge thermonuclear weapons plant discharged Hg, other metals, radionuclides, and PCB's into the Poplar Creek and Clinch River system
- ❑ Hg levels in the sediments at Poplar Creek are high enough to cause plant toxicity to benthic communities, fish and plants.
- ❑ The highest concentration of Hg in sediment and water was observed at the confluence of the Poplar Creek and Clinch River, well down stream of the point source
- ❑ Flow of the Clinch River appears to be high enough to impede flow of Poplar Creek, creating an efficient sediment trap (depositional area). Deposited sediments may be disturbed and transported up stream in the Poplar River under certain flow conditions.

Sudbury River, MA

- ❑ Hg was released by the Nyanza industrial site
- ❑ 23% of Hg settles out with particles in a reservoir downstream of the point source.
- ❑ Sediment stratigraphy studies in the reservoir suggest that historic inputs of mercury are being buried by clean sediments
- ❑ Wetlands associated reaches of the river (downstream of the point source and reservoir) appear to be significant sites of Hg and MeHg loading.

General Observations

- ✘ Given the right conditions, even small amounts of mercury in the environment will be methylated and efficiently bioaccumulated**
- ✘ Mercury methylation is most likely to occur under anoxic conditions**
- ✘ Inorganic mercury concentrations do not correlate directly to methylmercury concentrations**
- ✘ In rivers, mercury is largely particle associated and will be transported accordingly**
- ✘ Wetlands associated reaches of the river may be important in determining the mobility and loading of mercury species**