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## **Measurement of methyl mercury production in constructed wetlands and comparison with data collected in a natural system**

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### Abstract Text:

This project investigated methyl mercury (MeHg) production associated with in stream and constructed experimental wetlands in a watershed with mercury contamination associated with historic mining. The goal was to develop strategies for use of wetlands for reduction in nonpoint source nitrogen, phosphorus and total suspended solids loads without exacerbation MeHg production. Methyl mercury production in constructed wetlands was investigated as a function of different water, sediment and vegetation exposures. In general, MeHg production was highest in those wetlands where the sediments contained Hg and the chemistry of the water flowing through the wetland was such that it promoted production. Constructed wetlands with no vegetation had MeHg concentrations in the sediment that were similar to those with vegetation; however, MeHg concentrations exported from the wetland with no vegetation were less. This trend is hypothesized to be due to photodegradation of MeHg in the water column. MeHg concentrations measured in a reach of the creek, that was one source of the water and sediment for the constructed systems, showed that in vegetated areas with slow moving waters MeHg was produced. In a ponded open water area downstream of the wetland, MeHg concentrations were less and this is thought to be due to photochemical degradation of MeHg produced upstream. This research suggests that one way to mitigate MeHg produced in wetlands constructed for purposes of reduction of stream nutrient and sediment loads is to have an open water area below the wetland where MeHg can be photodegraded. In addition, since the chemistry of the water was an important factor promoting wetland MeHg production use of wastewater and irrigation returns for wetland management in the water limited west needs to be considered carefully in mercury contaminated systems.

### Impact Statement: