

## Phytoremediation of Mercury- and Methyl Mercury-Contaminated Sediments by Water Hyacinth (*Eichhornia crassipes*)

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### Abstract

Phytoremediation has the potential for implementation at mercury- (Hg) and methylHg (MeHg)-contaminated sites. Water hyacinths (*Eichhornia crassipes*) were investigated for their ability to assimilate Hg and MeHg into plant biomass, in both aquatic and sediment-associated forms, over a 68-day hydroponic study. The suitability of *E. crassipes* to assimilate both Hg and MeHg was evaluated under differing phosphate (PO<sub>4</sub>) concentrations, light intensities, and sediment:aqueous phase contamination ratios. Because aquatic rhizospheres have the ability to enhance MeHg formation, the level of MeHg in water, sediment, and water hyacinth was also measured.

Hg and MeHg were found to concentrate preferentially in the roots of *E. crassipes* with little translocation to the shoots or leaves of the plant, a result consistent with studies from similar macrophytes. Sediments were found to be the major sink for Hg as they were able to sequester Hg, making it non-bioavailable for water hyacinth uptake. An optimum PO<sub>4</sub> concentration was observed for Hg and MeHg uptake. Increasing light intensity served to enhance the translocation of both Hg and MeHg from roots to shoots. Assimilation of Hg and MeHg into the biomass of water hyacinths represents a potential means for sustainable remediation of contaminated waters and sediments under the appropriate conditions.