



Thiols in wetland interstitial waters and their role in mercury and methylmercury speciation

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ABSTRACT: Organic sulfhydryl compounds, or thiols, are ligands that strongly complex class B metals such as Hg and methylmercury (MeHg). We determined the concentration profiles of five low-molecular-weight thiols (cysteine, thioglycolic acid, glutathione, *N*-acetyl-L-cysteine, and 3-mercaptopropionic acid) in sediment interstitial waters, at a vertical resolution of 1 cm, in three contrasting freshwater and brackish wetlands in Canada. All five thiols were detected in the porewaters, with concentrations ranging from nanomolar to submicromolar. In one of the wetlands (Baie St. Francois) the profiles of Hg and MeHg were also obtained at the same vertical resolution. Thermodynamic calculations revealed that at these levels thiols play a negligible role in inorganic Hg speciation in sediment interstitial waters, but they can dominate the MeHg speciation. Consistent with recent findings that intracellular MeHg in fish is dominated by MeHg-thiol complexes, this suggests that thiols also play a significant role in MeHg speciation in the extracellular environment.

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