Poster Number

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Topic	Exposure assessment
Title	**Bioavailability of Copper in Contaminated Sediments Assessed by a DGT Approach and the Uptake of Copper by the Aquatic Plant Myriophyllum Aquaticum**
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Keywords: DGT, bioavailability, sediments, copper, *Myriophyllum aquaticum*

Summary: The assessment of the potentially harmful effects of metals on biota depends on the speciation and bioavailability of the metals. In this study, we investigated copper accumulation and toxicity in the aquatic plant *Myriophyllum aquaticum* after exposure to artificial sediments varying in peat and/or ferric hydroxide content and spiked with Cu (5 to 200 $mg.kg^{-1}$). Modeling of the kinetic DGT (diffusive gradient in thin film) measurements revealed fast and slow copper resupply from the solid phase for sediment formulated with and without peat, respectively.

M. aquaticum proved to be sensitive to copper, as the copper accumulation and growth differed depending on the sediment composition and copper concentration. Comparing the copper accumulation in *M. aquaticum* to total dissolved, free and C_{DGT} (concentration in solution derived from DGT measurements) copper concentrations revealed that C_{DGT} concentrations were a better predictor of the accumulation than the others. However, the relatively weak correlation observed (r^2=0.6) and the fact that plant uptake does not increase proportionally to fluxes to DGT suggest that copper uptake in plants was not diffusion limited. Thus, the free copper concentrations near the root surface were sufficient to meet the plant's demand during the experiment. Furthermore, labile complexes that continuously resupply the Cu^{2+} pool may also contribute to the concentrations available for plant uptake. In the range of copper concentrations investigated here, saturation of uptake processes as well as toxicity are considered responsible for the poor DGT prediction of plant uptake.