**Poster Number**

15

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| **Topic** | Effect assessment |
| **Title** | **Nickel Phase Partitioning, Flux, and Toxicity in Field-Deployed Sediments** |
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**Summary:** Ni speciation, bioavailability, and toxicity is modified by sediment geochemistry and empirical surveys and laboratory assays have highlighted the importance of acid-volatile sulfides (AVS) and organic carbon (OC) for altering Ni bioavailability. In this study, we amended 5 geochemically distinct lotic sediments with a range of Ni concentrations and monitored geochemistry, flux (by DGT), and toxicity under field conditions. After 4 weeks, colonizing macroinvertebrates exhibited a negative response to sediment Ni, and SEM-AVS models of bioavailability differentiated toxic and non-toxic sediments. After 8 weeks, relationships between macroinvertebrates and Ni deteriorated as sediments previously identified as toxic exhibited no toxicity. Our data suggested that Ni binding to Fe oxides may be responsible for the decline in toxicity. DGTs placed in the sediment indicated that Ni flux and speciation changed through time as partitioning shifted from NiS to Ni sorbed to Fe oxides. Although DGTs did provide a greater understanding of Ni phase partitioning, DGT-measured Ni was not better than SEM-AVS or total Ni at predicting macroinvertebrate response, which suggested that DGTs cannot replace SEM-AVS models for measuring bioavailability. Our results suggest that Ni speciation in lotic sediments may be more complex than what is accounted for in SEM-AVS models and additional research on Fe oxide sorption is needed to improve bioavailability models.