Poster Number

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Topic	Effect assessment
Title	**Development And Application Of Predictive Bioavailability Models To Assess Chronic Toxicity Of Nickel In Freshwater Sediments**
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Summary: Within the framework of European Union regulatory initiative for the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (1) a high quality data set on the chronic toxicity of sediment nickel to 8 species of benthic invertebrates, has been generated (Besser et al and Brumbaugh et al 2012). Next to fulfulling the test requirement imposed by the REACH regulation these data can serve as a basis for developing Sediment Quality Guidelines (SQGs) for nickel for a range of sediment types. In the initial phase tests were conducted with sediments low in acid volatile sulfide (AVS) and total organic carbon (TOC) concentrations. In a second phase tests were conducted using eight different spiked sediments with a wide ranges of characteristics affecting nickel bioavailability. Statistical extrapolation techniques were used to elaborate Species Sensitivity Distributions (SSD) that yielded a safe threshold value of 94 mg Ni/ kg dry weight under RWC conditions that represent the 10th percentile of abiotic parameters in the EU and could be used as a conservative benchmark for nickel toxicity in suboxic/oxic sediments. Predictive bioavailability relationships between effects data and the sediment parameters AVS and Fe were established and used to derive site-specific SQGs. Normalizations to these parameters reduced the inter-sediment variability in toxicity values in a significant way for the amphipod species. However, these bioavailability relationships were less clearly defined for the mayfly *Hexagenia*. Application of the different bioavailability models to normalize the SSD to prevailing local conditions resulted in safe threshold values for the different bioavailability scenarios ranging from 127-296 mg/kg dry weight. when the AVS model was used. A similar response is observed when using Fe based models with ranges of 143-355 mg/kg dry weight**.**