

Poster Number

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Topic	Exposure assessment
Title	Routes for Exposure Assessment of Hydrophobic Organic Substances in Sediment using Equilibrium Passive Sampling
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Summary: Total concentrations of hydrophobic organic substances (HOC) in sediment often do not represent the risk to the surrounding environment. When equilibrating a passive sampler with sediment, the HOC will partition between sediment and sampler. Provided the capacity of the sampler is kept very low compared to the sediment, the measured concentration in the sampler is a much better reflection of exposure. This equilibrium concentration in the sampler can be converted to equilibrium concentrations in other compartments relevant for risk assessment: (1) through division by the sampler-water partition coefficient the freely dissolved (pore)water concentration is obtained. (2) this pore water concentration can be multiplied with bioconcentration factors (BCFs) in order to predict (equilibrium) concentrations in benthic organisms for which EQS may exist (3) a simple alternative abiotic approach is using a lipid-sampler partition coefficient converting the concentration in the sampler to a (model)lipid basis, principally reflecting the lipid based concentration as for biota in equilibrium with the sediment.

Provided EQS are available on lipid basis the latter approach is promising as lipid-sampler partition coefficient can be very precisely determined whereas BCFs suffer from a large natural variability.

Passive sampling of sediment can also monitor the success of remediation and increasing the capacity of the sampler relative to the sediment sample gives additional information including the releasable concentrations of the HOCs.