

DETERMINING PASSIVE SAMPLER PARTITION COEFFICIENTS FOR MONITORING DISSOLVED-PHASE ORGANIC CONTAMINANTS

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Passive samplers are used for environmental and analytical purposes to measure dissolved nonionic organic contaminants (NOCs) by absorption from a contaminated medium into a clean phase, usually in the form of a synthetic organic film. Recently developed passive sampler techniques include polyethylene (PE), polyoxymethylene (POM), and solid phase microextraction (SPME). The aim of our study is to compare the effectiveness of these types of passive samplers at monitoring water column concentrations for a wide range of NOCs. To measure the freely dissolved concentration of a NOC from the measured passive sampler concentration, chemical specific passive sampler-water partition coefficients ($K_{\text{sampler-water}}$) are needed. A kinetics study in the laboratory with PCB congeners confirmed that equilibrium was achieved between passive samplers and water within 56 days. For the 26 individual PCB congeners, $\log K_{\text{sampler-water}}$ values ranging from 4.52 to 6.97 were calculated from measured water and sampler concentrations and found to be comparable to literature values. Partition coefficients for additional NOCs will be presented as well as the deployment set-up for upcoming field work that will be used to avoid loss of samplers and provide samplers with physical support in the water column.