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## **Impact of passive sampler protection apparatus on sediment porewater profiles of hydrophobic organic compounds**

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### **ABSTRACT**

Passive sampling techniques have been widely used to determine the dissolved concentration profiles of hydrophobic organic compounds (HOCs) in sediment porewater. However, the effects of having a protection for the passive sampler on profiling HOCs concentrations in sediment porewater, especially in deep sediment, have remained unclear. To address this issue, low density polyethylene passive samplers with and without protectors, which consisted of glass fiber filter and porous stainless steel shield, were simultaneously deployed in sediment of the Dongjiang River, South China. The results showed that the protectors retarded the dissipation of performance reference compounds (PRCs) from the sampler by a factor of  $2 \times 10^9$ . The protectors seemed to exert a negligible effect on the measured concentrations of PAHs, BDE-47, and BDE-99 in surficial sediment porewater (0–14 cm depth) from both samplers. However, the sediment porewater concentration profiles of PAHs and BDE-47 from the sampler with protectors were in agreement with those normalized by dry weight in deep sediment (16–34 cm depth), indicating that a diffusion layer established by the protectors may minimize the probability of local depletion of the target analytes in deep sediment. In addition, the log  $K_{oc}$  values of PAHs, BDE-47, and BDE-99 exhibited a slight increasing trend with sediment depth. This finding suggested that in situ passive sampling techniques could be a feasible tool in determining the site-specific log  $K_{oc}$  values of HOCs at different sediment depths.

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