

Accepted Manuscript

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PII: S0045-6535(17)30451-4

DOI: [10.1016/j.chemosphere.2017.03.080](https://doi.org/10.1016/j.chemosphere.2017.03.080)

Reference: CHEM 18998

To appear in: *ECSN*

Received Date: 30 January 2017

Revised Date: 15 March 2017

Accepted Date: 20 March 2017

Please cite this article as: Schroeder, H., Fabricius, A.-L., Ecker, D., Ternes, T.A., Duester, L., Metal(loid) speciation and size fractionation in sediment pore water depth profiles examined with a new meso profiling system, *Chemosphere* (2017), doi: 10.1016/j.chemosphere.2017.03.080.

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Metal(loid) speciation and size fractionation in sediment pore water depth profiles examined with a new meso profiling system

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HIGHLIGHTS

- A novel laboratory meso profiling and sampling system (*messy*) is introduced.
- *Messy* enables to survey the redox potential when sampling water across the sediment water interface (SWI) down to 20 cm depth.
- *Messys* performances in impact orientated release-, speciation, and size fractionation studies are demonstrated in a 151 days sediment incubation experiment. 13 metal(loid)s, As and Sb speciation and the colloidal fraction were addressed.
- 13 metal(loid)s released into the pore water of an anaerobic oxbow sediment are grouped into those stronger impacted by mechanical disturbance and those impacted by natural acidification (oxygen induced pyrite weathering).
- The fate of Sb, spiked as Sb₂O₃, sediment disturbance, is presented.
- A spike of Sb₂O₃ did not impact Sb(III) concentration in the pore water during mechanical disturbance and acidification.

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