

Sensitivity comparison of different sediment bioassays

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Introduction: Even though WFD is focusing on water column in respect to achieving good ecological status/potential of surface waters, the role of sediment, not only as an integral part of aquatic ecosystem providing habitat for benthic communities, but also as an ultimate sink for vast number of contaminants that enter aquatic ecosystems, and more importantly as their secondary source, should not be neglected or underestimated.

Within our study 14 location in modified water bodies in Flanders (Belgium) were selected for sediment sampling and application of different bioassays. Overall aim is to compare sensitivities of chosen bioassays in addressing the potential adverse impact of sediment on biota and consequently the ecosystem and ecological status/potential, and to give basis and different point of view in analyzing and interpreting the results of chemical analyses.

Methods: Test species, covering different trophic levels, are exposed to the solid phase and/or to extracted pore water. In addition to bioassays regularly done in sediment monitoring by Flemish Environment Agency (test on pore water with *Pseudokirchneriella subcapitata* and *Thamnocephalus platyurus*, sediment contact test with *Hyalella azteca*), following bioassays will be carried out as well: pore water tests with *Daphnia magna*, ProTox test and sediment contact tests with *Potamopyrgus antipodarum* and *Myriophyllum aquaticum*.

Results/Discussion: Available previous data from the investigated sites (years 2008 and 2009) focused only on chemical analyses in sediment and water column only; no bioassays were ever performed. These data show that a majority of measured compounds (more than 100 compounds measured) are below detection limit.

Even though sediment chemistry data for the harbor area are available (limited to 6PAHs van Borneff, 7PCBS, OCPs, EOX, mineral oils As, Cd, Cr, Cu, Pb, Hg, Zn, Ni) they are not obtained from the same sampling sites as for the purpose of this study, so no direct comparison can be made, but more importantly But, chemical analyses alone do not give an answer to whether present contaminants, both measured as well as those compound not included in chemical analyses, are bioavailable and to what extent, or to put in another context, do they pose a risk/hazard to aquatic biota and consequently to overall ecological status/potential. This gap should be overcome by bioassays.

Due to number of bioassays designed for this study, results from bioassays will be obtained in coming months and more thoroughly discussed.

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