

## Development of a triad assessment method for brackish sediments in Flanders

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In sediment risk assessment, analysis of the pollutant concentrations is essential in determining the degree and nature of sediment contamination. However, chemical analyses provide no evidence of toxic effects or effects in situ. The Sediment Quality Triad method incorporates measures of various chemical parameters, toxicological effects and benthic community structure in view of conducting an integrated assessment of sediment quality.

In framework of developing a triad assessment method for the quality evaluation of brackish sediments, in 2015 30 sediment samples were taken along the Scheldt estuary (Sea Scheldt (Flanders) and Western Scheldt (The Netherlands)) and other brackish aquatic systems in Flanders. For these samples, chemical parameters (e.g. metals and organic pollutants), toxicological effects and benthic community structure are being assessed. In this study 3 bioassays are carried out to test their suitability for uptake in a quality triad method for brackish sediments as indicator of ecotoxicological effects. Two sediment contact bioassays with the polychaete worm *Hediste diversicolor* and the amphipod *Corophium volutator*, and a pore water test with the rotifer *Brachionus plicatilis* are performed to test the toxicity of the samples.

Based on a literature inventory of existing sediment quality standards for brackish waters and on analysis of the ecotoxicological and biological effects of sediment pollutant concentrations, quality guidelines for chemical parameters for Flemish brackish sediments will be derived.

For the biological component of the triad method, comprising an evaluation of the benthic invertebrate community, a separate evaluation method is developed for brackish oligohaline more static water systems, and for brackish sediments in the different ecotopes of the Scheldt estuary. For the latter the M-ABMI ('Multivariate AMBI', Bald *et al.*, 2005; Muxika *et al.*, 2007) and the Occurrence Intactness Index are tested for their suitability as biological index in a triad method for the evaluation of Scheldt sediments.