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HEAVY METALS IN SEDIMENTS – MONITORING THE QUALITY OF THE MARINE ENVIRONMENT

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ABSTRACT

As part of the monitoring program from Hydrographic Institute, since 1981, sediment samples were collected in four different areas, each corresponding to a different estuarine area of relevant economic, social, and ecological importance at Coastal Continental of Portugal: POL-Aveiro (mouth of River Vouga and other minor rivers); POL-Tejo (mouth of River Tejo); POL-Sado (mouth of River Sado); and POL-Faro (Ria Formosa, complex and extended coastal area of dunes, small islets and bars). This paper aim to present metals concentrations, grain size and organic carbon in sediments during the monitoring program (1985-2010). For the determination of metal concentrations all sediment samples were freeze-dried, homogenized and reduced to a fine powder. Samples were then acid-digested in a microwave oven. Most metal concentrations were then analysed via flame atomic absorption spectrometry and arsenic levels was analysed in a hydride generator, following ICES guidelines as described in Loring and Rantala (1990). Prior to analysis sediment samples are submitted to grain size fraction. Two separate determinations are done – for the total sediment and for the 500 mm wet sieving was employed. Total organic carbon was measured using a Strohlein C-mat 5500. Quality assurance of results was achieved by the participation in the Quasimeme since first round. Statistical evaluation of the analytical results is made using the Z-score statistical indicator established for each parameter. Figure 1 shows Arsenic concentrations in the four diferent areas. The results shows spatial and temporal variations in sediment samples according to the diferent areas. OSPAR Commission - CEMP Assessment Manual, 2008 OSPAR Commission, 39 p. Loring, D.H., Rantala, R.T.T., 1990. Techniques in Marine Environmental Sciences, vol. 9. International Council for the Exploration of the Sea, Copenhagen.



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