



The influence of extreme discharge on the transport of selected priority substances in the river Elbe (Germany)

M. Baborowski (1), W. von Tümpling (1), M. Mages (1), J. W. Einax (2)

(1) UFZ Centre for Environmental Research Leipzig-Halle, Department River Ecology, Germany. (2) Friedrich Schiller University of Jena, Institute of Inorganic and Analytical Chemistry, Department of Environmental Analysis, Germany.

Extreme discharges lead to changes in the mobility of sediments, deposited in still water areas like groyne fields, locks and floodplains. During floods contaminated sediments and alluvial soils upstream the sampling location could be re-mobilised and increase the suspended matter concentration in the water column. On the other hand the water quality during low water periods can be influenced by increasing sedimentation rates due to lower flow rates, as well as re-solution processes of trace elements due to changes in the redox state of the sediments. Therefore, the concentration of priority heavy metals (cadmium, mercury, nickel, lead) that are suggested in the Water Framework Directive for trend monitoring in sediment and/or biota were analysed in water samples of the river Elbe at Magdeburg monitoring station (river kilometer 318, German mileage). The samples were taken during the floods 2002, 2003 and 2005, as well as during a long lasting low water period in 2003. The results will be discussed relating to the hydrological conditions during and before the sampling, as well as the pollution sources in the catchment area. Comparing the different hydrological conditions increased heavy metal concentrations were measured in both, flood and low water periods. Thereby the maximum values measured during low water can reach the range of those, analysed during floods. Investigations during extreme periods are a reasonable completion of the operational monitoring of priority substances specified in the Water Framework Directive. They give additional information about the current pollution state in the catchment area of the river.