ANNUAL REPORT ON GEOTRACES ACTIVITIES IN POLAND

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Institute of Oceanology in the previous year concentrated mostly on dissolved metals in pore waters. This included Hg, Cd, Cr, Zn, Cu, Mn, Pb and As. Most of the studies performed dealt with submarine groundwater discharge as a source of metals to coastal areas. Studies concerning mercury were published in Szymczycha et al. Water Air Soil Pollut (2013) 224:1542. Below short outline of this study:

Both groundwater flow and mercury concentrations in pore water and seawater were quantified in the groundwater seeping site of the Bay of Puck, southern Baltic Sea. Total dissolved mercury (HgTD) in pore water ranged from 0.51 to 4.90 ng l−1. Seawater samples were characterized by elevated HgTD concentrations, ranging from 4.41 to 6.37 ng l−1, while HgTD concentrations in groundwater samples ranged from 0.51 to 1.15 ng l−1. High HgTD concentrations in pore water of the uppermost sediment layers were attributed to seawater intrusion into the sediment. The relationship between HgTD concentrations and salinity of pore water was non-conservative, indicating removal of dissolved mercury upon mixing seawater with groundwater. The mechanism of dissolved mercury removal was further elucidated by examining its relationships with both dissolved organic matter, dissolved manganese (Mn II), and redox potential. The flux of HgTD to the Bay of Puck was estimated to be 18.9 ± 6.3 g year−1. The submarine groundwater discharge-derived mercury load is substantially smaller than atmospheric deposition and riverine discharge to the Bay of Puck. Thus, groundwater is a factor that dilutes the mercury concentrations in pore water and, as a result, dilutes the mercury concentrations in the water column.

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