

Sediment pollution of the Elbe River side structures - current research

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The contribution brings the summarized results of a long-term research on sediment pollution of side structures of the Elbe River over the last 14 years. The investigation has been focused on old anthropogenic pollution of sediment cores taken from fluvial lakes and floodplain, as the sampling of deeper sediments outside the riverbed is not a part of systematic monitoring of sediment pollution of the Elbe.

The Elbe River floodplain has been influenced by human activities since the Middle Ages, but the main anthropogenic pollution have been produced in the 20th century.

The studied localities were chosen with the respect to the distance from the source of industrial pollution, the intensity of hydrological communication with the river and the surrounding landuse to determine the extend and the level of anthropogenic contamination in the Elbe River floodplain ecosystem.

Apart from bathymetric measurements, observation of the hydrological regime in several fluvial lakes or water quality sampling at some localities, the research was focused above all on determination of metal concentrations (Ag, Cd, Cr, Cu, Fe, Hg, Mn, Pb, Zn) in all taken sediment cores, specific organic compounds (PCBs, DDT, HCH, HCB, PAHs etc.), total organic carbon at some localities and grain structure analyses.

The data were also compared with the results of systematic sediment monitoring from the nearest riverbed sampling stations on the Elbe River.

The highest concentrations of metals and specific organic compounds were determined in the sediments taken from fluvial lakes and floodplain (Zimní přístav PARAMO, Rosice fluvial Lake, Libiš pool etc.) situated in the vicinity of the main Elbe River polluters - Synthesia chemical plant and PARAMO refinery in Pardubice or Spolana chemical plant near Neratovice. However, there was also determined a significant role of the hydrological communication with the river proved with lower sediment pollution in separated localities.

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