FRACTIONATION OF CHOSEN HEAVY METALS IN BOTTOM SEDIMENTS OF SMALL WATER RESERVOIRS

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Abstract: The aim of the study was fractionation of Zn, Cu, Ni, Pb in the bottom sediments of two small reservoirs: at Krempna on the Wisłoka River and at Zesławice on the Dłubnia River. The partitioning of metals for various fractions was performed with the use of Tessier's sequential chemical extraction method. All together five metal fractions were distinguished: exchangeable metals (fraction I), metals bound to carbonates (fraction II), metals bound to hydrate Fe-Mn oxides (fraction III), metals bound to organic matter (fraction IV), and metals bound to minerals (fraction V). The largest quantities of metals were bound with fraction V, the smallest occurred in the forms most easily available for living organisms, in faction I. Proportions of Zn, Ni and Pb in the exchangeable fraction were about 1%. The amounts of metals bound with fraction II were also relatively low, except for Zn in bottom sediment at the Zesławice Reservoir. In this bottom sediment the share of Zn bound to carbonates was 33%. Medium metal quantities were associated with hydrate Fe-Mn oxides (fraction III) and with organic matter (fraction IV). Relatively high proportion of metals in fraction V and trace amounts of metals in fraction I as well as alkaline and neutral reaction of the sediments may prove a potentially low hazard of the metal release in the case of chemical changes in the reservoirs.