

BIOAVAILABILITY AND MIGRATION FEATURES OF METALS IN “BOTTOM SEDIMENTS – WATER” SYSTEM UNDER THE ACTION OF DIFFERENT ENVIRONMENTAL FACTORS

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Abstract. This review considers and summarizes findings of the studies on metals' coexisting forms in bottom sediments of surface water bodies. This makes it possible to assess metals' migration ability in the “bottom sediments – water” system and their potential bioavailability for hydrobionts. The coexisting forms of metals in bottom sediments depend on their chemical properties and the component composition of the solid phase. Metals are distributed among exchangeable, carbonate, oxide, organic and residual fractions of bottom sediments. The highest migration ability is observed for metals contained in the first three fractions. Metals migration from organic and residual fractions hardly ever takes place. The oxygen regime, pH and redox potential, total dissolved solids and water temperature, concentration and component composition of organic substances affect the exchange of metals between bottom sediments and overlying water. The metal mobility in the “bottom sediments – water” system will increase under conditions of climate change. This is because cases of dissolved oxygen deficiency become more common, the total dissolved solids get higher in concentration, and pH and redox potential is reduced. Therefore, the development of methods to reduce metals migration from bottom sediments is a relevant task, which is discussed in the present paper.

Keywords: water body, bottom sediment, metal speciation, metal mobility, environmental factor.

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