

Investigations of Heavy Metals Pollution in Sediments of Small Urban Lakes in Karelia Republic

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Abstract : Waterbodies, which are located either within urban areas or nearby towns, permanently undergo anthropogenic load. The extent of the load can be determined via investigations of chemical composition of both water and sediments. Lakes, as a rule, are considered as a landscape depressions, hence they are capable of natural material accumulating, which has been delivered from the catchment area through rivers as well as temporary flows. As a result, lacustrine sediments (especially closed-basin lakes sediments) are considered as perfect archives, which are served for reconstructing past sedimentation process, assessment of the modern contamination level, and prognostication of possible ways of changing in the future. The purposes of the survey are to define a heavy metals content in lake sediments cores, which were retrieved from four urban lakes located in the southern part of Karelia Republic, and to ascertain the main sources of heavy metals input to these waterbodies. It is really crucial to be aware of heavy metals content in environment, because chemical composition of a landscape may have a significant effect on living organisms and people's health. Sediment columns were sampled in a field with 2-cm intervals by a gravitational corer called «Limnos». The sediment samples were analyzed by inductively coupled plasma spectrometry (ICP MS) for 8 chemical elements (Pb, Cd, Zn, Cr, Ni, Cu, Mn, V). The highest concentrations of trace elements were established in the upper and middle layers of the cores. It has also been ascertained that the extent of contamination mostly depends on a remoteness of a lake from various pollution sources and features of the sources.

Keywords : bottom sediments, environmental pollution, heavy metals, lakes

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