

ANALYSIS OF HYDROECOLOGICAL SITUATION OF MINOR RIVERS IN URBAN TERRITORIES

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Urbanization of a territory is accompanied by complicated processes concerning modification of water balance elements, natural water quality, and existing biocoenosis. Investigation of these processes was carried out on minor rivers (with catchment area less than 100 sq.km) in Zelenograd city – detached district of Moscow. Field hydrological and hydrochemical investigations conducted in all the phases of water regime show that for minor rivers in urban conditions anthropogenic increase of runoff is 160-450% during summer floods and 200-360% during low-water. Urbanization of the territory also causes transformation of chemical runoff. The more discharge is, the more significant difference is. As a rule water mineralization is much more than background values. Proportion of calcium hydrocarbonate in total mineral content declines and sodium chloride and sulfate increases. Background proportion of calcium and magnesium is disturbed. Diversity of contaminants determining water quality increases. Cu, Zn, and Pb content is within sanitary standards all the year round. Contamination index of water in rivers and their tributaries is "high" or "very high". Dangerous deterioration of water quality is the most probable in low water period. The main cause of change of water quality for the worse is high concentration of phosphates and nitrites. Toxic impurities content in water of considered rivers is insignificant. In addition to chemical pollution minor rivers valleys in urban conditions are subjected to mechanical contamination and intensive silting of channels. Complex analysis of causes of contamination of minor rivers valleys, surface and subsurface water enables to reveal restricted zones for water protection. Measures for improvement of hydroecological situation of minor rivers are proposed.