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THE SUITABILITY OF WASTEWATER FOR IRRIGATION TO IMPROVE THE ECOLOGY OF NATURAL RIVER BASINS

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ABSTRACT

Nowadays, water scarcity caused by drought, soil degradation and desertification has already affected 1.5 billion people worldwide and is directly linked to poverty, food insecurity and malnutrition [1]. This problem largely affects Asian countries, where the majority of the world's population lives, experiencing acute water shortages. The planet, which is already limited in resources, is burdened by the need to meet the various needs of people, especially those who are already deprived of access to clean water [2]. At the present stage of the world community development in the context of the 21st century challenge on water safety, the most important task is to develop and accelerate the implementation of scientifically based measures to protect water sources from contamination. The focus on artificial water purification does not solve the main issue, only pushes back the terms of depletion of water resources. In comparison with the 20th century, there is already an acute shortage of drinking water, along with water used for technological purposes. In such circumstances, the management of water resources in river basins should be much more efficient in order to ensure uninterrupted water supply and environmental sustainability to meet current and future needs. This is probably the most challenging task for water resources professionals [3]. Indeed, a lot of effort has gone into compiling a set of indicators and developing policies to meet human needs for water, but even more hard work remains to find the required solutions that will improve water management. In addition, the scope of water supply problems extends from the local level to the global scale, while the adequacy of regulation remains one of the main factors that cannot be determined [4]. The degree of water purification using artificial structures does not exceed 80-90%, since the most persistent and slow-oxidizing organic pollutants, as well as mineral salts and biogenic substances remain in the discharged wastewater and enter reservoirs with them. Neutralizing them by 8-10 times dilution with clean water does not solve the problem and is considered impractical in the economic aspect. The conducted research allowed to determine the possibility of agricultural use of household wastewater as an effective measure to prevent pollution of reservoirs.

Keywords: ecologization of water use, water safety, protection of water resources, wastewater, water purification and post-treatment, assessment of irrigation water.