

## **Current water management and environmental problems of transboundary Zaravshan river**

Prof. Rashid Kulmatov  
Ecological Movement of Uzbekistan  
Bunyodkor Str. 1A, 100027, Tashkent  
e-mail: rshdkulmatov@yahoo.com

Integrated physical and chemical studies of the environmental situation in the Zaravshan River Basin were carried out jointly with scientists from the Faculty of Geography, University of Marburg in Germany in 2010. Water samples were taken from the Zaravshan River at 49 stations in the territories of Tajikistan and Uzbekistan. In parallel with application of static methods, long-term river water quality observations for 2002 – 2010 were processed.

The river water quality at the exit from the territory of Tajikistan (formation zone) generally meets normative requirements for various uses. However, at the entrance to the territory of Uzbekistan (gauging station Ravatkhoja) it is already polluted, with maximum permissible concentration (MPC) reaching 1.5-4 for copper, 1.5 for phenol and 2.5 for nitrites.

The quality of surface water is affected by mining and processing works, as well as by mercury-antimony deposits in the upper reaches of Zaravshan in Tajikistan.

Analysis of return water quality in the Zaravshan River basin revealed that ammonium ions, nitrates, chloride and sodium ions prevail in collector-drainage waters. They also contain phosphates, fertilizer residue and pesticide traces. On average, irrigated fields carry out 25 percent of nitrogen and 5 percent of phosphate to collectors. Their concentration in the collector water exceeds MPC by 3-7 fold and more.

The main sources of river water pollution in Samarkand oblast are discharges of collectors Siab, Chiganak, Khauzaksay and Taligulyan, as well as of wastewater treatment facilities “Boynazar” (Katta-Kurgan city), and in Navoi oblast discharge waters of NGRES (or Power Station Navoi), PO “Navoiazot” (Navoi Nitrogen, Production Association) and of collectors Sanitarniy, Bishkent and Markaziy.

The long-term trends in contaminant contents in the channel of the Zaravshan River show decrease the contents of phenols, oil, nitrogen in recent years, probably as a result of taking measures envisaged in Decree No 401 of the Cabinet of Ministers of the Republic of Uzbekistan.

In connection with possible natural and anthropogenic pollution in the upper reaches of Zaravshan (Tajik part of the river), it is required to organize water quality monitoring for the presence of antimony, arsenic, mercury, copper and other toxic metals in the river channel, in addition to exploring the possibility of organizing and implementing automated water quality monitoring systems.

Analysis of the current water situation in the Zaravshan River basin shows that at the current level of development of technology and organization of water use management, river waters have been completely depleted, and any haphazard external influence can cause serious negative effects on water management and ecological situation in Uzbekistan.

In the long term, it is needed at government level of the two countries to implement the integrated water resources management in the Zaravshan River basin. This is a continuous and new process ensuring sustainable economic development in the two countries.