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## Assessment of Water Quality of the Trans-Boundary Zarafshan River in the Territory of Uzbekistan

PDF (Size: 1225KB) PP. 17-26 DOI: 10.4236/jwarp.2013.51003

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### ABSTRACT

The Zarafshan river is a main trans-boundary river of the Aral Seabasin. As the main water resource, the Zarafshan river water is mainly used by the republics of Tajikistan and Uzbekistan. We explored the trends of space-time pollution of river water with ammonium, nitrates, phosphates, biological oxygen demand (BOD), fluorine and some heavy metals at seven water sampling points along the Zarafshan River in Uzbekistan. The experimental data showed that the water quality of the Zarafshan river in 2002-2009 has undergone a considerable transformation, even by the length of the river. The chemical composition of the Zarafshan river water underwent changes due to the agricultural collector-drainage discharges and the sewage of the cities of Samarkand and Navoi. The water pollutants of the Zarafshan river, as a consequence of the agricultural pollution, consisted of mineralization, ammonium, nitrate, phosphate, and pesticides. Therefore, it is necessary to monitor the chemical composition of the large agricultural collector-drainage discharges into the river. The main sources of the heavy metals (primarily arsenic and zinc) in the Zarafshan river water were probably ore processing manufactures located in the territory of Tajikistan.

### KEYWORDS

Trans-Boundary River; Zarafshan River; Water Pollution; Water Discharge; Collector-Drainage Discharge; Sewage

### Cite this paper

R. Kulmatov, C. Opp, M. Groll and D. Kulmatova, "Assessment of Water Quality of the Trans-Boundary Zarafshan River in the Territory of Uzbekistan," *Journal of Water Resource and Protection*, Vol. 5 No. 1, 2013, pp. 17-26. doi: 10.4236/jwarp.2013.51003.

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