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Application of Index Analysis to Evaluate the Water Quality of the Tuul River in Mongolia

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ABSTRACT

A study of water pollution determinands of the Tuul River was carried out in surrounding area of Ulaanbaatar, the capital of Mongolia at 14 monitoring sites, using an extensive dataset between 1998 and 2008. An index method, developed by Ministry of Nature and Environment of Mongolia, applied for assessment and total, seven hydro-chemicals used in the index calculation. The research indicates that the Tuul River is not polluted until the Ulaanbaatar city and the contamination level spike appears when the river entering the city. The upper reaches of the river and tributaries have relatively good quality waters. Several pollution sources exist in the study area. Among them, the Central Wastewater Treatment Plant (CWTP) is a strongest point source in the downstream section of the river, recently. Pollutions at sites 7-10 are strongly dependant effluent treatment levels from the plant, and it contains a high amount of chemicals that can cause of major decrement of the water quality. This would definitely kill aquatic fauna in the stretch of the river affected. It certainly happened in 2007. The general trend of water quality gradually has been decreased in the study period. Clearly, there is a need to improve the water quality in the Tuul River in surrounding area of the Ulaanbaatar. In order to change this situation, operation enhancement of treatment plants, a water quality modeling and artificial increment of dissolved oxygen concentrations become crucial to improve the water quality significantly. Perhaps a new wastewater treatment plant is needed for Ulaanbaatar city.

KEYWORDS

Tuul River, Water Quality Assessment, Pollution Point Source, Water Quality Map, Water Quality Index

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