

Hydrochemical Characteristics of Selenge River and its Tributaries on the Territory of Mongolia

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Abstract

Hydrochemical research of the Selenge and its main tributary the Orkhon river on the territory of Mongolia has been conducted. Concentrations of the main water ions were measured. Distribution of heavy metals was determined. Dynamics of biogenic elements (NO_3^- , NH_4^+ , phosphates) and degree of phenol pollution was determined.

Key words: Baikal, biogenic, heavy metals, ions, phenol, Selenge River

Introduction

During the last 30-40 years Lake Baikal has been influenced by various anthropogenic factors. Industrial and household waste water have changed the chemical composition of Baikal with a deterioration in water quality in the basin territory. According to sustainable development policy, protection of Baikal region is considered one of the priorities of environmental conservation. The main indicator of the condition of Lake Baikal is water characteristics of Selenge tributary (57 % of flow), from which 4 million tons of mineral substances, 0.4 million tons of organic matter, 1 million tons of solid particles and 0.2 million tons of oil products arrive annually (Dugarova, 2002). Two thirds of the Selenge river basin is situated in Mongolia. The length of the Selenge river on the territory of Mongolia is 1043 km.

The Selenge river formed as a result of joining the rivers Ider and Muren and its source is in the Khangai (Mongolian Altai). The main tributaries of the Selenge river in Mongolia are the rivers Tuul, Orkhon and Kharaa with the main industrial districts situated on their banks (Fig. 1). These industrial towns include Erdenet and Govi, a metallurgy plant in Darkhan, carpet and woollen enterprises, meat processing and goldmining plants in Booro and Zaamara. Industrial wastewater pollution is having an adverse effect on the environment destroying natural processes of degradation within biological communities. The

river is polluted along its entire length. To assess the current ecological condition in the Mongolian part of the Selenge river basin, it is necessary to implement hydrobiological and hydrochemical monitoring. It requires information not only of chemical composition, but of biogenic components in the processes of accumulation and transformation in water, bottom sediments and river banks.

The main aim of the work is to research hydrochemical characteristics of the Mongolian part of the Selenge river and close water arteries to identify chemical elements (heavy metals, basic ions and biogenic elements) and estimate their influence on Lake Baikal.



Fig. 1. Map of the sample locations