

## Geochemical Barriers as an Element of Aquatic Systems

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Using synergy concepts, the role of geochemical barriers (GCB) as an obligatory component of aquatic systems (AS) is shown. This is a fundamentally new approach to identify the role of GCB in the formation of the AS structure and substance flows. Models of identification and transformation of the processes of AS formation and material-energy flows through GCB are developed.

**Objects of analysis:** AS of Lake Chokrak (Kerch Peninsula, unique salt lake, springs, mud volcano, hydrobionts complex, grass vegetation and soil in the zone of constant influence of the lake), marginal filters of the Northern Dvina and Aojian rivers.

Processes in the AS were analyzed using data on marker substances - polycyclic aromatic hydrocarbons, PAHs (toxic, stable, clearly indicate a natural or technogenic pollution source). Indicators of the AS evolution intensity are changes in entropy, enthalpy and Gibbs energy of PAHs. Data were processed using multivariate statistical methods.

For the various AS components, the leading factors determining the accumulation of PAHs have been highlighted, i.e.: for aquatic environments (solubility > Gibbs energy > hydrophobicity of PAHs); for lower hydrobionts (solubility > Gibbs energy), etc. The series of PAHs migration and accumulation activity were obtained. It has been shown that living matter plays an extremely important role in the evolution of AS.

Different types of barriers are characterized by significant differences in the intensity of accumulation and permeability for marker compounds. The role of GCB is multifaceted; they form the geochemical appearance of natural and man-made dynamic systems and their evolution.

The material has been prepared in the framework of the 5-100 project, financially supported by the Ministry of Education and Science of the Russian Federation (the Agreement № 02.A03.21.0008).

### Biography:

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