

THE IMPORTANCE OF STUDYING THE GEOCHEMICAL CONDITIONS OF THE GEOSYSTEMS OF THE MIDDLE PART OF THE AHANGARAN BASIN

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ABSTRACT: The article describes the influence of chemical elements on the processes and changes in geosystem based on geochemical analysis, and the data is based on studies carried out in the middle part of the Akhangaran Basin and previous researchers who conducted research in this area.

KEYWORDS: Geochemical conditions, geosystem, metalloids, MPC, clark.

INTRODUCTION

The Ahangaron Basin is located between the Chatkal and Qurama ridges. From the north, the Ahangaron river basin borders on the Chatkal and Aksakotasay tributaries of Chirchik through the Kyzylnura mountain. In the north-west, through the south-western branches of the Kyzylnura mountain, the Chirchik tributary borders on the Boshqizilsay basin. The western border passes through the watershed of the Belyovutsoy and Tosh say rivers through the foothill erosion-denudation surfaces, then through the watershed of the IV-V erosion-accumulation terraces of the Tashkent complex of the Chirchik river basin and connects to the Karasuv canal.

The border then passes through the core of the Karasuv Canal. The canal continues to the southwest and joins the Ahangaron River near the city of Alimkent. Beginning here the border to Syrdarya conditionally passes along the right bank of the Ahangaron River. Due to these areas are fully developed, natural landforms and soils, vegetation cover has changed and natural boundaries are not visible. In the northeast, east, southeast, the border passes through the watersheds of the Qurama Range. The southern border passes through the junction of the IV-V erosion-accumulative terraces of the Tashkent complex, located at the foot of the Qurama ridge in the Ahangaron basin, and the II-V terraces of the Syrdarya.

The Main Findings and Results

It is known that our research object consists of a mountainous area. The complexity of the nature of mountainous areas is due to the interdependence of the components of nature that make it up, the fact that the flow of matter and energy flows from top to bottom through water, through mountain valleys, gravity is a huge energy source, altitude geosystems and their constituent factors based on laws such as variability across specific regions. In the use of the natural resources of such complex mountainous areas, in addition to the above-mentioned general laws, it is necessary to take into account the local laws and factors specific to the region. This is because geosystems, in addition to having common characteristics, also have some extent specific individual characteristics.

The area between the Ahangaron (Turkish) Reservoir and the Tuyaboguz Reservoir has been conditionally defined as the middle part of the Ahangaron River.

Ahangaron Reservoir- A hydraulic structure built on the banks of the Ahangaron River. It was launched in 1989. The total volume is 260 mln. m³, the maximum height of the dam is 100 m, the water capacity is 480 m³ / sec. It regulates the water of the Ahangaron River seasonally. It is used to irrigate lands in Ahangaron, Orta Chirchik, Piskent and Boka districts of Tashkent region.

Tuyaboguz Reservoir (Tashkent Sea) - a hydraulic structure built in the middle reaches of the Ahangaron River. It was built in 1962. It regulates river water seasonally. The total volume is 250 million m³, the useful volume is 224 million m³. The water surface area is 20 km². The average depth is 12.5 m.

The geo-ecological situation is becoming more and more complicated due to the high natural resource potential of the area between these reservoirs and the growing growth of the mining and processing industry.

The middle part of the Ahangaron river basin is a whole geosystem in which the productive forces of our country are widely developed and are expected to further develop in the future. The development of industrial production has led to changes in geosystems. Atmospheric air, plant, soil, groundwater and surface water are polluted under the influence of mining and processing industries.

Naturally growing plants have been replaced by cultivated and ornamental plants. During the expansion and formation stages of settlements, its primary relief features underwent radical changes. The low-altitudes, especially the microrelief of the cities, were flattened. Also, due to the design of railways and highways, the unevenness and slope of the natural relief in the settlements have been brought to a level suitable for traffic. Thus, geosystems began to undergo anthropogenic change.

Prevention of geo-ecological problems is one of the important issues in ensuring the sustainable development of industrial areas. This is especially true of solid waste collected in mining areas, i.e. in areas where there are mining and processing enterprises. Changes in geosystems in mining-intensive areas are associated with the extraction of minerals, especially in the open pit, in which 2/3 of the annual amount of extracted rock is dumped in ore processing plants and most of it is almost never used. As a result, geosystems are polluted with chemical elements, the amount of harmful elements exceeds the permissible norm several times. For example, the impact of the Almalyk Mining and Metallurgical Combine on the natural environment reaches 30-40 km. The spread of heavy metals throughout the valley pollutes soil, vegetation and water bodies, complicating the living conditions of the population. The area contaminated with lead, zinc and copper deposits in the study area is more than 350 km², the natural amount of lead is 500-1000 thousand times higher than in Clark, copper is 10-200 times more, 30-40% of this area, zinc is 10-100 times occupies 50–60 percent due to the large number [1].

The annual production of ash and slag waste is up to 250,000 tons at Angren HES and up to 400,000 tons at New Angren HES. In 2013, more than 13 million tons of ash and slag waste were collected in the Angren mining industrial region, while the volume and amount of ash and slag waste is increasing as the rate of uninterrupted power generation increases. Due to the expansion of the area occupied by ash and slag, their storage in the open causes them to be released into the air in the form of dust by the wind, and the moving components are washed away by precipitation, causing soil and groundwater and surface water pollution. The results of

the chemical analysis of ash and slag wastes of Almalyk Mining and Metallurgical Combine, Angren HES and New Angren HES are defined the existence of chemical elements such as SiO₂, TiO₂, Al₂O₃, Fe₂O₃+FeO, Fe₂O₃, FeO, MgO, MnO, Co, Na₂O, K₂O, P₂O₃, SO₃ and heavy metals and metalloids Zn, Pb, Cu, Cr, Co, Ni, Sb, W, Mo, As, Cd, Th, U, Ba, Ga, Rb, Sr, Y, Zr, Nb, Cs, Sc, V, Bi. [3]

Analysis of chemical elements requires knowledge of quantitative and qualitative changes in the components of nature. In this context, research should be conducted within geosystems that have natural boundaries, where all components of nature interact and influence. Migration of chemical elements causes changes in geochemical conditions in geosystems.

It is clear from the above considerations that the formation of geosystems in the middle part of Ahangaron is determined by the interaction of the components, i.e. the quantitative indicators of the substances they contribute. These indicators are expressed in different units (cubic meters, millimeters, grams, kcal / cm², etc.), and each component has its own substance, that is, the formation of a geosystem depends on the amount of chemical elements they provide. Therefore, the chemical elements formed and distributed as a result of industrial development and human economic activity determine the geochemical conditions in geosystems. The continuous exchange of matter and energy represents the law of the integrity of geosystems, however, it does not develop uniformly in time and space, continuing to develop continuously due to the presence of rhythm. Given the principle of "irreversibility of evolution", the fact that the geochemical conditions of geosystems are constantly changing determines their dynamics.[2] This means that geosystems are also evolving, that is, changing. In the middle part of the Ahangaron Basin, there is a high level of industrial development, an increase in the amount of chemical elements released into the environment, and, in turn, changes in the quantity and quality of geosystems. This is due to changes in geochemical conditions. Therefore, the study of the geochemical conditions of geosystems provides an opportunity to develop specific measures for the rational use of natural resources and nature conservation.

CONCLUSION

In summary, the study of the geochemical conditions of geosystems in the middle part of Ahangaron requires the following tasks:

- Determining the boundaries of geosystems;

- Detection of changes in geosystems on the basis of a comprehensive study of the geochemistry of man-made elements;
- Evaluation and forecasting of quantitative and qualitative changes in geosystems;
- Development of recommendations for maintaining the ecological sustainability of geosystems.

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