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WATER COMPOSITION AND ECOLOGICAL STATUS OF AYDAR-ARNASOY LAKE SYSTEM

Annotation: *The article presents the results of the study of the compositional analysis of the water of the Aydar-Arnasay lake system (Lake Tuzkon), one of the largest reservoirs in the Jizzakh and Navoi regions of the Republic of Uzbekistan.*

Keywords: *Aydar-Arnasay lake, monitoring, pollution, hardness, mineralization, ammonium ion, chloride ion*

СОСТАВ ВОД И ЭКОЛОГИЧЕСКОЕ СОСТОЯНИЕ ОЗЕРНОЙ СИСТЕМЫ АЙДАР-АРНАСОЙ

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Аннотация: *В статье представлены результаты исследования композиционного анализа воды Айдар-Арнасайской озерной системы (озеро Тузкон), одного из крупнейших водоемов Джизакской и Навоийской областей Республики Узбекистан.*

Ключевые слова: *озеро Айдар-Арнасай, мониторинг, загрязнение, жесткость, минерализация, ион аммония, ион хлорида*

Introduction. Although more than half of the globe, or 71 percent, is covered by water, the widespread use of water bodies for industrial and economic needs in recent years has led to an expansion of the various impacts on them.

The main body. Today, water in the territory of the republic is naturally formed due to irrational use of water resources We see that the basins are drying up (the Aral Sea), and in some areas the waters of abandoned lakes (Aydar-Arnasay, Sariqamish and Dengizkul) are expanding, forming their own ecosystems (geosystems).The Aydar-Arnasay lake system formed in the arid region is a changing ecosystem. Ecosystem changes affect all components of the landscape, primarily plants, animals, groundwater levels and mineralization. On the other hand, the arid region has a unique microclimate, which also affects the environmental climate.

Therefore, we have set the main task of studying the ecological status of water in the Aydar-Arnasay lake system and studying the structural analysis of water. Water from the Aydar-Arnasay lake system was brought in special containers.

Methodology. Complexonometry - a method of determining the amount of metal ions in solution by titration. Complexometry is widely used as a simple and convenient method for determining the hardness of water, the amount of metal ions in mineral raw materials and wastewater.

The result. When we took samples from the Aydar-Arnasay lake system and analyzed them, the following results were observed.

From the Aydar-Arnasay lake system on the results of the analysis of the samples taken INFORMATION

№	Object name	Sample place name	indicators								
			pH	Soli-dity mg-eq / l	The chemical oxygen demand of water is mg / l	Minera-liza-tion	NH_4	Cl^-	Fe^+	Cu^+	Suspen-ded sub-stances
1	Aydar-Arnasay lake system (Tuzkon lake)	106 -contour	6,7	22,6	18,25	4212	1,45	840	0,036	0,0007	22
		PN		7	15	1000	0,39	300	0,05	0,001	15
		Higher than PN		3,23	1,22	4,2	3,7	2,8	0	0	1,5
2		109-contour	6,5	23,2	18,93	4560	1,92	870	0,04	0	21
		PN		7	15	1000	0,39	300	0,05	0	15
		Higher than PN		24,3	1,3	4,6	4,9	2,9	0	0	1,4

3		112-contour	6,5	7	19,03	4760	2,64	910	0,048	0	23
		PN		3,5	15	4,8	0,39	300	0,05	0	15
		Higher than PN			1,3		6,8	3,1	0	0	1,5

Discussion. According to the analysis, we observed that the chemical parameters of the water in the obtained water samples exceeded the permissible norm (PN).

In the water sample from Contour 106, the chemical oxygen demand of the water is 1.22 times; hardness 3.23 times; ammonium ions by 3.7 times; chlorides 2.8 times; water mineralization by 4.2 times; non-sedimentary substances were found to increase 1.5 times.

In the water sample from contour 109, the chemical oxygen demand of water is 1.3 times; hardness 3.31 times; ammonium ions by 4.9 times; chlorides 2.9 times; water mineralization by 4.6 times; non-sedimentary substances were found to increase 1.4-fold.

In the water sample from Contour 112, the chemical oxygen demand of water is 1.3 times; hardness 3.5 times; ammonium ions by 6.8 times; chlorides 3.0 times; water mineralization by 4.8 times; non-sedimentary substances were found to increase 1.5 times.

Under natural conditions, water always contains dissolved salts, gases and organic matter. Their amount depends on the formation and conditions of the water.

The allowable mineralization index for chemical analysis of water is 1000 mg / l.

The water analysis samples we conducted show that the mineralization of water has increased by an average of 4.53 times in the contour section.

Hardness of water is a property of water that contains calcium $(Ca)^+$ and magnesium $(Mg)^+$ ions. Total hardness is measured by the sum of milligram equivalents (mg-eq / l) of calcium and magnesium ions in 1 liter of water. In the central water supply, the water hardness is generally allowed to be up to 7 mg-eq / l.

The water analysis samples we conducted show that the water hardness index increased by an average of 3.35 times in mg-eq / l contour cross-sections.

When the hardness of the water is high, water softening methods should be used.

Ammonium ion (NH_4^+). In natural waters, the gas formed during the biochemical decomposition of nitrogen-containing organic compounds - ammonia (NH_3) - accumulates when dissolved in water. Dissolved ammonia (ammonium ion) enters the reservoir with surface and groundwater runoff, atmospheric precipitation, as well as industrial wastewater. The presence of ammonium ions in concentrations above background values is a new source of pollution and contamination (municipal wastewater treatment plants, industrial waste settling tanks, livestock farms, manure compound, nitrogen fertilizers, settlements and camping sites).

Ammonium ion content in water (maximum allowable concentration) Ammonium ion for fishery reservoirs - 0.3 mg / dm^3.

The water analysis samples we conducted show that the concentration of ammonium ions in the water increased by an average of 5.13 times in the contour section.

The increasing concentration of ammonium ions in the water indicates the deterioration of the sanitary condition of the reservoir.

High concentrations of chlorides worsen the taste of water. The amount of chloride is also strictly standardized for technical and economic purposes. The maximum concentration of chlorides in drinking water should not exceed 350 mg / dm^3, in fishery reservoir water - 300 mg / dm^3.

The water analysis samples we conducted show that the concentration of chloride ions in the water increased by an average of 2.9 times in the contour section. Multi-chloride water is unsuitable for irrigating agricultural plantations

The Aydar-Arnasay lake system is saturated with wastewater from Kazakhstan's Chordara Reservoir and local collectors and drains. Due to the lack

of fresh water in the lake over the years, salinity levels have risen, negatively affecting the natural reproduction of fish.

Conclusion. One of the priorities of sustainable development in our country is to maintain a healthy ecological situation in the region. Wetlands play an important role in ensuring the sustainability and integrity of ecosystems as an important link in the system chain.

Maintaining water quality within the established standards is a necessary condition for maintaining the health of the population, biodiversity, natural and industrial products, the aesthetic and reactive potential of nature. Because we are all equally responsible for maintaining the ecological sustainability of the basins for future generations.

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