Taken from Gulabatli village of Tartar region artesian water analysis and environmental assessment

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Abstract: The purpose of the research work is to study the analysis of heavy metals, phenols and polycyclic aromatic hydrocarbons in artesian water taken from Gulabatli village of Tartar region. At the same time, the article mentions the devices used in the analysis the sample taken from that water,the results of the analysis and the reason for the results. Some substances from artesian water exceeded the permissible concentration limit, which is related to the geographical location of the water.

Key words: Heavy metals, Cadmium, Lead, Silver, Polycyclic aromatic hydrocarbons (PAH), Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Chrysene.

1.INTRODUCTİON

As we know, this water ecosystem is constantly connected with the environment surrounding it. The formation of surface and groundwater is related to industry, transportation, anthropogenic activities, agriculture and natural disasters.

Innumerable anthropogenic effects occurring in nature, harmful substances collected in the air and lithosphere eventually fall into the water environment. We know that because water is the best solvent, the environment for pollution is created. Also, one of the most important properties of water is to ensure the active participation of substances outside itself in biological, chemical and physical processes. That is why water pollution is divided into 3 parts: physical, chemical and biological.

Chemical pollutants are also divided into 2 groups, organic and inorganic pollutants. Inorganic pollutants include heavy metals, mineral salts, clay-derived substances, alkalis, acids, and others. But heavy metals and their compounds are the most damaging to aquatic organisms [1].

It was determined that the number of harmful water pollutants in water basins and waterways has increased significantly. As mentioned, each person uses 450 l of water per day. As a result of research, it was determined that the chemical composition of water depends on the geographical location, the structure of the earth's crust, and other factors.

In many areas, the amount of several mineral salts as well as calcium and magnesium salts in the drinking water is much lower than the norm necessary for humans. Due to the lack of necessary salts for life activity in the body, it tends to get infected with many diseases. At the same time, the excess of salts in the water causes diseases. In other words, when we say water necessary for drinking and life activities, we mean water that is sufficient with mineral salts and other nutrients. It is known that the water supply of many cities, towns and villages is provided by underground water. Considering the increase in the number of people and their demand for water, it is necessary to re-evaluate the need for existing aqueducts. It should also be noted that incorrect selection of the methodology during the assessment or making technical mistakes leads to obtaining incorrect results in the assessment of the reservoir reserve [2, 3].

Due to the increase of anthropogenic influence in the territory of Tartar region, the change of quality indicators of river waters has increased, especially in the low water period. In order to better study the

ecological condition of rivers, it is important to determine the factors that affect it and develop calculation methods. Excessive use of water from some rivers in industry and agriculture can lead to the loss of their function as a natural component. Currently, the implementation of various economic measures in the basin of the rivers flowing directly from the territory of Azerbaijan to the Caspian Sea has led to changes in the quantitative and qualitative indicators of river waters. From this point of view, it is considered one of the important issues to study the rivers of the territory on an ecological basis [4,5,6].

Artesian water is located in the Karabakh plain, in the Sanjali territorial unit of Gulabatli village, Tartar region. It is fresh water located at a depth of about 100-600 m. We monitored the artesian water and determined its physical and chemical composition. Thus, phenol and phenol derivatives were studied in water. Physico-chemical properties of artesian water were studied. The pH unit of water is equal to 7.5. [8]

Based on the results of the analysis, it can be noted that the artesian water is not so dirty.

Among PAHs, naphthalene did not exceed the norm, and other representatives did not exceed the norm.

Table 1. Amount of polycyclic aromatic hydrocarbons in artesian water.

PAHs	mkg/l Sample (water)
Naftilen	0.03
Asenaften	<0.01
Fluoren	<0.01
Fenantren	<0.01
Anthracene	<0.01
Fluorant	<0.01
Piren	<0.01
Benz(a)anthracene	<0.01
Krizen	<0.01
Benz(b+j+k)fluoranten	<0.01
Benzo(a)piren	<0.01
İnden(1,2,3-cd)piren	<0.01
Benzo(ghi)perylene	<0.01
Dibenz(ah)anthracene	<0.01
16PAH	**0.03**

Table 2. Amount of phenolic organic compounds in artesian water.

Parameter	23115-01-1
Phenolic compounds	Uq/l
phenol	<0.02
o-cresol	<0.02
2-nitrophenol	<0.04
2,4-dimethylphenol	<0.02
2,4-dichlorophenol	<0.02
2,6-dichlorphenol	<0.02
4-chloro-3-methylphenol	<0.04
2,4,5-TCP	<0.04

2,4,6-TCP	<0.04
2,3,4,6-tetrachlorophenol	<0.04
pentachlorphenol	<0.04

Phenolic compounds are among the chemicals of greatest concern due to their long-term persistence and toxic effects in the environment. More is thrown into the environment from construction, agriculture and other reasons.
In the water sample we analyzed, the amount of phenols does not exceed the norm, and the artesian water was not contaminated with phenols.
When heavy metals accumulate in the body, they can cause various diseases and even death. Some heavy metals are present in small amounts in the body.
Both excess and deficiency of them create problems.

In order to determine whether heavy metals in water are harmful or harmless, the amount, type and human structure of heavy metal should be taken into account. In recent years, researches have concluded that cancer diseases and poisoning are caused by heavy metals in drinking water [7].
Lead is a heavy metal that is mainly distributed in the hydrosphere. However, it is less widespread in groundwater than in surface water, and it is a moderately harmful metal due to its effect [1]. Heavy metals were studied in the artesian water sample located in Gulabatli village, Tartar region. Water sample was taken by ISO 19458:2006 method and analyzed by EPA 200.7 method.

Table 2. Analysis of heavy metals in artesian water taken from Gulabatli village, Tartar region

Metals	Mkg/l Sample (water)	LTD (mkg/l)
Cadmium	<1	0.01
Lead	16.7	0.1
Silver	<5	0.01

As can be seen in the table, the above heavy metals have exceeded the permissible limit. The reason for this is that the area where the artesian water is located is close to the war zone.

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