УДК 628.164(575.1)

A WAY TO SOFTEN WATER AND MAKE IT DRINKABLE

Abduganiyev Madiyorjon Maxsudali o'g'li
Engineer"TOSHKENT SHAHAR SUV TA`MINOTI" LLC
Scientific supervisor: **Abdukodirova M.N.**
dosent National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers".

Abstract: It is known that spring water and artesian water are directly used as drinking water in villages. Due to the high mineralization of these waters, it causes various diseases. Spring and artesian waters are hard waters. Ca and Mg salts in their composition are more than normal. I recommend the Water softener YB-5 series FBK-1-23 device for providing drinking water to villages through underground water.

Key words: Clean water, Villages, Economic development, Sustainability.

In our young independent country, which is implementing consistent and comprehensive reforms in all sectors of the national economy, great attention is being paid to the issues of providing water to the population and production, as well as the rational use of existing water resources. In addition, great work is being done to provide the population, especially rural residents, with clean drinking water. Naturally, water supply systems are expanding, technically improving, and at the same time becoming more complex.

Water receiving structures from underground and surface sources are getting bigger, water transportation distances are getting longer, and water treatment processes and structures are becoming more complicated under the influence of environmental conditions and conditions. In such conditions, it is extremely important for our country, which lives in the conditions of the Aral Sea basin and is doing great work for the well-being of its people, to improve the technologies of designing, building and operating water supply systems and achieving their performance at the level of demand. It is one of the tasks that are urgent and at the top of the agenda.

Providing the population and production with water in the required amount and at the level of demand in a timely manner plays a special role in achieving sustainable economic development of the country.

Over the last 30-40 years, the increase of anthropogenic influences on water supply sources has worsened the situation of water supply in the republic. Currently, there are many problems related to the state of rural water supply. Only 60-80% of the villagers have access to clean drinking water.

In order to get out of this difficult situation, great work has been done and continued by the government and the president of the republic. In particular, we can mention a number of decisions of our president on June 28, 1990 on "Improving the supply of drinking water and natural gas to rural residents" and the subsequent period.

One of the main tasks of the national economy is to provide water to the population and production facilities, as well as timely collection and treatment of dirty water on the spot.

The quality of water used for drinking, economic and technical purposes depends on the content of various soluble and insoluble mineral and organic substances in water and is determined by the sum of physical, chemical, bacteriological and biological properties of water.

The requirements for the quality of drinking water are determined based on the requirements of the State Drinking Water of Uzbekistan "Hygienic requirements and quality control" UzDst 950:2011.

The presence of mineral substances - calcium and magnesium salts in water gives it the property of hardness. Hardness is measured in "mg eq/l" or degrees. 1 degree of hard water corresponds to 10 mg of calcium oxide (CaO) or 14 mg of magnesium oxide (MgO).

The degree of hardness of natural waters is characterized as follows:

1. Soft water ‹ 4 mg ek/l
2. Medium hardness water 4-8 mg ek/l
3. Hard water 8-12 mg ek/l
4. Very hard water › 12 mg ek/l

The hardness of river waters is usually not high (1-6 mg eq/l). However, in the recent period, the hardness of the river water has increased due to the increase of anthropogenic influence. The hardness of Amudarya water occasionally reaches 16-18 mg eq/l in its lower reaches. The hardness of ground water is usually higher than that of surface water. The hardness of drinking water should not exceed 7 mg ek/l.

I recommend the Water softener YB-5 series FBK-1-23 device for providing drinking water to villages through underground water. Productivity from 1 to 5 m3/hour; The device is used to remove calcium, magnesium and other hardness salts from water. The device consists of a case made of steel and coated with a nutritionally neutral polymer, a special regeneration tank, a set of hoses and valves. It does not require additional electricity during use and operation of the system. Sorbents are foreign products and have a long service life (up to 3 years).

1-5 m3/hour Working pressure up to 5 atm. The volume of the sorbent (cationite) is 120 kg. Output water hardness (based on demand) mg eq/l-0.02-1.0.

Currently, water softeners are used in the production of drinking water, dairy products, and for tools and equipment that require soft water. For example: boiler room, steam rooms.

Supplying villages with clean drinking water in this way is easy, cheap and reliable. Currently, at a time when science is progressing, in order to provide the population with clean drinking water and to make effective use of our existing water resources, it is necessary to provide clean drinking water in all regions of our country.

Conclusion: To soften hard water and make it suitable for drinking, you typically need to address the issue of excessive mineral content, primarily calcium and magnesium ions. Softening water can enhance its taste, reduce scale buildup in appliances, and make it more suitable for household use. There are various methods to soften water, but the most common one is ion exchange with a water softener. In conclusion, water softening is an effective way to remove the hardness minerals from water, making it more suitable for household use and potentially for drinking. However, you should consider the potential increase in sodium or potassium content and the associated costs and environmental impact. It's essential to strike a balance between achieving soft water and maintaining water quality and safety.

REFERENCES

1. Mahmudova I.M, Salohiddinov A.T. “Qishloq va Yaylovlar suv ta’minoti” Toshkent-2013 “Chinor ENK”
2. O’zbekiston Davlat Standarti 950:2011
3. Internet sayti: www.green.uz
4. Abduqodirova, M., & Ismoilkhodjayev, B. (2021). Treatment of polluted municipal wastewater in Tashkent. In *E3S Web of Conferences* (Vol. 264, p. 01052). EDP Sciences.

5. Abdukadirova, M. N., & Sh, I. B. (2023). Evaluation of the effectiveness of the technology of biological treatment of wastewater at the Salar aeration station. *Texas Journal of Agriculture and Biological Sciences*, *15*, 121-126.
6. Abdukadirova, M. N. (2022). DEVELOP STUDENTS'PRONUNCIATION SKILLS FOR HEARING IMPAIRED. *Экономика и социум*, (3-1 (94)), 7-9.
7. Sh, I. B., & Abdukadirova, M. N. (2019). Assessment of the effectiveness of biological treatment of wastewater at the" Binokor" aeration station located in Orta Chirchik district of Tashkent region. *Journal of Irrigation and Reclamation*, (1), 15.
8. Sh, I. B., & Nasibov, B. R. (2022). Influence of algae on fur growth, development, physiological condition and fur quality. *Texas Journal of Agriculture and Biological Sciences*, *5*, 67-70.
9. Ismailhodjaev, B., Kuatbekova, K., Kholmirzaeva, B., Boburbek, N., Mirzaqubulov, J., Eskaraev, N., & Abduraimova, N. (2022). Activity, patterns, and localization of carbonic acid enzymes in algae used in wastewater treatment. *Texas Journal of Engineering and Technology*, *14*, 11-17.

WORDLY KNOWLEDGE