



Preparation of Drinking Water from A Reservoir and Studying the Influence of Unsatisfactory Technical Conditions of Water Piping Structures and Networks on Water Quality

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ABSTRACT

An analysis of the state of drinking water supply in the country indicates that the quality of drinking water in many regions of the country is deteriorating. Among the reasons are the ongoing pollution of water sources, the low level of implementation of modern water treatment technologies, the high deterioration of distribution networks, the regional peculiarities of water supply sources associated with a deficiency or excess of nutrients that have a negative impact on public health. The article examines the analysis of the state of provision of the republic with centralized water supply and sanitation.

Keywords:

drinking water, pollution of water sources, modern water treatment technologies

The problem of the content of various organic compounds in drinking water attracts the attention of not only researchers in various fields of science and water treatment specialists, but also consumers. In recent years, many research institutes in the Republic of Uzbekistan, such as "SANIIRI", "UzGidromet", "UzSuvloyikha", "Uzbekkommunalloyihaurilish" and others working in the field of water supply, are improving technological processes and methods of drinking water treatment, ensuring the production of water with a high degree of sanitary reliability. Currently, problems associated with the contamination of fresh water reserves with heavy metals, petroleum products, and biologically stable organic substances that have a negative impact on the biochemical regime of water bodies are becoming more acute [1].

An analysis of the state of drinking water supply in the country indicates that the quality of drinking water in many regions of the country is deteriorating. Among the reasons are the ongoing pollution of water sources, the low level of implementation of modern water treatment technologies, the high deterioration of distribution networks, the regional characteristics of water supply sources associated with a deficiency or excess of nutrients that have a negative impact on public health [2].

The supply of surface or groundwater to water consumers in the required quantity and in accordance with target indicators of water quality in water bodies is the responsibility of water supply systems. Improving people's living standards, improvement and industrial development is impossible without high-

quality water supply, drainage and wastewater treatment.

Water supply and sewerage services are one of the most important and most materially and energy-intensive sectors of the public utilities sector in Uzbekistan. All cities of the republic and 65% of urban-type settlements are provided with centralized water supply systems. 66.4% of cities and 4.9% of villages have sewerage systems. 65% of urban settlements and 54% of rural settlements are provided with centralized water supply services. The rest of the rural population consumes water from wells, captages and individual wells, which in the overwhelming majority are in unsatisfactory technical condition. 18.2% of rural water supply systems, about 9% of public wells and drainages do not comply with state standards.

The quality of drinking water in centralized water supply systems is negatively affected by the unsatisfactory technical condition of water supply structures and networks and their significant deterioration, which ranges from 35-68% in different areas. Sources and unaccounted water flows in water supply systems amounted to 35-62%.

Centralized sewerage services are provided to 17%, 66.4% of urban-type settlements and 0.5% of rural settlements. In 2020, only 11.1 million rural population (65%) used centralized water supply services. Engineering equipment, in particular internal water supply with supply to the house, was provided only by 18.5% of the population, sewerage - 0.5%, hot water supply - 0.2%, and street water taps - 18.6%. More than 74% of rural water supplies are intermittent or disconnected. 1.1 million in cities and 4.3 million rural residents use local water sources for drinking needs [2].

More than 25% of drinking water samples from underground sources in rural settlements do not meet current standards - for sanitary-chemical indicators it is 2.1 times higher, for bacteriological indicators - up to 2.3 times higher than the number of corresponding samples taken in centralized water supply networks [3].

International experience shows that the problem of improving the quality of drinking water can be solved only on the basis of an integrated approach, including all aspects of production and economic activities and, above all, the quality of water in water supply sources.

A certain algorithm for solving problems is proposed in the form of a "road map", i.e. a sequence of targeted actions in the organizational, legal, production and technical, financial, economic, scientific and humanitarian spheres, which ensure the achievement of the goals of development and improvement of water supply and sanitation systems, as well as indicator indicators of the quality of service provision at the level of developed countries.

Today, almost all centralized water supply and sanitation systems in populated areas, as well as the enterprises that operate them, are at the very beginning of reform, i.e. at the start of the "road map" According to the instructions of the chairman of the JSC "Uzsuvtaminot", together with the Water Inspectorate, a "road map" was completed for the provision of drinking water, in the context of each mahalla, throughout the republic.

There are centralized and decentralized water supply. Centralized water supply provides water to several water collection points by organizing a water supply system, which is a complex of engineering structures through which water is collected from a water supply source, processed necessary to bring its quality to the requirements of the water consumer, water is supplied to the point of consumption and distribution among consumers. The quality of drinking water is regulated by UzDST 950-2011 "Drinking Water" [4].

Centralized domestic and drinking water supply is organized at surface or underground water sources.

With a decentralized, local water supply, water is taken by the population directly from the water source, without a distribution network of pipes. Groundwater is most often used as a source of water supply, and mine wells or springs (springs) are used as water intakes. Sanitary rules allow the use for

drinking purposes of well water with a coli index of no more than 10, turbidity on a standard scale of no more than 1.5 mg/l, transparency of no less than 30 cm, color value of no more than 30° [4]. Other indicators of the chemical composition and organoleptic properties of well water must comply with the requirements of UzDST 950-2011 "Drinking water".

The water supply system is a complex of structures to provide a certain group of consumers with water in the required quantities and required quality. In addition, the water supply system must have a certain degree of reliability, that is, ensure the supply of water to consumers without an unacceptable reduction in the established performance indicators in relation to the quantity or quality of the supplied water (interruptions or reduction in water supply or deterioration in its quality within unacceptable limits) [5].

The water supply system of a populated area must ensure that water is obtained from natural sources, purified if required by consumer requirements, and supplied to places of consumption.

Drinking water supply is a set of measures to provide drinking water to the population. Drinking water supply includes the selection and assessment of possible sources of water supply (for groundwater - assessment of their reserves), selection of the location and construction of water intake structures, sanitary assessment of water and measures to protect it from pollution. All modern drinking water supply systems in populated areas are centralized, each of them provides water to a large group of consumers.

For drinking water supply, natural sources of water are used: surface - open watercourses and reservoirs (rivers, reservoirs, lakes, seas) and underground (ground and artesian waters), in some cases, the source of drinking water supply can be water extracted by drainage workings during the drainage of mineral deposits [6].

When choosing a source of water supply, the given need for drinking water and the presence of surface or fresh groundwater in the area are first taken into account. From the

point of view of water quality and their protection from pollution, preference is given to groundwater. When choosing a surface source of water supply, hydrology, conditions, minimum and average water flow rates, compliance with their intended water intake, sanitary characteristics of the basin, industrial development, the presence and possibility of sources of domestic, industrial and agricultural pollution in the area of future water intake are assessed. If the surface source of water supply does not meet the requirements of the composition and properties of drinking water, in agreement with the sanitary and epidemiological service authorities, additional water treatment measures can be planned to ensure the required quality (filtration, coagulation, disinfection, etc.). When using groundwater for drinking water supply, the following is carried out: [7].

- searches for deposits (sites) and aquifers within them, carried out on the basis of regional geological, hydrogeological and geophysical work;

- preliminary exploration, including obtaining calculated hydrogeological parameters, choosing a rational water intake scheme, preliminary assessment of operational groundwater reserves in the explored area;

- detailed exploration, culminating in an assessment of operational groundwater reserves in relation to the developed scheme and design of the water intake according to categories that ensure the allocation of capital investments for the design and construction of the water intake.

Municipal water supply is associated with the direct consumption of water by the population (for drinking, as part of food products), with the use of water for household purposes (laundry, cleaning, washing, etc.), to meet the needs of municipal household services (laundries, hairdressers, etc.), urban transport, construction organizations.

Municipal water supply is characterized by relatively low irreversible consumption. Therefore, wider implementation of sewerage will increase the amount of wastewater that can be reused (after appropriate treatment) for

irrigation or industry. This will result in overall savings in water used by its consumers.

Literature.

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