HYGIENIC MONITORING OF WATER BASINS AS SOURCES OF DRINKING WATER

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Relevance : Water is one of the most essential factors for human health and life. Providing the population with clean and safe drinking water is one of the priority areas of the healthcare system. Therefore, the quality of drinking water sources and their hygienic condition should be constantly monitored.

Research Objective: The aim of the research is to study the hygienic condition of water reservoirs as drinking water sources and to develop measures to protect them from contamination.

Materials and methods: used include data from water reservoir monitoring, results of sanitary-epidemiological surveillance, as well as sanitary-hygienic assessment and descriptive analysis methods.

Results: In Uzbekistan, various water basins such as rivers, reservoirs, artesian wells, and springs are used as sources of drinking water. These sources are not only at risk of natural pollution but also face anthropogenic (human activity-related) pollution sources. This makes the issue of monitoring water quality, analyzing it, and taking necessary actions extremely important.

Drinking Water Sources refer to natural or artificial objects from which water suitable for drinking, cooking, and household needs is obtained. These sources can vary based on their origin, quality, and usage:

1. Natural Water Sources include groundwater (artesian layers, springs), rivers, lakes, and mountain waters. These sources often pass through natural filters, making them relatively clean in terms of chemical and microbiological content. Artesian waters, in particular, are considered one of the most preferred sources from a hygienic standpoint due to their very low levels of harmful substances.

2. Surface Water Sources such as rivers, reservoirs, and lakes, being located in open environments, may be exposed to various pollutants (industrial waste, agricultural runoff, household waste). Therefore, these waters must be continuously monitored and undergo purification and disinfection processes.

3. Artificial Water Sources refer to wells drilled using technical equipment, reservoirs, and water systems delivered through pipelines. These sources primarily extract water from natural sources, which is then passed through special purification facilities before being supplied to the population. The cleanliness of water basins is one of the most

important factors determining the quality of drinking water. However, in recent years, due to ecological issues, and the expansion of industrial and agricultural activities, the level of pollution in water sources has been increasing. Water basins become polluted through the following main channels: industrial waste, agricultural waste, household and sewage waste, pollutants falling from the atmosphere, natural disasters, and climate change, among others. Regardless of the source of drinking water, its quality must meet sanitary standards. Therefore, every source must be hygienically evaluated, regularly monitored, and preventive measures should be taken against pollution risks. The quality indicators of drinking water are of critical importance in ensuring public health. Water is one of the most essential life sources, entering the body after nutrients. For this reason, drinking water is evaluated from a hygienic perspective based on specific requirements. These requirements are determined according to the physical, chemical, biological, and radioactive properties of the water. Physical properties refer to the appearance, clarity, color, odor, and taste of the water. Drinking water must be transparent, colorless, and free from any foreign odors or tastes. If the water appears turbid, or has an unusual smell or taste, it signals contamination. Chemical composition depends on the levels of minerals, salts, metals, and other chemical elements in the water. Specifically, substances such as nitrates, nitrites, ammonium, chlorine, iron, and sulfates, if present in excessive amounts, can be harmful to the body. Additionally, the presence of heavy metals (such as lead, mercury, cadmium) is toxic. Microbiological indicators indicate the presence of harmful microorganisms (such as Escherichia coli, staphylococcus, streptococcus, etc.) in the water. According to hygienic standards, drinking water should not contain any pathogenic microorganisms. To achieve this, the water is disinfected using special disinfectants. Radiation safety is also crucial, particularly in geologically active areas. The levels of radioactive isotopes (such as radon, uranium) in the water must be within sanitary norms. Thus, the selected water sources must meet the state standard O`zDST 951:2011, which specifies "Centralized potable water supply sources, hygienic and technical requirements, and selection rules."

Conclusion: The hygienic control of drinking water sources and protecting them from pollution is of vital importance in ensuring public health. To ensure that water basins remain clean and safe, regular monitoring and preventive measures must be taken. This includes monitoring the water basins, purifying and disinfecting the water, preventing harmful waste from entering the basins, informing the public, conducting sanitary education, cleaning water networks, and providing technical maintenance. These actions are essential for maintaining safe drinking water sources for the population.

References :

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