



HYGIENIC CHARACTERISTICS OF OPEN RESERVOIR POLLUTION

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Annotation

Water is crucial for the survival of all living organisms. Currently, water pollution in developing countries poses problems in many health care systems, a major concern for the government in these countries. The disposal of treated wastewater into open water bodies as well as the presence of samples taken from checkpoints due to contamination by other polluting sources and not meeting sanitary-hygienic requirements indicate that open water basins are constantly polluting.

Keywords: water quality, microbiological analysis, chemical analysis, bacteriological analysis, open water basin, Tashkent region.

Annotatsiya

Barcha tirik organizmlarning tirik qolishi uchun suv hal qiluvchi ahamiyatga ega. Hozirgi vaqtda rivojlanayotgan mamlakatlarda suv ifloslanishi ko'plab sog'liqni saqlash tizimida muammolarni yuzaga keltiradi, bu mamlakatlarda hukumat uchun katta tashvish tug'diradi. Ochiq suv havzalariga tozalangan chiqindi suvlarini tashlanishi hamda boshqa ifloslantiruvchi manbalar tomonidan ifloslanayotganligi sababli nazorat nuqtalardan olingan va sanitar-gigiyenik talablarga javob bermagan namunalarning mavjudligi ochiq suv havzalarning doimiy ravishda ifloslanayotganligini ko'rsatadi.

Аннотация

Вода имеет решающее значение для выживания всех живых организмов. В настоящее время загрязнение воды в развивающихся странах вызывает проблемы во многих системах здравоохранения, что вызывает серьезную озабоченность правительства этих стран. Наличие проб, взятых с контрольно-пропускных пунктов и не отвечающих санитарно-





гигиеническим требованиям, в связи с сбросом очищенных сточных вод в открытые водоемы и загрязнением их другими источниками загрязнения, свидетельствует о стойком загрязнении открытых водоемов.

Introduction

To maintain the natural circulation of the required amount of water from surface, underground and sea waters in the territory of the Republic of Uzbekistan, to ensure its purity to the level specified in the regulations, to protect aquatic plants and animals, to prevent pollution of water bodies, in them it is allowed to use it as long as it maintains the ecological balance and does not harm the water body as a landscape element [8, 10].

Water object - natural (rivers, streams and rivers) and artificial (open and closed canals, as well as collector drainage networks) watercourses, natural (lakes, seas, underground aquifers) and artificial (reservoirs, floodwater collection sites, ponds, etc.) water bodies, as well as springs and other objects. Prevention and elimination of pollution, pollution, drying and silting of water bodies with products of soil erosion, as well as maintenance of a favorable water regime, use of water bodies, their reconstruction, repair and restoration in order to create normal conditions for travel, water protection zones of water bodies are determined in accordance with the law, and land areas for coastal regions are allocated from them[1, 8, 10].

Considering the close relationship between environmental conditions and water availability, many national indicators have been developed to assess water quality. Contamination of surface water is widespread, leading to significant contamination of groundwater, including well water. Water pollution plays an important role in increasing the rate of diseases (kidney diseases, oncology and acute infectious diseases) and leads to an increase in the death rates of adults and children.[4, 6, 9].

Water is crucial for the survival of all living organisms. The health of the natural ecosystem depends on the physical, chemical and biological properties of water[15]. Water quality varies from place to place around the world. Environmental factors physical, chemical and microbiological parameters are interrelated to determine water quality[3]. Therefore, all these parameters should be evaluated.

Currently, water pollution in developing countries causes problems in many health systems, which is a major concern for governments in these countries.[3, 11, 12]. A billion or more cases of diarrhea occur regularly in these countries each year. In addition, two million people worldwide die each year due to diarrhea. These cases are occurring due to unsafe drinking water supply and poor sanitation[7, 14, 16].





According to the WHO, 70% of river water in India is polluted due to increased flow of direct pollutants. Some of the river water in India is so polluted that it cannot be used for any purpose[13]. In India, about 95% of the rural population depends on groundwater for their basic domestic needs. About 70% of water resources are highly polluted. Additionally, 75% of disease and 80% of child deaths are attributable to water pollution.[2].

In the last decade, it has been found that the water quality has also deteriorated with the dynamic increase in population in most of the high mountain areas.[5]. Studies show that the deterioration of water quality in various sources in the world is a leading factor in direct infectious diseases.

Research methods: Hygienic description of the state of pollution of open water bodies in Tashkent region during 2019-2021 by microbiological and chemical analysis.

Generally accepted methods of microbiological examination of water are determination of microbial count and coli-titer or coli-index. The chemical analysis of water is the chemical substances and compounds present in the water or from the environment.

Results: 43 water bodies belonging to the 1st and 2nd category flow in the territory of Tashkent region. They include Syrdaryo, Angren, Chirchik, Ugam, Chimyonsoy, Chotkal rivers and streams in the 1st category, Karasuv, Zakh, Kurkulduq, Salar, Parkent, Zarkent, Bokachi-tana canals in the 2nd category. At the same time, there are Tashkent and Chervok reservoirs among the open water reservoirs.

In order to study the quality of water in open water sources in Tashkent region, samples were taken from open water basins located in the region. Water samples were taken from these reservoirs and subjected to microbiological and chemical analysis. When studying the dynamics of water samples, the following was found: in the last years 2019, 2020, 2021, a total of 8,384 samples were taken for microbiological analysis, and 2,748 samples were taken for chemical analysis. In 2019, 63 out of 3028 water samples taken for microbiological analysis did not meet the requirements, 93 out of 1024 samples taken for chemical analysis did not meet the requirements. In 2020, 37 out of 2491 samples and 68 out of 781 samples did not meet the requirements, respectively. In 2021, a total of 2,865 samples were taken for microbiological analysis, of which 59, and 97 of 943 samples taken for chemical analysis did not meet the requirements.

Analyzes show that open water bodies are continuously polluted, and it is necessary to increase the number of samples to analyze and verify the nature of pollution. Protection of open and underground sources of water supply implies





strengthening of water quality control of open water bodies and prevention of pollution.

During 2020-2021, sanitary and helminthological inspections were conducted in 7 cities and 15 districts of the administrative regions of Tashkent region. In 2020, 83 samples were taken from open water bodies located in all cities and districts, of which 4, i.e. 4.8%, gave positive results. In 2021, 6.6 percent of 228 samples did not meet the requirement. In 2020, the highest indicators correspond to Akkurgan district, and in 2021, to Yangiyol city, Qibray and Upper Chirchik districts.

In order to study the polluting sources of open water bodies located in the territory of Tashkent region, 2 cities and 1 district located in the territory of the region were selected for research. Open water reservoirs located in the territory of Angren, Bekobod cities and Qibray district in Tashkent region are important as a source of water supply in terms of size. There are open water bodies of both categories in these cities and districts.

According to the report of the municipal hygiene department of the Angren City Sanitary-Epidemiology and Public Health Department, the number of facilities discharging wastewater into water bodies in the city is 1 per category 1 basin, and 1 per category 2. is ten. The number of facilities discharging household wastewater is 1 per water of both categories, and the number of facilities discharging production wastewater is 1 per basin belonging to the 2nd category only. The number of permanent structures is 2 in the 1st category, and 10 in the 2nd category. Water samples taken from these water bodies for the determination of microbiological parameters: 20 water samples were taken from the water body belonging to the 1st category, 54 water samples were taken from the body belonging to the 2nd category, non-compliant samples were not identified. From the same basins, the number of samples taken for sanitary-chemical inspections was 24 samples of the 1st category, 77 samples of the 2nd category, and the number of non-compliant samples was not determined.

A total of 5 water bodies flow in the territory of Bekobod city, that is, the Syrdarya River, Farhad, Kirov, Khoz-Yoz and Dalvarzin rivers. 2 of them belong to the 1st category, 3 belong to the 2nd category. According to the report of the communal hygiene department of the Department of Sanitary Epidemiology and Public Health, the number of facilities discharging wastewater into water bodies in the city is 2 for the 1st category and 3 for the 2nd category. Household wastewater dischargers discharge 1 object per 1st category water basin, and the number of industrial wastewater dischargers is 1 per 1st category basin and 3 per 2nd category basin. The number of samples that are not properly cleaned and the purity level





does not meet the requirements are 1 and 3. The number of permanent structures is 5 in the 1st category, and 5 in the 2nd category. Water samples taken from these water bodies for the determination of microbiological parameters: 62 water samples were taken from the water bodies belonging to the 1st category, 69 water samples were taken from the water bodies belonging to the 2nd category, non-compliant samples were not identified. From the same basins, the number of samples taken for sanitary-chemical tests was 54 samples of the 1st category, 70 samples of the 2nd category, and the number of non-compliant samples from the samples taken from the 2nd category water basin was 18.

There are 5 sources of pollution of open water bodies, including Bekobod "Suvokava", "Bekobodsemta'mir", "Bekobodsement", "Uzmetkombinat", "Bekobodyolsanoat". Out of 5 enterprises that discharge wastewater into open water bodies, Bekobod "Suvokava", "Uzmetkombinat" enterprises discharge into the Sirdary, "Bekobodsemta'mir", "Bekobodsement", "Bekobodyolsanoat" enterprises discharge into the Dostlik Canal.

According to the results of the monitoring of Bekobod city water supply, 105 samples were taken for bacteriological tests of the laboratory control indicators of the Bekobod Suvakawa object. All of them met the requirements, 116 of the samples taken for chemical tests, i.e. 100%, did not meet the requirements. 61 samples were taken for bacteriological tests of laboratory control indicators at the UMK vodazabor facility. All of them met the requirements, 76 of the samples taken for chemical tests, i.e. 100%, did not meet the requirements.

A total of 2 open water bodies, namely Boz Su and Kara Su canals, flow in the territory of the selected Kibrai district. The first belongs to category 1, the second to category 2. According to the report of the communal hygiene department of the Department of Sanitary-Epidemiology and Public Health, the number of facilities that discharge sewage into water bodies in the district is 5 for the 1st category basin, 5 for the 2nd category basin is ten. The number of facilities discharging domestic wastewater is 1 per water of the second category, and the number of facilities discharging industrial wastewater is 1 per basin belonging to the 2nd category only. The number of permanent structures is 6 in the 1st category, and 9 in the 2nd category.

According to the results of the 2022 annual monitoring of economic entities that discharge wastewater, it was found that samples taken from water bodies do not meet the requirements.

For bacteriological analysis, the number of samples taken from the 1st category water basin was 22, and the number of samples taken from the 2nd category water





basin was 159, of which 5 water samples of the 2nd category did not meet the requirements. For sanitary-chemical inspections, 151 samples were taken for pesticides, non-compliant samples were not identified, for microbiological inspections, 71 samples were taken from water bodies of the 1st category, non-compliant, 74 samples were taken from the water bodies of the 2nd category. lib, of which 6 samples did not meet the requirements, including 1 sample did not meet the requirements for helminths and *Escherichia coli* dangerous to humans when tested for pathogens detected in 1 dm³ water. 8 out of 118 samples taken from the source of the 1st category and 6 out of 84 samples taken from the 2nd category water basin did not meet the requirements of the sanitary-chemical indicators.

Discussion. The results obtained from the water distribution network in the above-mentioned cities and districts showed that 365 samples were taken in 2020 and 745 samples were taken in 2021, and there were no non-compliant samples. In 2020, 13.6% of 22 samples of the indicators obtained from water bodies where waste water was transported, and in 2021, 10.9% of 110 samples had negative results. The highest indicators were recorded in 2020 in Chinoz district, Yangiyol district, and in 2021 in Yangiyol district, Zangiota districts.

Conclusions. In conclusion, the presence of unsanitary samples taken from control points due to the discharge of treated wastewater into open water bodies and contamination by other sources of pollution indicates the continuous pollution of open water bodies, which indicates the pollution sources of open water bodies. requires strict control and continuous monitoring of water quality.

1. There are water bodies of transboundary importance that supply water to the population in the region.
2. Open water bodies are constantly polluted in every city and district located in the region: The highest indicators correspond to Akkurgan district in 2020, and in 2021 to Yangiyol city, Qibray and Upper Chirchik districts. .
3. Analyzes show that open water bodies are continuously polluted, and it is necessary to increase the number of samples to analyze and verify the nature of pollution.
4. Protection of open and underground sources of water supply implies strengthening of water quality control of open water bodies and prevention of pollution.





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