DRINKING WATER PROBLEM

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Abstract: The article deals with the issues of contamination of drinking water with various sources that cause deterioration in the quality of the habitat and affect the state of human health. The methods of drinking water purification are also considered and an assessment of the existing structure of drinking water supply systems is given.

Tags: drinking water, quality, pollution

Drinking water is the most important factor in human health. Almost all its sources are exposed to anthropogenic and man-made effects of varying intensity. The problem of the quality of drinking water affects many aspects of the life of human society throughout the history of its existence [1].

There are key indicators of drinking water quality. They can be divided into groups: organoleptic indicators; toxicological indicators; indicators affecting the organoleptic properties of water; chemicals formed during water treatment; microbiological indicators.

When drinking water with an iron content above the standard, a person risks acquiring various liver diseases, allergic reactions, etc. The increased content of manganese in water has a mutagenic effect on a person. Sometimes in drinking water there are many salts of hydrochloric and sulfuric acids (chlorides and sulfates). The use of such water leads to disruption of the activity of the gastrointestinal tract. Hygienists first started talking about the health hazards of lead in water in connection with the mass intoxications that arose when using lead pipes on water pipes. Aluminum, accumulating in the body, can cause impaired motor reactions in children, anemia, headaches, kidney disease, liver disease, colitis, neurological changes associated with Parkinson's disease. The toxicity of the above components is not so great as to cause acute poisoning, but with prolonged use of water containing the mentioned substances in concentrations above the normative, chronic intoxication may develop, resulting in one or another pathology. According to sanitary standards, any water that flows from the tap must meet the standards of drinking water [2].

To date, there are several classifications of sources of pollution of natural resources. Conventionally, all sources can be divided into the following categories: settlements and their household waste; industry; petroleum products; agriculture.

A significant part of the household waste of settlements is sewage. At the same time, no matter how modern and high-tech the treatment equipment is, the possibility of the occurrence of pathogenic bacteria in already treated effluents is not excluded. In the sewerage along with household effluents enter detergents and cleaning substances, bleaches, disinfectants and other household chemicals.

In countries with developed industrial production, the main consumers and polluters of water are enterprises of various sectors of the economy. And since it is still expensive to clean and dispose of industrial effluents, enterprises prefer to simply discharge polluted effluents, often illegally, into various natural reservoirs or into municipal sewers. Today, most of the industrial effluents are waste from ferrous and non-ferrous metallurgy, organic synthesis enterprises, oil refining and pulp and paper industries.

The main causes of pollution with petroleum products are:

leaks and accidental spills of petroleum products during their production, transportation, processing, storage and use;

emissions of condensate of exhaust gases of cars in the areas of major highways, highways, trans-modal corridors.

Pollution of aquifers with oil products can occupy quite large areas, and the linear remoteness of oil-contaminated areas reaches several hundred meters and even several tens of kilometers from the site of infiltration of petroleum products into underground aquiferous mountains umbrellas.

One of the main consumers of water is agriculture, which uses it to irrigate fields. The water flowing from them is saturated with salt solutions and soil particles, as well as residues of chemicals that help increase yields (fungicides, herbicides and other pesticides, as well as organic and inorganic fertilizers). Fresh water, in addition to disinfectants, is also contaminated with pharmaceuticals used in agriculture - hormones, antibiotics and growth inhibitors [3].

Safe and affordable water is an important factor in people's health, whether it is used for drinking, household use, cooking or recreational purposes. Improved water supply and sanitation and more efficient water use can contribute to economic growth in countries and make a significant contribution to poverty reduction. In 2010, the UN General Assembly explicitly recognized the human right to water and sanitation. Everyone has the right to adequate, continuous, safe, physically accessible and affordable water supply for personal and domestic needs.

Water is one of the most common substances in nature: the hydrosphere occupies 71% of the earth's surface, water makes up 65% of the human body and is an indispensable component of its production activities. Water is especially important for human life and activity in a hot climate. However, the growth rate of urbanization in the 30s of the XX century sharply marked the problem of supplying cities. Rapid industrial and housing construction, rapid population growth did not contribute to the preservation of the purity of water sources. In recent years, there has been a noticeable tendency towards a deterioration in the quality of drinking water due to the high biological and chemical contamination of surface water bodies of centralized water supply sources. By 2025, half of the world's population will live in water-scarce areas. According to WHO (WHO fact sheet April 2017), 40 million people die each year from noncommunicable diseases, accounting for 70% of all deaths worldwide. Poor sanitation and hygiene or limited access to water lead to an increase in the incidence of diarrhoeal diseases. The majority of deaths from diarrhoeal diseases worldwide (88%) are caused by undrinkable water and poor sanitation and hygiene. Significant changes in the quality of water resources occur under the influence of anthropogenic loads. The main source of water pollution is agriculture (78%), where large volumes of collectent-drainage water are formed. Industry (about 18%) and the municipal sector (about 4%) contribute their share.

The problem of improving the quality of drinking water is of national importance and requires a comprehensive solution. In recent years, not only hygienists, but also biologists, engineers, builders, economists, politicians have increasingly begun to talk about the quality of water, because the rapid development of production constantly increases the need for water, forcing it to be used more rationally.

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