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Research Article

METHODS OF MECHANICAL, CHEMICAL AND BIOLOGICAL TREATMENT OF WASTEWATER IN INDUSTRIAL ECOLOGY

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ABSTRACT

It is important to provide the population with clean drinking water. Drinking water must meet the requirements of special state standards and is a constant focus of health care institutions. The state standard requires the organization of sanitary protection zones of water sources and main water intake facilities.

KEYWORDS

Hydrosphere, resource, atmosphere, biosphere, organochlorine, Oil and oil products, wastewater.

INTRODUCTION

Water pollution by industrial and household waste is one of the main reasons for water shortage. Water pollution means the presence of foreign compounds in its composition that reduce its quality. For reuse, it is necessary to mix 10m3 of clean water with every m3 of polluted industrial and domestic wastewater. The sources of surface and ground water pollution are many and varied.

The main sources of water pollution are wastewater from industrial enterprises and households, wastewater from the production of mineral resources; waste water used in oil refineries; traffic waste water; water flowing from cities and fields where chemicals were used; including untreated effluents from hospitals and animal husbandry complexes, etc. Oil and oil products, artificial detergents, phenols, pesticides, non-ferrous metals, complex chemicals are the main compounds that pollute water. Mineral, organic, bacterial and biological pollutant compounds falling into wastewater are separated. Mineral contaminants usually consist of a solution of sand, clay, various mineral salts, acids and alkalis. Organic pollutants consist of plant and animal remains, human and animal physiological waste. Bacterial and biological

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contaminants are mainly present in domestic wastewater.

Wastewater treatment methods such as mechanical, chemical and biological. The water is mechanically cleaned of mineral and organic substances. In the chemical method, wastewater is cleaned by adding various chemical compounds and reacting with harmful substances (waste is precipitated). Chemical treatment is carried out in enterprises for the purpose of reuse of water, and before discharge of waste water into water bodies or sewers. When the biological treatment method is used, organic pollutants are mineralized with the help of bacteria and microorganisms. Biological treatment is carried out in irrigation fields, biological ponds and aerotanks. After that, the water is disinfected with chlorine and all the bacteria in it are killed.

Groundwater is of great importance in providing quality drinking water to the inhabitants of the earth. In various countries, including Uzbekistan, underground water, artesian water and mineral water are used for drinking in large quantities. Special hospitals will be built in the places where mineral waters come out. Nowadays, irregular use of underground water, pollution due to various sources is increasing. One of the most important environmental problems is the protection of groundwater, which is an invaluable source of drinking water, and ensuring its rational use. Ensuring the reuse of water in various sectors of the national economy provides an opportunity for rational use of existing water resources.

REMs of more than 1,300 harmful compounds in water and permissible limits of effluent discharge for enterprises have been established. Enterprises pay fines and other fees for using water in excess of the specified limit and for exceeding the standard of discharge of waste water.

In recent years, pollution of the world's oceans has become an environmental problem of global importance. The seas and oceans are mainly polluted by oil and oil products, industrial and domestic effluents, heavy metals, radioactive compounds, etc. The Mediterranean Sea is the most polluted sea on Earth. Covering the surface of the ocean with oil leads to the disruption of interaction in the "ocean-atmosphere" system and the death of green plants - phytoplankton, which are one of the main sources of oxygen on Earth. This, in turn, causes a decrease in biological productivity in the ocean.

The world's oceans have been turned into a graveyard of highly toxic and radioactive substances for many years. It is inevitable that the pollution of the world's oceans will have not only global ecological, but also social consequences. Protection of the world's ocean, which is the cradle of life on earth, and ensuring the rational use of ocean resources can be successfully implemented only as a result of the cooperation of various countries.

Surface and underground water resources of Central Asia are limited and require rational use. The waters of the two main rivers, Syrdarya and Amudarya, are almost completely exploited, and groundwater is increasingly being used. The problem of water pollution has exacerbated the shortage of drinking water. The abundant use of river water for irrigation is causing the drying up of the Opol Sea.

The Republic of Uzbekistan is one of the largest irrigated agricultural regions. Water resources are the most important factor determining the development of Uzbekistan and the entire Central Asian region. In ancient times, crops such as cotton and rice, which

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require labor and abundant water, were cultivated in this large area. The lands of Uzbekistan are mainly irrigated by the waters of the Amudarya, Syrdarya, Zarafshan, Kashkadarya, Surkhandarya, Chirchik and Okhangapon rivers. More than 50 reservoirs have been built in the republic to regulate the flow of rivers.

As a result of wasteful use of water, the irrigated areas are 4.2 mln. when it reaches 1 hectare, it is observed that the available water reserves are exhausted. There are 95 underground water deposits in the republic, and currently 52% of the underground water potential is being used.

Water pollution is also one of the urgent environmental problems. The main rivers of Uzbekistan are polluted from the territories of Kyrgyzstan, Tajikistan and Turkmenistan. The water of the rivers is polluted by livestock complexes, communal-household effluents, industrial effluents and large volumes of collector-drainage waters.

As a result of the large amount of pesticides and toxic chemical compounds entering the waters, the problem of drinking water in some regions of the republic became acute. Especially in the Republic of Karakalpakstan and Khorezm region, the poor quality of drinking water has led to an increase in diseases. Rural population of Bukhara and Kashkadarya regions have relatively less access to good quality water.

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