Asian Journal of Research in Social Sciences and Humanities
ISSN: 2249-7315 Vol. 11, Issue 11, November 2021 SJIF 2021 = 8.037
A peer reviewed journal

INPACT OF INDUSTRIAL WASTEWATER ON THE ENVIRONMENT

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DOI: 10.5958/2249-7315.2021.00310.5

ABSTRACT

With the growth of industrial development, the volume of waste water that pollutes the environment increases, which leads to an ecological balance of water systems and has a detrimental effect on the human body. The article describes the methods and methods of wastewater treatment and the use of more modern treatment facilities.

KEYWORDS: *Wastewater, Treatment, Methods, Volume Of Wastewater, Human Body, Environment, Treatment Facilities, Industry, Water System.*

INTRODUCTION

Protection of water resources from depletion and pollution, as well as their rational use for the needs of the national economy is one of the most important problems that require urgent solutions. Environmental protection measures, in particular the rational use of water resources, are widely implemented in Uzbekistan. One of the main areas of work on the protection of water resources is the introduction of new production processes, the transition to closed (drainless) water supply cycles, where purified wastewater is not discharged, but is repeatedly used in technological processes. The current economic situation and the state of environmental protection activities in the Republic of Uzbekistan require not only the accelerated development and adoption of effective measures for rational use of natural resources and environmental protection, but also the solution of urgent scientific problems, in particular the relevant water treatment biotechnologies of hydrolysis and other industries through the cultivation of algae, aquatic and wetland plants.

It is known that mechanical, physical, chemical and biological methods are used for wastewater treatment. Currently, the problem of biological wastewater treatment has become more urgent, i.e. the use of the ability of the biocenosis of treatment facilities to utilize organic and inorganic substances as food sources. At the same time, biological ponds are used, in which the quality of wastewater affects the growth and development, as well as the composition of hydrobionts and, ultimately, the intensive purification of the wastewater itself. To accelerate the wastewater treatment processes, a biological purification method is recommended by enriching the phytocenosis with a green mass of microscopic algae and creating thickets of aquatic and wetland plants,

With the growth of the development of industrial production, the volumes of wastewater polluting the environment, as well as reservoirs, are increasing. The study of wastewater after use showed the need to use the latest treatment facilities. [1]

The main sources of wastewater formation are:

- Various discharges into reservoirs;

- Chemical discharges;

- Emergency drains into the sewer;

- Dilution of various substances with water and dumping them into the sewer.

The total waste water consumption, subject to the discharge of an emergency drain into the sewer, is about 446 m3/day.

Inorganic and organic substances include heavy metal compounds, petroleum products, pesticides (pesticides), synthetic detergents (detergents), phenols. They enter reservoirs with industrial wastewater waste. Many of them in the aquatic environment either do not decompose at all, or decompose very slowly and are able to accumulate in food chains. The increase in bottom sediments and their amount in rivers and reservoirs is constantly increasing due to soil erosion as a result of improper farming, as well as the regulation of river flow.

Organic substances - enter the water from domestic or industrial wastewater. Their decomposition occurs under the action of microorganisms and is accompanied by the consumption of oxygen dissolved in water. If there is enough oxygen in the water and the amount of waste is small, then aerobic bacteria quickly turn them into relatively harmless residues. Otherwise, the activity of aerobic bacteria is suppressed, the oxygen content drops sharply, rotting processes develop.

Pathogenic microorganisms and viruses are contained in poorly treated or completely untreated sewage drains of settlements and industrial facilities. Once in drinking water, pathogenic microbes and viruses cause various epidemics, such as outbreaks of salmonellosis, gastroenteritis, hepatitis, etc. Currently, the spread of epidemics through public water supply is rare in urban areas. Food products may be contaminated, for example, vegetables grown in fields that are fertilized with sludge after domestic wastewater treatment (from the German. Schlamme - dirt). With the development of the food, chemical, and agricultural industries, the volume of wastewater polluting the environment, as well as reservoirs, increases. [2]

This phenomenon leads to a violation of the ecological balance in water systems, has a detrimental effect on organisms.

Such discharges complicate the ecological situation, cause damage to the national economy, increase the cost of preparing water taken from a water source. Considering that more than 1000 harmful substances are normalized in the water of water bodies of economic, drinking and cultural water use, the task of control becomes the construction of treatment facilities.

Currently, the construction of sewage treatment plants and wastewater treatment is very relevant.

The use of treatment facilities provides for the averaging of industrial wastewater, the use of separate mechanical and joint biological treatment of industrial, chemical and household wastewater with subsequent post-treatment and treatment of precipitation and their further use in production, at home, as well as in agriculture. To improve the quality of wastewater treatment, it is recommended:

- Standard treatment facilities for mechanical treatment of domestic wastewater;

- primary vertical industrial wastewater settling tanks with a settling duration of at least 2 hours and an efficiency of reducing the concentration of suspended solids by 40%;

- Biological ponds of post-treatment;

- Facilities for the treatment of precipitation, vacuum filters, with a descending web, as well as reserve silt sites with drainage.

The proposed methods of wastewater treatment can increase the efficiency of reducing the concentration of suspended solids.

The study of wastewater after use showed a high concentration of stocks of organic and biogenic substances, which indicates the need to use the latest treatment facilities.

Sanitary rules and regulations for the protection of surface waters from pollution oblige water users to systematically monitor the operation of sewage treatment plants, water in reservoirs or outflow water above the discharge of wastewater and at the nearest water use points. At the same time, it is indicated that the control procedure is coordinated with the bodies of the Sanitary and Epidemiological Service (SES), depending on the local conditions at the water body and the type of water use. [2]

Therefore, the main task is to ensure reliability both when treating wastewater before discharge into reservoirs, and when reusing them in circulating and closed water management systems.

This is caused not only by the need to ensure the uninterrupted operation of these systems, but also by the need to guarantee the environmental safety of water sources and reservoirs when wastewater is discharged into them.

The choice of measuring instruments for the component composition of water bodies is determined by a set of controlled ingredients. This, in turn, is due to the methods of analysis adopted by the laboratory, taking into account chemical, physical, or biological properties. Water control of water bodies in the points of economic drinking and cultural and household water use in terms of hygienic requirements is provided by the simplest laboratory devices manufactured by the domestic industry.

When determining the quality of a substance, it is necessary to determine the substance that is subject to priority control.

When choosing, it is necessary to take into account the hazard class, i.e. the presence in industrial effluents of the most dangerous substances encountered in the control regions. Therefore, when operating water treatment complexes, as well as during the construction of new facilities, along with economic ones, it is necessary to take into account the indicators of their operational reliability. These indicators characterize the safety and maintainability of structures in various operating modes and maintainability of limiting elements and equipment.

Thus, the material base of the control service can be provided with equipment of domestic production, which will allow assessing environmental safety, the operation of water treatment facilities in wastewater disposal systems.

The work of many treatment plants and, above all, treatment facilities provides for their dewatering on vacuum filters, centrifuges, and in most cases liquid precipitation is stored in storage tanks, only in isolated cases they resort to burning solid precipitation. Sometimes overflow of sediment storage and sludge storage leads to emergency discharges of all biological treatment plants showing that they are all overloaded.

In recent years, there has been a huge leap in the field of wastewater treatment and recycling. Precipitation processing is largely determined by the amount of precipitation.

The use and implementation of some methods of processing sewage sludge allow it to be used for production:

- Organic and organomineral fertilizers for agricultural fields, meadows, gardens, parks;

- To improve the structure of cultivated soils;

- feed additives for animals, birds, fish, fur-bearing animals.

- obtaining protein-vitamin sludge, amino acids, protein, technical vitamin B12 from active sludge;

- Commercial products from organic sewage sludge, resin, gasoline, kerosene, wax;

- Crude oil as a liquid fuel with a high heat of combustion;

-commercial products from fat-containing waste water;

- Technical fats;

- Greases;

- High-quality lanolin soap;

- Mixtures for road surfaces;

Therefore, the work of many sewage treatment plants and previously sewage treatment plants is aimed at dewatering them using vacuum filters on centrifuges, and in most cases liquid precipitation is stored in storage tanks, and only in isolated cases they resort to burning solid precipitation. Sometimes overflow of sediment accumulators in sludge storage facilities leads to emergency discharge of biological treatment facilities - this shows that they are all overloaded.

In recent years, there has been a huge leap in the field of wastewater treatment and recycling. Precipitation processing is largely determined by the amount of precipitation.

The processing of sewage sludge by pyrolysis processing them together with crushed solid household waste is the most relevant solution for today. Mixing these two types of waste brings the humidity of the mixture to 70-80%, which eliminates mechanical dehydration. [3]

This makes it possible to solve the problem of the elimination and use of household waste and sewage sludge, which, due to the presence of harmful substances, cannot be disposed of in agriculture.

The method of natural or wastewater treatment is chosen based on a technical and economic comparison of competing options. However, it was noted in the work that the method that is optimal in economic terms is not always the best in terms of environmental indicators. It is proposed to assess the environmental expediency by the amount of secondary pollutants accompanying the processes of water purification from the so-called primary pollutants. Secondary are the pollutants that enter the environment or are formed during the production of a particular type of energy and the reagents themselves used for water treatment. [3]

For a correct assessment of the environmental expediency of the process, reference data on the pollutants accompanying the production of reagents, materials and energy necessary for water purification are required. [4]

The proposed method is based on the principle of preserving the mass of substances in any technological operations. Note that in this study, only water-soluble substances with known values of their MPC are accepted as pollutants of the aquatic environment. [2] If the atmosphere is polluted in the production of energy and reagents, the final result is taken into account, in which the self-purification of gas emissions or during their forced purification, water-soluble substances will turn out to be pollutants of the hydrosphere. When determining the pollution of the aquatic environment from energy production, it is taken into account that 75.3% of electricity is generated at thermal power plants, as a result of which the natural environment is polluted with sulfur dioxide (0.4 g eq /kWh) and nitrogen oxides (0.1 g eq /kWh). It is assumed that thermal energy is produced by burning hydrocarbon fuel containing an average of 2% sulfur (40 kg of sulfur dioxide per 1 ton of fuel) [1]

At the same time, the specific costs of raw materials, the consumption of electricity, fuel, steam, water going to technological needs, and the volume of all types of pollution are determined. If there are several technological schemes used, then the necessary data is calculated for each of

them, weighted averages are calculated. If the list of raw materials includes industrial products, then the costs of their production are determined similarly. [4]

The procedure for environmental assessment of alternative methods of water purification is as follows. The consumption of reagents, materials and energy required to process a given amount of water or pollution is calculated, and the amount of water contaminated with accompanying secondary impurities is determined directly during the purification process.

The proposed methodology will complement the technical and economic comparison of competing technologies by determining the environmental feasibility of the latter and comparing their full energy intensity. A joint analysis of environmental and energy indicators will make it possible to more reasonably choose the optimal scheme for natural and wastewater treatment.

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