

BIOLOGICAL WASTEWATER TREATMENT SYSTEMS AND THEIR ADVANTAGES

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Abstract. *It is no secret that water is an indispensable part of human life and the most necessary resource for living. This is why it is important to conserve water. Special attention should be paid to the biological purity of wastewater. In relation to this topic, that is, in the issue of biological wastewater treatment, systems and the advantages of these systems are discussed in this article.*

Keywords: *water, wastewater, biological treatment, treatment methods, biological method, mechanical method, local method, anaerobic, aerobic.*

Water is a necessary component of almost all technological processes in agriculture and industrial production. Water is used a lot in technological processes in these areas. If fresh water is used too much, it may eventually become scarce. The reason is that modern technology is not able to clean it one hundred percent. It is also necessary to use wastewater for complete water purification. This means wasting water again. The effect of self-cleaning in natural water bodies is also very effective.

In our republic, the discharge of polluted wastewater into water sources has been reduced by one third. Control work on water saving is increasing. Fields are being watered on a scheduled basis. Water meters are being installed in apartments. All these efforts are aimed at saving wastewater and preventing its wastage.

Although water is the most common substance on Earth, 98% of its reserves are salt waters of the seas. It is possible to use only 0.1% of the total fresh water (the remaining water is available in the form of glaciers and snow at the poles and high mountain peaks). Inability to use water efficiently is also due to unimproved technology. For example, 500 cubic meters of wastewater is produced when 1 ton of synthetic fiber is produced. The total amount of water consumed until 1 ton of product is ready is 15-20 thousand cubic meters. Currently, a closed water exchange scheme has been developed and partially implemented in a number of industries. This is a local way of purifying water. Such cases significantly reduce water consumption, and in some cases, make it possible not to discharge wastewater into water bodies at all.

Water is also the most abundant inorganic substance on our mother planet. There is no life on Earth without water. Water is the only source of oxygen in photosynthesis, the main life process on Earth. It is of great importance in the formation of weather and climate. Also, water is a precious resource, and various methods are used for its purification, including biological methods. Together with them, depending on the level of pollution, mechanical filtering and chemical cleaning can be carried out. Of course, in this process, the methods are selected taking into account the properties of water and the requirements for products.

It is worth noting that biological methods have their advantages. Its advantages include the safety and elimination of pathogens. The same result can be obtained by chemical exposure, but certain impurities will be present in the liquid and this is not always acceptable. In most cases,

mechanical filtration of wastewater is carried out in advance, which serves to ensure their high-quality preparation.

First of all, it was considered important to look at the clear and bright definition and recognition of methods of biological treatment of wastewater. Therefore, the mechanical method used in wastewater treatment will be discussed in detail below.

Mechanical method.

Almost all wastewater treatment systems include mechanical filtration procedures, which ensure high-quality treatment. It is also a simple and inexpensive technology that allows separation of coarse mixtures, the presence of which is unacceptable at the outlet. After that, more delicate cleaning, including anaerobic treatment, is carried out.

In such systems, the following processes are carried out:

- * support;
- * tension;
- * additional filtering.

Sedimentation is the main one, with its help almost 70% of impurities can be removed. Coarsely dispersed substances are placed in special devices, after which further processing is carried out.

Biological cleaning methods.

The purpose of such treatment is to destroy organic components present in wastewater. Aerobic and anaerobic microorganisms are used for this purpose, which reduce these substances to water and gas.

Each method has its own characteristics. These features:

1. Aerobic oxygen is required for the vital activity of such bacteria, so aeration systems are used in devices. They create optimal conditions for the normal life and activity of microorganisms.
2. Anaerobic - they do not need oxygen, but the conditions for their operation are also created in the devices. Special ventilation systems remove methane formed after disposal of organic matter.

Varieties of local structures for water treatment.

It is mandatory to use local treatment plants, which treat the wastewater to a practically safe substance. It can be poured into water bodies or used to irrigate areas.

Types of such structures:

1. Septic tanks are airtight containers made of coarse-grained material with a film of anaerobic bacteria. Such an element is a filter that retains various suspensions and microorganisms break down organic matter. In addition, special filter wells can be provided for safe discharge of contents.
2. Aerotanks are special devices with forced ventilation. They additionally use special clay to speed up processing.
3. Bioponds — they have biological treatment of pre-filtered water. These are artificial reservoirs with an average depth of 1 meter, but due to the specific characteristics of the bacteria living in them, they are used only in regions with a warm climate.
4. Stations for deep cleaning include several stages with the use of filters and various installations. After them, the water is purified by almost 98%, which significantly expands the scope of its application.

Based on the above information and opinions, it can be concluded that water will always be an important resource for man and his life under any conditions. Preventing the wastage or pollution of this resource requires constant attention and control from mankind. It is also very important for industry officials to select the most suitable one and predict the advantages and disadvantages of implementation when applying for biological wastewater treatment systems.

In the issue of biological treatment of wastewater, opinions about systems and their advantages are always taken into account. Because we emphasized again above that wastewater is an important part of human life. For this reason, it is certainly not inappropriate for the systems to be rich in innovation and change in accordance with the requirements of the time.

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