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PROCESSING OF INDUSTRIAL WASTE WATER AND ITS USE FOR THE NECESSARY PURPOSES

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Abstract: Industrial wastewater processing plays a crucial role in addressing environmental concerns and optimizing resource utilization. This article explores the methods and benefits of treating industrial wastewater for various essential purposes, including reclamation, agricultural use, and industrial processes. Through a systematic analysis of different treatment techniques and their outcomes, we highlight the significance of industrial wastewater processing in sustainable resource management.

Keywords: Industrial wastewater, treatment, resource utilization, sustainability, reclamation, drinking water, water reuse.

Introduction: The industrial sector is a vital component of modern society, contributing significantly to economic growth and development [3-5]. However, this sector also generates large quantities of wastewater, laden with pollutants and chemicals that pose environmental hazards [6-9]. To mitigate these risks and harness the potential of wastewater as a resource, effective industrial wastewater processing is essential [10-13]. This article aims to shed light on the methods, results, and implications of treating industrial wastewater for necessary purposes [14-17].

Water in industry: drinking water supply for the employees of the enterprise, as a raw material, in the technological process, in auxiliary processes (in the cooling system, in ensuring the sanitary condition of the area, etc.), for firefighting and irrigation purposes. is necessary [18-24].

Methods: Preliminary Treatment: The initial stage of industrial wastewater processing involves the removal of large solids and debris through screens and sedimentation tanks. This step ensures that the subsequent treatment processes can function efficiently. Physical Treatment: Physical methods such as coagulation, flocculation, and sedimentation are employed to separate suspended particles and impurities from the wastewater. This helps in reducing turbidity and improving water quality.

Chemical Treatment: Chemical treatments like oxidation, precipitation, and pH adjustment are used to neutralize acidic or alkaline wastewater and remove dissolved pollutants, heavy metals, and toxic substances. Biological Treatment: In biological treatment, microorganisms are used to break down organic matter and convert it into less harmful

substances. Techniques like activated sludge, trickling filters, and biofilm reactors are commonly used for this purpose.

Advanced Treatment: Advanced treatment methods include membrane filtration, reverse osmosis, and ultraviolet (UV) disinfection. These techniques are employed to further purify wastewater and meet stringent quality standards.

The norm of the amount of water consumed for the production sector of an industrial enterprise is determined depending on the technological processes of this industrial enterprise.

The given rate includes water used for drinking, showering and production processes in industrial enterprises.

The average annual water consumption volume of industrial enterprises-networks is determined by the following expression:

$$W_{Industry} = P_{Industry} \bullet N_{Industry} \quad m^3/year.$$

bu erda:

$P_{Industry}$ – annual production volume of the industry;

$N_{Industry}$ – rate of water consumption per unit of industrial product, m^3

We studied the data on wastewater and as a result of the analysis we came across one piece of information [1-2]. This information was written in August 2022, and according to this situation, the special working group is connected with the production of the "Salar" wastewater treatment plant due to the fact that there was public dissatisfaction due to the appearance of unpleasant odors in the Sergeli, Yangihayot districts and other areas of Tashkent. on the study of the enterprises that dispose of liquid waste water. According to the press service of "Tashkent City Water Supply", during the studies, a list of 30 enterprises with the possibility of discharging highly polluted, unpleasant and smelly wastewater into the facility was formed.

These enterprises are located in Sergeli, Yakkasaroy, Yashnabad, Mirabad, Mirzo Ulugbek and Yangihayot districts. To date, the working group has studied the technological condition of the wastewater network and local treatment plant of 26 of the above enterprises.

During the studies, it was found that 4 production enterprises do not comply with the established standards of wastewater, and "Kaya naturdarme" LLC, "Zamon" LLC, "Charm Attor" LLC, "Hayk Paper" LLC were disconnected from the city's wastewater pipes. known. Laboratory samples were taken from these enterprises, and as a result, the content of wastewater contained more impurities than the specified norm.

Industrial water treatment not only significantly improves the quality of manufactured products and extends the service life of equipment, but also reduces the impact of harmful substances on the environment by reducing harmful drainage. The main purpose of industrial water treatment is water treatment for enterprises and structures that consume water per day. Water purification, depending on the needs of the consumer, is used for general and additional purification. General cleaning includes cleaning of iron and hardness salts. After treatment, water mineralization and complete softening are included.

Finding the concentration of impurities in wastewater.

a) Determining the concentration of solids in municipal wastewater:

$$K = \frac{a \ 1000}{n} мг/л$$

BOD (Biological oxygen demand) According to:

$$L = \frac{b \ 1000}{n} мг/л$$

n – waste water standard;

a – the amount of impurities in terms of solids per person per day, (ҚМваҚ 2.04.03 – 97);

b – the amount of pollutants according to BPC per person per day, (ҚМваҚ 2.04.03 – 97).

Table 1

The name of pollution	Amount of dirt per person per day, g/day
Solid substances	75
BOD in distilled water	65
BOD in still water	40
phosphates	1,7
chlorides	9

Results: The results of industrial wastewater processing are multifaceted and have far-reaching benefits: Environmental Protection: Treating industrial wastewater prevents the discharge of harmful pollutants into natural water bodies, protecting aquatic ecosystems and preserving biodiversity. Resource Recovery: Processed industrial wastewater can be reclaimed for various purposes, including irrigation, cooling, and even drinking water, thus conserving freshwater resources. Cost Savings: Effective wastewater treatment reduces disposal costs and regulatory fines, contributing to overall cost savings for industries. Sustainable Practices: Implementing sustainable wastewater treatment practices aligns with corporate social responsibility and enhances a company's reputation.

Discussion: Industrial wastewater processing is indispensable for maintaining ecological balance and sustainable development. By adopting advanced treatment methods, industries can significantly reduce their environmental footprint. Reclaimed wastewater can serve as a valuable resource for agricultural irrigation, reducing the burden on freshwater sources. Moreover, it can be used for industrial processes, thereby decreasing the overall demand for fresh water. One notable example of successful industrial wastewater processing is the Chevron Richmond Refinery in California. Through innovative treatment technologies, they have reclaimed and purified wastewater for boiler feedwater, reducing freshwater usage by approximately 500,000 gallons per day. This not only contributes to water conservation but also minimizes operational costs.

How much water is irreversibly consumed in industry and how much water is returned as polluted wastewater depends on the system in which water is used in the enterprise. • At the present time, more than 60% of industrial enterprises in our republic have introduced a closed water reuse system, the main strategy of our country in this direction is to increase this rate to 85-90% in the near future. the second trend is to achieve significant savings in water use due to the development and implementation of water-free and low-water technological processes in industry [1-2].

Currently, due to the significant development of industry and agriculture, the world is facing a serious problem due to the continuous decrease of fresh water and the increase of domestic and industrial waste water. The scarcity of fresh water is also related to the rapid development of industries that consume fresh water [1-2]. For example, 600 m 3 of water is used to produce 1 ton of steel, and 8 times more to produce 1 ton of synthetic fibers. In large cities of the USA and Europe, the daily consumption of water per capita is 600-700 liters, and in developing countries it is 50 liters. A large amount of water is consumed by irrigated agriculture, power generation, etc.

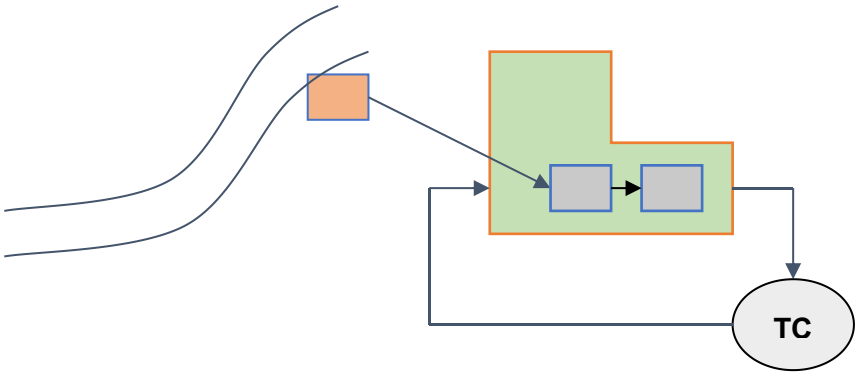

Figure 1. Use of water in a series closed system

Use of water in a continuous closed system - it is taken from the water source and transferred to the water treatment plant or station, where the water quality is brought to an acceptable state, and then the water is transferred to the plant or department of the enterprise that has the highest demand for water quality, which is the wastewater used in this department or plant. after the end of the technological process here, the waste water left after the end of the technological process here is cleaned again in the local treatment plant and transferred to the next plant or plant. reused in the technological process [1-2].

In conclusion, industrial wastewater processing is a critical component of responsible industrial practices. It not only safeguards the environment but also unlocks the potential of wastewater as a valuable resource. By adopting a holistic approach to wastewater treatment and reclamation, industries can contribute to a sustainable and resource-efficient future. Incorporating such practices into industrial operations is not only a regulatory requirement but also a moral obligation towards the planet. As industries continue to evolve, prioritizing wastewater treatment and resource utilization will play a pivotal role in shaping a greener and more sustainable world. The quality of water for the drinking purposes of the employees of the enterprise must be water that fully meets the requirements of (O'z DSt 950:2011) "Drinking water". For this purpose, each employee of the enterprise should be given 20-30 liters of water per shift, and in addition, each employee should be given 40-60 liters of shower water per shift. In order to extinguish a fire in

an enterprise, it should be given water in the amount of 5-30 l/c for 3 hours depending on the danger and importance of the fire. For these purposes, the water must be clean.

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