WASTE WATER TREATMENT BY ADSORPTION METHOD

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Annotation: *The cleaning methods that currently exist in textile industry enterprises, such as adsorption, flotation, coagulation, ozonation, etc., require large capital and operating costs and do not always provide the required effect. Most methods make it practically impossible to preserve or capture useful components from wastewater for reuse. Therefore, recently, both in Uzbekistan and abroad, extensive research has been carried out and new physical and chemical methods of water treatment have been developed, among which reverse osmosis and ultrafiltration occupy a special place. They are characterized by compact installations.*

Key words: *Cleaning methods, textile industry enterprises, recently, wastewater for reuse.*

INTRODUCTION: The adsorption method is based on the extraction of dissolved organic substances from solutions by the surface of solid adsorbents. This method is effective for the treatment of incompletely treated wastewater, when the extraction of specific contaminants by other methods is impractical or impossible. Adsorption of a solute is the result of the transfer of its molecules from the volume of the solution to the surface or into the volume of the adsorbent under the influence of the force field of the surface. Adsorption occurs most actively in the presence of double conjugated bonds and aromatic structures in the molecules of the dissolved organic substance. The ability to adsorb increases with increasing molecular weight of the substance, therefore dyes, synthetic surfactants and finishing preparations with long hydrocarbon radicals or with an aromatic base - colloidal electrolytes associated in the presence of mineral salts into large micelles - are sorbed from aqueous solutions with significantly greater energy." than single molecules. The adsorption ability of a particular sorbent is assessed the value of Fads is the difference between the sum of the adsorption forces acting in the system and the value of the hydration energy. Along with the chemical nature of the extracted substance and the physicochemical characteristics of the adsorbent, the amount of substance adsorbed from the solution is determined by the process conditions: the concentration of the extracted substance, temperature and active reaction of the medium, the ratio of the areas occupied on the surface of the adsorbent by molecules of the substance and water, changes in activity components of the solution, etc. The

assessment of the influence of all these factors is based on the developed theory of adsorption (in particular, on the provisions of Langmuir's theory of monomolecular adsorption, etc. One of the simplest methods of adsorption treatment of wastewater is bottom-up filtration through a layer of active coal (with mandatory preliminary separation of suspended substances from water). It should be noted that the adsorption purification method is the most effective for extracting specific contaminants from industrial wastewater, the isolation of which can be cost-effective in the aniline paint and other industries.The results of studies on the decolorization of colored wastewater from textile and knitting industry enterprises using the chemical reduction method are described in the literature. The essence of the method is the reduction of biochemically stable azo and nitro compounds that are part of most dyes to amino compounds, followed by their oxidation. This method is also called destructive.The main reducing agent is atomic hydrogen, released during the interaction of wastewater acidified with sulfuric acid with iron filings. Oxidation and mineralization of unstable amino compounds is carried out in an alkaline environment (pH 8-9) with a suspension of lime. The sediment that falls out during subsequent settling of wastewater contains CaSO4, (OH)2, Fe(OH)3 and, in addition, organic contaminants adsorbed on iron hydroxide flakes that are not subject to destruction by hydrogen - synthetic surfactants, finishing preparations, etc.

The choice of the most effective of the used physicochemical methods (destruction by oxidizing and reducing agents, electrochemical treatment, ozonation) is based on the physicochemical properties of specific wastewater contaminants and depends on their relative quantities.High requirements for the quality of water discharged after treatment and the limited capabilities of the method of chemical recovery from specific contaminants narrow the limits of the use of these treatment methods. Some difficult to oxidize contaminants found in textile wastewater can be oxidized by ozone (eg some dyes). Ozonizers are produced in plate and tubular types. Domestic industry (Kurgan Chemical Engineering Plant) produces ozonizers of the PO-2, PO-3, 110-4, PO-5 types. Extensive research on the use of ozone during wastewater treatment from textile enterprises has been carried out at LISI.Ozonation of wastewater from dyeing and finishing factories at the stage of their local treatment was carried out in two stages: removal of dyes present in the mixture of wastewater by ozonation and oxidation with ozone in model dye systems. The results of these studies at a concentration of dyes (in the first mode) in wastewater at a color intensity of 1:256 - 1:2024 are as follows: decolorization time - 50-240 minutes, ozone dose 72.5 - 1:20, decolorization effect 93-98% the effect of reducing pollution in terms of COD 79-82% Ozonation of a model system of dyes at their concentration of 75-100 mg/l showed that with an ozonation duration of 20-30 minutes, an ozone dose of 29-41 mg/l, the decolorization effect reached 98%. Dyes that are mixed with other wastewater contaminants are very difficult to oxidize. The research results showed that due to the long duration of treatment (up to 4

hours) and significant ozone consumption (up to 444 mg/l), the use of ozonation as a method of treating this type of wastewater from textile production is impractical.

Conclusion: Analyzing the literature data on wastewater treatment from textile enterprises, the following conclusions can be drawn. The large consumption of water per unit of output, the complex composition of wastewater, high requirements for the quality of water used, and the struggle to reduce losses of reagents used in the technological process make it extremely difficult to treat wastewater while simultaneously regenerating valuable products from it.

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