Bioremediation-Waste Water Treatment

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Abstract

The growing population of the world and the progressive adoption of an industrialist lifestyle based, inevitably, have caused an increase in the anthropogenic impact on the biosphere. The textile industries are the most important industries in Asia and their numbers have increased. These industries have shown a significant increase in use of organic synthetic complex dyes as a coloring material. Wastewater printing and dyeing units are often rich in color, which contains residues of reactive dyes and chemicals, and requires proper treatment before being released into the environment. These compounds can be released to effluent water during washing. Examples of these compounds include surfactants, sizing, coatings and additive finishes. Sizing Compounds such as starch contribute to a higher demand for biological oxygen and the demand for chemical oxygen of the wastewater current.

Keywords:

enzymatic treatment such as compared to conventional treatments are: application on recalcitrant materials, operation at high and low concentrations of contaminants in a wide range of pH, range of temperature and salinity, air conditioning to biomass and easy control process [20].

Process

To understand the impact of textile e f uents, you need to get a

fre or smoke to get color pattern on the canvas. T e rays of sunlight tend to naturally whiten colored fabrics such as bark, grass and cloth, as well as many dyed fabrics. Added cloth colors were achieved by placing a template on the cloth and expose it to the direct heat of the sun. T e soot was saved as another example on a template or the entire fabric would be strongly colored to provide a deep black color, even di f cult to obtain from natural dyes. T is technique has been widely applied in the East African trunks, where carbon blacks from the collection plate were removed and mixed the grease of the kitchen, the resin, the clay or the soil to the bark fbers to create a beautiful deep black spot [32]. T e

Vat dyes	Vat dyes are water-insoluble, but the alkali can be dissolved. cellulose (Van der Waals forces) and can usually be oxidized back with hydrogen peroxide - its insoluble form. The most common structures are anthraquinones or indigoids.
Pigment dyes	These insoluble, non-ionic compounds or salts representing 25% of all commercial dye names retain their crystalline or particulate structure throughout its application. The most common structures are azo or metallic complex phthalocyanines.
Ingrain dyes	The term ingrain refers to all dyes that are formed in situ, in or on substrate by the development or association of one or more intermediates compounds and a diazotized aromatic amine. In the color index a subgraph labeled Ingrain is limited to tetra-azaphorphine derivatives or precursors.
Solvent dyes	nonionic surfactants used for the dyeing of substrates in which they can dissolve as plastics, varnish, ink and waxes. They are not often used for textile processing. The most common structures are diazo compounds which undergo molecular rearrangement, triarylmethane, anthraquinone and phthalocyanine.
Other dye classes	

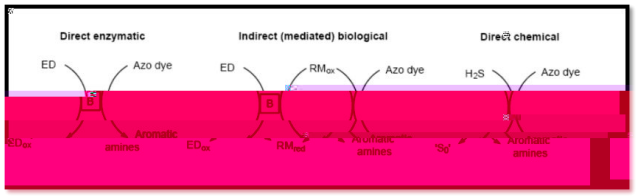

Figure 6: Azo Dye Reduction Mechanism. (ED=electron donor; B=bacteria (enzyme system); RM=redox mediator) [100].

T e general oxidation mechanism is more di f cult because of the

flters work with pressure as a motor and its performance. It depends on the temperature, the concentrations and the type of molecule. Other parameters, such as the available surface to separate and embed pores, too worry separation.

Chemical

Electrolysis: Electrochemical technology is very efective in removing the color of a wide range of dyes and pigments. Biological demand for oxygen and chemical oxygen demand and coagulation the total suspended solids present in the waste water [53]. Process is very simply based on the application of electric current in wastewater by means of a sacrifcial iron electrode for the production of ferrous hydroxide in solution. T ese iron sacrifcial electrodes form Fe (II) and -OH ions. Fe $(OH)_2$ is resulting acid dyes, soluble and insoluble, are removed from the waste water. In addition, Fe (II) can reduce azo dyes to arylamines. Water can also be oxidized, leading to O_2 and O_3 formation. E f ciency the electrochemical pollutant removal system can ofen reach 90%. However, the process is costly due to high energy demands, limited lifetime electrodes and uncontrolled radical reactions [54].

Ozonation: Ozone is a very strong and fast oxidizing agent that can react most species containing multiple linkages with simple oxidizable ions such as S^{2-} to form oxyanions such as SO_3^{-2} and SO_4^{-2}- [55]. Ozone quickly discolours water-soluble dyes, but with insoluble dyes react much more slowly. In addition, waste water from textile processing usually contains other refractory materials which will react

[75]. In contrast to mixed culture, pure culture use, there are some advantages. These include predictable performance and detailed information on degradation channels for better confirmation

dye mineralization rates and between binder and mushroom biodegradability is a question of controversy [98]. However, these difficulties are even greater if you consider that complex mixed wastewater is extremely variable in the composition even from the same factory, as is often the case with the textile industry. Other important factors for cultivation of white rock vapor and expression of

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