

Sea Protection: Using Marine Algae as a Natural Method of Absorbing Dye Textile Waste

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Abstract : Water pollution is a serious concern in all seas around the world and one major cause of it is dye textile wastes mixing with seawater. This common incident alters aquatic life, putting organisms' lives in danger and deteriorating the water's nature. There is a significant need for a natural approach to reduce the amount of dye textile waste in seawater and ensure marine organisms' safety. Consequently, using marine algae is a viable solution since it can eliminate the excess waste by absorbing the dye. Also, marine algae are non-vascular that absorb water and nutrients, meaning that having them as absorbers is a natural process and no inorganic matters will be added to the seawater that could result in further pollution. To test the efficiency of this approach, the optical absorbance of the seawater samples was measured before and after the addition of marine algae by utilizing colorimetry. A colorimeter is used to find the concentration of a chemical compound in a solution by measuring the absorbance of the compound at a specific wavelength. Samples of seawater that have equal amounts of water were used and textile dye was added as the constant variables. The initial and final absorbances, the dependent variable, of the water were measured before and after the addition of marine algae, the independent variable, and observed. The lower the absorbance showed us that there is lower dye concentration and therefore, the marine algae had done its job by using and absorbing the dye. The same experiment was repeated with same amount of water but with different concentrations of dye in order to determine the maximum concentration of dye the marine algae can completely absorb. The diminished concentration of dye demonstrated that pollution caused by factories' dye wastes could be prevented with the natural method of marine algae. The involvement of marine algae is an optimal strategy for having an organic solution to absorbing the dye wastes in seas and obstructing water pollution.

Keywords : water pollution, dye textile waste, marine algae, absorbance, colorimetry

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