Applications of Cellulose Acetate Extracted From Paper Waste for Wastewater Treatment

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Water pollution has been a severe problem; 2 million tons of sewage, industrial and agricultural waste is discharged into the world's water. Contaminated drinking water is estimated to cause 485 000 diarrhoeal deaths each year. This study aims to find a way for converting paper waste into cellulose acetate by using it as an adsorbent and preparing cellulose acetate membrane that is efficient for treating contaminated water. Since, paper waste accounts for 25 percent of waste in landfills and 33 percent of municipal waste. The study methodology consists of converting paper waste into cellulose acetate using acids, precipitating it by water, and drying the product. The produced cellulose acetate was practically used as an adsorbent for dyes with 94.62% adsorption rate without any modification. Moreover, cellulose acetate membrane was prepared by phase inversion using dichloromethane as solvent which is then used for removal of pollutants in water. The cellulose acetate produced is affordable, lightweight and biodegradable. Finally, this recycling method is a solution for multiple problems. Such as, water pollution, large quantities of paper waste in landfills and dyes environmental effects on all living organisms.

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