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REMOVAL OF METHYL ORANGE AND METHYLENE BLUE DYES FROM WASTEWATER USING SAWDUST AND SAWDUST-FLY ASH AS SORBENTS

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Abstract

Methyl orange and methylen blue are two dyes resulted from the textile industry. They are not raising just esthetical problems, but they are toxic and hence harmful to aquatic animals. The aim of this study is to test the capacity of three types of sawdust (oak, willow and white poplar) and mixed substrates, sawdust: fly ash (FA), to remove the methyl orange (MO) and methylen blue (MB) from wastewater. The influence of contact time, solution pH and initial concentration of dyes on the bleaching efficiency was investigated. Sorption kinetic data were fitted to the pseudo-second-order model. Adsorption isotherms were investigated to completely understand the adsorption processes. The adsorption isotherm data were best fitted by the Freundlich isotherms in most cases. The kinetic and thermodynamic results outline the important role played by the substrates porosity and the dyes type, particularly the dyes volume. The results indicate the all substrates, sawdust and sawdust: FA can be used as an efficient and low-cost alternative for removal of the dyes from wastewater.

Key words: biosorption, dye removal, sawdust, wastewater treatment

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