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Removal of Malathion from Aqueous Solutions and Waste Water Using Fly Ash

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ABSTRACT

Fly ash, obtained from a thermal power plant, Anpara, Sonebhadra, India has been used as an effective adsorbent for the removal of malathion from aqueous solutions. The time required to attain equilibrium was found to increase from 40 to 60 minutes as the initial malathion concentration increases from 1 to 10 mg/L. The optimum pH value for adsorption was 4.50. The removal of malathion increased by increasing the temperature indicating endothermic nature of removal process. The fly ash exhibited first order rate kinetics and followed both Langmuir and Freundlich isotherm models. Endothermic nature of adsorption process was further supported from increasing values of Langmuir and Freundlich constants with increase in temperature. The adsorbent can be used as an economical product for the removal of malathion from wastewater also. A comparison of the adsorption capacity of fly ash with other adsorbents shows that fly ash can be used for the removal of malathion from aqueous solutions.

KEYWORDS

Adsorption, Wastewater, Removal, Fly Ash, Malathion

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