

Malachite Green and Red Congo Dyes Adsorption onto Chemical Treated Sewage Sludge

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Abstract : In this study, the adsorption of Malachite Green (MG) by chemical treated sewage sludge has been studied. The sewage sludge, collected from drying beds of the municipal wastewater treatment station of IBN ZIED, Constantine, Algeria, was treated by different acids such as HNO_3 , H_2SO_4 , H_3PO_4 for modifying its aptitude to removal the MG from aqueous solutions. The results obtained shows that the sewage sludge activated by sulfuric acid give the highest elimination amounts of MG (9.52 mg/L) compared by the other acids used. The effects of operation parameters have been investigated, the results obtained show that the adsorption capacity per unit of adsorbent mass decreases from 18.69 to 1.20 mg/g when the mass of the adsorbent increases from 0.25 to 4 g respectively, the optimum mass for which a maximum of elimination of the dye is equal to 0.5g. The increasing in the temperature of the solution results in a slight decrease in the adsorption capacity of the chemically treated sludge. The highest amount of dye adsorbed by CSSS (9.56 mg/g) was observed for the optimum temperature of 25°C. The chemical activated sewage sludge proved its effectiveness for the removal of the Red Congo (RC), but by comparison the adsorption of the two dyes studies, we noted that the sludge has more affinity to adsorb the (MG).

Keywords : adsorption, chemical activation, malachite green, sewage sludge

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