



Adsorption-Desorption Of Herbicide Paraquat Dichloride By Mg-Bentonite Clay

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Accepted on 10th March 2014

ABSTRACT

An investigation was conducted on the adsorption and desorption of herbicide Paraquat dichloride (1,1-dimethyl-4,4-bipyridyl dichloride) from aqueous solutions on Mg-bentonite clay by batch method has been studied. The effects of different experimental parameters such as shaking contact time, particle size, Mg-bentonite dosage, temperature and the initial concentration of the Paraquat dichloride(PQ) were studied. The results showed that the adsorption process could be satisfactorily described with the reaction model and were reasonably explained by assuming a competitive adsorption mechanism in the ion exchange process. Further, the fitted adsorption capacity at equilibrium decreased with increasing temperature, but desorption increased with increasing temperature, indicating that adsorption is an exothermic process while the desorption is endothermic. The adsorption equilibrium for Paraquat dichloride onto Mg -bentonite is reached in 30 min, the maximum adsorption capacity at pH 10 was found favorable for the removal of Paraquat dichloride. The thermodynamic parameters (ΔG , ΔH , and ΔS) were calculated from equilibrium constant and were explained in the mean of the chemical structure of the adsorbate.

Keywords: Paraquat, Mg-Bentonite, adsorption, desorption, isotherms.
