

Abstract :

The characterization of the pharmaceutical wastewater by physicochemical analysis of some parameters showed a significant pollution load, expressed particularly by organic pollutants (chemical oxygen demand and biological oxygen demand). The removal of chemical oxygen demand by adsorption on anthracite is investigated in this study. The adsorption isotherms are realized in batch system; several working parameters, such as mass of adsorbent, contact time, temperature and particle size of anthracite were studied in an attempt to achieve a higher removal efficiency. The adsorption treatment achieved a maximum reduction of 70% for chemical oxygen demand under the following experimental conditions: 20°C, 3 g of adsorbent, contact time: 1 hour and particle size of 0.6 mm. The adsorption follows well the Freundlich model and the adsorption kinetics is the pseudo-first-order type. The free energy change of COD adsorption on anthracite was calculated, and it indicates that adsorption is a spontaneous and physical process.