

COMPARISON OF ADSORPTION CAPACITIES OF ACTIVATED CARBON AND COCONUT SHELL CARBON FOR TREATING DISTILLERY SPENT WASH

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ABSTRACT

The most accepted methodologies for waste reduction in domestic as well as industrial waste management is to find some use for the waste products, so that these may become resource materials for some useful products at the same time cease to be waste products. In the present study, coconut shell carbon (CSC) and commercial activated carbon (CAC) have been utilized for the treatment of distillery spent wash from sugar industry. The experimental investigation comprised characterization of adsorbents, batch experiments with coconut shell activated carbon as an adsorbent to study the effect of various operating parameters like pH, adsorbent dose, initial chemical oxygen demand (COD) value, contact time on adsorption. The adsorption capacities of CSC and CAC were technically compared for treating distillery spent. Also, packed column adsorption experiments were conducted to study the effect of various parameters like flow rate of effluent, temperature and adsorbent bed height studied for COD removal from distillery spent wash using both CSC and CAC. The results of the study were very interesting. About 80% COD removal was observed by using coconut shell carbon. It was evident from the experimental investigation that coconut shell carbon has a great potential for COD removal from sugar distillery spent wash and the laboratory scale investigations can be extended to the plant scale treatment process. As the process is technically and economically feasible it has wide scope for treating the effluents from other chemical industries thereby protecting the environment

KEY WORDS: CSC, CAC, COD, pH, Co