

ABSTRACT

The present study was aimed to develop activated carbon, using *Dilbergia sissio* saw dust. The wastewater of Packages (Pvt) Ltd was used for the treatment purpose. In this study only COD removal was the prime objective. Physio-chemical analysis of wastewater revealed that the wastewater from Packages (Pvt) Ltd was highly contaminated; having COD of 1640 mg/l. Combination of both physical and chemical method was used for the synthesis of activated carbon. The two activating agents used were BaCl₂ and H₂SO₄, followed by the high temperature at 650 °C. %yield reduction of COD for H₂SO₄-AC and BaCl₂-AC was 90% and 79%, respectively. The analysis of Langmuir isotherm and Freundlich isotherm revealed that the both activated carbon follow Langmuir isotherm more then Freundlich isotherm. The coefficient of correlation (r^2) for Langmuir isotherm was 0.988 and 0.996 for H₂SO₄-AC and BaCl₂-AC. This confirmed that the surface of both activated carbons is homogenous in nature. The R_L value of 3.3×10^{-4} and 5.6×10^{-4} also confirmed the favorable adsorption of COD on both activated carbons. The r^2 value for Freundlich isotherm was 0.799 and 0.898 for H₂SO₄-AC and BaCl₂-AC. The whole study project was successful, as it solved local problem of wastewater pollution, using activated carbon developed from martial of industrial by-product. And lastly it removed COD up to 90%, and can brought final COD of treated wastewater with in the permissible limit of WHO (1995).