ABSTRACT

A study was conducted using two samples of activated carbon on ten commonly used dyes of textile dyeing industry, namely:

- Green B
- Olive BGL
- Acid Violet 90 (MB)
- Acid Blue MTR
- Reactive Blue 221
- N Blue RGB
- Eosin YWS
- Metanil Yellow
- Acid Yellow 2GLN
- Acid Yellow RR

Experiments were performed by batch technique as well as continuous flow methods in order to compare the amount of dye adsorbed on the carbon samples. Other parameters studied were variation in dye concentration and pH values.

Experimental data on optical density of blank solutions, of different concentrations ranging from 10mg/L to 100mg dye/L and optical density of solutions after adsorption on activated carbon samples were taken and analyzed.

Based on the experimental data calibration curves were plotted for all the ten dyes at different pH values. Using the calibration curves, the amount of dye adsorbed was calculated.

The data was fitted to Simple Polynomial, Langmuir and Freundlich Isotherms for different carbon samples at varying pH and concentration values. Constants were calculated from the slope and intercept values of the isotherm graphs. Coefficient of
correlation, $r^2$ and standard deviation, SD were also noted. The data fitted well to the isotherms. Carbon sample $C_1$ showed a considerably higher potential to adsorb dyestuffs as compared to carbon sample $C_2$. Adsorption was better in batch method as compared to adsorption in continuous flow method.

From the analysis of data, it is shown that both activated carbon samples had a good capacity to remove the textile dyes from the residue wastewater.