Cationic and anionic dye adsorption by agricultural solid wastes: a comprehensive review

ABSTRACT

Recently many researchers have proved the capability of agricultural solid wastes as adsorbents to remove many types of pollutants including dyes. This review represents the use of agricultural solid wastes to remove two classes of dye, cationic and anionic dyes and makes a simple comparison among cationic and anionic dye adsorption by the same adsorbent, thus possibly opening the door for a better understanding of the dye-classified adsorption process. Both these classes of dyes are toxic and cause severe problems to aquatic environment. Some agricultural solid wastes can remove both dye classes, although they need activation. The dye adsorption capacities of agricultural waste adsorbents vary, depending on the pH of solution, initial dye concentration, adsorbent dosage and process temperature. The pH of solution is directly related to the dye-classified adsorption, where it affects the surface charge of the adsorbent and the degree of ionization of the adsorbate.

Keyword: Adsorption; Cationic dye; Anionic dye; Agricultural solid wastes