# Removal of dyes from wastewaters by low-cost adsorbents

## ABSTRACT

Dyes represent an objectionable pollutant to the environment. The removal of dyes has been of great concern because of their toxicity and persistency. The usage of commercial activated carbon to remove dyes in wastewater is limited due to its high cost. This prompted the search for alternative low-cost adsorbents. This chapter examines (i) historical aspects and pollution issues concerning dyes; (ii) main treatment technologies and their limitations; (iii) various studies using waste materials from agriculture and industry or naturally occurring biosorbents; and (iv) equilibrium and kinetic models used in batch and continuous systems that are important for design purpose.

**Keyword:** Dyes; Wastewater treatment process; Adsorption; Low-cost adsorbents; Batch systems; Continuous systems; Equilibrium studies; Kinetics modeling