

**POTENTIAL OF INORGANIC ADSORBENTS FOR DYE ADSORPTION
AND CHEMICAL REGENERATION**

S.D. LAMBERT¹, N.J.D. GRAHAM² and C.J. SOLLARS²

¹WS Atkins Water, Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW, U.K.

*²Department of Civil and Environmental Engineering, Imperial College of Science,
Technology and Medicine, London SW7 2BU, U.K.*

ABSTRACT

This paper evaluates the effects of Chemical regeneration on the capacities of two inorganic adsorbents, activated bauxite and a synthetic clay, for the adsorption of a reactive dye. The adsorbents were exposed to a series of exhaustion, chemical regeneration and re-exhaustion cycles reusing the same regenerant solutions. A number of chemical regenerant solution types and concentrations were investigated. The results demonstrated that both inorganic adsorbents had large potentials for reactive dye adsorption and chemical regeneration. At pH 5.5, their dye removal capacities were comparable to activated carbon. The regeneration of both adsorbents was also achieved rapidly with dilute solutions of NaOH and Na₂CO₃. In addition, the same regenerant solutions could be re-used a number of times for adsorbent regeneration before requiring replacement and disposal.

Keywords:- Activated bauxite, activated carbon, chemical regeneration, desorption, Hydrotalcite clay, inorganic adsorbents, reactive dye.