Journal of Applied Geochemistry
Vol. 16 No. 4 (2014). pp. 409-414

REMOVAL OF ARSENIC FROM MINE WATER AND EFFLUENTS USING IRON OXIDE COATED RED BRICK

Sajitha Nair, V. Umashankar, Usha Nathan*, Smeer Durani
Chemistry Laboratory, Atomic Minerals Directorate for Exploration and Research
Southern Region, Nagarbhavi, Bangalore
E-mail: usha1nathan@yahoo.co.in

Abstract

Removal of Arsenic from mine water is carried out using iron oxide coated brick (IOCB). A detailed study regarding preparation of the adsorbent, adsorption capacity for arsenic on IOCB, pH effect, time taken for the sorption and its application to mine water using synthetic mine water doped with arsenic is presented in this paper. The adsorption capacity for As on IOCB at a pH of 7.5 is 0.31mg/g. Batch studies showed that maximum sorption is at the pH range 6-8 and the time required is 24 hrs at that constant pH. Column studies reveal that arsenic is adsorbed instantly making the mine water free of arsenic. The Red brick can easily be desorbed using 2% sodium carbonate solution.

Keywords: Iron oxide coated brick, Adsorption, Arsenic, Mine Water