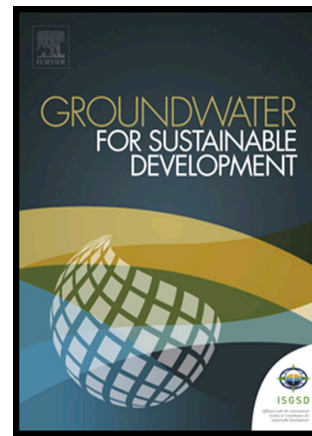


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BIO-COMPOSITES FOR THE SORPTION OF COPPER FROM AQUEOUS SOLUTION: A COMPARATIVE STUDY

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ABSTRACT

Metal cleaning and plating baths, pulp, paper board mills, printed circuit board and wood pulp production, fertilizer industry etc. are releasing copper into the environment and seriously affecting the quality of drinking water. Even minute quantity of copper (1.3 ppm) in water is detrimental to biota. Therefore, abundantly available poultry and agricultural wastes are tested as adsorbents for the removal of copper leading to sustainable management of wastes and improving the quality of water. Sorption capacities of chitosan-*Gallus domesticus* eggshell, chitosan-*Dromaius novaehollandiae* eggshell (CH-GDES, CH-DNES) and chitosan-*Dromaius novaehollandiae* feather (CH-DNF) composites were first evaluated for copper removal from aqueous solution by 'one variable at a time' method, and further experiments were carried out by a three level full factorial design of Response Surface Methodology (RSM). The percent removal of copper by the composites increased with the increase in contact time and the kinetics best fitted to the pseudo - second order model. The optimum pH of the aqueous solution was found to be 6 for the removal of copper for all the

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