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Role of river-derived algae on bioaccumulation in fixed bed reactors; a low-cost safe drinking water plant

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ABSTRACT

River-derived algae, *Phormidium luridum, Gloeothece rupestris* and *Chlorococcum infusionum* a low-cost material were studied for its ability to remove water pollutants for safe drinking water at neutral pH. The algae were grown on naturally occurring gravels in a glass column of nutrient enriched with raw-water media. The effect of flow-rate and temperature on bioaccumulation was investigated. Sorption isotherm followed the Langmuir model with a high Q_0 value (22.7 mg g^{-1}) and the value is in well agreement with the break through capacity (16.8 mg g^{-1}). Different physicochemical and bacteriological parameters were studied to investigate the purity of the effluent. The method effectively permits the quantitative removal (>95%) of both chemical (F^-, AsO_4^{-3}, PO_4^{-3}, Fe^{+3}, As^{+3}) and bio-pollutants (total coli form, Faecal *coli form*, *E. coli*), from raw water.

Keywords: Bioaccumulation; Self maintained bed; river–derived algae; *Phormidium luridum;* Safe Drinking Water Plant; Removal of Pollutants

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