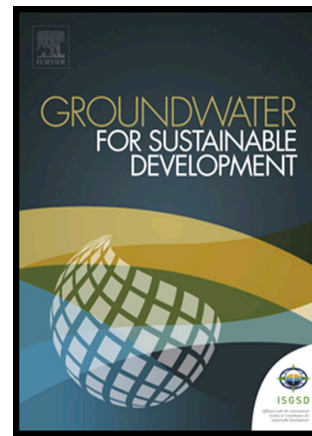


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Screening and identification of bacteria isolated from industrial area groundwater to study lead sorption: Kinetics and statistical optimization of biosorption parameters

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Abstract

Lead contamination in groundwater has raised serious health concerns. The traditional technologies available for lead removal are having several shortcomings. Hence, biosorption is considered as a potential eco-friendly alternative to the existing methods. In the present work, several ground water samples were collected from different lead contaminated regions of III and IV phase of Peenya industrial area from Bengaluru district of Karnataka, India. These ground water samples were used as a source to isolate bacteria with distinct morphological characteristics which were identified as *Bacillus toyonensis* SCE1, *Bacillus anthracis* SCE2, *Acinetobacter baumannii* SCE3, *Bacillus toyonensis* SCE4 and *Bacillus toyonensis* SCE5 that were tested for their biosorption properties. The interactive effect of initial lead concentration versus contact time was studied using Response Surface Methodology (RSM) while the biosorbent dosage was kept constant. The biosorption kinetics was investigated for the isolates and the results studies indicated that the biosorption charted pseudo-second order kinetic model and it provided the best fit for the bacterial species for lead biosorption.

Graphical abstract

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