



Title: Removal and Recovery of Uranium using Microorganisms Isolated from North American Uranium Deposits

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Source: American J. of Environmental Sciences 3(2): 60-66 , 2007

Abstract: Some attempts were made to remove and recover uranium that may be present in nuclear fuel effluents and mine tailings using microorganisms isolated from North American uranium deposits. To establish which microorganisms accumulate the most uranium, hundreds strains of microorganisms were screened. Of these strains of microorganisms tested, extremely high uranium accumulating ability was found in some bacteria isolated from North American uranium deposits. These bacterial strains, such as *Arthrobacter* and *Bacillus* sp., can accumulate about 2500 m mol uranium per gram dry wt. of microbial cells within one hour. These microbial cells can remove uranium from the uranium refining waste water with high efficiency. These microbial cells can also accumulate thorium as well as uranium with high efficiency. The microbial cells immobilized with polyacrylamide gel have excellent handling characteristics and can be used repeatedly in the adsorption-desorption cycles. These new microorganisms isolated from uranium deposits can be used as an adsorbing agent for the removal of the nuclear fuel elements, which may be present in nuclear fuel effluents, mine tailings and other waste sources.