



Comparison of heavy metals and uranium removal using adsorbent in soil

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This study investigates heavy metals (As, Ni, Zn, Cd, and Pb) and uranium removal onto geomaterials (limestone, black shale, and concrete) and biosorbents (*Pseudomonas putida* and starfish) from waste in soil. Geomaterials or biosorbents with a high capacity for heavy metals and uranium can be obtained and employed with little cost. For investigating the neutralization capacity, the change in pH, Eh, and EC as a function of time was quantified. The adsorption of heavy metals and uranium by the samples was influenced by pH, and increased with increasing heavy metals and uranium concentrations. Dead cells adsorbed the largest quantity of all heavy metals than other sorbents. The adsorption capacity followed the order: U(VI) > Pb > Cd > Ni. The results also suggest that bacterial membrane cells can be used successfully in the treatment of high strength metal-contaminated soil.