Organic acid enhanced electrodialytic extraction of lead from contaminated soil fines in suspension

The implementation of soil washing technology for the treatment of heavy metal contaminated soils is limited by the toxicity and unwieldiness of the remaining heavy metal contaminated sludge. In this work, the feasibility of combining electrodialytic remediation with heterotrophic leaching for decontamination of the sludge was investigated. The ability of 11 organic acids to extract Pb from the fine fraction of contaminated soil (grains <63 μm) was investigated, and application of the acids as enhancing reagents during electrodialytic remediation (EDR) of Pb-contaminated soil fines in suspension was tested. Five of the acids showed the ability to extract Pb from the soil fines in excess of the effect caused solely by pH changes. Addition of the acids, however, severely impeded EDR, hence promotion of EDR by combination with heterotrophic leaching was rejected. In contrast, enhancement of EDR with nitric acid gave promising results.

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