Recent Advances in Phytoremediation of Arsenic Contaminated Soil and Water. (S11-elless162335-Oral)

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Abstract:

The discovery of metal hyperaccumulating properties in select plants has led to their application (phytoextraction) for treatment of contaminated soil. Current efforts are focused on identification of accumulating plants and developing applications for removing contaminants from the environment. The Brake fern (Pteris vittata) has recently been identified as an arsenic accumulator and has been shown to accumulate and tolerate high concentrations of arsenic in its foliage when grown in arsenic contaminated substrates. Of ten plant species tested, P. vittata demonstrated a significant advantage in arsenic accumulation in its shoots. Within six weeks after transplanting into contaminated soil (total arsenic = 110 mg/kg), P. vittata accumulated arsenic in its shoots more than 200 fold higher (>1000 mg/kg) than any other species tested, including Boston fern (N. exaltata). Under the same growth conditions, however, N. exaltata accumulated less than 5 mg/kg of arsenic in its shoots. The results of current laboratory and field studies with arsenic contaminated soil and water examining the phytoremediation potential of P. vittata and other fern species will be presented.

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