

Assessing Bioavailability of Lead. (S11-colburn101210-Poster)

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Abstract:

Plant uptake is one vector for introduction of contaminants into the food chain. Conversely, plant uptake can also be used in phytoremediation of contaminated soils. Thus it is critical to understand soil-plant relationships that control, and enable us to predict, contaminant bioavailability. We determined total and plant-available (DTPA-extractable) Pb for soils on four plots and also determined Pb content of plantain, dandelion, and clover growing on those plots. Total Pb in soils ranged from 124-440 mg/kg. DTPA-extractable Pb ranged from 18-73 mg/kg. Plant concentrations ranged from 16 mg/kg for clover to 99 mg/kg in dandelion. Concentration ratios (CRs) based on total soil Pb ranged from 0.1 to 1.7, and CRs based on plant-available soil Pb ranged from 0.4 to 13. Plant-available Pb was reasonably well correlated to total soil Pb, but plant Pb concentrations were not reliably correlated to either total or plant-available Pb in soils. CRs based on total soil Pb were strongly, but negatively, correlated to plant-available Pb. Data from nominally plant available extraction procedures must be interpreted in light of differences among soils and plants.

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