Factors Affecting the Bioaccessibility of Pb in Soils Amended with Phosphate: A Meta-analysis and Bench-scale Study

Lead (Pb) is a high priority contaminant in the US, as it is widespread and can lead to developmental issues in children. Exposure to Pb often occurs through the ingestion of Pb contaminated soil. Theoretically, the addition of phosphate fertilizers to contaminated soil can reduce the bioaccessibility of Pb. While this has been researched for over 20 years, the results have varied from slight increases to almost complete reductions in bioaccessible Pb. This study determined the average reduction in bioaccessible Pb through the addition of phosphate amendments with a random effects meta-analysis. The influence of the phosphate amendment, contaminant source, and different soil properties were examined as well. The results of this analysis were used to inform an investigative bench-scale study. The bench-scale study sought to determine the effect of acidification on bioaccessible Pb in soils amended with phosphate. Three soils, previously incubated with phosphate, were acidified with trace-metal grade hydrochloric acid and subsequently neutralized with sodium hydroxide. The bioaccessible Pb was determined for each soil and treatment and differences between treatments were quantified.

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MONDAY, APRIL 11, 2022
9:00 A.M.

Join the seminar via Zoom:
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