Using Composts, Biosolids and By-Products to Remediate Metal Toxic Soils. (A05-chaney132401-Oral)

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Abstract:

When mine wastes or smelter-contaminated soils are strongly acidic, phytotoxicity of Zn limits plant cover. Soils remain barren because of metal phytotoxicity, acidity, infertility, and adverse soil physical properties. Because mixtures of biosolids, manures, and byproducts, or composts made from them, can remediate all of these problems, and the soil made calcareous to prevent acidification, we tested use of such Tailor-Made remediation mixtures at highly contaminated, barren soils at Palmerton, PA, Katowice, Poland, Kellogg, ID, Leadville, CO and other locations. Organic resources supplied N and P, and improved soil physical properties. Amendments were incorporated where practical. Locally adapted revegetation species became established with little difficulty, and plant cover included legumes. Plant shoot metals were below phytotoxic levels and safe for wildlife to consume; P and other nutrients were at adequate levels. Our experience indicates use of mixtures or composts of organic resources and by-products can provide a one-shot persistent remediation of soils highly contaminated with Zn, Cd, Pb, or Ni. High P and Fe in such mixtures improved metal inactivation.

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