BIOLEACHING OF PYRITE AND pH-CONTROL WITH ASHES

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Trace elements in hard- and softwood ashes from Sweden and Turkey were analyzed with ICP analysis and gamma spectroscopy. Cs-137 from the Chernobyl fallout and Ra-226 from uranium rich bedrock constitute the two dominant radioactive pollutants. Both elements can be removed efficiently by acid leaching in sulfuric acid and we suggest that this is a feasible route for treating hazardous ashes from power plants fired by contaminated wood (suggested limit Cs-137, 5000 Bq/kg ash). The metals can be recovered by well documented ion-exchange (cesium) and precipitation methods (radium). Acid leaching is particularly interesting if it can be combined with the use of ash for pH-control in biohydrometallurgical plants for metal production from sulfidic concentrates. Many non-radioactive trace elements (Cd, Co, Cr, Cu, V, Zn) are also efficiently dissolved. Risks with contaminated ash from domestic stoves are best limited by avoiding inhalation during ash handling and by hands-on recommendations for the use of ash as fertilizer. One example is to grow berries rather than lettuce on fertilized land, i.e., do what nature does after a forest fire.