

Sustainability through the Stabilization of Arsenic Residuals

Abstract

Drinking water providers, solid waste disposal entities, and regulatory agencies are evaluating new methods to treat arsenic residuals due to the current complications with leaching standards. Many technologies used today pose unacceptable risks if the arsenic-bearing residuals are disposed in landfill conditions. To remediate this problem, Arsenic Crystallization Technologies (ACT) attempt to transfer the arsenic-bearing solid residuals into stable mineralized forms. These forms have shown decreased arsenic solubility, however, the mineral phase structure needs to be investigated to determine the best conditions to synthesis the minerals. Sequential extraction procedures provide a method to determine the phase structure of the ferrous arsenate minerals in the ferric oxyhydroxide sludge. Initial experiments have shown a significant portion of crystalline ferrous arsenate forms, but more investigation is needed to determine the effect of the extraction liquids on the sludges. Eventually, these experiments may be used to optimize process variables to increase the percentage of crystalline ferrous arsenate that forms in the solid residuals.