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INVITED LECTURE - The Behavior of Actinide Elements in Contaminated Environments

Friday 21 September 2012 08:00 (20 minutes)

Savannah River Site (SRS) is one of several US Department of Energy (DOE) sites that have been used to produce nuclear materials for defense, industrial, and medical purpose. During several decades of processing, low-level radioactive effluents were discharged at the site, which have subsequently migrated away from the disposal area. Remediation of the area is needed; however, remedial action requires a thorough understanding of the contaminant behavior in this environment.

In this study, the distribution of contaminants in soils collected from the SRS F-area seepage basin and down gradient from the source was quantified for U, Pu, Am, and Cm using radioanalytical and mass spectrometric techniques. The results suggest that there are two sources of U and three sources of Pu in this area. In addition, using published groundwater data, Pu and Cm behavior in the groundwater is proposed . Also, the partitioning of actinides to these soils was studied using sequential extraction. The results indicate a source dependency for actinide partitioning in the soils. This information can be used by remediation engineers to design appropriate cleanup alternatives for the area.

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