Colloid-facilitated Cesium Transport Through Hanford Sediment. (S01-zhuang121731-Oral)

Authors:

- J.Zhuang - *University of Delaware*
- M.Flury - *Washington State University*
- Y.Jin - *University of Delaware*

Abstract:

In this study, effects of a Hanford colloid on Cs transport in a Hanford sand and Ottawa sand were investigated by saturated column experiments. Cs in the input solution was removed completely by the Hanford sand in the absence of the colloid at both high (7.5E-05 M) and low (1.3E-08 M) Cs concentrations because of its strong sorption by the sand. Similar result was observed for Cs transport in the Ottawa sand at the low Cs concentration. On the other hand, at the high Cs concentration Cs exhibited a complete breakthrough but with significant retardation due to the low Cs sorption capacity of the sand. In the strongly sorbing Hanford sand, presence of the Hanford colloid significantly facilitated Cs transport. However, the non-linear nature of Cs sorption on the colloid caused the efficiency of colloid-facilitated transport to vary, more significant at the low Cs concentration than at the high concentration. In the weakly sorbing medium, presence of the colloid remarkably reduced the retardation of Cs breakthrough. We also found colloid-binding Cs could be transferred from the colloid to the medium surface during transport.

Corresponding Author Information:

Jie Zhuang
University of Delaware
Dept. of Plant and Soil Sci., Univ. of Delaware
Newark, DE 19717-1303
phone: 302-831-3365
fax: 302-831-0605
e-mail: jzhuang@udel.edu

Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 10:15 am

Keywords:

Cesium, Colloid-facilitated, Hanford sediment, Transport