Transport of Inorganic Selenium from Aqueous to Sediment Phase on a Tidal Time Scale. (5173)

Authors:

- E.J. Pizzini* - *Univ. of California-Berkeley*
- H.E. Doner - *Univ. of California-Berkeley*

Abstract:

Selenium (Se) is becoming an increasing problem in bays and estuaries, which have conditions quite different from those found in most agricultural settings. The greatest activity for retention and release of Se most likely occurs near the water-sediment interface. Microcosms were created to examine the amount of selenite and selenate Se transported into sediment through diffusion and mass flow during a 24 hour tidal time period at environmentally relevant concentrations (25 ppb Se). Initially, mass transport of Se into the sediment was minimized by eliminating mass water flow. Greater than 80 percent of the selenite was removed from the aqueous phase within 24 hours. Greater than 60 percent of the selenate was removed from the aqueous phase within 24 hours, which was similar to the theoretical amount removed by pure diffusion. Additional experiments were conducted allowing water to evaporate from the saturated soil before application of a Se-spiked aqueous phase to examine potential influences from mass flow on the transport of Se from aqueous to sediment phase in short (24 hour) timescales. Selenite transport was strongly influenced by factors other than diffusion and mass flow (such as adsorption) while diffusion and mass flow may be more important factors in the transport of selenate at environmentally relevant concentrations over a tidal time scale.

Speaker Information: Edward Pizzini, Univ. of California-Berkeley, Division of Ecosystem Sciences Department of Environmental Science, Policy, and Management University of California, Berkeley, CA 94720-3110; Phone: (510)643-1858; E-mail: epizzini@nature.berkeley.edu

Session Information: Tuesday, November 2, 2004, 3:00 PM-5:00 PM

Presentation Start: 3:00 PM (Poster Board Number: 1574)