Influence of Surface Charge on Iodide and Pertechnetate Sorption to Soils Dominated by Fe-oxide or Organic Matter. (S02-kaplan151932-Poster)

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Abstract:

Iodide and pertechnetate sorption experiments were conducted over a pH range of 3 to 9. The two soils used in this study possessed a pH-dependent charge; one soil was collected from a wetland and derived most of its charge from organic matter, whereas the second soil was collected from an upland site and derived most of its charge from Fe/Al-oxide coatings. The pH of zero-salt effect (PZSE) for the wetland and upland soils were 4.4 and 4.1, respectively. Under ambient conditions, the wetland soil had a pH of 4.2 and a slight positive net charge of +0.1 meq/100 g. The upland soil had a natural pH of 5.0 and a net charge of -0.25 meq/100g. Both iodide and pertechnetate sorbed appreciably more to the wetland soil than to the upland soil, likely the result of more anion sorption sites derived from the organic matter in the wetland soil. In both soils, iodide sorption was greater and exhibited a greater pH-dependency than pertechnetate sorption. Pertechnetate exhibited anion exclusion or no sorption at pH values above the PZSE. Iodide sorption rapidly decreased as the pH increased to the PZSE, and then remained largely unchanged at pH values above the PZSE.

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