



Celebrating the International Year of Planet Earth

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George R. Brown Convention Center

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### 742-1 Methylarsenate Sorption to Aluminum Oxide.

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Inorganic arsenic behavior in soils has been extensively studied during the past few decades, yet only a limited amount of research has been conducted on organoarsenical species, especially monomethylarsenate (MMA) and dimethylarsenate (DMA). Methylarsenates are as toxic as inorganic arsenic and have been extensively used as herbicides. Unfortunately, few investigations have been conducted on methylarsenate behavior in soil, especially studies on methylarsenate bioavailability and reactivity. Similar to inorganic arsenate, methylarsenates appear to electrostatically interact with metal oxide minerals at environmentally relevant pHs. However, while there are some published studies with Fe-oxides, little is known about methylarsenate reactivity with Al-oxides. Accordingly, the objective of this study is to investigate MMA and DMA sorption behavior to aluminum oxide employing a multi-scale approach. Macroscopic studies included: sorption isotherms, pH edges, sorption/desorption kinetics, and electrophoretic mobility. We also employed molecular scale Fourier transform infrared (FTIR) and X-ray absorption (XAS) spectroscopic studies to examine sorption complex formation between methylarsenate and aluminum oxide.

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See more of: [Oxyanions in Soil Environments: II](#)

See more of: [S02 Soil Chemistry](#)