



ASA-CSSA-SSSA

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2009 International Annual Meetings

Footprints in the Landscape: Sustainability through Plant and Soil Sciences

Methylarsenate Sorption to Soil.

*Tuesday, November 3, 2009: 3:30 PM
Convention Center, Room 330, Third Floor*

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Methylated forms of arsenic compounds, monomethylarsenate (MMA) and dimethylarsenate (DMA), have been used as herbicides, pesticides, and/or defoliant for decades in many countries, including the US. High concentrations of MMA and DMA in groundwater have been reported in regions where historic application occurred. Biological processes can transform MMA or DMA into inorganic arsenate or arsenite. Arsenic's toxicity is related not only to the total amount of an element but also to its chemical forms which influence its mobility, bioavailability, and interactions with other elements. The fate of MMA and DMA, which was often applied in agricultural settings for crops such as cotton, could deleteriously affect human health. The sorption behavior, distribution, bioavailability, and As speciation in soil amended with MMA or DMA is not well understood. Consequently, it is difficult to predict the potential toxic effects. Therefore, the sorption, desorption, localization and speciation of MMA and DMA applied to soils from Delaware and Virginia will be studied to improve our understanding of organoarsenical behavior in the environment. Macroscopic and molecular scale studies, including sorption isotherms and X-ray absorption spectroscopy (XAS), will be employed to assess As behavior in MMA and DMA spiked soils.

See more of: [Chemical and Biological Controls On Arsenic Bioavailability: I](#)