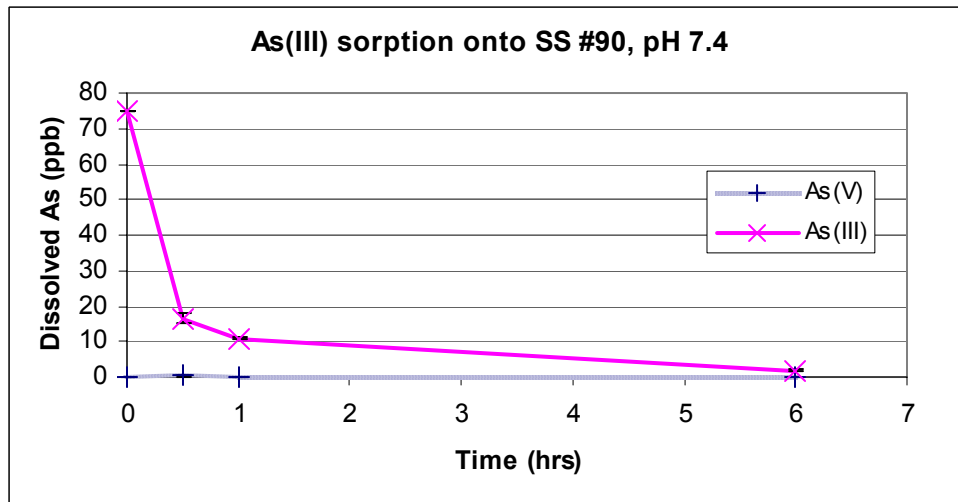


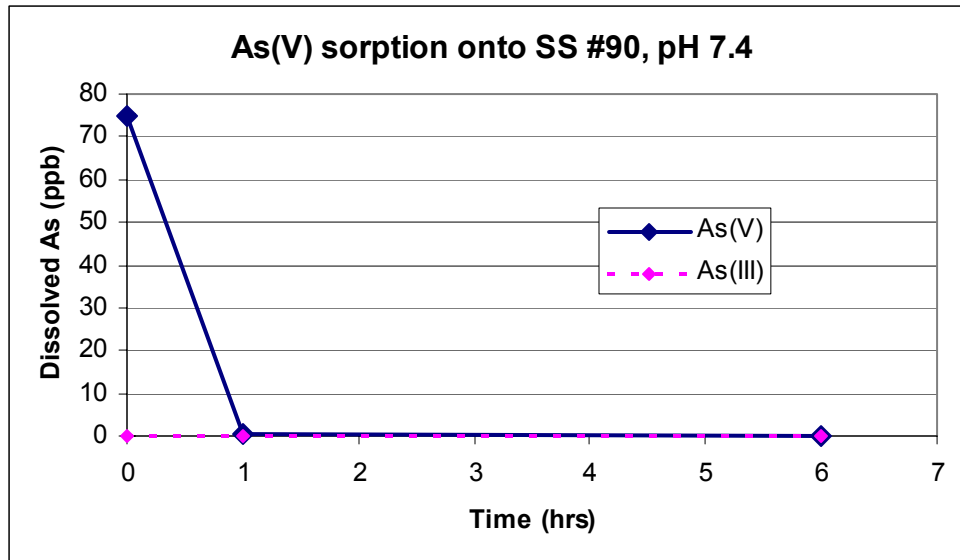
# A PRELIMINARY STUDY OF VARIOUS FACTORS INFLUENCING ARSENIC MOBILITY IN POROUS MEDIA.

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There are several factors that influence the mobility of dissolved arsenic oxyanions in the environment. The mobility of arsenate as  $\text{H}_3\text{AsO}_4$  (As(V)) and arsenite as  $\text{H}_3\text{AsO}_3$  (As(III)) through porous media is controlled primarily by sorption reactions with metal hydroxides. The kinetics of As(V) and As(III) sorption onto a sand of heterogeneous metal oxide composition has been studied at a single pH value and the results are presented here. The effect of NOM on arsenic sorption by metal oxides has been studied as well as the association of As(V) with NOM as a function of calcium concentration. Attenuated Total Reflectance FTIR (ATR-FTIR) was used to study NOM sorption by hematite over a pH range of 5-8 in the presence of As(V). These experiments were performed as part of a step-wise approach toward describing the behavior of As(V) and As(III) in a natural environment. The observed rate of As(V) sorption by the sand is slightly faster than the rate of As(III) sorption and both systems reached equilibrium within 4 hours. The presence of natural organic matter (NOM) significantly decreased the extent of arsenic sorption onto metal oxides but the actual mechanism of the inhibition is not well understood. ATR-FTIR shows that certain functional groups of the NOM are important for sorption at certain pH values and these groups change with changing pH. There is a small correlation between increasing  $\text{Ca}^{2+}$  in the system and increasing As(V) association with NOM presented in this poster as well. Future work will focus on the aqueous complexes of As(V) and As(III) with NOM as well as the competition of NOM with As(V) and As(III) for sorption sites on metal oxides.





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