Impact of Cation Saturation and the Nonionic Surfactant Brij 35 on Atrazine Sorption by Panther Creek Smectite. (S02-chappell134151-Poster)

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Abstract:

We hypothesize that the crystalline-swelling behavior of the lowcharge, 2:1 clay Panther Creek (PC) bentonite may be modified (by saturating cation, sample handling, and presence of nonionic surfactant) to alter the clay's affinity for atrazine (ATR). We present preliminary evidence demonstrating that the ATR distribution coefficient (Kd) was cation-saturation dependent (K>Ca>NH4). Moreover, air-drying K-saturated PC before adding ATR increased the ATR Kd to a value approximately seven times greater than that of non-dried samples. In addition, ATR sorption decreased in the presence of increasing concentrations of the nonionic surfactant Brij 35 in a nondegraded form (ATR Kd for 50 mg Brij 35/L>200 mg/L>2000 mg/L). No clear trend was observed for ATR sorption in the presence of oxygen-degraded Brij 35. On the basis of preliminary TLC and FTIR data, we hypothesize that the surfactant's functional group composition, as well as clayinduced shifts in the chain-size distribution of the Brij 35 polymer, contributed to these differences in ATR sorption.

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