Long-Term Desorption of Quaternary Amine Cations from Clays. Z.Z. ZHANG*, D.L. SPARKS, and N.C. SCRIVNER, Univ. of Delaware and Du Pont.

It is well known that clay minerals show base exchange not only with metal ions, but also with large organic cations. While natural clays are easily hydrated by water molecules, the organo-clays have an affinity for poorly water soluble organic compounds. Several investigators have proposed that organo-clays can be used as sorbents

to remove organic pollutants in water treatment and to mitigate other environmental problems. The present study was conducted to investigate the long-term stability of the organo-clays. Organo-clays were prepared by reacting quaternary amine cations with Na-, K-, and Ca-montmorillonite. Desorption of quaternary amine cations in the presence of 0.1 M NaCl, KCl, and 0.05 M $CaCl_2$ was determined at 10, 30, 90, and 180 days using a titration method. Three quaternary amines, nonyltrimethylammonium, dodecyltrimethylammonium, and hexadecyltrimethylammonium were used. The effects of alkyl chain length and metal cations on desorption will be discussed.

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