

Kinetics of Chloride Removal from an Iron-Rich Industrial Coproduct. G.J. HENDRICKS\*, Y. SALINGAR, and D.L. SPARKS, Univ. of Delaware.

An industrial  $TiO_2$  extraction process results in a filter-cake material (FC) rich in Fe and containing substantial chlorides. The FC was physicochemically characterized to test its suitability for agricultural uses and to assess possible environmental risks. Removal of chlorides from the FC was also investigated to determine if the rate of Cl removal was governed by chemical kinetics or transport-controlled kinetics. Equilibrium batch studies showed that the amount of Cl that could be adsorbed on the FC was small, even though the point of zero charge (PZC) of the FC was 8.3. A first-order model of Cl concentration vs time suggested that Cl removal from FC columns was a time-dependent process, while stirred-flow studies showed that Cl leaching is a function only of the total volume that flows through the chamber. These data indicate that results obtained from columns may lead to erroneous conclusions concerning time-dependent processes, since no uniform mixing occurs in the columns.