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**ADSORPTION AND DESORPTION BEHAVIOR OF
PHOSPHATE ON KAOLINITE**

A PROJECT REPORT PRESENTED BY

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The soluble phosphates added as fertilizers into soil are converted to insoluble labile forms by adsorbing mainly to clay minerals. Therefore increasing the availability of native soil phosphorous and retarding the fixation and reversion / desorption of added phosphates are the problems of greatest scientific importance.

In addition interest in the role that phosphorous plays in the eutrophic process has led to increasing research on the exchange of phosphorous at the sediment water interface in water bodies. In natural systems, the sediment acts as a reservoir for phosphorous. Studying phosphate adsorption and desorption by clay minerals found in water sediments permits evaluation of one mechanism of phosphate concentration regulation or finding a method of removing phosphate in overlying waters and in water purification processes.

This work gives information regarding the adsorption behavior of phosphate on the clay mineral Kaolinite. The pH dependence of adsorption behavior reveals that the maximum adsorption of phosphate on kaolinite occurred at pH 3. For phosphate concentrations less than 20 ppm, 100 % removal was obtained by 20.00 g/l kaolinite suspension.

When attempts are made by changing the pH of the solution and by changing the soil: solution ratio to desorb previously sorbed phosphate from kaolinite only a small proportion of phosphate can be desorbed in to phosphate free water. The maximum quantity of phosphate desorbed was 11 % from the adsorbed amount and can be obtained at pH 5-7.

The amount of desorbable phosphate increases with increasing solution: clay ratio and increasing desorption time. Desorption decreases with increasing sorption time prior to desorption.