

PHOSPHORUS RECOVERY USING PELLETIZED ADSORPTIVE MATERIALS:

STUDY OF DESORPTION FOR POTENTIAL REUSE

Phosphorous (P) is one of the essential nutrients for growth and is generally the most limiting nutrient since, it cannot be fixed from the atmosphere. Methods for recovering phosphorous from water systems already exist, but advances are being made to find a more economic, efficient, effective and easy to use method that can allow for reuse of the recovered P. One area of study is in adsorption, which involves finding the best material for adsorption of phosphorous from water and for releasing it back into the environment through desorption or leaching. The goal of this research was to first optimize the capacity for a pelletized adsorptive material that was synthesized with varying amounts of a binder material from 0-20 % and then to study recovering the phosphate for reuse. The pelletized materials were studied through kinetics experiments as well as isotherm experiments to gain insight into the adsorption capacity and mechanism. Following successful adsorption, a simple leaching study was conducted to see how much phosphate would be released back into water without any added desorption aid. Desorption was then studied by changing the pH of solution.