The Optimal Reclamation Point of Phosphate from a Wastewater Treatment Plant

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Phosphorous is one of the most commonly used chemicals in the production of industrial products such as detergent and fertilizers. Due to the non-renewable nature and extensive use of phosphates, their loss in industrial processes where reclamation is not practised is an issue that will continue to grow in the future. Without change, phosphorous levels will become too low to supply the demand. The purpose of this research was to investigate the optimal reclamation point of phosphate from an industrial waste water treatment facility through chemical precipitation using calcium chloride. Water samples were collected from selected locations throughout a waste water treatment facility.. The samples tested were an untreated sample, samples from the first and second treatment phase and lastly a treated sample. All samples were tested for absorbance before and after precipitation using a Photospectrometer. From this, the absorbance was converted into ppm and the percentage yield of phosphate was calculated. The results showed that the water from the untreated sample had the highest percentage reclamation of phosphate at 93.5%. Treatment phase 1 recorded the lowest percentage yield of only 17.1% while treatment phase 2 and the treated sample reclaiming 78.2% and 81.7% respectively. These results indicate that the optimal reclamation point is from the untreated sample as it has the highest percentage reclamation and is also the most effective due to no chemicals inhibiting the precipitation process. From this investigation further research should be conducted to determine how recovered phosphate could be reused effectively and safely from an industrial setting.

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