

## Recovery of Phosphorus from Sewage Sludge Ash by Heat treatment and Liquid-Liquid Separation

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Phosphorus is a scarce resource, some estimates predict a peak in production in the years to come; therefore, research efforts on methods to recycle the phosphate generated in urban sewage are increasing. Sewage Sludge Ash (SSA) arises as a promising source for Phosphorus Recycling. This research studies the use of a Heat Treatment, followed by liquid-liquid extraction in order to attain  $P_2O_5$  recovery from SSA. The heat treatment was carried out using the addition of  $Ca(OH)_2$  and exposure to  $1250^\circ C$  for 30 min, in order to form the P-bearing phase Silicocarnotite ( $Ca_5(PO_4)SiO_4$ ) and a phase similar to the non P-bearing phase Gehlenite ( $Ca_2Al_2SiO_7$ ). Preliminary experiments have shown that these mineral phases can be separated using a simple extraction using kerosene and a surfactant under controlled pH. When the actual SSA sample was heated this way and then subjected to extraction, a maximum difference of 39% in  $P_2O_5$  content was obtained at  $pH = 2$  when 0.25% Dodecyl Amino Acetate (DAA) is used as surfactant.

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