

Identifications of Pathways for Phosphorus-based Product Recovery from Sewage Sludge using Multicriteria Decision Analysis for Sri Lankan Context

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This study was carried out to inspect the suitability of 5 methods to produce phosphorus-based products using sewage sludge as an alternative to the rock phosphate demand to produce phosphate fertilizers. The considered methods are supercritical water gasification of sewage sludge, struvite precipitation, thermochemical treatment of sewage sludge, wet chemical treatment of sewage sludge and electro dialysis of sewage sludge. These methods are compared with each other to determine best method using 11 different criteria selected in Sri Lankan context. The comparison was carried out using a multi-criteria decision making (MCDM) technique called TOPSIS under 3 different scenarios which assigned different values to the criteria in environmental, economic and fertilizer suitability aspects. An analysis was carried out regarding results of the MCDM to determine the best method, and struvite precipitation was selected as the best method in Sri Lankan context to recover the phosphorus in wastewater.

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