Acid extraction of phosphorus from sewage sludge incineration ash: REMONDIS TetraPhos®

Piloted by:	Lippeverband with REMONDIS Aqua
P-source:	Sewage sludge ashes with low P-load
P-product:	Phosphoric acid (H_3PO_4)

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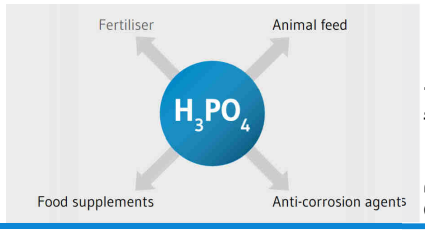
The process

The REMONDIS TetraPhos® process (TetraPhos® process) enables the recovery of phosphate as phosphoric acid from ashes originating from fluidized bed combustion of municipal sewage sludge. Thereby more than 80 % of the ash phosphorus is recovered.

The TetraPhos® process treats the ash with phosphoric acid, then, after separation of acid insoluble residue, purifies the resulting leachate with sulphuric acid, ion-exchange and selective nano-filtration to generate an industrial quality phosphoric acid (brandname RePacid®).

The Emscher and Lippe regions produce sewage sludge ashes with a low P-load (8% - 11% P_2O_5). Phos4You looks at the possibilities to apply such a process with this SSA-quality.



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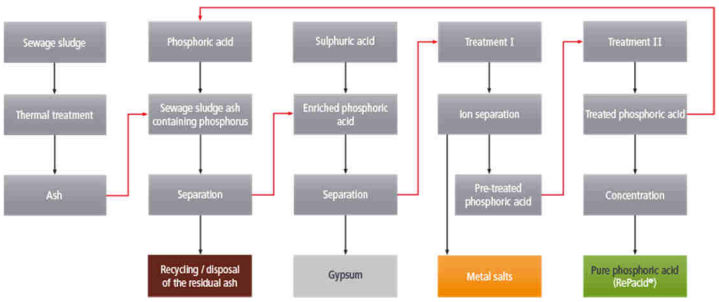
The product

The produced RePacid® is a phosphoric acid with very low contaminant level, making it suitable for industrial applications or the use as raw material for further chemical processing to industrial products.

Indeed most of the other phosphate products are made from this important, multi-functional mineral acid, in manufacturing fertilisers or animal feed, but also in industrial application. Demand for phosphoric acid lies at over a million tonnes per year in Europe alone.

Apart from production of RePacid®, the TetraPhos® process enables recovery of iron and aluminium salts as coagulants, for recycling in sewage works phosphorus removal and gypsum intended for production of building material and a residual ash waste that either is used in the cement industry or if the latter is not possible is landfilled.

The demonstrator



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Location: Germany, Sewage sludge incineration plant WFA Elverlingsen GmbH, Werdohl Germany, indoor

Commissioning: May 2018

Input material: Sewage Sludge Ashes

Input mass: approx. 50 kg DM/h

Output: H_3PO_4

Output mass: approx. 18 kg/h

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