

Phosphorus adsorption for small scale use: FiltraPHOS™

- Piloted by: Environmental Research Institute (ERI), part of Univ. of the Highlands and Islands, and Véolia
- P-source: Waste water (low volume), i.e., septic tanks, small WWTPs
- P-product: Sorbent material enriched in phosphate (ideally for direct land application)



The process

The FiltraPHOS™ can be used on small discharges (i.e., septic tanks) to help deal with the challenge of diffuse phosphorus pollution in remote, rural and islands locations.

The FiltraPHOS™ employs an enhanced principle combining a rapid gravitational filtration of raw water through a granular media and its continuous self-backwashing. The filtering media is composed of single or dual media layers.

Following on from the objective of phosphorus recycling, local resources will also be used as the adsorption material where feasible.

Veolia developed the P adsorption reactor (FiltraPHOS™) for small wastewater discharges (i.e., from septic tanks, individual dwellings or business premises). Two reactors are run by ERI, one in the laboratory (to test different adsorption materials) and another one at a small WWTP site.

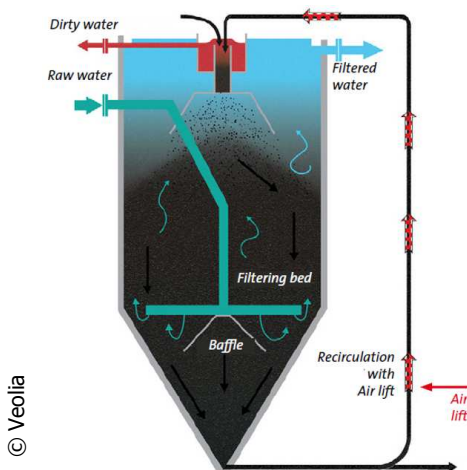
The product

After filtration, the sorbent material containing the recovered phosphorus can be used directly as fertilizer or as an intermediate for industry.

A range of possible sorbents will be tested including sorbents that would otherwise be considered "waste" materials (i.e. food and beverage industrial waste). Sorbent material may need to be activated (chemically/thermally) prior to use.

Ideally, the sorbent material "loaded" with P will be such that it can be applied directly to land as a granular-powder soil conditioner and fertilizer (rich in other beneficial components, i.e., CaCO₃).

The demonstrator



Two reactors are being built: one to test different adsorption materials in the laboratory, another to run on-site.

Location: Scotland, ERI and relevant sites

Commissioning: August 2018

Input material: waste water (low volume)

Input mass: approx. 10 PE

Output: Sorbent material enriched in PO₄

Output mass: To be confirmed