

Outline for one-day workshop at Aquatech, Amsterdam RAI,
Thursday 13th March 2024

<https://phosphorusplatform.eu/AquatechWorkshop>

**The new EU requirements of the revised Urban Waste Water Treatment Directive
for phosphorus removal, reuse and recycling:**

interactions between tighter discharge consents, chemical P-removal coagulants, P-recovery

**NOTE: participants have free access to Aquatech on condition that you MUST register BOTH for
Aquatech ([here](#)) and for the ESPP workshop ([here](#) – link pending)**

See: summary ESPP workshop on iron-phosphate interactions (2020) www.phosphorusplatform.eu/scope138

- **9h15 – 10h45:** Iron / aluminium salts and tighter P-removal requirements
 - Optimising coagulant (Fe/Al) use and P-removal
 - overview – *Jean-Christophe Ades, Incopa (European Inorganic Coagulants Producers Association) and Kemira, overview on coagulant use for effective and efficient phosphorus removal*
 - case studies from sewage works operators
 - Impacts on iron / aluminium concentrations in sewage sludge, discharge water
 - Impacts of iron / aluminium in sewage sludge on digester biogas energy production
 - Phosphorus removal, reuse and recycling in the revised (2024) Urban Waste Water Treatment Directive, *Dries Huygens, European Commission Joint Research Centre, phosphorus removal, reuse and recycling in the revised (2024) Urban Waste Water Treatment Directive*
 - Questions and discussion
- **10h45: Networking break**
- **11h15 – 12h45:** The revised Urban Waste Water Treatment Directive (2024) phosphorus “reuse and recycling” targets
 - **Two breakout sessions** (1 ½ h)
 - Fe/Al in digested sludge and crop phosphorus availability (P “reuse”)
Kasper Reitzel, University of Southern Denmark (SDU)
 - Impacts of Fe/al on P-recovery processes (P “recycling”): struvite precipitation, biochars, ash ...
 - *Christian Kabbe, EasyMining: Ash2Phos process, demonstrated separation of phosphorus from iron/aluminium in sludge ash, recovery of the P, Fe, Al*
 - *Mohamed Takhim, TTBS: experience on recovery of P and Fe from sewage sludge ashes containing iron by the Rubiphos process*
 - *Andrea Salimbeni, ReCord: investigations into separating phosphorus from Fe/Al via leaching of sewage sludge biochars*
- **12h45 – 13h45:** Lunch
- **13h45 – 15h15:** Phosphorus recycling upstream of sludge combustion (from liquor or sludge flows)
 - **Two breakout sessions** (1 ½ h)
 - Routes to increase P-recovery rates in phosphate precipitation processes
 - *Joachim Clemens, SF Soepenber, iPhos process*
 - *Ostara WASSTRIP / Xylem return stream, achievable % of wwtp input P-recovery as struvite*
 - Recovery of phosphorus as iron phosphate and possible uses or processing
 - *Royal Haskoning DHV, Sigrid Scherrenberg, ViviMag® vivianite recovery trials –*
 - *Aquaminerals, valorisation routes for vivianite to products with markets*
 - *test results for recovery of organic phosphate esters from vivianite, SINFERT process – Kirill Nikitin, University College Dublin*
 - use of vivianite as an iron fertiliser
- **15h15 – 15h45:** Networking break

- **15h45 – 17h00** Conclusions, perspectives, proposals (1 ½ h):
 - Sustainability benefits of P-recovery upstream then use of P-depleted sewage sludge as fuel for cement kilns,
 - Reports from the four breakouts
 - Panel with European Commission, Water Europe, water industry, other industries
 - Questions and discussions

- **17h – 17h30:** Networking drinks