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Events

Workshop on iron phosphate chemistry applied to phosphorus stewardship

This workshop remains fixed 13-14 July, 2020 either with a physical meeting in Utrecht, the Netherlands, or by webinar (in which case the programme will be organised differently). So: save the date! Themes will cover: Iron phosphorus interactions in sediments, in soils and engineered systems, Strategies for phosphorus release and P-recovery from iron phosphates, Iron - phosphate interactions in agriculture and Markets for recovered iron phosphate materials.

Contact: sara@phosphorusplatform.eu Registration: [here](#).

Postponement ESPC4 and PERM → 31st May – 2nd June 2021

Given the development of the international corona virus situation, and after re-discussion with the venue hotel and the Belvedere Palace, Vienna, we have decided to postpone ESPC4 and PERM (4th European Sustainable Phosphorus Conference and European Phosphorus Research Meeting) from June 2020 to **Vienna 31st May – 2nd June 2021**
<https://www.phosphorusplatform.eu/espc4>

Rescheduling ... RAMIRAN 2020, Systemic, ESNI

The manure and organic resources recycling conference, RAMIRAN, is rescheduled (provisionally) to 20-23 September 2021, Cambridge, UK.

The SYSTEMIC workshop on nutrient recovery from anaerobic digestion and ESNI (European Sustainable Nutrient Initiative) are rescheduled to 26 – 27 October 2020, Brussels

Ramiran: www.ramiran2020.org
ESNI and SYSTEMIC workshop on [Eventbrite](#)

Covid 19

French safety agency opinion on Covid risk in sewage sludge

ANSES, the French national agency for health, food and environment safety, has issued an [opinion](#) on the risks of Covid19 in sewage sludge. This confirms the WHO statement that there is no evidence of survival of viable (infectious) Covid19 in sewage. ANSES concludes that systems already considered as ensuring sanitisation of sewage sludge under current regulations will largely remove possible Covid risk. 70% of France's sewage sludge is used in agriculture, and this is mostly sanitised before spreading. ANSES recommends that monitoring of this sanitisation be reinforced. A small amount of sludge from smaller sewage works is currently spread without sanitisation. ANSES recommends that this sludge be incinerated or treated during the Covid pandemic.

ANSES [Opinion](#) 27th March 2020

FAO expert group: coming months critical for global food supply

The FAO CWFS (Committee on World Food Security) High Level Panel of Experts has issued a preliminary paper on possible impacts of Covid-19 on food security and nutrition. The Committee expects that the most affected will be the poor and vulnerable, especially migrants, conflict regions. Impacts will be from disruption of food processing and distribution chains, from the expected world economic slowdown and resulting unemployment, and in the medium term from losses in production if farmers do not have access to inputs for this Spring (Northern hemisphere) planting season. Another problem worldwide is workforce shortages on farms because of restrictions to workers' movements. The experts note that although there are no significant issues with food supply at present, disruption of transport systems and workforces in coming months will be critical for future food supply because this is when most of the world's food production takes place.

FAO (Food and Agriculture Organization of the United Nations), 24th March 2020: "Interim Issues Paper on the Impact of COVID-19 on Food Security and Nutrition (FSN) by the High-Level Panel of Experts on Food Security and nutrition (HLPE)" [paper](#).

Public consultation and calls

Integrated Nutrient Management Action Plan

The EU Committee of Regions (CoR) has opened a public stakeholder [consultation](#) to 1st May on input to the new EU [Circular Economy Action Plan](#). This Plan includes as proposed actions to "develop an Integrated Nutrient Management Plan with a view to ensuring more sustainable application of nutrients and stimulating the markets for recovered nutrients". ESPP will input to this CoR consultation underlining our support for this proposed Integrated Nutrient Management Plan and the interest to link to the proposal in Horizon Europe Orientations [Orientations](#) to develop "comprehensive EU policy to balance nutrient cycles ... move to living within the planetary boundaries, with regards to nutrient flows". ESPP will underline in particular the need to work with the food & beverage industry to address dietary choices, the key driver for nutrient use, to support agricultural nutrient stewardship and nutrient recycling, including with fiscal and market tools and with nutrient recycling demonstration sites, and to address contaminants in secondary nutrient flows (sewage sludge, manure).

EU Assembly of Regional and Local Representatives, Written Stakeholder Consultation "New Circular Economy Action Plan" [consultation](#) open to 1st May 2020

Call for input: Nutrient technologies and climate change

[ESPP](#) (European Sustainable Phosphorus Platform) and [SPA](#) (Sustainable Phosphorus Alliance, America) are preparing several special issues of [SCOPE Newsletter](#) relating eutrophication, nutrient management and climate change. Circulation: 41000 emails worldwide, detected openings 11 – 14%. Issues will cover: eutrophication and methane emissions, climate change impacts on nutrient runoff, climate change and diet nutrition, and links between nutrient technologies and climate change.

We will include a selection of texts showing **how products or technologies for nutrient recycling or eutrophication abatement can reduce greenhouse gas emissions or contribute to climate change mitigation**. For example:

- greenhouse gas LCA analysis of nutrient recycling process
- technologies to mitigate impacts of nutrients and climate change on eutrophication
- addressing greenhouse gas emissions of fertiliser production
- reducing climate change impacts of nutrient use and management in agriculture

To include your technology, send us a text, by 15th May latest to info@phosphorusplatform.eu

- Preference will be given to texts supported by data and/or references
- Links must be made to climate change
- Maximum 400 words plus 1-2 photos
- photos must be free of rights for web publication
- selection of texts by ESPP and SPA is final. We may propose to you to revise your text.

2020 BBI JU call for proposals open

The 2020 Bio-Based Industries Joint Undertaking call for proposals is open until 3 September. The call constitutes €102 million worth of funding for projects focusing on the upgrading and valorisation of biomass. The budget is divided between five Research and Innovation Actions (RIA), seven Innovation Actions (split between Demonstration Actions (DEMO) and Flagship Actions (FLAG)) and four Coordination and Support Actions (CSA), including €15 dedicated to FLAG projects under the topic of valorisation of organic fraction municipal solids waste through integrated biorefineries at commercial level.

<https://www.bbi-europe.eu/news/over-%E2%82%AC100-million-available-advancing-european-bio-based-sector>

New ESPP member

Prosumer feasibility study of P-recovery in Italy

Wastes from slaughterhouses and food processing industries are the third 'waste stream' containing phosphorus (P) in Europe, offering potential to recover and recycle phosphorus to fertilisers. Italy and particularly Emilia-Romagna Region have thousands of companies in this sector. The Prosumer project will assess and develop business models for the techno-economic feasibility of P recovery from waste streams in the Italian agri-food sector and its reuse in fertilizers. The project is coordinated by the University of Bologna with the support of Marche Polytechnic University and involves Italian companies in the agri-food sector (Pizzoli, Granarolo, Caviro Extra) and in fertiliser production (Puccioni) who will provide data for the model. The expected results, fitting with several ESPP objectives, include to (i) increase awareness about phosphorus and disseminate information; (ii) evaluate business risks and opportunities (iii) deliver decision support tools for financial instruments and regulatory framework.

Prosumer project: Techno-economic and environmental feasibility study of Phosphorus recovery and reuse in fertilizers applied to Italian Prosumers (producers and consumers of P). funded by EIT Climate-KIC (project n. 200103, 2020). Contact: Jessica Rossi jessica.rossi12@unibo.it

Communications

BBC features phosphorus recovery

BBC's "People Fixing the World" has featured Ostara, recovering phosphorus as struvite, and SNB, incinerating sewage sludge and looking to recover phosphorus. A 3 minute BBC [video](#) provides an excellent summary of why phosphorus is important, and how struvite is recovered by Ostara at Amersfoort, The Netherlands, to produce a high quality fertiliser adapted to plant needs (non water soluble, so low leaching). SNB explain that sewage sludge ash is recycled in construction, but that they hope to develop P-recovery upstream of this end-use. A 30 minute [podcast](#) explains the importance of phosphorus, from its discovery to today, its different uses of phosphorus, the impacts of phosphorus losses and the need to develop the circular economy for phosphorus.

BBC News [video](#), "People fixing the planet", 3 minutes, 30th March 2020 and BBC World Service [podcast](#), 30 minutes (sound), "The treasure in our toilet", interviews of Robert Van Springelen, Ostara, and Silvester Bombeeck, SNB. [Summary here](#).

Two new books on phosphorus

A 150 page new book by Alexandra Drizo presents an update of approaches and technologies for phosphorus removal and recovery, covering phosphorus management in sewage, agriculture and in lakes, including summaries of regulation for phosphorus removal and recovery. The book covers: the challenges of eutrophication are summarised, water quality legislation, regulation of innovative phosphorus removal technologies and of phosphorus recycling, methods and technologies for removal of phosphorus from sewage, actions for mitigation of agricultural and stormwater phosphorus runoff, in-lake phosphorus treatment and phosphorus recovery and recycling technologies.

A 460 page book edited by Alan Steinman and Bryan Spears, with 24 chapters and 17 case studies, by over 60 experts worldwide, looks at "internal loading" of phosphorus to lakes and coastal lagoons, that is release of phosphorus from bottom sediments. It is feared that climate change will increase sediment P releases, because warming may lead to longer periods of stratification (periods where deep and shallow water layers do not mix) resulting in anoxia (no oxygen) conditions in sediments, and to increased decomposition of organic matter in sediments. The book analyses drivers of sediment phosphorus release and uptake, measurement techniques, management approaches including in-lake treatment techniques.

"Phosphorus Pollution Control: Policies and Strategies", A. Drizo, 2020, [ISBN: 978-1-118-82548-8](#)

"Internal Phosphorus Loading in Lakes. Causes, Case Studies, and Management", A. Steinman & B. Spears, January 2020, [ISBN 978-1-60427-144-7](#)

Atmospheric phosphorus deposition

Nutrient inputs to the Mediterranean

Malagó et al. have estimated total nutrient inputs to the Mediterranean at 1 900 ktN_{-total}/year and 100 ktP_{-total}/year phosphorus, based on modelling nutrient inputs from diffuse sources (i.e. mineral fertilisers and manure) and point sources (i.e. human settlements connected to sewers and industrial discharge). They used readily available global data and determined the relative importance of different sources identifying hotspot areas of higher pollution. The main contributor to nitrogen is agriculture, whereas for phosphorus the biggest sources are wastewater, soil erosion, and agriculture. However, the main source for soluble phosphorus (30 ktP_{-ortho}/year) is wastewater.

Kanakidou et al. estimated, using modelling, atmospheric deposition to the Mediterranean at around 60 tP_{-soluble}/year, (initial model result 4.3 ktP_{-soluble}/year, multiplied by x14 for re-correlation), compared to 125 ktP_{-total}/year from rivers and coastal cities. For nitrogen, these authors estimate atmospheric inputs at 1 281 ktN/y compared to around 1 360 ktN/y from rivers and cities, (for nitrogen, the model estimate corresponds approximately to other data without re-correlation).

In another paper, Violaki et al. estimate atmospheric deposition of soluble phosphorus (in rainwater and in dry deposition), based on sampling at two sites for 2 – 7 years. They conclude that total dissolved phosphorus from deposition, based on the sites with the higher results, is up to 2.2 mmolP/m²/year in the West Mediterranean and 1.5 mmolP/m²/year for the East that is c.140 ktP_{-soluble}/year for the 2.5 million km² of the whole Mediterranean. This is coherent with Koçak 2010 who estimated that, for the Eastern Mediterranean (Turkish coast), soluble phosphorus and soluble nitrogen DIN inputs were dominated by atmospheric deposition, whereas silicon input was dominated by river inflows.

Violaki et al. estimate that the atmospheric deposition might cause up to 7% of algal production in the North West Mediterranean, and up to 38% in oligotrophic areas of the East Mediterranean during stratified periods. Thus, the atmospheric P deposition may make some contribution to CO₂ uptake at times the Mediterranean.

"Modelling nutrient fluxes into the Mediterranean Sea", A. Malagó et al., Journal of Hydrology: Regional Studies 22 (2019) 100592, DOI
"Organic phosphorus in atmospheric deposition over the Mediterranean Sea: An important missing piece of the phosphorus cycle", K; Violaki et al., Progress in Oceanography 163 (2018) 50–58, DOI

"Atmospheric inputs of nutrients to the Mediterranean Sea", M. Kanakidou, et al., Deep-Sea Research Part II 171 (2020) 104606

"Atmospheric nutrient inputs to the northern levantine basin from a long-term observation: sources and comparison with riverine inputs", M. Koçak et al., Biogeosciences, 7, 4037–4050, 2010 DOI

"Modeling the impacts of atmospheric deposition of nitrogen and desert dust-derived phosphorus on nutrients and biological budgets of the Mediterranean Sea", C. Richon et al., 2017 Prog. Oceanogr Volume 163, April 2018, Pages 21-39

Global P flows from atmospheric deposition

For comparison to the above studies for the Mediterranean, Tipping (CEH UK) et al, 2014, collated data on atmospheric phosphorus deposition at c. 250 sites worldwide (with a recognised bias of >80% of sites in Europe and North America). They found a geometric mean deposition of 0.14 gTP/m²/year (total phosphorus), of which around 40% on average is soluble P and a further 20% is non filterable P (with significant variations between sites), that is around 60% of TP deposition is relatively available. This corresponds to a total global atmospheric deposition of around 3.7 MtP/y. For comparison: annual world beneficiated phosphate rock production is 17 – 24 MtP/y (see: [ESPP Factsheet](#)). Most of this atmospheric deposition is considered to come from natural sources, in particular dusts, especially from the Sahara, and also from pollen and other biogenic organic materials. Anthropogenic sources include burning of fossil fuels. Data showed considerable variation between sites, and at sites between years. The authors note that atmospheric deposition from fertiliser application can be significant locally, and may impact sensitive ecosystems near farmland, noting that this question requires further research, whereas long-range transport, which is important for oceans, is mainly from dust.

"Atmospheric deposition of phosphorus to land and freshwater", E. Tipping et al., Environ. Sci.: Processes Impacts, 2014, 16, 1608

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eNews newsletter: www.phosphorusplatform.eu/eNewshome

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ESPP members

