ESPP actions

ESPC5 call for abstracts extended to 16th June

ESPC5, the 5th European Sustainable Phosphorus Conference, 8-9 October, Lleida, Spain (site visits 10th October to Fertilizantes del Ebro, biogas plant with digestate valorisation. ESPC5 follows on from ESPC4 Vienna, 2022 which, with 320 participants onsite and 80 online, was the biggest conference on phosphorus ever worldwide.

Abstracts are invited on:

- Phosphorus management in agriculture: P losses in agriculture, P use efficiency.
- Climate change impacts on P in the environment and on P management
- Phosphorus sustainability in the Mediterranean region
- Nutrient recovery technologies, recycled nutrient markets
- Digestate processing and valorisation
- Regional P sustainability policies
- Other aspects of phosphorus management and nutrient recycling

LEIDA 8 - 10 October 2024 ESPC5 European Sustainable Phosphorus Conference

Abstracts for oral and posters: free format, must include: short title, names and emails of all authors, summary of maximum 500 words. ESPP members can take a short pitch, presenting company technologies or R&D perspectives. Send to info.espc5@uvic.cat by 16th June 2024. https://www.phosphorusplatform.eu/espc5.

15th Sustainable Foods Summit, Amsterdam, 4-5 July 2024

ESPP (represented by Pär Larshans, EasyMining/RagnSells) will participate in a panel on Closing Material Loops.

https://sustainablefoodssummit.com/europe/

ESPP list of consultants

We have published on our website (www.phosphorusplatform.eu/regulatory) **a list of consultants active in areas relevant to nutrient recycling and fertilisers, including technical, regulatory and market questions**. The table provide contacts, indications of areas of competence and geographical coverage. This list is developed for information of companies and organisations looking for professional support, and is not in any way a recommendation or endorsement of the cited consultancies. This list is open: if other consultants send relevant information (see existing table) we will be happy to include.

"ESPP list of consultants active in areas relevant to phosphorus recovery and recycling, including technical, regulatory and market questions" www.phosphorusplatform.eu/regulatory

SCOPE Newsletter – draft policy proposals –CRU Phosphates 2024 summary

ESPP's 151st SCOPE Newsletter is published. This Newsletter includes draft policy proposals (one page each), based on discussions at ESPP's two one-day workshops in March 2024, on

- **proposing policies to support market uptake of recycled nutrients (market pull policies)**

- **possible phosphorus "reuse and recycling" rates for the revised EU Urban Waste Water Treatment Directive** (UWWTD)

For each of these, ESPP will submit proposals to the European Commission based on the relevant "ESPP outline for proposals" sections in this Newsletter.

Comments and input on these outline proposals are welcome to ESPP.

This Newsletter also summarises the 16th edition of the CRU "Phosphates" Conference, the annual industry meeting place which is also the world's biggest conference on phosphorus, at which ESPP organised a panel on sustainable fertilisers.

www.phosphorusplatform.eu/Scope151

Policy

Austria adopts Phosphorus recycling obligation

Austria is now the third European country, after Switzerland and Germany, to make P-recycling from sewage sludge legally obligatory (from sewage works ≥ 20 000 p.e., by 2033). Published as part of the Waste Incineration Ordinance (Abfallverbrennungsverordnung 2024 – AVV 2024), the new regulation requires that, from 1st January 2033, all sewage works with design capacity works ≥ 20 000 p.e., must either incinerate their sewage sludge and recover phosphorus from the ash, or must otherwise recover 60% of the sewage works inflow phosphorus. Where phosphorus is recycled from sewage sludge after incineration either 80% of the P must be recovered from the ash, or the totality of the ash must be used to produce a fertiliser compliant with Austrian fertilisers regulations. Sewage sludge and/or sludge incinerator plant operators will have to report annually the P-content of ashes or P inflow to the sewage works, type of P-recovery, tonnage of P recovered annually, tonnage of sewage sludge (DM) annually.

Austria Abfallverbrennungsverordnung 2024 – AVV 2024, CELEX 32010L0075, published in the Austrian Official Journal, 13th May 2024 (see section 4) https://www.bmk.gv.at/themen/klima_umwelt/abfall/recht/vo/abfallverbrennung.html

EU "greenwashing" Directive

Proposed EU Green Claims Directive is in the Parliament – Council decision process. It will require that all environmental claims be factually substantiated and verified, with potential penalties for unsubstantiated claims. The European Parliament position and amendments were voted on 12th March and the draft Directive is now under discussion in Councill and the Directive will only be adopted under the new Parliament and Commission after the June European elections. The proposal concerns all "environmental claims" which were defined in Directive 2024/825 (February 2024), modifying 2005/29/EC, and covers "any message or representation which is not mandatory … in any form, including text, pictorial, graphic or symbolic representation, … which states or implies that a product, product category, brand or trader has a positive or zero impact on the environment or is less damaging to the environment … or has improved its impact over time". The proposed Green Claims directive would require any such claim to be factually substantiated, subject to verification by Member States. Substantiation would have to be based on recognised scientific evidence, with a life-cycle perspective covering all significant environmental impacts, environmental performance would have to be shown to be better than legal requirements. The Directive does not define one single evaluation method and does not apply to labelling under EU regulations (EU Ecolabel, Organic Farming Regulation, EMAS, future EU carbon certification). Very small companies may be exempted.

European Parliamentary Research Service briefing document "'Green claims' directive. Protecting consumers from greenwashing" HERE

European Consultation proposal for a Directive "on substantiation and communication of explicit environmental claims (Green Claims Directive)", 23rd March 2023, COM(2023) 166 final.

Mandate to EFSA for Opinion on Category 1 Animal By-Product ash as fertiliser

The European Commission (DG SANTE) has requested from EFSA (European Food Safety Agency) an opinion on use of Cat. 1 ash in fertilisers, considering both prion risk (TSE/BSE) and other possible biological or chemical risks. The mandate concerns ash from "incineration, co-incineration and combustion" of Category 1 Animal By-Products (without specifying incineration conditions. It reminds that Cat. 1 material must currently be "disposed by waste as incineration", suggesting that use of Cat. 1 ash as fertiliser has been banned by EU regulations since 2009 (a lawyer's opinion commissioned by ESPP in 2022 concluded that this is not the case, see www.phosphorusplatform.eu/regulatory, as demonstrated by authorisation of use of Cat. 1 ash as fertiliser by the UK for decades). The letter of mandate states that "the Commission is currently not aware of any new scientific data, evidence, publication, assessment or technological solution" that would justify revision of existing legislation but that following several requests "in particular from the European Sustainable Phosphorus Platform … the Commission seeks for a review of the existing scientific literature in order to explore the possible presence of biological and chemical hazards in ash from Category 1 materials after incineration, co-incineration and combustion." EFSA have accepted this mandate committing to deadlines to deliver opinions on the BSE/TSE risk by 30th April 2025 and (if this first opinion is not negative) on other biological and chemical risks by April 2026. ESPP welcomes this DG SANTE mandate.

We have already requested a risk analysis from SAFOSO to input to EFSA and will submit all other relevant information known to us.

If you are aware of data, publications or evidence of health or environmental safety of Cat. 1 ash, please indicate to ESPP info@phosphorusplatform.eu so that we can forward to EFSA.

European Commission DG SANTE "Request for a scientific opinion on the presence of biological and chemical hazards in ash from Category 1 material after incineration, co-incineration, and combustion", Ares(2024)2805627 - 17/04/2024, EFSA reference EFSA-Q-2024-00278, Mandate number M-2023-00166 https://open.efsa.europa.eu/question/EFSA-Q-2024-00278

EU Critical Raw Materials (CRM) Act published

The EU CRM act has now been published. "Phosphate rock" and "Phosphorus" (meaning P_4) are in the Critical Raw Materials List so are concerned by the policy measures below. They are not however in the "strategic raw materials" sub-list, so are not eligible for Strategic Projects, Joint Purchasing, recycling and supply targets.

ESPP considers that this Act should support phosphorus stewardship and recycling by requiring monitoring, inciting national circularity measures and facilitating permitting of recycling projects.

ESPP regrets that P_4 is not included in the "Strategic" sub-list despite being essential for the specified "strategic" industry sectors (renewable energy, e.g. solar panels; batteries; data and electronics fire safety) and despite the EU's 100% dependency on supply from three countries (China, Vietnam, Kazakhstan) – see joint industry declaration.

ESPP notes Art. 4.1) which specifies that CRMs covers "*raw materials, including in unprocessed form, at any stage of processing and when occurring as a by-product of other extraction, processing or recycling processes, … shall be considered critical raw materials*". The interpretation of this for "Phosphate rock" could be interesting (!).

The following articles of the Act concern all CRMs (not only Strategic Raw Materials), so concern "Phosphate Rock" and "Phosphorus" (P_4) :

- Art. 5.2: "*incentivise technological progress and resource efficiency*" of CRMs,
- Art. 9 and art. 2.14 (definitions): Member States must establish "*Points of Single Contact*" (can be more than one!) to facilitate and coordinate permitting of installations for "*extraction, processing or recycling*" of CRMs,
- Art. 13, art. 18: certain CRM project planning simplifications,
- Art. 19: national exploration programmes for CRM resources,
- Art. 20: EU monitoring of CRM trade flows and obstacles to trade, demand, supply and supply concentration, production, bottlenecks, price volatility. This monitoring information (aggregated) will be made publicly available,
- Art. 21: identification and monitoring of key CRM value chain operators,
- Art. 26.1: (within 2 years) national programmes for circularity of CRMs, including incentivising resource and materials efficiency, "*collection, sorting and processing of waste with high critical raw materials recovery potential …*" and "*increase the use of secondary critical raw materials including through measures such as taking recycled content into account in award criteria related to public procurement or financial incentives for the use of secondary critical raw materials*", "*increase the technological maturity of recycling technologies*", "*support the use of Union quality standards for recycling processes of waste streams containing critical raw materials*", workforce upskilling …
- Art. 2.7: analysis of operating and closed sites to define CRM recovery potential from extractive waste (ESPP note: could concern phosphogypsum deposits),
- Art. 26.7: The Commission will adopt (by May 2025) implementing acts defining a "*list of products … and waste streams … considered as having a relevant critical raw materials recovery potential*",
- Art. 30 and art. 31: possible sustainability certification and environmental footprint schemes for CRMs.

EU Regulation 2024/1252 (11th April 2024) "establishing a framework for ensuring a secure and sustainable supply of critical raw materials" https://eur-lex.europa.eu/eli/reg/2024/1252/oj

EGTOP Opinion on calcium phosphate from sewage sludge incineration ash

The EU's Expert Group on Organic Farming has published a positive Opinion recommending the authorisation of calcium phosphate from sewage sludge ash in EU Organic Farming, subject to respecting EU Fertilising Products criteria. This positive Opinion comes just 18 months after submission of this dossier. It is now up to the European Commission to prepare an amending regulation to include such recovered calcium phosphate into the list of authorised fertilisers in Annex II of the EU Organic Farming Regulatiion. The Opinion refers to the EGTOP positive Opinion on "calcined phosphates" from municipal sewage, 2016, stating that these are a "similar material" (this is questionable), but that this Opinion was subject to their inclusion into the EU fertilisers regulation (which is now done). "Struvite and other precipitated phosphates", as defined in the EU Fertilising Products Regulation (FPR) CMC12, were authorised in EU Organic Farming in January 2023 (see ESPP eNews n°73), but this does not cover phosphates from ashes (CMC13). This new Opinion is based on the EasyMining Ash2Phos process and mentions other processes, focussing only on calcium phosphate from sewage sludge incineration ash,

noting its low water solubility as important. The Opinion indicates that recovery from other ashes (meat and bone meal, manure, plant residues, agricultural digestates) is considered not appropriate, because it is preferrable for Organic Farming to use these directly as fertilisers. The recommendation is to authorise, for Organic Farming: "Calcium phosphate recovered from ash – Only from sewage sludge ash origin – The relevant limits for contamination and organic pollutants set [in the EU FPR] apply". This is different from the requirements for struvite and precipitated phosphates (as inscribed in the Organic Farming Regulation) which require to "meet the requirements laid down" in the EU FPR (interpreted by the European Commission to mean: must be CE-Mark Certified under the FPR). It remains to be seen which wording the Commission will use if and when they amend the Organic Farming Regulation.

ESPP regrets that this Opinion leaves "calcined phosphates" with a positive EGTOP Opinion from 2016 but not yet implemented into the Organic Farming Regulation. ESPP welcomes this new EGTOP positive Opinion but we regret that this is limited to "calcium phosphates". If EGTOP considers each recycled material one-by-one, they will consume much energy and progress very slowly. ESPP suggests that EGTOP consider all ash-based phosphate and potassium fertilisers recovered from ash which meet the requirements of the EU Fertilising Products Regulation (PFC1 = Fertilisers and CMC13 = Thermal Oxidation Materials and Derivates), subject to defining a limitation on solubility, as discussed in this Opinion. ESPP also regrets the limitation to sewage sludge ash. Some animal by-products cannot be spread directly on fields and must be incinerated, so that recycling of nutrients from ash is the best option, and incinerators may intake several different materials in order to optimise nutrient recycling and minimise environmental footprint.

EGTOP (EU Expert Group for Technical Advice on Organic Production), Final report on Plant Protection (X) and Fertilisers (VII), adopted 6 - 8 March 2024 here.

DG GROW policy actions for Bio-Based Products

Nearly 200 people joined the third European Commission (DG GROW) workshop on developing the bio-based economy, 21st May. The Commission summarised actions underway and planned to support policy development.

This follows the European Commission Communication on "Boosting biotechnology and biomanufacturing" (COM(2024)137, 20th March 2024). This Communication outlines policy actions, including research and innovation support, stimulating market demand by improving carbon impact comparisons of fossil-based and bio-based materials and by including "bio-based content requirement" in public procurement for certain categories (it is not indicated which product categories are envisaged), streamlining regulation (accelerating market approval for "bio-based fertilisers" is cited), supporting investments especially in scale-up of innovation, developing standards for bio-based industries, strengthening skills, improving cooperation and use of AI. Examples cited in the Communication include fertilisers from marine biotech and from algae grown in wastewater.

At the May workshop, DG GROW indicated that a study will analyse how legislation for biotechnologies and bio-based production could be simplified (by Autumn 2025). A mapping of current industrial bio-based value chains aims, by end 2025, to identify challenges and opportunities and to identify relevant raw materials which are currently imported into the EU and which could be replaced by EU-origin bio-resources. A third study will assess feasibility of introducing bio-based content requirements for public procurement of certain products and a fourth study (tbd) will look at voluntary sustainability labelling of bio-based products. Also, DG ENVI has launched work on assessment of fossil versus bio-based products for Product Environment Footprints. Regarding standards, DG GROW reminded that the 2024 work programme for European Standardisation includes developing new and revising existing standards for bio-materials and bio-based products, including defining terminology, harmonising testing methods and setting performance criteria. This is taken forward with a request call to the European Standardisation Organisation for a mapping and feasibility study for standards on (inter alia) bio-based products. DG GROW also presented the Biotech Hub under development which aims to identify and support relevant cluster organisations (1500 identified worldwide) and technology centres (50 identified in Europe).

"'Next steps in advancing bio-based products and materials", DG GROW workshop, Brussels and online, 21st May 2024

European Commission Communication "Building the future with nature: Boosting Biotechnology and Biomanufacturing in the EU", COM(2024)137, 20th March 2024

European Parliament study highlights EU food system dependencies

Phosphates and potash are two of three agricultural inputs flagged as having very high geographical import dependency (along with soya, which is also a major import route for nutrients). Cereal production is identified as particularly dependent on fertiliser imports. The EU is estimated to be 68% dependent on imports of phosphates (for fertilisers) and 31% for potash (page 21, European Commission data), or 46%, 58% and 45% for P, K and N (page 26, based on Fertilizers Europe data). ESPP suggests that these differences in numbers show an increasing need to update EU phosphorus flow studies (from Kimo Van Dijk's 2013 study, see SCOPE Newsletter n°106). The overall value ratio (imported inputs)/(total output) is <10% for EU agriculture, fisheries & aquaculture, food & beverages. Policy tools identified as addressing agricultural input security include trade relations, the Green Deal sustainability objectives and the Farm-to-Fork nutrient loss reduction targets, the CAP (Common Agricultural Policy, inc. support for nutrient management) and Organic Farming. Proposed actions include reducing consumption of animal products.

"The dependency of the EU's food system on inputs and their sources", study for the European Parliament Agriculture and Rural Development PE 747.272 - March 2024 HERE.

"Fertilizer Industry Facts & Figures 2023", Fertilizers Europe 2023, June HERE.

EFSA positive Opinion on alternative composting parameters

The Opinion concerns only catering waste and similar (Animal By-Products Cat.3). For such compost to be authorised in EU fertilisers, DG SANTE must now modify the ABP Regulation annexes to include the considered parameters. This would then automatically lead to authorisation in the EU Fertilising Products Regulation CMC4 This dossier, submitted by the European Compost Network (ECN) via Belgium national authorities, was first considered by EFSA in 2020, when EFSA requested further evidence on neutralisation of thermoresistant viruses. The dossier was resubmitted with additional data in mid-2023 and EFSA's positive Opinion was adopted on 14th March 2024. EFSA considers that the two proposed alternative composting parameter specifications both achieve reduction in pathogens and viruses equivalent to the composting parameters currently specified in the ABP Regulations. The current ABP Regulation parameters are: ≥70°C for ≥1 hour with particle size ≤12 mm. The new parameters, based on tunnel composting processes, are: ≥55°C for ≥72 hours with particle size ≤200 mm and ≥60°C for ≥48 hours with particle size ≤200 mm. The EFSA positive Opinion concerns only Cat.3 ABPs as specified (catering and cooking wastes from restaurants, canteens and households and similar discarded food processing wastes = in effect "biowaste"), including when mixed with non-ABP materials.

"Two alternative methods for treating animal by-product-derived materials in composting", ECN, 27th May 2024

"Evaluation of alternative methods of tunnel composting (submitted by the European Composting Network) II", adopted 14th March 2024, EFSA Journal 2024;22:e8745, DOI.

ESPP new members

SINFERT (soluble inorganic fertilisers), UCD, Ireland

Innovative new DOC (deoxychlorination) process extracts volatile phosphorus compounds from a variety of sources including bone meal ash or phosphate rock. This material can be directly converted into phosphoric acid for production of plant-available inorganic fertilisers or inorganic phosphate chemicals. The process uses as inputs a chlorine source (chlorine is cycled in the system) and water or alcohols (for esterification). In the latter case, the DOC process could potentially produce some industrial organophosphorus esters directly, bypassing P_4, but not all chemicals which currently depend on P_4. Applications of these organophosphorus esters include surfactants (e.g. PA100, PAE800), plasticisers (e.g. TPHP, IPP), fire resistant fluids (triaryl phosphate esters) and flame retardants (TEP, TNBP). Work is underway to extend the range of chemicals which currently depend on P_4 to be manufactured via DOC process. The key process runs at medium temperature (60-100°C) with possibility for heat recycling. The UCD (University College Dublin) research Team led by Dr K. Nikitin and Dr S. Hodge works in close collaboration with fertiliser and food industry experts.

The process has been successfully demonstrated to date on a small lab scale of input materials processed including manure ash, sewage sludge ash, struvite and vivianite. The project aims to further widen the range of materials, including low-grade phosphate rock, improve the extraction yield (objective 90-95%) and achieve pilot scale (batch mode 100-1000 g) and develop a continuous flow version. The plant availability of fertiliser produced via DOC has been fully confirmed by in-vivo plant trials.

Dr Kirill Nikitin Team leader at UCD says "Our process is entirely different from existing thermal and wet extraction technologies. We hope that ESPP membership will enable SINFERT innovation to dialogue with significant industry players to look for partners to develop to further stages of industrial uptake. We are looking to actively engage with interested stakeholders to blueprint this new process. We are looking to work with chemical manufacturing experts to quickly improve the DOC process in terms of efficiency, economic viability and commercialisation potential".

The SINFERT project has been selected by Science Foundation Ireland (SFI) 'Future Food Systems Challenge" programme for a duration of up to 4-5 years subject to outputs https://www.sfi.ie/challenges/future-food-systems/SINFERT. For more information: presentation at ESPP's NERM Conference April 2024 here. Contact SINFERT.CHALLENGE@gmail.com

EkoBalans

EkoBalans develops integrated solutions for processing residual streams from biogas production, the food industry, and agriculture, into circular fertiliser products, including struvite and ammonium sulphate recovery. Today, EkoBalans delivers and operates such facilities and offers complete concepts from feasibility studies and pilot-scale facilities to refinement and product marketing. The aim is to combine technologies and other technical solutions in practical operation, to transform waste water treatment plants into recycling facilities, contributing to the circular economy and to addressing climate and environment challenges. EkoBalans' nitrogen recovery technology, eco:N, combines ammonium stripping and absorption/crystallization to produce solid ammonium sulphate, using EkoBalans' own specific system configuration, pre-treatment and ammonium sulphate harvesting process. Up to 95% of ammonium-N can be removed with eco:N. The eco:N process can be preceded by

phosphorus extraction as fine particle struvite with EkoBalans' technology eco:P. The preferred business model is buy-back of the recovered ammonium sulphate and/or struvite for use with other secondary raw materials in the production of Ekobalans' organo-mineral fertilisers. EkoBalans is interested in cooperation for sales of the fertiliser product on local markets. We have a high interest in ESPP since we find the network vital to spread and share information about this important topic to many international stakeholders. *https://ekobalans.se/en/*

Nutrient recycling

Veas Norway CE-mark for recovered ammonium salt

Veas, Norway's largest municipal wastewater treatment plant, has obtained the CE-mark for its recovered ammonium sulphate solution, according to the EU Fertilising Products Regulation 2019/1009 EU Part, in PFC 1 and CMC 15. Veas treats around 800 000 p.e. wastewater from Oslo. Ammonia is recovered from the digestate dewatering liquor, after anaerobic digestion of the sewage sludge. The digestate solids are used as an organic fertiliser in local agriculture. A substantial fraction of the total nitrogen load entering the Veas plant is recovered, resulting in a 37 - 40 % (c. 8% N) ammonium sulphate solution. In 2023, around 4 000 tonnes of solution were recovered (over 300 tN). The ammonium sulphate product is CE certified (FPR PFC 1 and CMC 15) by CerTrust (Notified Body). The company Acinor AS is distributing the product which has been sold to Denmark, Sweden and United Kingdom as well as domestically.

"VEAS in brief" HERE.

Nordic BAT for nutrients in aquaculture

Nordic Council of Ministers document describes BAT (Best Available Technologies for nutrient reduction and reuse in land-based aquaculture, underling the importance of fish sludge nutrient recycling for the circular economy. The report notes that the EU has no specific regulatory framework for aquaculture. It remains not covered by the updated Industrial Emissions Directive. Fish sludge, consisting of faeces and uneaten feed, contains significant phosphorus and nitrogen: 2-3% P/TS, 4-11% N/TS, Estevez et al. 2022). Fish sludge can be used as a fertiliser and/or for energy production, generally after processing, for example by thickening (sedimentation, filtration), drying, anaerobic digestion, pyrolysis, bio-oil or syngas, incineration. Use as fertiliser may be limited by transport/processing costs, zinc or possibly other heavy metal levels and salinity for marine fish. EU regulations are considered to pose important obstacles to fish sludge nutrient reuse and recycling, in particular the exclusion from EU fertilisers and animal by-products regulations. These effectively limit fertiliser use to within the country of production (if allowed there) and exclude trade of fertilisers produced from fish sludge.

"Best Available Techniques for Reduction and Reuse of Emissions in Nordic Land-based Aquaculture", Nordic Council of Ministers, 2023, 154 pages HERE.

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