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Summit of Organic and Organo-Mineral Fertilisers Industries in Europe (SOFIE2)



Brussels & hybrid, 17-18 January 2023

How organic and organo-mineral fertiliser products and technologies deliver specific agronomic performance characteristics for farmers' needs. The event is being co-organised by ESPP, [ECOFI](#), [Eurofema](#) and [Fertilizers Europe](#), with support of the [International Fertiliser Society](#).

Speakers already include: European Commission - Chiel Tettelaar, EFCI Register - Harald Mikkelsen, Koppert - Emma Burak, Yara - Francisco Morell, ICL Fertilizers - Peter Hammond, CCM - Maurice Evers, Lumbricus.nl - Mark Kragting, Tema Process - Thijs Kapteijns, Protix - Verena Pfahler, German Biogas Federation - Laia Llenas Argelaguet, BETA Technological Center / Fertimanure - Leon Fock, Eurofema

SOFIE2 - 2nd Summit of the Organic and organo-mineral Fertilisers Industries in Europe, **Brussels** Renaissance Marriott Hotel, 19 rue de Parnasse, & hybrid, 17-18 January 2023 www.phosphorusplatform.eu/SOFIE2023

First workshop on Nitrogen Recovery

Brussels & hybrid, 19 January 2023

www.phosphorusplatform.eu/NRecovery

This workshop will be open, for physical participation in Brussels, to invited participants only whereas online access is open. This is necessary to enable an operational working meeting.

Information and registration online (hybrid) www.phosphorusplatform.eu/NRecovery
Participation in Brussels: contact [Olivier Bastin, ESPP](#)



ESPP new member

HOLCIM



The cement industry sees continuing recovery of energy and minerals from sewage sludge and other waste streams as compatible with phosphorus recycling, and HOLCIM's Geocycle waste management services aim to take this forward.

HOLCIM is a global international leader in innovative and sustainable building solutions. Main business segments are cement, concrete, aggregates, and roofing solutions. Sustainability is at the core of Holcim's strategy, with the industry's first 2030 and 2050 net-zero targets, validated by the Science Based Targets initiative (SBTi). Leading the circular economy, we already recycled in 2021 more than 50 million tons of materials across our business and will reach 75 million tons (including 10 million tons of construction & demolition waste) by 2025, maintaining our place as a world leader in recycling. See the [HOLCIM sustainability report](#)

HOLCIM's [Geocycle](#) activity provides services to recover waste from other industries or municipalities by integrating them in our production processes. For instance, a cement kiln is a very efficient tool to recover mineral based or energy containing waste materials.

Every year hundreds of thousand tons of sewage sludge are co-processed in cement kilns. HOLCIM aims to play an active role in the sustainable management of phosphorus and is investigating technologies to recover phosphorus in synergy with our operations. We believe in cooperation, promoting knowledge exchange and looking for partnerships.

<http://www.geocycle.com/>

EU Regulatory

Consultation on inclusion of precipitated phosphates in Organic Farming

The European Commission has published for [consultation to 21/11/2022](#) proposed authorisation of recovered struvite and precipitated phosphates in certified Organic production. The proposed wording is as per the EGTOP Opinion of June 2022, see [ESPP eNews n°69](#), and would modify the annexes of the EU Organic Farming Regulation (2021/1165) to include: *Recovered struvite and precipitated phosphate salts: products must meet the requirements laid down in Regulation (EU) 2019/1009, animal manure as source material cannot have factory farming origin.* Also as indicated in the eNews, wording concerning compost and digestate of bio-waste is modified. Questions posed by this wording include: does "meet the requirements" of the EU Fertilising Products Regulation 2019/2009 mean that the FPR Conformity Assessment is necessary as per FPR Annex IV? Does this refer only to the specifications of Annex II CMC12, or also of Annex I PFCs and Annex III labelling? What is the definition of "factory farming" – does this include livestock in stables for part of the year? Does this also cover "derivates" of precipitated phosphates as defined in the FPR CMC 12?

ESPP will also request that further recycled materials currently not authorised in Organic production: Renewable calcined phosphates (cf. positive EGTOP Opinion 2016 ("[Final Report on Fertilisers II](#)") and waste ash derived nutrients (phosphorus from sewage sludge incineration ashes, potassium from municipal solid waste ashes ...), Recovered elemental sulphur, Bio-sourced adsorbents used to treat wastewaters, Phosphorus-rich pyrolysis and gasification materials (inc. biochars), Algae and algae products grown to treat wastewater. Vivianite, Recovered nitrogen from off-gases..

Any individual or organisation can contribute to this public consultation.

Consultation on amendment to the EU Organic Farming Regulation. [Open to 21st November 2022](#)

EU consultation on Critical Raw Materials

Public consultation [open to 25th November 2022](#) towards a future EU Regulation on Critical Raw Materials (CRMs). At this stage, the consultation concerns an outline roadmap, with a general questionnaire on policies and priorities.

EU public consultation "European Critical Raw Materials act". [Open to 25th November 2022](#)

CAP monitoring and evaluation rules cover nutrients

The EU has adopted rules for monitoring and evaluation of CAP (Common Agricultural Policy) "Strategic Plans" (Member States orientate CAP farm subsidies), including nutrient losses and balances and ammonia emissions. Key evaluation elements specified include nutrient balance (indicating that this is to reduce nutrient losses), ammonia emissions, food quality, climate change, biodiversity, ecosystem services, competitiveness and farm incomes. Two of the nine specified "Impact Indicators" are air quality – ammonia emissions and water quality – "gross nutrient balance on agricultural land". These specifications apply at the Member State level. At the farm level, calculation of nutrient balances ([FaST tool](#)) was removed from CAP subsidy conditions during the Parliament-Council co-decision process but is included the CAP Advisory Service (see revised CAP [2021/2115](#) art. 15(4)g).

Commission Implementing Regulation 2022/1475, 6 September 2022, "as regards the evaluation of the CAP Strategic Plans and the provision of information for monitoring and evaluation" [LINK on Eur-Lex](#).

Draft revision of EU Urban Waste Water Treatment Directive

The European Commission has published draft revisions of the Urban Waste Water Treatment Directive (UWWTD 91/271), adding the objective of nutrient recovery and tightening phosphorus removal requirements for sewage works. **This regulatory proposal now goes to discussion in the European Parliament and Council.**

The Commission's Explanatory Memorandum indicates that the evaluation of the UWWTD concluded that it has been successful in improving water quality, largely because of clear and simple requirements. The indicated objectives of the revision are to address emerging pollutants, storm overflow and discharges from small villages and isolated households, and to ensure coherence with Green Deal climate, biomethane production and Circular Economy objectives, in particular "better recovery of nitrogen, phosphorus and maybe organics". Implementation deadlines are phased through to 2040.

The Commission estimates that overall the new requirements will add c. 2.3% to water tariffs.

Proposed changes from the existing Directive include:

- **More stringent discharge limits for phosphorus and nitrogen** (Annex I)
 - 0.5 mgP_{total}/l or 90% P removal, or (was 1-2 mg/l or 80%)
 - 6 mgN/l or 85%N removal (was 10-15 mg/l or 70-80%)
 - these limits would be applicable (as before) to all wwtps > 10 000 p.e. in eutrophication Sensitive Areas, but additionally would be applicable to wwtps > 100 000 p.e. even if not in Sensitive Areas.
 - the concept of Less Sensitive Areas would be abolished (required less treatment)
- "The Commission would be empowered to adopt delegated act ... (to set out) **minimum reuse and recycling rates for phosphorus and nitrogen from sludge**" (art. 20)
ESPP notes:
 - the Explanatory Memorandum refers to "nutrients and maybe organic carbon" but in fact this is limited to N and P
 - the wording "reuse and recycling" could include valorisation of sludge in agriculture
 - the minimum rates, by this wording, would apply to N and P in the sludge, not in wwtp inflow, which would be particularly different for N. It also would not take account of nutrients recovered upstream, e.g. with separative urine collection.
- **Waste water treatments would have to be "energy neutral" by 2040.** Energy neutrality is defined as "total renewable energy produced at wwtps" versus total energy used by the plants. Calculation is as national total, not per wwtp.
ESPP note: this is very different from climate neutrality, in that wwtp NO_x, N₂O and CH₄ emissions are not taken into account, nor are emissions in sludge management outside the wwtp, nor are climate impacts of nutrient recovery (substituted fertilisers), nor carbon sequestration in sewage sludge to land. Indeed, the wording could be read as considering that installation of a number of wind turbines on wwtp sites would be sufficient.
- Collection and treatment of wastewater for all agglomerations > 1 000 p.e. (was 2 000 p.e.) (art. 3.2, 6.2)
- A new concept of "**Quaternary treatment**" is introduced. (art. 8 and Annex I). This requires at least 80% removal of indicator organic pollutants. It would be obligatory for all wwtps > 100 000 p.e. and for all wwtps > 10 000 p.e. where a pollution risk is identified, or discharging into bathing waters, etc.
- "**Extended producer responsibility**" (EPR) would be implemented for pharmaceuticals and cosmetics only, such that companies placing these on the market must cover the full costs of monitoring and quaternary treatment (art.9, Annex III)
ESPP note: this EPR does not thus cover industrial chemicals such as PFAS, plastic additives, nor agro-chemicals.
- The Commission would develop a methodology for measuring microplastics in wastewater and in sludge, and then these would have to be monitored in wwtps > 10 000 p.e. (art. 21)
- Promote water reuse (art. 15)
- A new concept of "Integrated urban wastewater management plans" would be obligatory for all agglomerations > 100 000 p.e. and all > 10 000 p.e. where stormwater or urban runoff meet certain conditions (art. 5, Annex V)
- New definitions of "sludge", "micro-pollutant", "antimicrobial resistance" ... (art. 2)

NOTE: above obligations are the proposed final requirement, in some cases intermediate levels are fixed for certain date horizons. The articles/annexes cited refer to the revision proposal as published (not to the numbering in the existing 1991 Directive). The above is in many cases a simplification, please refer to the published regulatory proposal for precise detail.

The Commission also published at the same time modifications of the Environmental Quality Standards, Groundwater and Water Framework Directives are proposed. These concern chemical pollutants in water, and in particular address "emerging contaminants of concern" including PFAS, microplastics and pharmaceuticals.

ESPP welcomes these proposals as ambitious and pragmatic to continue to improve Europe's water quality, to further limit phosphorus and nitrogen losses, to move towards the Nutrient Circular Economy and to address emerging pollutants, in particular PFAS, pharmaceuticals and micro-plastics.

European Commission "Proposal for a revised Urban Wastewater Treatment Directive", 26th October 2022

https://environment.ec.europa.eu/publications/proposal-revised-urban-wastewater-treatment-directive_en

European Commission "Proposal for a Directive amending the Water Framework Directive, the Groundwater Directive and the Environmental Quality Standards Directive", 26th October 2022 https://environment.ec.europa.eu/publications/proposal-amending-water-directives_en

INCOPA-Cefic press release [27th October 2022](#).

ESPP input on Animal By-Products (ABPs) in fertilisers

ESPP input to the public consultation underlining the importance of accelerating regulatory authorisation of recognised safe ABPs in fertilisers, without unjustified mixing or packaging requirements. ESPP regrets that DG SANTE's first, minimalist, proposals arrive more than six years after the regulatory proposal for the EU Fertilising Products Regulation was published by the European Commission (at the time with an "empty box" for ABPs) and that these proposals do not cover a number of significant routes for recycling ABP nutrients which have been operated safely for many years in Member States national fertilisers. ESPP suggests that the proposed dilution requirements and sales in < 50 kg packets would largely prevent use of ABPs in EU-fertilisers, would generate unnecessary packaging waste and costs and are not justified (not mentioned in the EFSA Opinion, [ESPP eNews n°61](#)).

ESPP requests that EFSA (European Food Safety Agency) Opinions should be rapidly mandated by DG SANTE for the cycled ABP nutrient materials which were not included in the DG SANTE mandate to EFSA of April 2020: "Alternative transformation parameters" for composts, digestates, processed manure and frass (as already defined in ABP Regulation 142/2011 annexes), Nationally validated treatment methods, Precipitated phosphates & derivatives CMC12, Pyrolysis-gasification materials CMC 14, Cat.1 ABP ashes which represent a significant potential for phosphorus recycling.

ESPP input to public consultation on Animal By-Products in EU-fertilisers, 24th October 2022 www.phosphorusplatform.eu/regulatory

Policy perspectives

European Commission sees nutrient recycling as part of fertiliser crisis strategy

Oliver Sitar, European Commission DG Agriculture has underlined the gravity of the fertiliser supply crisis, impacts on farmers and food security, and that nutrient recycling from waste streams is part of improving EU resilience. Speaking at a webinar on food security (organised by EBIC, the European Biostimulants Industry Consortium, 100 participants, 28th October 2022), Mr. Sitar indicated that fertiliser prices and supply constraints, with energy costs, risk pushing farmers to use less fertiliser, so resulting in lower production, accentuating food price increases. The Commission has identified that 70% of EU ammonia production, the raw material of nitrogen fertilisers, was stopped this summer. The Commission has [indicated](#) that it will communicate on an "EU fertilisers strategy" in November, and that this will particularly target the Member States CAP (Common Agricultural Policy) Strategic Plans, which define how the EU's CAP budget funds are spent on the ground. The Commission cited precision farming, planning of fertiliser use and incentives for biological and alternative fertilisers. Mr Sitar confirmed the importance of the CAP Strategic Plan, and also of INMAP (EU Integrated Nutrient Management Action Plan, expected early 2023) and of Soil Health. The European Parliament already adopted a resolution ([24th March 2022](#)) stating that "alternative organic sources of nutrients and nutrient cycling should be utilised to the fullest extent as soon as possible" and calling on the Commission to "address legislative and practical barriers, ... in particular, ... to enhance the use of organic fertilising products obtained from sewage sludge, processed manure, biocharcoal and frass".

European Parliament resolution, 24th March 2022 "Need for an urgent EU action plan to ensure food security inside and outside the EU in light of the Russian invasion of Ukraine", [P9_TA\(2022\)0099](#). EURACTIV "European Commission announces communication on fertilisers", [6th October 2022](#). Fertilizers Europe press release "The EU Fertilizer Strategy: a tool to secure EU industry's green potential and ensure long-term food security in Europe", [6th October 2022](#)

EU risk assessment of sewage sludge contaminants

Commission (JRC) study concludes that pharmaceuticals in sewage sludge are of limited risk but that industrial chemicals in sludge may pose risks to human health and soil organisms when sludge is applied to farmland. In a report to support the currently ongoing revision of the EU Sewage Sludge Directive, JRC note that 6 to 9 million tonnes (DM) of sewage sludge are generated annually in the EU of which one third to a half is currently used in agriculture, effectively replacing maybe 5% of EU mineral P fertiliser use, maybe 2% for N-fertiliser. Priority organic contaminants in sewage are identified as dioxins, PAH, PFAS and chlorinated paraffins (a halogenated flame retardant), and to a lesser extent also alkylphenols, phthalates and polychlorinated naphthalenes. These contaminants are identified as potentially accumulative in soil and in food webs and as toxic even at very low levels. JRC concludes that for this small set of contaminants, there is potential significant risk to humans and to soil micro-organisms. Pharmaceuticals and personal care products are considered "of limited concern even at high application loads of sewage sludge". Because of data gaps identified, there may be potential risks for other substances. Microplastics are also noted as an increasing source of concern because they can negatively impact soil properties and have negative impacts on soil organisms. The report notes that incineration of sewage sludge would eliminate these organic contaminants and estimates that anaerobic digestion and incineration of all EU sewage sludge would generate an additional net 4.4 TWh_e of energy, most of this (3.4 TWh_e) is from AD, so incineration would generate supplementary energy equivalent to 0.04% of EU electricity generation. The report recognises that sewage sludge application contributes to soil organic carbon but notes that this is orders of magnitude lower than for application of manure or bio-waste. Overall the report concludes that sewage sludge management should consider risks versus resource efficiency and that consequently a mixture of options adapted to local situations is necessary.

"Screening risk assessment of organic pollutants and environmental impacts from sewage sludge management", Study to support policy development on the Sewage Sludge Directive (86/278/EEC) European Commission JRC Science for Policy Report, D. Huygens et al., 2022, JRC129690, EUR 31238 EN, ISSN 1831-9424 <https://dx.doi.org/10.2760/541579>

ESPP asks EU to define when mineral chemicals cease to be “processed manure”

In ongoing correspondence with the European Commission, ESPP has again requested that mineral products, containing near-zero organic carbon, should be confirmed to be not subject to “processed manure” application limits under the Nitrates Directive. ESPP is not suggesting exemption from Nitrates Directive requirements for “RENURE” (“SAFEMANURE”) materials proposed by JRC because this would allow certain untreated manures, most liquid fractions of manure, various other scarcely-processed manures or raw manure spiked with 10% urea (see ESPP [eNews n°47](#)).

ESPP suggests that products respecting the definition of “Mineral Fertilisers” in the EU Fertilising Products Regulation, i.e. < 1% organic carbon, should not be considered as “processed manure” because their agronomic behaviour will be the same as primary mineral fertilisers

ESPP further requests a clear definition of when recovered nutrient materials are no longer considered to be “processed manure” under the Nitrates Directive, for example:

- Ammonia salts recovered from manure offgases (given that offgases are not covered by the Animal By-Products Regulation)
- Biomass resulting from use of manure as substrate: algae grown in manure, willow trees fed with manure, etc. of nutrients recovered from processing of such biomass

Copies of ESPP correspondence with DG Environment (ESPP letter of 20th October 2022) www.phosphorusplatform.eu/regulatory

Research

“Planetary Boundaries” for nitrogen inputs for Europe

Environmental limit thresholds are modelled for EU countries for nitrogen, considering impacts of N deposits to natural areas (biodiversity damage) and losses to surface waters and groundwater (drinking water). The INTEGRATOR nitrogen input-loss model (based on MITERRA-Europe) is applied to 40 000 geographical areas in Europe, each being a cluster of 1 k squares grouped for identical soil type, slope, altitude, etc. INTEGRATOR uses empirical linear models to estimate N emissions, runoff and leaching (ammonia, N₂O, NO_x, N₂) from data on agricultural uses and inputs and on housing. The study concludes that total EU N inputs must be reduced by 31% to respect thresholds for N deposition (biodiversity), 43% to protect surface waters (2.5 mgN/l) but not significantly for drinking water (50 mgNO₃/l). For drinking water, despite this result for the EU total, N input is necessary for nearly 20% of agricultural land. For all thresholds, results varied widely between different EU member states and regions, with the highest reductions being needed in livestock intensive regions. These calculated thresholds are significantly lower than that proposed by EEA and FOEN 2020 ([ESPP eNews n°45](#)) by attributing the planetary boundary exceedance to the EU based on consumption, concluding an EU exceedance of 3.3 (so requiring a reduction of N inputs of 71%).

“Spatially explicit boundaries for agricultural nitrogen inputs in the European Union to meet air and water quality targets”, De Vries et al., *Science of the Total Environment* 786 (2021) 147283, [DOI](#).

Agricultural phosphorus deficits in Romania

40 – 50 year field trials at five sites in Romania, with different soils, show that P-fertilisation is needed to increase crop yields, with 80 kgP/ha being the needed maintenance dose and higher doses optimal on certain sites. Around 2/3 of Romania’s agricultural soil has low, very low or extremely low phosphorus, and the trend is worsening: over the period 2012-2019, average P application was only 13 kgP/ha, resulting in an average P-deficit of 26 kgP/ha. Field trial data are from 1967-1975 to 2019 at Valu lui Traian (calcaric Chernozem soil), Turda (typical Chernozem), Lovrin (typical Chernozem), Teleorman (Cambic Phaeozem and Secuieni (typical Chernozem). Initial soil available P at the five sites (Egner-Riehm-Domingo method), varied from 8 – 60 kgP_{AL}/ha and increased significantly at all sites with P application rates of 40 – 160 kgP/ha. Application of at least 80 and up to 160 kgP/ha were needed to reach 120 kg soil P_{AL}/ha (120 – 180 is cited as being the agronomic target in Belgium, for example). Wheat production increased 5 – 10 kg/ha per kg P applied. Even with the highest levels of fertiliser application, there was no soil accumulation of cadmium nor other heavy metals.

“Evolution of soil phosphorus content in long-term experiments”, N. Marin et al., *Series A. Agronomy*, Vol. LXV, No. 1, 2022 ISSN 2285-5785. [LINK](#)

High diet phosphorus and calcium increases blood pressure in rats

Long-term study in mice shows that high P and Ca in diet increased blood pressure, apparently changes to RAAS hormone balance (renin-angiotensin-aldosterone system). Male rats (statistics based on groups of at least ten rats) were fed normal diet (1% Ca, 0.7% P) or high Ca-P diet (2%Ca, 1.25% P) for fourteen months. Parathyroid hormone PTH was not modified, presumably because Ca:P ratio was not changed, however FGF23 hormone increased and RAAS hormone system balance was modified. Several indicators of blood pressure and arterial stiffness increased significantly (c. + 20%). This study is contrary to several reports that increased diet P in humans is not related to increased blood pressure.

“Long-Term Excessive Dietary Phosphate Intake Increases Arterial Blood Pressure, Activates the Renin-Angiotensin-Aldosterone System, and Stimulates Sympathetic Tone in Mice”, N. Latic et al., *Biomedicine* 2022, 10, 2510 – [DOI](#).

Sewage sludge quality certification questionnaire

EFAR has launched a [questionnaire](#) asking whether an EU Quality Assurance Scheme for Biosolids would improve stakeholder confidence, and what aspects are important in sludge agricultural use safety and certification. EFAR ([European Federation for Agricultural Recycling](#)) represents companies specialised in land spreading of biosolids. The questionnaire asks about consumer confidence, legal conditions, monitoring, traceability, contaminants, data transparency.

Questionnaire open to 15th November 2022

<https://docs.google.com/forms/d/e/1FAIpQLScaxBrrH5XjN4LI0WngxYyM2--04A-XP86PGuJkBB39-nUcYw/viewform>

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