

<b>ESPP dates for 2024</b>	<b>1</b>
<b>Workshops and meetings</b>	<b>1</b>
SOFIE3 – <b>registration now open!</b>	1
Standards & definitions for “Bio-Based” nutrients – <b>registration now open!</b>	2
<b>Call for contributions to ESPP eNews</b>	<b>2</b>
<b>Research funding calls</b>	<b>2</b>
Open Horizon Europe calls related to nutrients	2
<b>Policy</b>	<b>3</b>
Council and Parliament positions on Urban Waste Water Treatment Directive (UWWTD)	3
European Commission 2024 Work Programme	3
ESPP input on proposed Soil Health Directive	4
ESPP FPR summary table	4
EU Detergents Regulation revision	4
OCP West Africa partnership with World Bank and ECOWAS	4
Wageningen UR launches magnetite P-removal & recovery project	4
<b>ESPP new member</b>	<b>5</b>
K+S	5
<b>Nutrient recycling</b>	<b>5</b>
Remondis TetraPhos P-recovery operational in Hamburg	5
More publications but fewer patents on sustainable & recycled fertilisers	6
UK water industry Resource Recovery Working Group	6
Electroanalytical determination of paracetamol in organic fertilisers	6
<b>Stay informed</b>	<b>6</b>
<b>ESPP members</b>	<b>7</b>

## ESPP dates for 2024

- **14 Dec. 2023:** 14h30-16h30 CET ESPP General Assembly (online) – ESPP members/partners have received link – if not contact [info@phosphorusplatform.eu](mailto:info@phosphorusplatform.eu) – and EasyMining [webinar](#) 13h-14h30 CET on recycled phosphates for animal feed
- **16-17 Jan. 2024:** Brussels & online [SOFIE3](#) (Organic and Organo-Mineral Fertilisers) (with Eurofema, Fertilizers Europe, International Fertiliser Society and SILC)
- **18 Jan. 2024:** Brussels & online [“Bio-Based” nutrients](#) - standards & definitions
- **26-28 Feb. 2024:** Warsaw [CRU Phosphates 2024](#) ESPP panel on sustainable fertilisers
- **12-13 March 2024:** Brussels & online [Nutrient recycling policy](#)
  - targets for nutrient recovery under the Urban Waste Water Treatment Directive revision
  - policy tools to support market pull for recycled nutrients
- **16-17 April 2024:** Brussels & online [NERM](#) Nutrients in Europe Research Meeting (with Fertimanure, Lex4Bio, Walnut, Sea2Land, Rustica) – **call for abstracts extended to 10<sup>th</sup> December 2023**
- **8-10 October 2024:** Lleida, Spain [ESPC5](#) (5<sup>th</sup> European Sustainable Phosphorus Conference)

## Workshops and meetings

### SOFIE3 – **registration now open!**

3<sup>rd</sup> Summit of Organic and organo-mineral Fertiliser Industries in Europe.  
**16-17 January 2024, Brussels Plaza & hybrid**

SOFIE is the only industry meeting place for organic-carbon-based fertiliser producers, distributors, advisory, technology suppliers. The [first SOFIE](#) (2019) attracted 125 participants, with 230 for [SOFIE2](#) (January 2023).

Programme now online. Organic fertiliser company showcase pitches welcome.

Programme and conference website [www.phosphorusplatform.eu/SOFIE](http://www.phosphorusplatform.eu/SOFIE)

**Registration now open** SOFIE3 Conference + Defining “Bio-Based Fertilisers” Meeting on [Eventbrite](#)



## Standards & definitions for “Bio-Based” nutrients – registration now open!

**Brussels & hybrid, 18<sup>th</sup> January 2024** Defining “Bio-Based Fertilisers” and FPR “solely biological origin”

The term “Bio-Based Fertilisers” is today being widely used. For market transparency and policy making. It is important to have a clear and agreed definition of what is a “Bio-Based Fertiliser” and how to define the “Bio-Based” nutrient content of fertilising products. Also, the EU Fertilising Products Regulation 2019/2009 uses the term “*of solely biological origin*” for nutrients in criteria of several PFCs and there is today no clarity on how this should be interpreted.

CEN and ISO methodologies for “Bio-based products: vocabulary” and for defining bio-based content are based on carbon radiodating, and are not applicable to nutrients.

This meeting will discuss

- relevance of bio-based definitions for markets and policy making
- existing official bio-based vocabulary (CEN, ISO, plastics sector, industry labels)
- what comparable methodologies could be applied to recycled nutrients in fertilisers and in other applications?
- possible coherence with FPR terminology “of solely biological origin”
- wording of a joint industry / R&D position on proposed definitions ( this will take as a starting point the ESPP proposed working document [HERE](#))
- proposed next steps, possible input to policy makers, to CEN ...

Programme: <http://phosphorusplatform.eu/BBF2024>

**Registration now open** SOFIE3 Conference + Defining “Bio-Based Fertilisers” Meeting on [Eventbrite](#)



Defining “Bio-Based Fertilisers” and  
FPR “solely biological origin”

18<sup>th</sup> January 2024  
Brussels & Online

## Call for contributions to ESPP eNews

**ESPP members and our other readers (you are more than 105 000!) are invited to get involved in ESPP eNews by submitting relevant news, articles, or information about your actions.** Contributions are invited from researchers, companies, and stakeholders, and can include recent updates, accomplishments within your organisation, insights, industry expertise, press releases or research articles and perspectives, presenting your own organisation’s actions, or other news which you think is of interest. You can send us a proposed short text ready for publication, or simply forward to us a link or document which you suggest we should cover. ESPP eNews are circulated to over 120 000 recipient including companies, stakeholders, regulators and media interested in nutrient management, worldwide, and are also published on the ESPP website [www.phosphorusplatform.eu](http://www.phosphorusplatform.eu). Your participation will enrich our newsletter and provide a platform for you to showcase your expertise and achievements.

To share your news, research articles, or press releases to be included in the next eNews issues, email them to [info@phosphorusplatform.eu](mailto:info@phosphorusplatform.eu)

## Research funding calls

### Open Horizon Europe calls related to nutrients

**Three Horizon Europe calls relative to “Clean environment and zero pollution” opened in October 2023 with deadline February 2024 (total budget 38 M€) and concern nutrient management and recycling and food systems.** Projects funded under “Clean environment and zero pollution” aim at halting and preventing pollution by focusing on removing pollution from waters, soils, air, including nitrogen and phosphorus emissions, substituting harmful chemicals, improving the environmental sustainability and circularity of bio-based systems, and reducing environmental impacts of and pollution in food systems.

[Demonstrating how regions can operate within safe ecological and regional nitrogen and phosphorus boundaries](#) (Innovation action, 27 M€, 3 projects expected to be funded) aims at showing how N/P-relevant sectors (including agriculture, food/drink sector, water/waste management, bioenergy ...) in a given region can limit N/P emissions to air, water and soil from their activities by respecting pre-established regional N/P budgets and applying N/P balancing practices. These comprise activities that enhance the sustainability and circularity of N/P relevant resources and services between urban/industrial and rural/coastal environments and apply respective governance measures. Funded projects are expected to test innovative practices and technologies to make use of secondary raw materials and produce N and P-based fertilisers recovered from organic waste, wastewater, biological residues or by-products and promote local and regional value chains (achieving a TRL 8 by the end of the project) and to develop comprehensive guidelines to disseminate best practices and techniques to all involved actors.

[Best available techniques to recover or recycle fertilising products from secondary raw materials](#) (Coordination and Support Actions, 4 M€, 2 projects to be funded) covers technical, environmental and economic analysis of best available technologies for recovering/recycling fertilising products from secondary raw materials in Europe while limiting N and P pollution in soil, water and air and any other form of pollution from the use of such fertilising products and from the replacement of N- and P-based fertilisers produced from conventional processes. Examples of fertilising products are: recycled nutrients from urban and industrial waste water and sewage sludge, organic fertilising products from bio-waste, digestate and treated manure as well as other fertilising products from biological resources.

[Environmental impacts of food systems](#) (Research and Innovation Actions, 7M€) aims to fill the relevant knowledge and data gaps regarding the environmental impacts of food processing, manufacturing, packaging, distribution, trade, consumption, food waste and end of life practices. Proposals are expected to identify and map opportunities and innovative solutions, including existing good practices that address the identified impacts and promote the uptake of sustainable food production and/or food supply practices, including consumption practices, with minimum impact.

The deadline for submitting proposals is 22<sup>nd</sup> February 2024, 17:00 Brussels time.

Horizon Europe Working Programme 2023-2024 [pdf](#) (details of described calls at p. 364 and successive)

ESPP is interested to support networking, dissemination, and communication activities. Please contact Veronica Santoro for more information and possibilities ([veronica.santoro@phosphorusplatform.eu](mailto:veronica.santoro@phosphorusplatform.eu)). ESPP research activities and ESPP nutrient related R&D project list [www.phosphorusplatform.eu/R&D](http://www.phosphorusplatform.eu/R&D)

## Policy

### Council and Parliament positions on Urban Waste Water Treatment Directive (UWWTD)

**European Parliament and Council (Member States) positions on UWWTD revision both maintain defining minimum reuse & recycling rates for phosphorus (art. 20), but Council proposes to delete reuse & recycling of nitrogen.** Both support amendments to widen reuse & recycling to include from wastewater and not only from sludge (amendment proposed by ESPP). Positions differ on the timeline for defining reuse & recycling targets, with Parliament wishing to accelerate this. Parliament proposes to support development of a functional market for recovered nutrients but this is not proposed by Council. Both propose to include N<sub>2</sub>O in greenhouse emissions reductions, which is important as this is one of the most important climate impacts from wastewater treatment. Positions differ on extent of tightening of P and N emissions limits and removal obligations from sewage, and on proposed implementation deadlines for these, with Parliament's position in many cases even more demanding than the initial Commission proposed revision text, and Council less demanding. Discussions to finalise the UWWTD revision now go to "trilogue" (negotiation between the European Parliament and Council representatives, with participation of the European Commission) with the aim to agree a compromise text to be adopted by both Parliament and Council before next year's European Parliament elections (6-9 June 2024, followed by the designation of a new European Commission). ESPP has written to Member States and European Parliament rapporteurs suggesting that nitrogen reuse & recycling should not be abandoned in the current nitrogen fertiliser supply and price crisis context (related to gas supplies and the Russian war of aggression against Ukraine). ESPP proposes as a compromise to specify assessment by the Commission of feasibility and cost/benefits for nitrogen recovery.

European Commission initial proposed text for the UWWTD revision: [https://environment.ec.europa.eu/publications/proposal-revised-urban-wastewater-treatment-directive\\_en](https://environment.ec.europa.eu/publications/proposal-revised-urban-wastewater-treatment-directive_en)

Parliament voted position: [https://www.europarl.europa.eu/doceo/document/TA-9-2023-0355\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/TA-9-2023-0355_EN.pdf)

Council position: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST\\_14271\\_2023\\_INIT](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST_14271_2023_INIT)

ESPP letter to Parliament and Council for trilogue: [www.phosphorusplatform.eu/regulatory](http://www.phosphorusplatform.eu/regulatory)

### European Commission 2024 Work Programme

**2024 Work Programme shows limited Green Deal ambition. Emphasis is on resilience, economic security, digital, and reduced regulatory burdens.** The Integrated Nutrient Management Action Plan, announced for 2023, is not mentioned (it was already not mentioned in previous Work Programmes, presumably because it was announced as a non-regulatory initiative). Pending initiatives listed include the Urban Waste Water Treatment Directive revision, the proposed Soil Health Act, Critical Raw Materials Act, Waste Framework Directive revision, Ecodesign Regulation recast, Nature Restoration Regulation. Three new initiatives are planned for 2024 under the Green Deal: wind power, 2040 climate targets, water resilience. An evaluation in 2024 of the Nitrates Directive will assess whether it is fit for purpose, including whether it sufficiently promotes the recycling of nutrients from various sources, including processed manure. A fitness check of "Polluter Pays" implementation is also announced. The revision of the EU chemicals regulation REACH, included in the 2023 Work Programme, has disappeared. A "strategic dialogue on the future of agriculture in the EU" is announced, targeting a "transition to sustainable food systems". Food security and resilience of food systems are emphasised but nutrients are not mentioned.

European Commission Work Programme 2024 (17<sup>th</sup> October 2023).

## ESPP input on proposed Soil Health Directive

**Draft EU legislative text now with European Parliament and Council fixes “objectives” of healthy soils across the EU by 2050, including phosphorus and nitrogen criteria.** Further details are in [ESPP eNews n°77](#). ESPP’s input to the public consultation welcomes the proposed maximum phosphorus level for all European soils (maximum between 30 and 50 mgP<sub>Olsen</sub>/kg<sub>soil</sub>) to be defined locally and maximum nitrogen levels (if critical ecosystem services are compromised). This reflects the EU Farm-to-Fork and Biodiversity Strategy target to “reduce nutrient losses by at least -50% without deteriorating soil fertility”. ESPP welcomes the recognition of appropriate fertilisation, nutrient recycling and organic fertilisers in Sustainable Soil Management Principles (in Annex III(e)). ESPP suggests that healthy soil criteria should also include, for crop and grazing land, MINIMUM plant-available phosphorus levels, defined by region / soil / crop types and taking into account biodiversity and water quality objectives. Without adequate phosphorus supply, plant health and crop productivity are compromised.

*Proposed EU Directive on Soil Monitoring and Resilience (Soil Monitoring Law), European Commission proposed legislative text 5<sup>th</sup> July 2023, COM(2023) 416 final [Eur-LEX](#).*

## ESPP FPR summary table

**ESPP has produced a table summarising EU Fertilising Products Regulation amendments, regulatory documents, links and other relevant EU documents available.** The document can be consulted [here](#) and comments are welcome ([info@phosphorusplatform.eu](mailto:info@phosphorusplatform.eu)).

*Input welcome: “ESPP FPR summary table”, v15/11/2023 [here](#)*

## EU Detergents Regulation revision

**European Commission proposal maintains status quo of phosphates limits in consumer laundry and dishwasher detergents, but not in industrial detergents.** The proposal’s main objectives are to update and simplify the 2019 Regulation and to address innovations: microbes included in detergents, consumer refill packs. The current Regulation limits phosphorus in detergents for consumer laundry (0.5gP/wash) and consumer automatic dishwasher (0.3 gP/wash). This effectively prevents the use of “phosphates” as detergent builders (sodium tripolyphosphate STPP or similar) but allows small quantities of components such as phosphonates. The draft European Parliament position, proposed by the Rapporteur Manuela Ripa proposes to reduce these limits and complexify them (distinguish “phosphate” content from “phosphorus”, fix limits per kg of laundry) and to also limit phosphorus in hand dishwash liquids, surface cleaners and in industrial laundry and industrial dishwasher detergents. The European Commission proposal states that phosphorus in industrial detergents is considered to be not environmentally significant and the suitable alternatives are not available. It is ESPP’s understanding that phosphates are generally not used in hand dishwash and surface cleaners (and not in shampoos), so that phosphorus limits in such products are not appropriate.

*“COM(2023)217 - Proposal for a regulation of the European Parliament and of the Council on detergents and surfactants, amending Regulation (EU) 2019/1020 and repealing Regulation (EC) No 648/2004” [28<sup>th</sup> April 2023](#).*

*European Parliament draft report, Manuela Ripa, 2023/0124(COD), [2<sup>nd</sup> October 2023](#).*

## OCP West Africa partnership with World Bank and ECOWAS

**Partnership aims to improve customised fertiliser access and sustainable fertiliser use for farmers in Benin, Guinea, Mali and Togo, covering 10 million hectares.** OCP, a member of ESPP, operates phosphate rock mines in Morocco and is a world leader in phosphate fertiliser and plant nutrition solutions. The partnership signed with the World Bank will reinforce the ECOWAS fertiliser and soil health Roadmap (Economic Community of West African States), develop digital soil analysis and mapping enabling adapted customised fertilisation, establish agricultural technology, service and training centres, and support the launch of a West Africa Regional Center for Soil Health and Fertility by IITA (International Institute for Tropical Agriculture). OCP says the partnership will enable West Africa to “contribute to global food security with a just and sustainable agricultural transition, contributing to African development and prosperity”

*“OCP Group and World Bank Join Forces to Boost Food Security and Agricultural Development in West Africa”, World Bank, [11<sup>th</sup> October 2023](#)*

*“Phosphate marocain : clé de la sécurité alimentaire Mondiale”, EcoNostrum, [26<sup>th</sup> October 2023](#).*

## Wageningen UR launches magnetite P-removal & recovery project

**MAD project (Magnetic Adsorption – Desorption) will test selective removal of soluble phosphate from wastewater by adsorption to magnetite, magnetic separation, then desorption to release a phosphate solution for recovery.** Because it can readily be separated by electromagnetic field, magnetite (Fe<sub>3</sub>O<sub>4</sub>) is today used to improve flocculation, improving particulate settling and tertiary P-removal from wastewater in the CoMag process, with a number of units operating commercially worldwide (see [SCOPE Newsletter n°141](#)), and has been tested in various other processes (e.g. Marmara University, LKAB, Xiao et al., see [SCOPE Newsletter n°138](#)). Challenges for the Wageningen project will be to achieve selective adsorption of phosphate, without other ions, and without coagulation of organic particulates, and reversing the adsorption to generate a sufficiently concentrated

and clean orthophosphate solution. Wageningen's partners in the MAD project include Agristo (potato products), Royal Swinkels brewery, Bakker Magnetics, Sidra Wasserchemie, BiotaNutri and Suez.

*Recovery and Valorisation of Phosphorus compounds from Waste Water Streams using Magnetic Adsorption-Desorption (MAD), [website](#)*

## ESPP new member



### K+S

**International raw materials company, K+S has over 11 000 staff worldwide, specialised in potassium salts and other minerals for use in fertilisers, animal feed, food, pharmaceutical, water treatment, de-icing and industrial applications.** The roots of the K+S Group date back to the middle of the 19th century, mining the world's first potash deposits in Germany for fertiliser production. Today, K+S operates potassium and sodium mineral mines in Europe and North America and produces balanced mineral products according to customer needs. K+S is strongly focused on agriculture and fertilisers, and makes an important contribution to society by enabling farmers to secure the world's food supply. As a raw materials company with limited resources, K+S strives to make efficient use of its own natural raw materials to counteract global scarcity, whilst ensuring responsibility towards society and the environment in operating regions. The claim is to enrich life for generations and to be a pioneer for environmentally friendly and sustainable mining. Because the extraction of valuable materials from waste streams will play an ever more important role in creating a more sustainable future, K+S has set the mission of developing new, circular business areas as part of its strategy. For this purpose, K+S wants to actively participate in ESPP and establish partnerships to advance the circular economy. In the past, K+S successfully marketed "Thomaskali", a secondary phosphorus product from steel industry slag. K+S will contribute to the ESPP network its many years of expertise in fertiliser production through to the targeted application of products

[www.kpluss.com](http://www.kpluss.com) & [Image Films](#)

## Nutrient recycling

### Remondis TetraPhos P-recovery operational in Hamburg

**Full-scale phosphorus recovery from sewage sludge incineration ash today operating 1/3 capacity, treating c. 7 000 t/y of ash. The technical grade phosphoric acid produced has iron/aluminium content which limits sale to certain applications.** ESPP joined a visit of the Remondis TetraPhos P-recovery installation, Hamburg, with some 25 participants, organised by DPP (German Phosphorus Platform), 25<sup>th</sup> October 2023. TetraPhos is now operational, processing sewage sludge ash from Hamburg Wasser where the whole sewage sludge of the city of Hamburg (75%) and sewage sludge from surrounding municipalities (25%) is combusted. 1.5 million m<sup>3</sup> wet sludge, = 125 000 t/y dewatered sludge, produce about 20,000 t/y of ash. Hamburg



Wasser operates a dryer upstream of the incinerator that dries all locally produced sludge to 85% dry matter. After mixing this sludge with dewatered (25% DM) sludge from external customers, the sludge has about 45% DM and is conveyed to the incinerator where it is combusted without additional fuels. Heat for drying is supplied from the same sludge processed in anaerobic digesters. The P-recovery plant capacity is 7 000 t technical (75%) phosphoric acid from 20,000 t ash. The acid is not fully compliant with technical grade acid specifications because of high iron and aluminium concentrations. The concept is to sell it to customers who do not have an issue with Fe / Al content, for a slightly lower price than technical grade acid. Currently the plant is operating only one shift processing around 1/3 of the full capacity. The operating company Phosphorrecycling Hamburg <http://www.phosphorrecycling-hh.de/unternehmen/unternehmen.html> is a private public partnership between Hamburg Wasser and Remondis. The process (see summary in [ESPP Technology Catalogue](#)) is based on acid leaching with internally recycled phosphoric acid. Leaching is relatively mild, so most heavy metals remain in the filter cake (solid / liquid separation by a vacuum belt filter). The filter cake is landfilled (same category as ash). The liquid is reacted with sulphuric acid, gypsum precipitated and separated by another vacuum belt filter. Then the liquid is purified by ion exchange columns. On the photo, the phosphate recycling building is on the right side in the back, with the acid tanks in front.

## More publications but fewer patents on sustainable & recycled fertilisers

**Bibliometric analysis of nearly 250 000 published papers and patents shows an increasing number of both from 2001 to 2017, but after that date a doubling of publications but a halving of patents.** Searches combined the terms sustainable, recycled or recovered with either fertiliser or nutrient (or similar words) from 2001 to 2021. The number of publications on nutrient recovery from wastewater increased from 2001 to 2012 but has not increased since then. Publications on green ammonia synthesis have increased rapidly since around 2017. In total, 120 000 patents were identified and 125 000 journal publications. Nearly all the patents were from China, as well as around half of the journal articles, with India and the USA also generating high numbers of publications. Most patents addressed agricultural wastes or wastewater & sludge. Publications on green ammonia synthesis have increased. This analysis fails to consider that these trends should be considered in the context of the overall inflation in scientific publications (doubling in 17 years [Bornmann et al. 2021](#)) and the similar global increase in patent applications ([see here](#)).

*"Sustainable Fertilizers: Publication Landscape on Wastes as Nutrient Sources, Wastewater Treatment Processes for Nutrient Recovery, Biorefineries, and Green Ammonia Synthesis", L. Babcock-Jackson et al., J. Agric. Food Chem. 2023, 71, 8265–8296, [DOI](#).*

## UK water industry Resource Recovery Working Group

**Second online meeting analysed potential resource recovery streams and discussed three wastewater resource recovery case studies (Ostara struvite, AquaMinerals biopolymers, Cranfield University N-recovery as ammonia gas).** Participants included five UK water companies, regulators, technology suppliers and experts. Analysis of over forty resource recovery technologies for UKWIR (UK Water Industry joint Research) and for Thames Water suggests that only biogas/biomethane and biosolids (sewage sludge to land) are widely viable at present, while heat recovery, ferric sludge, CO<sub>2</sub>, cellulose, hydrogen and nitrogen recovery are potentially promising in the medium term, based on economic and sustainability criteria. Key challenges are identified for all wastewater treatment resource recovery routes as the regulatory validation of the recovered product and responding to downstream user requirements (quality, supply logistics and scale ...). The UK water industry Resource Recovery Working Group is open to participation of all concerned companies and competent persons.

Contact: Robert Naylor [Robert.Naylor@thameswater.co.uk](mailto:Robert.Naylor@thameswater.co.uk)

## Electroanalytical determination of paracetamol in organic fertilisers

**Study presents an electroanalytical procedure employing a portable, sensitive, relatively low-cost system for the determination of paracetamol in human urine and in recovered struvite.**

Paracetamol, one of the most consumed drugs in the world, was determined in samples of urine, struvite, and pharmaceutical tablet with screen-printed carbon electrodes in conjunction with optimized square-wave voltammetry. Urine samples consisted in human urine from a single donor (an adult male who had not used any medication in the previous 3 months), human urine used in the production of struvite from multiple donors, and synthetic urine. The proposed procedure, utilising 0.1 mol/l HCl as a supporting electrolyte and an Ag/AgCl electrode as reference, presented a limit of detection of 0.06 µmol paracetamol/l and a linear concentration range between 0.19 to 100.0 µmol/l. The method demonstrated a good sensitivity without using any preconcentration technique or modification of the electrode surface, and a good selectivity for determining paracetamol compared to the other substances studied as possible interferences, including ascorbic acid, uric acid, cephalexin, dopamine, diclofenac, ethinylestradiol, norfloxacin, prednisone, potassium, calcium, ammonia, and urea (in the proportion of 1:100 paracetamol:interferent). Good reproducibility was obtained for analyses performed on the same electrode, between electrodes and days, and recovery tests underlined no significant matrix interference. Among the method limitations is the possibility of some compounds to interfere with the detected analyte, which may require the sensor modification with specific materials (inorganic, organic, or biological).

*"A portable electroanalytical procedure to determine paracetamol in organic fertilizers" L. R. G. Silva, Ionics (2022) [DOI](#)*

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