

Upcoming ESPP events	1
Calls for information and input	1
Data on recycled nutrient products from manures for JRC study	1
Global call for a science initiative on phosphorus	2
Meetings	2
EFPPA Congress: phosphorus in animal by-products.....	2
IWAMA Nutrient Reduction and Recovery workshop.....	2
Policy & regulation	2
Sweden enquiry into sewage sludge use and P-recovery	2
Member States warned of legal action over Water Framework Directive	3
HELCOM Ministerial Declaration commits to nutrient recycling strategy	3
Germany condemned by European Court for nitrates pollution	3
Netherlands Nitrate Directive exemption renewed.....	3
EU Waste legislation updated.....	4
Circular Economy in EU Cohesion Funding.....	4
Netherlands refuses subsidy to biogas nitrogen recycling project	4
Research and projects	4
Open and upcoming EU research funding calls related to nutrients	4
Improving sewage biosolids quality	5
SYSTEMIC recycled nutrient product Fact Sheets open for comment	5
Pondus plans nutrient recovery pilot plant.....	5
Ellen MacArthur Foundation Circular Economy for Food in Cities	6
Nano calcium phosphates inhibit cancer cell proliferation.	6
Stay informed	6
GPDR & privacy policy	6
ESPP Members	6

Upcoming ESPP events



Stakeholders meeting on EU Fertilisers Regulation and STRUBIAS

(phosphate salts, biochars, ash-based products), including webinar with JRC on STRUBIAS final draft report (TBC)

Wednesday 5th September 2018, 9h00 - 17h15, Brussels (webinar 14h - 15h30)
Registration: www.eventbrite.ca/e/eu-fertilisers-regulation-and-strubias-tickets-47156434164



3rd European Nutrient Event at ECOMONDO 2018 green technology expo 8 - 9 November 2018, Rimini, Italy - [Website](#)

Phosphorus and nutrient recycling and management in Italy, the Mediterranean region and in EU research, development and innovation.

See more events at www.phosphorusplatform.eu/upcoming-events

Calls for information and input

Data on recycled nutrient products from manures for JRC study

Please be reminded of the [call for data](#) on processed manures to input to the EU Commission / JRC study for the Nitrates Directive. Please send – as soon as possible - any data relevant to nutrient leaching, agronomic performance, LCA or quality/safety of recycled nutrient products. Also, we remind of the [JRC call](#) for manure runoff field test site candidates.

Submission of existing data or publications on nutrients or contaminants in runoff or groundwater following application of manure, processed manure or biosolids – as soon as possible, and by end August latest – to SYSTEMIC systemic@wur.nl and ESPP

info@phosphorusplatform.eu If product or trial information is confidential, please contact these emails so that we can arrange direct transfer under confidentiality agreement to JRC. See www.phosphorusplatform.eu/scope-in-print/news/1700-call-for-data-jrc-nitrates-directive-study

Deadline to propose field sampling sites to JCR = 31st August 2018 to Bernd.GAWLIK@ec.europa.eu “Call for participation in an EU-wide monitoring campaign of manure” <https://ec.europa.eu/jrc/en/science-update/call-participation-eu-wide-monitoring-campaign-manure>
See www.phosphorusplatform.eu/scope-in-print/news/1701-jrc-call-for-manure-runoff-field-test

Global call for a science initiative on phosphorus

Launched by the “Our Phosphorus Future” project with support from United Nations Environment. Read the text of this global call and sign up at www.opfglobal.com

Meetings

EFPPRA Congress: phosphorus in animal by-products



About 400 animal by-products processing professionals met at the [annual EFPPRA Congress](#) (European Fat Processors and Renderers Association), Barcelona, 20-23 June. Sebastian Csaki, International Feed Industry Federation presented GFLI, indicated that around one billion tonnes of animal feeds are produced annually, with considerable international trade dependency: e.g. the EU only produces around 42% of its animal feed protein needs, the rest is imported (in particular soya). The [Global Feed LCA Initiative](#) “Global metrics for sustainable feed” aims to develop recognised LCA data to respond to global purchasers’ and regulators’ demands for information. The system is backed by [FAO Livestock Environmental Assessment and Performance Partnership \(LEAP\)](#) and is EU [PEF](#) (Product Environmental Footprint) compliant. ESPP [summarised](#) objectives for sustainable phosphorus management, and outlined implications of the new EU Fertilisers Regulation for the rendering industry. Questions and discussion showed the interest of renderers to accelerate the inclusion of ABP products into the Fertilisers Regulation (CMC11, STRUBIAS), in particular to confirm that Cat1 derived ash (after ABP End Point incineration) can be used as fertilisers, to ensure the inclusion of Cat2 and Cat3 derived fertilisers products in the Regulation (see e.g. SARIA France below). Other challenges include enabling more flexible use of bovine-derived protein products in animal feeds, where safety has been demonstrated. Marius van Krimpen, Wageningen University & Research presented EFPPRA supported studies showing that pig PAP (processed animal protein, see SCOPE Newsletter [n°122](#)) can replace 20% (finishing) - 40% (starter) of soya in broiler chicken diet with positive impacts on growth and no negative impacts on bird health.

EFPPRA congress website www.efpra.eu/congress-2018

ESPP presentation at EFPPRA congress www.slideshare.net/NutrientPlatform/circular-economy-opportunities-and-challenges-for-abps-in-fertilisers-efpra-congress-2018-european-fat-processors-and-renderers-association-56-september-2018

IWAMA Nutrient Reduction and Recovery workshop



Interactive Water Management

The [IWAMA](#) Interreg project (2016-2019) aims at improving the resource efficiency and sludge handling in wastewater management of the Baltic Sea Region, with consortium members in Germany, Poland, Lithuania, Latvia, Estonia, Finland, Sweden. The project seminar in Kalmar, Sweden, 14th June 2018, looked at different technologies for nutrient recovery and recycling including overviews by Matthias Barjenbruch, Technical University of Berlin, Germany, and by [Ludwig Hermann](#), Proman, ESPP President. Technology presentations included PCS Airprex (struvite recovery), PONDUS (N-recovery from sludge by thermos-chemical sludge hydrolysis, improved biogas production and vacuum degassing), PAKU (thermal treatment of sludge and use of ash at the NEVE fertiliser plant), Ekobalans (struvite and ammonium sulphate recovery). Also the Finland Ekolaari sewage sludge certification and traceability [system](#) was presented, which aims to increase farmer confidence in sewage biosolids used to return organic carbon and nutrients to soil. Other innovative approaches presented included filter-based technologies for nutrient removal and biological solutions such as mussel production.

IWAMA (Interactive Water Management) Interreg project www.iwama.eu

ESPP presentation www.slideshare.net/NutrientPlatform/european-sustainable-phosphorus-platform-history-scope-achievements-iwama-workshop-on-nutrient-reduction-recovery-1315-june-2018

Policy & regulation

Sweden enquiry into sewage sludge use and P-recovery

On 13th July, the Swedish Environment Minister, Karolina Skog, [announced](#) an enquiry into a possible ban on agricultural use of sewage biosolids and into proposals for a legal requirement for phosphorus recovery for recycling from sewage sludge. The Government suggests that today only 30% of Sweden’s sewage sludge is used in agriculture, whereas the majority goes to landfill or landscaping and states “The aim of the inquiry is to ensure that phosphorus is recycled from sewage sludge in a non-toxic and safe manner and can be used to a greater extent in agriculture”. The Minister cites the problems of pharmaceutical residues, metals and microplastics in sewage sludge, and states that the objective is not to prevent the production of biogas (sludge methanisation). The enquiry will be led by Gunner Holmgren, former Governor of Västernorrland County and Director-General of the Defence Materiel Administration, and experienced in leading government enquiries.

“Inquiry to propose ban on spreading sewage sludge on farmland and a phosphorus recycling requirement”, Swedish Government website 13th July 2018 www.government.se/press-releases/2018/07/inquiry-to-propose-ban-on-spreading-sewage-sludge-on-farmland-and-a-phosphorus-recycling-requirement

Member States warned of legal action over Water Framework Directive



The [European Environment Agency](#)'s latest assessment of water quality status across the EU shows that less than 40% of surface waters (rivers, lakes, coastal waters) are achieving good quality status, despite this was the legal objective for 2015 under the Water Framework Directive (2000/60/EC). Very many Member States have applied for exemptions to this obligation, delaying until 2021 or 2028. The biggest pressures on surface waters are hydromorphological modifications (40%), diffuse

pollution particularly from agricultural nutrients and pesticides (38%) and atmospheric deposition of chemicals (e.g. mercury) (38%). This is despite important actions taken to address nutrient pollution over recent decades, including a 50% reduction in agricultural phosphorus surpluses from 2000 to 2013 (7% reduction for nitrogen) and even more important reductions in point source emissions through improved sewage collection and treatment. DG Environment has promised a report in November 2018 making clear recommendations to improve implementation of the Water Framework Directive and assessing whether exemptions are really justified, and has indicated that legal actions against Member States will be engaged over implementation failures. The Commission has also announced a public consultation on the Water Framework Directive in September 2018.

"European waters. Assessment of status and pressures 2018", EEA Report No 7/2018 www.eea.europa.eu/publications/state-of-water/at_download/file

HELCOM Ministerial Declaration commits to nutrient recycling strategy



The Baltic Sea Commission ([HELCOM](#): 8 EU Member States, plus Russia and the EU) annual Ministerial Meeting 2018 has committed to elaborate, by 2020, a "Nutrient Recycling Strategy aiming to reduce nutrient inputs to the Baltic Sea". The [Ministerial Declaration](#) acknowledges progress in reducing Baltic pollution, but reminds that the Baltic is "still heavily affected by eutrophication" and that maximum allowable phosphorus and nitrogen inputs are exceeded in most sub-basins. The Nutrient Recycling Strategy is one of 10 actions agreed, along with eutrophication, hazardous substances, underwater noise, climate change, litter – circular economy, seabed damage, biodiversity, ecosystem approach and governance. The Nutrient Recycling Strategy will focus on measures at source, recycling of nutrients in

manure and sewage sludge, ensuring environmentally safe recycling, develop guidance on risk assessment and on technological processes, identify Baltic regional challenges and identify common visions and objectives for nutrient recycling.

HELCOM 2018 Ministerial Declaration, 6 March 2018

www.helcom.fi/Documents/HELCOM%20at%20work/HELCOM%20Brussels%20Ministerial%20Declaration.pdf

Germany condemned by European Court for nitrates pollution



The European Court of Justice (ECJ) [ruled](#) on 21st June 2018 that Germany is breaking EU law by allowing excessive use of manure as fertiliser, so causing nitrate pollution of groundwater. This follows action against Germany engaged by the European Commission in October 2016. Official data shows that nearly 30% of Germany's groundwater exceeds the 50 mg nitrate/litre limit set by EU legislation. The ECJ has ruled that despite tighter limits for fertiliser and manure application fixed by Germany's fertiliser ordinance in 2017, this is not sufficient. The Court states that the Germany ordinance "allows farmers to over-fertilise ... to exceed the real nitrogen needs of crops, which can result in nitrate inputs to water. This is contradictory to the principle of balanced fertilisation". The ECJ concludes that the German ordinance allows excessive application of manure beyond the Nitrates Directive limit of 170 kgN/ha. Germany had claimed that because the nitrogen in manure was mostly

in organic form it was unlikely to be rapidly leached to groundwater. The ECJ rejects this argument as supported by no scientific evidence. The ECJ further concludes that German Länder rules in many cases do not oblige farmers to have adequate manure storage facilities (to allow spreading of manure on land only when needed and appropriate). It should be noted that Germany updated its fertiliser ordinance in 2017 to address the issues raised above. However, a recent [study](#) by the University of Kiel for BDEW (German federation of water and energy industries) also concludes that the updated 2017 German fertiliser ordinance still allows spreading of manure beyond EU legal limits and environmental limits, with "widespread disregard for all agricultural and environmental science-based recommendations".

European Court of Justice ruling C 543/16 <http://curia.europa.eu/juris/celex.jsf?celex=62016CJ0543> (in German or French). BDEW – Kiel University report www.bdew.de/presse/presseinformationen/duenge-verordnung-weitere-nitratbelastungen-vorprogrammiert

Netherlands Nitrate Directive exemption renewed



The European Commission has [agreed](#) to extend the Netherlands exemption to Nitrates Directive manure spreading limits, allowing Dutch farms to continue to apply up to 250kgN/ha on grassland, instead of the 170 kgN/ha limit fixed by the Nitrates Directive. However, the exemption will only apply until the end of 2019, whereas the Netherlands requested until end 2021. The Netherlands continues to be obliged to limit total phosphorus and nitrogen in manure production to 2002 levels. The exemption comes with requirements for an "enhanced enforcement strategy", to be in place by end September 2018, to prevent manure fraud,

including an independent assessment of the scale of deliberate non-compliance, enhanced field inspections and controls, and a methodology for establishing “dissuasive penalties and sanctions”. This Commission decision follows approval in December 2017 of the [Netherlands Phosphorus Emissions Trading Scheme](#) (see ESPP eNews [n°19](#))

*Netherlands Phosphorus Emissions Trading Scheme 19 December 2017 www.europa.eu/rapid/press-release_IP-17-5362_en.htm
European Commission Implementing Decision 31 May 2018 granting a derogation requested by the Netherlands pursuant to Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.137.01.0027.01.ENG*

EU Waste legislation updated

As part of the EU Circular Economy Package, [updates](#) of four key EU waste Directives were published on 14th June 2018: Directives on waste, landfill, end of life vehicles and batteries, and packaging waste. Member States will have to recycle 55% of municipal waste by 2025 (and 65% of packaging), rising to 65% by 2035. Bio-wastes will have to be separately collected by 2023 (bio-wastes are defined as “biodegradable garden and park waste, food and kitchen waste from households, offices, caterers, retail, food processing etc. Food waste should be reduced by 50% at the retail and consumer levels by 2030, as well as addressing food waste losses throughout the production and supply chain.

All four updated EU waste Directives: EU Official Journal L150 vol. 61, 14th June 2018 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2018:150:TOC>

Circular Economy in EU Cohesion Funding



The European Parliament has [adopted](#) a report asking for the development of indicators to assess how EU Cohesion Funds (European Structural and Investment Funds = ESI) contribute to the circular economy and suggesting a significant increase in climate and circular economy related spending in Cohesion Funds. The report highlights “ex-ante conditionalities” of Cohesion Funds such as environment and resource efficiency and requests that the conditionalities be developed to take into account the waste hierarchy and the circular economy. The Parliament proposes that “circular economy” as such be added to the ESI “Intervention Fields”. The need for EU-level taxation and other tools to

ensure that secondary materials are market competitive is noted. Synergies between ESI support to the circular economy and actions funded through LIFE, SME funding (COSME) and R&D programmes should be improved. The importance of regional and city actions for the circular economy, and of the bioeconomy are underlined.

European Parliament resolution of 13 June 2018 on cohesion policy and the circular economy (2017/2211(INI)) P8_TA-PROV(2018)0254, (Davor Škrlec report) www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P8-TA-2018-0254&language=EN

Netherlands refuses subsidy to biogas nitrogen recycling project

The Netherlands Government has [refused](#) a subsidy to the OCI Nitrogen (fertiliser producer) and Re-N Technology project (Zitta project, Chemelot, Limburg Province, Netherlands). The project would be the biggest biogas plant in the Netherlands, treating 700 000 ton/year of pig manure and producing biogas (40 million m³/year), dried manure pellets and purified water as well as recovering nitrogen. The cost would be around €80 million (plus €10 million to integrate into the existing fertiliser factory). The Netherlands Government Sustainable Energy Regulation (SDE) rejected the subsidy proposal because of “insufficient confidence”, whereas the companies underline that the economic risk in such an ambitious and innovative project is precisely why public support is needed. The companies indicate that they continue to hope to realise this project but consider subsidy necessary.

News (in Dutch) www.processcontrol.nl/oci-nitrogen-krijgt-geen-subsidie-voor-biogasininstallatie and www.ocinitrogen.com/NL/newscenter/Pages/Subsidie-biogasininstallatie-niet-toegekend%20-%20OCI-Nitrogen-en-Re-N-Technology-teleurgesteld-.aspx

Research and projects

Open and upcoming EU research funding calls related to nutrients

Several Horizon 2020, INTERREG and LIFE EU research funding [calls are open or will be opened soon](#) for which nutrient recycling and stewardship fits in. Seven open calls under Horizon 2020 at this moment are related to the biobased industry (BBI) with a submission deadline soon of 6 September 2018, with two focused specifically on nutrients. One call ([BBI.2018.SO1.D2](#)) has a focus on finding solutions to dilution, pollution and content diversity challenges to turn mixed urban bio-waste into sustainable feedstock for the bio-based industry. The other call ([BBI.2018.SO3.D4](#)) has a focus on producing biopesticides or bio-based fertilisers as components of sustainable agricultural management plans. The other five calls have more general biobased industry focus. Other interesting Horizon 2020 calls with a focus on nutrients should be published on 16 October 2018, with a submission deadline 23 January 2019. These calls will focus on closing nutrient cycles ([CE-RUR-08-2018-2019-2020](#)), high-quality organic fertilisers from biogas digestate ([CE-SFS-39-2019](#)), circular bio-based business models for rural communities ([CE-RUR-10-2019](#)), integrated water management in small agricultural catchments ([SFS-23-2019](#)), and sustainable European aquaculture 4.0 nutrition and breeding ([DT-BG-04-2018-2019](#)). A call on building a water-smart economy and society including reuse of wastewater and recovery of nutrients ([CE-SC5-04-2019](#)) should open 14 November 2018,

submission deadline 19 February 2019. In the same period several calls will be opened with a focus on more sustainably primary and secondary sourcing of critical raw materials (CRMs, e.g. phosphate rock and white phosphorus) and on soil management. INTERREG [North Sea region](#) and North [West Europe region](#) have submission deadlines in September and November 2018 respectively. The [Integrated Projects](#) and [Preparatory Projects](#) under the LIFE sub-programmes for Environment have deadlines in September 2018. Horizon 2020 SME instrument has cut-off dates in October, February, May and September. ESPP is interested to collaborate in existing and upcoming research projects and can help in networking, dissemination and communication activities. Please contact Kimo van Dijk for more information and possibilities (kimovandijk@phosphorusplatform.eu). See our [ESPP list of EU research funding calls](#) and also the [ESPP list](#) of running and finished EU and national funded nutrients research projects.

ESPP list of EU research funding calls

www.phosphorusplatform.eu/images/download/ESPP-list-nutrient-related-EU-research-funding-calls-2018-07-13.pdf

ESPP research activities and ESPP nutrient related R&D project list www.phosphorusplatform.eu/R&D

Contact for ESPP research, development and innovation activities Kimo van Dijk kimovandijk@phosphorusplatform.eu

Improving sewage biosolids quality



The EU-funded (ERDF, Interreg BSR) project [BEST](#) (Better Efficiency for Industrial Sewage Treatment, 2017-2020) will assess the status of industrial wastewater inputs to municipal sewage works in the Baltic Sea region, and make recommendations for process and management improvement. Objectives include to improve sewage biosolids quality by reducing contaminants from industrial discharges (also improving potential for reuse on farmland) and to avoid discharges from industries (including food processing) which can disrupt sewage works operation (by high flows, varying or specific organic contents), so deteriorating the quality of

discharge effluent achieved by the sewage works. The project is led by the City of Helsinki and involves 16 organisations in Estonia, Finland, Latvia, Poland and Russia.

Best project website <https://projects.interreg-baltic.eu/projects/best-119.html>

SYSTEMIC recycled nutrient product Fact Sheets open for comment



EU Horizon 2020 project [SYSTEMIC](#) has published Fact Sheets on four recycled nutrient products derived from manure for use as fertilizers: Ammonium nitrate, Ammonium sulphate, Mineral Concentrate and Struvite. The Fact Sheets outline, for each product, the typical recycling/production process, average chemical and physical composition (e.g. water content, nutrient contents and forms), agronomic and environmental aspects and current regulatory status. Contaminants are not addressed. The Fact Sheets do not give ranges for values of nutrient content, water content / concentration or organic carbon, and do not yet suggest “cut off” limits for what levels could be acceptable in defining the product: e.g. mineral concentrates are indicated as having “average” 33.4 g/kg dry matter (96.7% water), but it is not suggested what lower

limit of dry matter could still be considered to be a “concentrate”. However SYSTEMIC will bring out a report with more information and for this SYSTEMIC is interested in additional information regarding the factsheets and/or further comments and suggestions (SYSTEMIC@wur.nl). SYSTEMIC has also published Fact Sheets presenting the project’s five [demonstration sites](#) (Groot Zevent Vergisting, AMPower, Acqua&Sole, Friday Eggs, BENAS) and eleven [outreach sites](#) (GreenGas, SOM Energia, Biogastur, BioGas Bree, Waterleau New Energy, SCRL Kessler, GMB, Emerude, WaterNet, Bojana, Atria) summarising biogas feedstocks and production, status of digestate use today, and objectives for digestate valorisation within the project.

SYSTEMIC recycled nutrient product Fact Sheets – for comment: under “Downloads” and then “Publications” at www.systemicproject.eu
SYSTEMIC biogas plant site Fact Sheets under “Plants” at www.systemicproject.eu

Pondus plans nutrient recovery pilot plant

Pondus [proposes](#) to recover nitrogen from sewage sludge by a combination of thermos-chemical hydrolysis, enhanced anaerobic digestion and vacuum pump ammonia stripping. The sludge is first treated to pH 11, 65°C (using waste heat from CHP). After 2 hours, the pH returns to around 7. Then it is mixed with fresh sludge before anaerobic digestion, which significantly improves biogas production (+20 to +30%) because of higher temperature and free COD, as well as reducing sludge viscosity and polymer consumption in dewatering. This process is operational at a number of sites including in Germany (e.g. Gifhorn), USA and China, up to 50 m³/hour. [Pondus](#) is now working to combine this process with vacuum degassing (during dewatering) of the digested sludge, followed by gas washing to recover ammonia sulphate, and with phosphorus recovery by struvite precipitation. This nitrogen recovery process has been laboratory tested, and a 50-100 litre/hour pilot plant is planned with KWB in Berlin for 2019 in the Horizon 2020 project “Circular Agronomics”.

Presentation at IWAMA workshop Kalmar Sweden June 2018 www.iwama.eu/material/videos/video-activating-digester-thermal-chemical-hydrolysis-and-recovering-nitrogen and Pondus website www.pondus-verfahren.de

Ellen MacArthur Foundation Circular Economy for Food in Cities



The Ellen MacArthur Foundation (EMF) has launched an initiative called “[Cities and the Circular Economy for Food](#)”, at a meeting in London 20th June 2018 attended by ESPP Board Member, Andrea Gysin of Ostara. This follows the Foundation’s “[Urban BioCycles](#)” initiative 2017, which seems to be now shelved (see ESPP eNews [n°9](#), April 2017). EMF suggest that cities worldwide throw away

600 million tonnes of organic materials, that nutrient recovery could nearly three times replace fertilisers and that improved diets could save 1.4 billion US\$ on healthcare in the USA alone. Like the “Urban BioCycles” project, the new initiative seems to mainly target nutrient recycling in cities. Despite the fact that most food is produced in rural areas, **the scope extends to peri-urban agriculture and not beyond**. However, concepts cited include “[regenerative agriculture](#)” (holistic agriculture, without pesticides or artificial fertilisers, which cultivates soil health and ecosystem services), as well as organic waste recycling, closing nutrient loops and protein substitution. Case studies cited include [Agriprotein](#) (black soldier fly larvae conversion of organic waste to protein, see ESPP eNews [n°15](#) September 2017, 40 000 t/y waste recycled at a first site in South Africa, other projects underway), [LUFA](#) rooftop farms (3 installations in Canada, total 1.3 ha) and [Toast Ale](#) (since 2015 a total of 18 tonnes of bread cut-offs discarded from sandwich making used in breweries) and [Winnow](#) (data on food waste in commercial kitchens). **The outputs will be launched at the World Economic Forum in Davos 2019.**

Ellen MacArthur Foundation programme “Cities and the Circular Economy for Food” www.ellenmacarthurfoundation.org/programmes/systemic-initiatives/cities-and-the-circular-economy-for-food

Nano calcium phosphates inhibit cancer cell proliferation.

Recent studies (in vitro and in vivo) suggest that nano-particles of calcium phosphates can inhibit proliferation of human cancer cells, whilst having much less effect on normal cells. Nano tri calcium phosphate (nTCP) showed to more inhibitive than nano hydroxyapatite (nHAP). Nano-particles of size of 60-70 nm were more effective than larger particles. Authors suggest the effect may be related to negative surface charge of cancer cells and both positive and negative binding sites on the nano calcium particles. Calcium phosphates are widely present biological molecules (e.g. in bones) so could possibly provide a future cancer treatment with low risks of side effects.

Inhibitory Effect of Tricalcium Phosphate Sintered at Different Temperatures on Human Breast Cancer Cell Line MCF-7, M. Rahmanian et al., Multidisciplinary Cancer Investigation, January 2017, Volume 1, Issue 1 <http://mcjournal.com/article-1-39-en.html>
Different Inhibitory Effect and Mechanism of Hydroxyapatite Nanoparticles on Normal Cells and Cancer Cells In Vitro and In Vivo, Y. Han et al., Nature Scientific Reports, 4-7134, 2014 <https://doi.org/10.1038/srep07134>

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