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Regulation

EU Fertilisers Regulation revision

The new EU Fertilisers Regulation, which will cover recycled nutrient products, composts, digestates, biostimulants, has been examined by Council (the 28 Member States) and will be discussed in relevant committees of the European Parliament in March – April (Council's proposals are not yet published). Council apparently wants manures to be sanitised before input into composting or anaerobic digestion (AD): this would be prohibitive, and is not justified where composting or AD ensure sanitisation (animal by-products safety end-point). ESPP has met MEPs from the different European Parliament political groups and concerned Commissions (AGRI agriculture, IMCO internal market, ENVI environment). ESPP's messages include proposing adding a requirement for traceability for all fertilisers susceptible to contain organic contaminants (from farm producing manure or factory producing by-products through to the farm where the fertiliser is used), facilitating innovation whilst ensuring safety for future inclusion of new recycled products into the regulation annexes, avoiding additional monitoring obligations or trace-element limits if these do not increase product safety, use of safe industry by-products, interactions with REACH (chemical legislation) and clarifying wording to improve regulatory workability and information of farmers. ESPP's proposal to include traceability for organics is proposed by the ENVI Rapporteur, Elisabetta Gardini (EPP), [amendment](#) n°119. Now is the right time to [contact your regional/national Members](#) of the European Parliament and to ask for their engagement to support and improve this proposed new regulation, which will be a major step forward for nutrient recycling in Europe.

ESPP key positions and proposed amendments online at www.phosphorusplatform.eu/regulatory. For further information see ESPP eNews [n°4](#), and ESPP SCOPE Newsletter [n°120](#). ENVI report and proposed amendments Elisabetta Gardini [http://parltrack.euwiki.org/dossier/2016/0084\(COD\)](http://parltrack.euwiki.org/dossier/2016/0084(COD)), download source: [PE-597.640](#)

Discussions engaged on meat and bone meal ash recycling to fertiliser in Portugal

The company ITS (Industria Transformadora de Subproductos Animais) based in Coruche, Portugal, ensures rendering of slaughterhouse wastes and dead animals (Animal By-Products (ABP) Categories 1 and 2), producing animal fat for biodiesel and meat and bones meal (MBM) for destruction. A rotating-kiln ensures the incineration of the MBM at 850°C, generating 2 500 tonnes/year bottom-ash, as well as thermal energy under the form of steam, which is used for the rendering process. The ash (Meat and Bone Meal Ash MMBA) contains >15% phosphorus (of which most is soluble in NAC neutral ammonium citrate), that is nearly 400 t/y of phosphorus (P), as well as 1% potassium and 0.75% magnesium, with low levels of heavy metals or other contaminants. Discussions are underway with the national authorities to define conditions for use of the MBA as a fertiliser in agriculture. ETSA is also looking for other ways to valorise the MMBA. It is estimated that animal by-products in Europe contain a total of around 310 000 t/y of phosphorus (see SCOPE Newsletter [n°122](#)) www.etsa.pt

German sludge and P-recovery ordinance moves forward

On 18th January, the new German new sewage sludge ordinance (AbfKlärV), which will make phosphorus recovery obligatory for most of Germany's sewage, was [validated](#) by the German Cabinet (see ESPP eNews n°6). It is now expected to pass the parliament and Federal Council before summer 2017 and enter into force in January 2018, making phosphorus recovery obligatory for larger sewage works within 12 years (> 100 000 p.e.) or 15 years (> 50 000 p.e.), under certain conditions. P-recovery will thus be required for around 500 sewage works (out of a total of 9 300 in Germany), treating around 2/3 of German sewage. At present, around 26% of German sewage sludge is spread on arable land and this is expected to be cut by half as a consequence of this sewage sludge ordinance (AbfKlärV), and also of the new fertilising ordinance (DüV) which implements the nitrates directive and which will already strongly impact sludge valorisation in Germany next year.

Information provided by Christian Kabbe, KWB. Official press release in German:

http://www.bmub.bund.de/presse/pressemitteilungen/pm/artikel/deutschland-soll-phosphor-aus-klaerschlam-gewinnen?tx_ttnews%5BbackPid%5D=82
English translation of German sewage sludge ordinance (EU Notification 2016/514/D (Germany) <http://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2016&num=514>

Denmark limits farm phosphorus application

New regulations in Denmark, expected to enter into force in August 2017, would for the first time, specifically limit phosphorus application by farmers (including manure, organic and mineral fertilisers). To date phosphorus has been only indirectly limited by manure spreading limits, based nitrogen content. A general ceiling of 30 - 43 kgP/ha (depending on the type of fertiliser) is expected to be applied across the country, but with a lower limit of 30 kgP in 2018, independent of fertiliser type, in lake catchments concerned by River Basin Management Plans. The Danish Society for Nature Conservation is however critical of the proposal, considering that in some areas and for the first years of implementation it would allow farmers to spread more manure than today. Denmark has some 13 million pigs and around one tenth of Denmark's fields are today saturated with phosphorus in the top soil. Phosphorus saturation can be documented down to 1m depth some places, with 1-2 tonnes/ha of surplus phosphorus stocked. Media coverage notes that a key challenge is moving the surplus phosphorus from the livestock production region of Jutland (West) to arable areas of Zealand (East Denmark).

"Farming package will increase use of phosphorus", *Ingeniøren*, 13/1/2017 <https://ing.dk/artikel/landbrugspakken-vil-oge-brugen-fosfor-191939> and "Denmark a major culprit in rapid consumption of world phosphorus resources", *Ingeniøren*, 13/1/2017 <https://ing.dk/artikel/danmark-storsynder-vi-opbruger-verdens-fosfor-ressourcer-med-rasende-fart-191934>

ESPP input to REACH regulation evaluation

ESPP has submitted input to the EU's public consultation on the REFIT (assessment of fitness for purpose) of the EU Chemical Regulation 1907/2006 ("REACH"). ESPP considers the Regulation as having improved information about chemicals used in Europe, so contributing to public confidence and safety. ESPP's specific comments noted that the exemption of digestate from REACH should be confirmed; underlined the importance for the nutrient circular economy of Art. 2(7)d which specifies that sites producing "recovered substances" (e.g. struvite recovered from wastewaters) do not have to register under REACH (subject to certain conditions) but noted that clarification is needed to ensure fair sharing of costs and administration for this disposition; and noted that adaptation of REACH should be considered to facilitate registration of recovered nutrient products covered by the EU Fertilisers Regulation (after revision is completed), subject to ensuring safety. REACH is complex to apply to variable or organic substances, such as many recycled nutrient products, and partly inappropriate because it is intended to address the substance, and not impurities, which will be specified in the Fertilisers Regulation.

ESPP input to EU REACH REFIT consultation www.phosphorusplatform.eu/regulatory and EU consultation page http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8952

Circular economy in priorities of EU Commission Work Programme

The third annual Work Programme of the Juncker Commission maintains the Circular Economy in its top priorities. The Action Plan for the Circular Economy is intended to deliver on Sustainable Development Goals, with a monitoring framework for the circular economy (Autumn 2017), a legislative proposal on quality requirements for water reuse, a REFIT revision of the Drinking Water Directive and a proposal to address the interactions between chemical, product and waste legislations.

"Juncker Commission presents third annual Work Programme: Delivering a Europe that protects, empowers and defends", EU Commission press release 26/10/2016 http://europa.eu/rapid/press-release_IP-16-3500_en.htm

EU takes Germany to court over Nitrates Directive failures

The European Commission has filed a 1500 page suit to the European Court of Justice against Germany for failure to adequately implement the Nitrates Directive. The Commission indicates that nitrate pollution is worsening in Germany's ground and surface waters and in the Baltic Sea. The court action was announced in April 2016 and confirmed in November. The Commission suit indicates that Germany has failed to update its nitrates Action Programme, despite its 2012 implementation report showing that the programme is inadequate to achieve environmental objectives. The Commission indicates that crop fertilisation requirements allow a surplus of 60 kgN/ha/year, application of up to 230 kgN/ha/year is allowed on some grasslands, that some Land's manure storage capacity requirements are insufficient and that restrictions on application on sloping land, near watercourses and on frozen land are inadequate.

Extracts of EU Commission suit to European Court of Justice, Executive Summary in German: <https://netzfrauen.org/2016/11/08/gefaehrliche-quelle-eu-kom-verklagt-deutschland-wegen-verletzung-der-eu-nitrat-richtlinie-deutschland-hat-ein-nitratproblem/> "EU takes Germany to court over high nitrate levels" EurActiv 7/11/2016 <https://www.euractiv.com/section/agriculture-food/news/eu-takes-germany-to-court-over-high-nitrate-levels/> "Water: Commission refers Germany to the Court of Justice of the EU over water pollution caused by nitrates", EU press release 28/4/2016 http://europa.eu/rapid/press-release_IP-16-1453_en.htm

EU Auditors say Commission fails to address food waste

The European Court of Auditors, in a special report on combating food waste, says that the Commission's "ambition has decreased over time" and that action taken "has been fragmented and intermittent". The report calls for an "agreed definition of food waste and an agreed baseline, from which to target reductions", better Commission coordination and development of an action plan, integration of food waste reduction into policies such as the Common Agricultural Policy, and to facilitate donation of food which would otherwise be wasted. The Commission launched in 2016 a [food waste Platform](#) to bring together EU bodies, experts, NGOs and food-chain actors. Some 88 million tonnes of food goes to waste annually in the EU, expected to rise to 126 million tonnes by 2030 unless action is taken.

"Speech by Commissioner Vytenis Andriukaitis at the launch meeting of the "EU Platform on Food Losses and Food Waste" 29/11/2016 http://europa.eu/rapid/press-release_SPEECH-16-4093_en.htm and EU Court of Auditors Special Report 2016-34 "Combating Food Waste: an opportunity for the EU to improve the resource-efficiency of the food supply chain" http://www.eca.europa.eu/Lists/ECADocuments/SR16_34/SR_FOOD_WASTE_EN.pdf

Ammonium phosphatides considered safe in food

EFSA (European Food Safety Agency) has re-evaluated ammonium phosphatides (E422) for safety as a food additive. Ammonium phosphatides are molecules consisting of ammonium phosphate with one or two attached mono- or di-glycerides. They are produced by reacting phosphate and ammonium with glycerides, either synthetic or from vegetable oils, and are used as an emulsifier and stabiliser in a range of foods, including chocolate, yoghurts, soft cheese and other dairy products, coffee, cakes and biscuits. EFSA examined a significant number of animal studies of the substance. These indicate that (in rodents) 70-82% is not absorbed (found in faeces) and that most of the absorbed phosphate is incorporated rapidly into bone, muscle or the liver. Studies show low oral toxicity and no cancer, reproductive or developmental effects. EFSA concludes that use as a food additive does not raise safety concerns and that the current ADI (acceptable daily intake) does not require modification.

"Re-evaluation of ammonium phosphatides (E422) as a food additive", EFSA Scientific Opinion adopted 27/9/2016, EFSA Journal 2016, 14(11), 4597 <https://www.efsa.europa.eu/en/efsajournal/pub/4597>

Projects

Impacts of phosphorus recovery on sewage sludge dewatering

The US water industry research organisation WERF has launched a 24 month project to investigate how P-recovery, anaerobic sludge digestion and biological phosphorus removal impact sewage sludge dewatering. The organisation indicates that sludge handling can represent 50% of total municipal wastewater treatment costs, with dewatering and polymer use in dewatering representing a significant part of sludge handling costs. WERF note that anaerobic sludge digestion in biological P-removal sewage works can result in significant dewatering problems and high costs, and that there is a lack of agreed knowledge on how P-recovery processes can impact this. The project with Bucknell University will include fundamental laboratory research into flocculation of bio-P digested sludges and field research particularly looking at P-recovery. WERF also has a second project to assess how P-recovery or biological P-removal can be integrated into low-energy, low-carbon nitrogen-removal processes. **If you have information on this question, please contact ESPP.**

WE&RF 2016: "Unintended Consequences Of Resource Recovery On Overall Plant Performance: Solving The Impacts On Dewaterability Properties (NTRY12R16)", http://www.werf.org/c/PressReleases/2016/Unintended_Consequences_of_Resource_Recovery_on_Overall_Plant_Performance.aspx and "Water Environment Research Foundation Seeks Proposals for 2 Studies on the Impacts of Resource Recovery on Wastewater Treatment Processes" http://www.werf.org/c/PressReleases/2015/WERF_Seeks_Proposals_for_2_Studies_on_Impacts_of_Resource_Recovery_on_Wastewater_Treatment_Processes.aspx

UPM and Yara to develop recycled fertilisers

UPM (paper, biorefining and forest biomass group with 10 billion €/y turnover and production in 13 countries worldwide) and Yara (Finland phosphate rock mining and fertiliser production group) have obtained funding for 2017-2018 from Raki2, the Finland Environment



Ministry nutrient recycling programme, to develop an agricultural fertiliser product from pulp and paper mill wastewater treatment sludge and sludge incineration ash. UPM's different factories produce around 400 000 t/y of sludge including both primary sludges with a high fibre content and secondary sludges consisting mainly of bacterial biomass. The project aims to develop fertiliser and soil improver products with nutrient availability corresponding to crop needs, including balancing nutrients by combining with mineral fertilisers, so reducing risks of soil nutrient leaching and losses.

"Enhancing the utilisation degree of sludge by improving fuel value and mapping out new applications", UPM stakeholder magazine Biofore 10/11/2016 <https://www.upmbiofore.com/enhancing-the-utilisation-degree-of-sludge-by-improving-fuel-value-and-mapping-out-new-applications/> and UPM press release 10/11/2016 "UPM and Yara to co-develop recycled fertilisers" <http://www.upm.com/About-us/Newsroom/Releases/Pages/UPM-and-Yara-to-co-develop-recycled-fertilisers-001-Thu-10-Nov-2016-10-03.aspx>

Nurec4org project for phosphorus recycling in organic farming



The 2-year Nurec4org project launched in 2017 will support the uptake of recycled nutrient products in organic farming in Germany. It is led by Kompetenzzentrum Wasser Berlin (KWB) and Bioland (Germany's biggest organic farmers' association) and funded by DBU, Germany's largest environmental foundation. Actions will include studying the market potential for recycled phosphorus products in organic farming and potential supply availability, looking at acceptance criteria for organic farmers and consumers, testing agronomic value and evaluation environment, health and life cycle factors. The objective is to provide both evidence and stakeholder consensus to support regulatory acceptance of recycled phosphates in organic agriculture.

Contact: christian.kabbe@kompetenz-wasser.de

Ductor nitrogen and phosphorus recovery with Fraunhofer Umsicht

A pilot installation (80 m³ fermenter) has started operation in Tuorla, Finland, and will treat 1 400 t/y of poultry manure. A 10 000 t/y chicken manure input installation started is planned in Haren, Germany, in 2016 (see ESPP eNews n°3). The Ductor technology recovers up to 60% of nitrogen (by ammonia stripping and then ammonium sulphate production) upstream of anaerobic digestion (biogas production). The digestate can be processed to a solid organic phosphate fertiliser from the digestate. Fraunhofer Umsicht will work with Ductor to evaluate the performance of the Ductor technology, including the impact on biogas production.

"Revolutionary technology by Ductor® commissioned in Tuorla, Finland", 20/12/2016 <http://www.ductor.com/revolutionary-technology-ductor-commissioned-tuorla-finland/>

Denmark's largest biogas plant yet

The biogas plant to be built near Korskrø, Southern Jutland, Denmark's most intensive livestock production region, will take over 700 000 t/y of input organic wastes, mainly cattle manure, and produce 22 million m³/y of biogas. The project brings together the Nature Energy biogas company and Sydvestjysk, a cooperative of around 100 farmers. The plant benefits from exemplary architectural and landscaping [design](#) by Gottlieb Palludan.

EBA (European Biogas Association) news <http://european-biogas.eu/2016/11/28/denmark-countries-largest-biogas-plant-under-construction/> and "Nature Energy og Sydvestjysk Biogas klar til rekordstort biogasanlæg ved Korskrø" 11/11/2016 https://www.natureenergy.dk/corporate/presse/nyheder/spadestik_korskro

Science & media

Danone: towards a circular economy in food

Global food company, Danone, has [announced](#) a three-year partnership with the Ellen MacArthur Foundation to embed circular economy principles inside the company and to promote them widely. Danone aims for systemic change to preserve natural resources and to move to a more circular value chain. In 2016, Danone was awarded the Environment Top Performance prize by the ESG (Environmental and Social Governance) ratings agency Vigeo, top of 1 300 companies assessed. The company already has [circular economy projects](#) addressing nutrients, such as recycling acid whey by-products from yoghurt production to animal feeds, fertiliser and energy.

"Toward a circular economy in food", Emmanuel Faber, CEO of Danone <http://downtoearth.danone.com/2016/02/29/toward-a-circular-economy-in-food/>

Quick reference on phosphorus in the body

A convenient summary of phosphorus biology data is provided in two pages of text plus tables, including a summary of biological functions of phosphorus, data on body P uptake and regulation, an overview of hyper- and hypophosphatemia and useful conversion indicators (mg/l – mmol – mEq/l). Note that this is a veterinary journal and some of the data (e.g. normal serum P levels) for dogs and cats may not be the same for humans.

"A Quick Reference on Phosphorus", A. Allen-Durrance, Vet Clin Small Anim, 2016 <http://dx.doi.org/10.1016/j.cvsm.2016.09.003>

UK water industry priorities phosphorus and pharmaceuticals

CIP2, the UK water industry's second Chemicals Investigation Programme (coordinated by UKWIR) is a major research and monitoring investment. The project is running from 2015 to 2020 with an estimated cost of UK£140 million for chemicals, with a priority on pharmaceuticals, and UK£50 million for phosphates. Some 600 sewage works are being sampled for 74 chemicals. AquaStrategy reports that interim results from 160 sites show a Water Framework Directive compliance risk at $\geq 90\%$ of sites for five substances (three fluorinated / PFOS chemicals¹, PAH² and phosphorus as SRP³). Twenty of the 74 chemicals being studied are pharmaceuticals⁴. For a number of pharmaceuticals⁵, the interim results suggest that levels in sewage works discharge water would pose a potential risk in rivers. CIP2 also includes testing nearly 20 different technologies to reduce phosphorus discharges and 10 technologies to remove pharmaceuticals, a challenge being to find solutions which eliminate the pharmaceutical molecule rather than simply adsorbing it. AquaStrategy note that Switzerland has moved forward on pharmaceutical treatment in sewage works through a 9 CHF/year/person tax. In January 2017, a coalition of 14 NGOs called on the European Commission to take action to reduce pharmaceutical pollution of water, as is required by Directive 2013/39/EU (priority substances in water), which fixed a deadline of September 2015, deadline which has been missed. The NGO's letter also points to pharmaceuticals in manure and soil.

1: perfluorooctane sulfonic acid and perfluorooctanoic acid. 2: indicator benzo(a)pyrene. 3: soluble reactive phosphorus. 4: including the 6 pharmaceuticals which are on the Water Framework Directive priority substance 'Watch List': diclofenac, estradiol (E2), ethinyl estradiol (EE2), erythromycin, clarithromycin, and azithromycin. 5: diclofenac, propranolol, clarithromycin, erythromycin, EE2, rantidine and azithromycin. "Early insights from the UK's groundbreaking sewage assessment", AquaStrategy October 2016 <https://www.aquastrategy.com/article/early-insights-uks-groundbreaking-sewage-assessment> "The European Commission must fulfil their obligation to reduce pharmaceutical pollution", NGOs' position and letter Health Care Without Harm 19/1/2017 <https://noharm-europe.org/articles/press-release/europe/european-commission-must-fulfil-their-obligation-reduce-pharmaceutical>

Increased diet phosphorus improves pig immune system

A PhD thesis looks at the effects of dietary calcium phosphate levels and of fermentables on the immune system and on gut bacteria of pigs. Following a literature study, two consecutive full scale tests were carried out on 31 pigs fed for 9 weeks with a corn-soybean (higher level of fermentables) then a corn-pea diet, with for each test, groups of high and low calcium phosphate (4 or 7 %Pdm). Higher calcium phosphate and higher fermentables both led to healthier gut and lower potentially harmful gut bacteria. The higher calcium phosphate diets generally showed higher levels of positive immune function indicators. Further research is recommended concerning variations of phosphorus availability (digestibility) and the formation of different inositol phosphates.

"Impact of dietary phosphorus and fermentable substrates on the immune system and the intestinal microbiota of the pig", C. Heyer, PhD in Agricultural Science, University of Hohenheim Germany, 2016 http://opus.uni-hohenheim.de/volltexte/2016/1301/pdf/Dissertation_Chlotte_Heyer.pdf#page=27

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