

## ESPP working document: Secondary nutrient materials not covered by Fertilising Product Regulation CMCs.

Material	Origin / process	Status	Current FRP status	Definition / constraints	Safety	Sources
<p>The objective of this document is to <b>stimulate discussion and collection of information</b> concerning potentially interesting secondary nutrient materials which may not fit into any current CMC.</p> <p>In some cases, FAQ guidance may suffice to clarify inclusion under conditions in an existing CMC. For other cases, modification of CMC text or a new CMC might be necessary.</p> <p><b>Industry and stakeholders are invited to provide comments, additional information</b> (in particular relevant to potential tonnages, examples of commercial use today, risk questions or evidence of safety) or to suggest other materials not yet included in this list.</p> <p>NOTE: Art. 42.1 of the revised Fertiliser Regulation text specifies that Annexes II (CMCs) can be modified to add CMCs “(a) which have the potential to be the subject of significant trade on the internal market, and (b) for which there is scientific evidence that they: (i) do not present a risk to human, animal or plant health, to safety or to the environment, and (ii) ensure agronomic efficiency”</p>						
<b>Mineral nutrient products from gas scrubbing</b>	Nitrogen recovery from scrubbing of digester methane, manure storage or drying or processing, or animal housing offgas. Possibly also sulphur recovery?	Production already full-scale – use in fertiliser or industrial chemicals (e.g. Yara)  Already today considered to be a mineral fertiliser under German regulations.	Excluded from CMC1, because derived from waste. Possible inclusion in CMC11 (by-products) is unclear, and probably subject to variations between MS. Not covered by STRUBIAS “phosphate salts” because NOT a phosphate salt Stripping from flue gas from incineration of sewage sludge or biowaste or chicken manure (etc) <b>is included in STRUBIAS “thermal oxidation materials or derivatives”</b> (because this no longer refers to “ash”, so de facto also covers flue gases from incineration). This is unintentional and undesirable (and should be corrected / clarified?)	Limit to “Mineral” fertilisers (i.e. < 1% C-org)	Contaminants and pathogens will not usually be in gases. Limit processing temperature (e.g. 150°C to cover drying) and avoid flue gases from combustion processes: flue gases from incineration processes may contain heavy metals, dioxines, etc. With such a temperature limit, there is no need to limit input materials because contaminants will not be found in gas.	See UrbanAgenda bottleneck report <a href="#">here</a>

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<b>Nitrogen recovery from wastewaters</b>	Nitrogen is recovered from municipal wastewater (in sewage or sludge treatment) or other wastewaters (e.g. food industry) by chemical processes, adsorption/regeneration, then processed to ammonia salts.	EasyMining process under commercialisation	Excluded from CMC1 because the initial substrate is a waste. Probably not a by-product?	Limit to "Mineral" fertilisers (<1% C-org) to ensure organic contaminants, pathogens etc not present	Need to verify heavy metals, organic contaminants, pathogens.	
<b>Fish excreta</b>	Fish excreta are excluded from "manure" under the ABP	Estimated currently c.20 processors in Norway and others starting up. For one example see <a href="#">here</a> Total fish sludge in Norway alone is > 800 000 tDM/y. Only land or closed-pen based is available for recycling, but this part is increasing, see <a href="#">here</a> p14	Currently excluded from use in FRP compost, digestate, and in STRUBIAS struvite, biochars, ash-based products		Proposal: for FPR, accept same requirements as for other "manures" (sterilisation in some cases) Possibly accept also specific national sterilisation processes (e.g. for Norway, see <a href="#">here</a> pp31-32). Norway <a href="#">report</a> concludes use is safe for humans and farm animals (untreated use near water could pose risks for fish, but this is not relevant for FPR products)	

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<b>Insect frass</b>	Insect excreta, exoskeletons, uneaten feed substrate	10 000 t/y in 2019 in Europe. Forecast 9Mt/y by 2030. Contains approx. 4%N, 1.3%P, 2.5%K	Excluded	Sieving out of larvae. Sterilisation.	Align to ABP endpoints ? or wish fish manure? "Dejecta of insects" is authorised untreated (without sanitisation) in <b>Organic Farming</b> (see <a href="#">Regulation (EC) No 889/2008</a> Annex I page 79 - no conditions for use in the column on the right side. This dates from <a href="#">1994</a> originating from the use of dejecta of bees or other insects used in biocontrol.	IPIFF statement <a href="#">19<sup>th</sup> September 2019</a> <a href="mailto:info@ipiff.org">info@ipiff.org</a> ; <a href="mailto:christophe.derrien@ipiff.org">christophe.derrien@ipiff.org</a>
<b>Biomass grown in sewage and in other waste waters</b>	Algae production can be "fed" with wastes: nutrients in manure, sewage, digestates, or in biofuel processing discharge, or offgas from cement production (CO2 mitigation) Algae, micro-algae, duckweed Can be used either as fertiliser (nutrient content), soil improver (organic carbon) or directly or after processing for biostimulants	Operational full scale ESPP to look for some figures on current and potential production	Excluded from CMC1 because waste derived? Maybe CMC2 (plant materials) if not processed?	Such materials are excluded from use as animal feed or in human food, so fertilisers are optimal use	May accumulate contaminants from the waste?	Contacts: <a href="mailto:andrea.salimbeni@re-cord.org">andrea.salimbeni@re-cord.org</a> 00 39 380 31 53 696 <a href="mailto:maurizio.cocchi@eu-bia.org">maurizio.cocchi@eu-bia.org</a> European Biomass Industry Ass. Cement industry CO2: Lafarge-Holcim
<b>Biomass collected as waste</b>	E.g. seaweed from beach cleaning or canal clearing	To consider with above?	As above?			ESPP to provide contacts

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<b>Humous from tree bark</b>	Composting process not CMC3 conform.	Bark considered "waste" by some MS, "by-products" by others	Not CMC3 Not CMC2 Excluded from CMC1 if bark is considered "waste" ? Under CMC1 would require REACH registration, which is unrealistic : compost is exempted from REACH registration in Annex V – BUT CMC1 specifies the exemption from REACH Registration ONLY for substances in points 6 to 9 of Annex V		Tree bark can concentrate heavy metals but these are limited in PFCs 3 and 4	GME
<b>Lime mud from paper industry. Pulp and paper biosolids</b>		Low fertiliser value as produced, but can be hygienised, processed to useful fertilising products (e.g. SoilFood Finland)	Finland: by-products when leave paper mill. If processing is mechanical (mixing, granulation) then CMC11 = by-products? However, in some cases lime is added to stabilise. Question: this involves some chemical reaction, so is the "reacted" product also CMC11.	Hygienisation. Heavy metals.	Olli Lehtovaara <a href="mailto:olli.lehtovaara@soilfood.fi">olli.lehtovaara@soilfood.fi</a> Pulkkinen Sanna <a href="mailto:sanna.pulkkinen@metsagroup.com">sanna.pulkkinen@metsagroup.com</a>	
<b>Calcium carbonate recovered from drinking water treatment</b>			Specifically included already in CMC6 (food insutry byproducts) Eligible for CMC1 and for CMC11 – so not necessary? Excluded from STRUBIAS because is NOT a "phosphate salt"			ESPP to provide contacts
<b>Separately recovered human urine</b>	Separative toilets, then some form of stabilisation or processing	<a href="#">Aurin</a> piloted and authorised as fertiliser in Switzerland (with activated carbon filtration to remove pharmaceuticals). Urine used as fertiliser in Paris <a href="#">OCAPI</a> project		Need to define what treatment, if any, is required	Pharmaceuticals will be present. Claimed to be biologically safe.	<a href="http://www.vuna.ch/#aurin">http://www.vuna.ch/#aurin</a> <a href="https://www.leesu.fr/ocapi/">https://www.leesu.fr/ocapi/</a>
<b>Fertilisers produced by chemical processes from mining tailings</b>			OK under CMC1 if produced as part of the mining process, NOT if produced from tailings which have previously been stockpiled as "waste"			

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<b>Phosphate salts from phosphogypsum waste stacks</b>	Struvite precipitation from gypsum stack leachate reduces P losses to environment.	Full scale processes tested in US and Canada (two operators)	Currently excluded from CMC1, not a "by-product" (CMC11) and excluded under STRUBIAS		Contaminants are the same as for phosphate rock which is used under CMC1.	
<b>Ammonium salts from powder fire extinguisher refurbishment</b>	During regular fire extinguisher maintenance, powder is removed. The part which cannot be re-used is cleaned using solvents (to remove additives such as silicone which improve spraying) to deliver clean ammonium salts (ammonium phosphate, ammonium sulphate)	The EU potential for this recycled material is estimated at c. 100 000 t/y. Process demonstrated in Horizon Europe PHOSave project	Spent material is waste -> excluded from CMC1. Solvent cleaning is required, so not a by-product (not CMC11)		Solvent cleaning ensures contaminant removal. Resulting product (ammonium phosphate) can be used directly as a fertiliser, after granulation or blending.	<a href="http://www.phosphorusplatform.eu/Scope127">www.phosphorusplatform.eu/Scope127</a> and <a href="http://www.phosphorusplatform.eu/Scope123">www.phosphorusplatform.eu/Scope123</a>
<b>Mineral salts recovered from waste incinerator ashes.</b>	Chemical re-processing of the fly ash from municipal solid waste (MSW) or other waste incinerators. Potassium is c 3% of MSW incinerator fly ash (as K). Ammonia used to remove NO <sub>x</sub> in incinerator exhaust gas is also recovered.	7 000 t/y of potassium (K) in Sweden from MSW incinerator fly-ash alone (15 incinerators) → nearly 200 000 tK/y in Europe (410 <a href="#">incinerators</a> ). Full scale plant under construction in Sweden (130 000 ty/y fly ash) EasyMining Ash2Salt	Excluded from STRUBIAS "thermal oxidation derivatives" because MSW excluded from input list. MSW is a waste, so excluded from CMC1 Not a by-product.	PFC heavy metal limits plus STRUBIAS "thermal oxidation" contaminant limits could be applied	Heavy metals must be removed. Incineration contaminants (dioxins etc) are not expected in fly ash, but should nonetheless be verified.	<a href="#">EasyMining press release 26th May 2020</a>