NUTRIENT PLATFORM NL

European Sustainable Phosphorus Platform

Nutrient Recycling & the Fertilisers Regulation

How to ensure quality & safety?

January 25th, 2017 | European Parliament

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European Sustainable Phosphorus Platform

Programme

13.30 Welcome

Jan Huitema | MEP ALDE, Rapporteur on the Fertilisers Regulation, AGRI

13.35 Economic and industry potential of nutrient recycling from wastewater

Aalke Lida de Jong | Aqua Minerals

13.45 How manure fits into the Fertilisers Regulation proposal

Emilie Snauwaert | Flemish Coordination Centre for Manure Processing (VCM)

14.00 Quality and safety of nutrient recycling

Christopher Thornton | European Sustainable Phosphorus Platform (ESPP)

14.15 Key position pitches by stakeholders

Bertrand Vallet | EurEau

Benoît Planques | ECOFI

Nicolas Vega | EBA

Antoine Hoxha | Fertilizers Europe

14.35 Discussion

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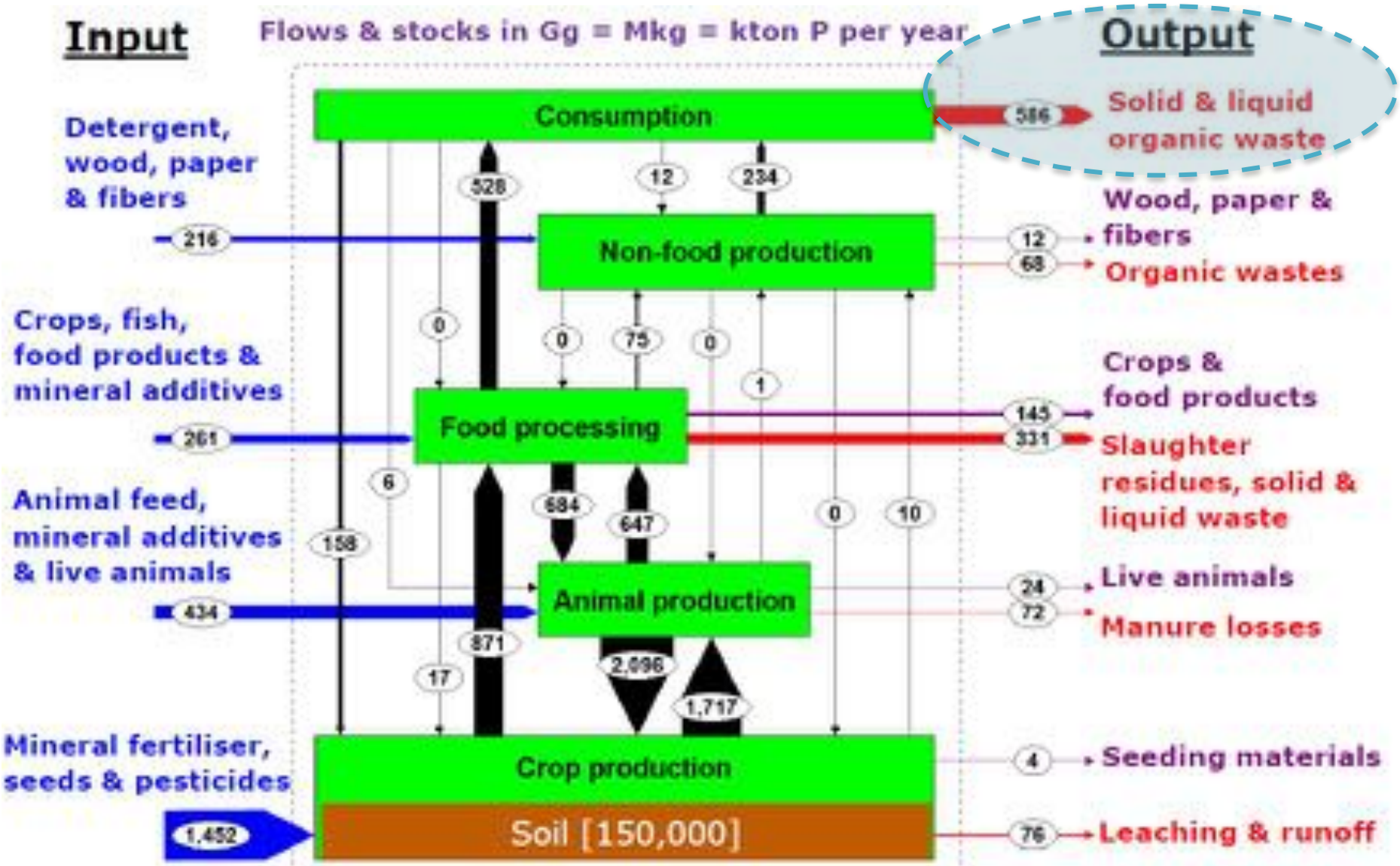
Economic and industry potential of nutrient recycling from wastewater

Aalke Lida de Jong | Aqua Minerals

Economic and industry potential of the nutrient recovery from waste water

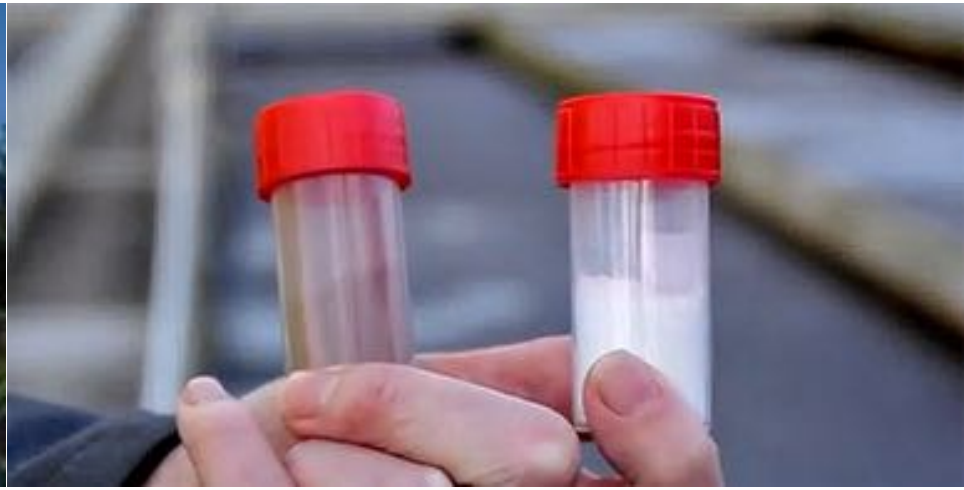
Aalke Lida de Jong



Kimo van Dijk, Jan Peter Lesschen, Oene Oenema, Wageningen University, 2014

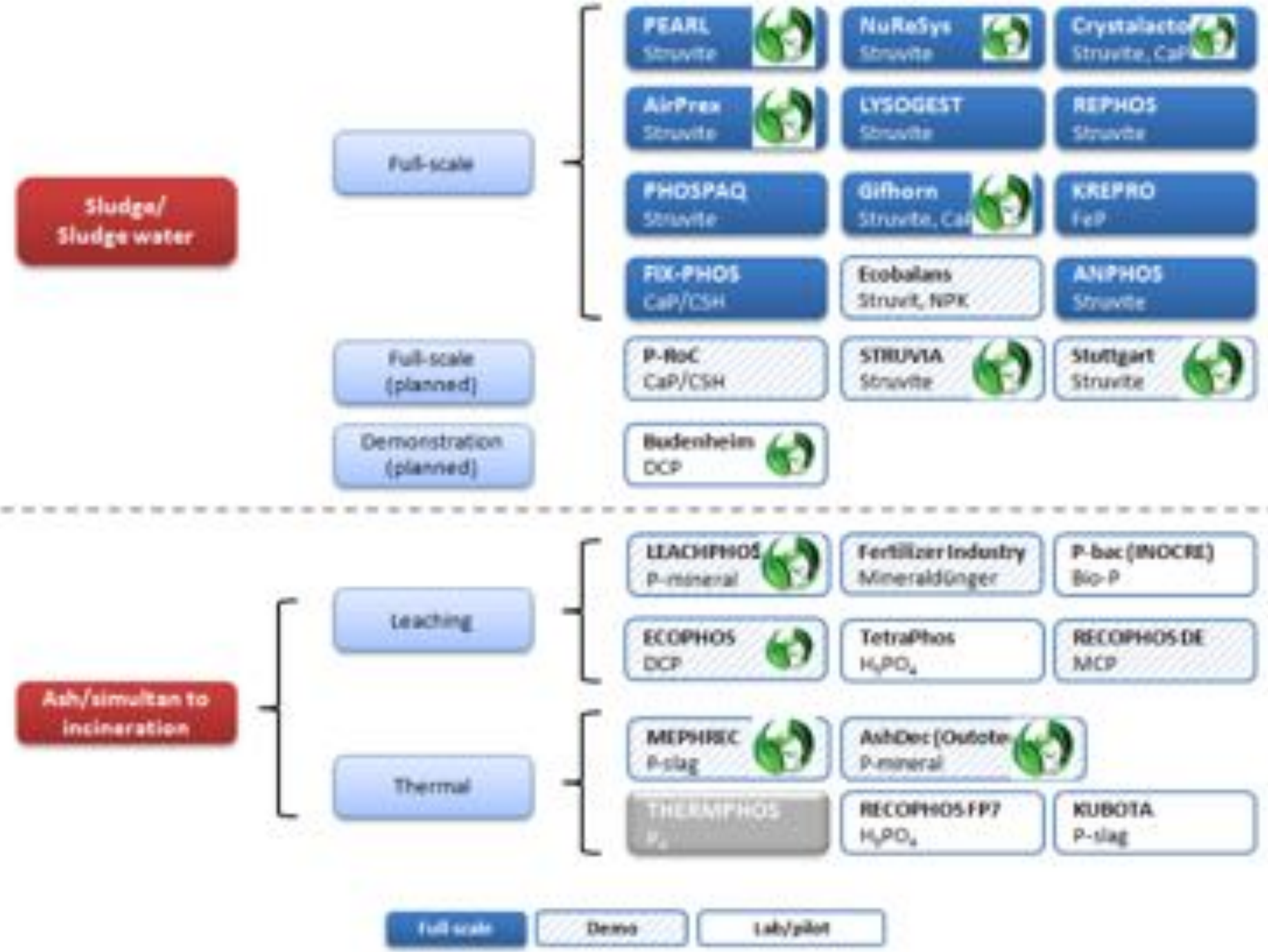
P-recovery from waste water

From sludge and
sludge dewatering centrate



From ashes of sludge
incineration

aqua
minerals


Sludge/
Sludge water
Full-scale
PEARL
Struvite
NuReSys
Struvite
Crystalactor
Struvite, CaP
AirPrex
Struvite
LYSOGEST
Struvite
REPHOS
Struvite
PHOSPAQ
Struvite
Gifhorn
Struvite, CaP
KREPRO
FeP
FIX-PHOS
CaP/CSH
Ecobalans
Struvit, NPK
ANPHOS
Struvite
Full-scale
(planned)
P-RoC
CaP/CSH
STRUVIA
Struvite
Stuttgart
Struvite
Demonstration
(planned)
Budenheim
DCP
Ash/simultan to
incineration
Leaching
LEACHPHOS
P-mineral
Fertilizer Industry
Mineraldünger
P-bac (INOCRE)
Bio-P
ECOPHOS
DCP
TetraPhos
H_3PO_4
RECOPHOS DE
MCP
Thermal
MEPHREC
P-slag
AshDec (Outotec
P-mineral
THERMPHOS
P_4
RECOPHOS FP7
H_3PO_4
KUBOTA
P-slag
Full scale
Demo
Lab/pilot

Barriers EU recovered P market

1. Waste status
2. Fertiliser regulations

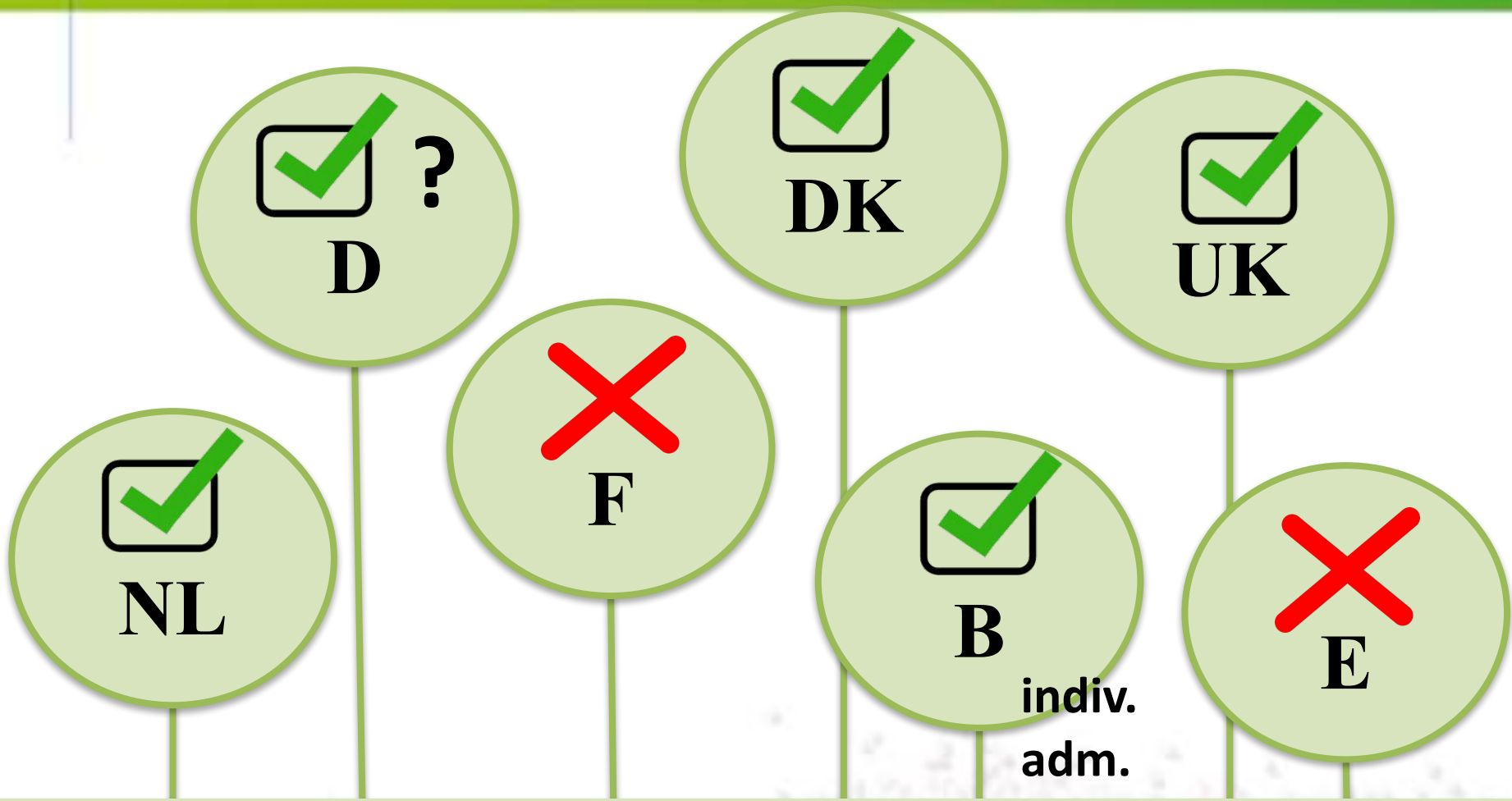
Waste is nasty

By-product

End-of-waste

End-of-waste


OVER THERE
FAR AWAY
NO IDEA
DON'T KNOW
??
NOWHERE
SOMEWHERE
NOT SURE
UNCERTAIN
DISTANT



National Fertilisers Regulations

EU Fertilisers Regulation

Strubias: struvite, biochar, ashes

Recommendations

Fast track criteria struvite, biochar and ashes

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Recommendations

Flexible & fast procedure to add new innovative secundary fertilisers

aqua minerals

Recommendations

Don’t exclude (inorganic) by-products and end-of-waste products as raw material for fertiliser production

aqua minerals

Recommendations

Add other ready to market secondary nutrients:

- minerals concentrate
- other inorganic recovered phosphates (calcium phosphate, potassium phosphate etc.)
- calcium carbonate from drinking water
- dried hygienised manure pellets
- (..)

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How manure fits into the Fertilisers Regulation proposal

Emilie Snauwaert | VCM

Vlaams Coördinatiecentrum Mestverwerking

POSITION VCM ON PROPOSAL EU2003/2003 REVISION

EMILIE SNAUWAERT

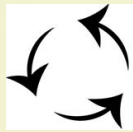
25 JAN 2017, BRUSSELS

VCM – Flemish Coordination Centre for Manure Processing

- intermediary between government and sector concerning all aspects of manure processing.
- supported by a great variety of members (Flemish and Provincial governments, farmers union, consultancy, bank sector, manure processing sector, animal feeding sector, research- and knowledge institutes, constructors, etc.)

→ independent position = *no Flemish position*

Why recovery of nutrients from manure?



In many cases: manure as main source of fertilisation for farmers

↔ use of surplus of nutrients affects the environment

⟶ demand of tailor-made fertilisers according to the plant needs

Mineral P-fertiliser production

→ P-scarcity (extracted from P-rock)

→ highly dependent on a few countries

Mineral N-fertiliser production

→ energy intensive process

Sustainable nutrient recovery from manure, as <u>available</u> resource?

Use as mineral fertiliser, or as raw material for production of mineral fertilisers

vcm

Why recovery of nutrients from manure?

Next to N, P, K, also **carbon**!

Maintain the organic matter content in the soil → current depletion of carbon

Need of organic fertilisers / soil improvers

For fertilisation in regions with nutrient surplus: low in nutrients

For fertilisation in regions with nutrient demand: high in nutrients

Currect export from Flanders to countries in and outside EU (2014):
1.398.632 tonnes pasteurised manure products *(according to EU1069/2009)*

Main remarks concerning trade of Flemish products derived from manure

Limits for contaminants in PFC's

Biuret

Regarding organic fertilisers (PFC1 A & B):
- for PFC 1A, it is needed to prove that biuret is not present in the EU fertilising product;
- for PFC 1B, a limit has been fixed.

The analysis of biuret should only be needed for production of ureum fertilisers (by heating of ureum). This analysis should therefore only be necessary in the case biuret could be present because of the process. This needs to be clarified in the text.

Limits for bacteriology in PFC's

Proposed Council Presidency amendments of 7/9/16

Ascaris spp and Toxocara spp

Regarding organic fertilisers (PFC1 A and B) and organic soil improvers (PFC3B), the "absence of resistant parasites such as eggs of Ascaris spp. and Toxocara spp. shall be demonstrated".

Reference is made to Annex XI, chapter I, section 2 (c) (iii), second indent of Regulation (EU) No. 142/2011 → only eggs of Ascaris spp. are mentioned in the case the processing method needs to be validated (alternative method for heat treatment of 60min at 70°C).

So today these parameters are not analysed for organic fertilisers/soil improvers based on manure (according to EU 142/2011). Problems with these parasites have never been occured. This extra analysis means an extra cost.

GENERAL REMARKS

- Revision should be a stimulant for the use of minerals from animal manure, this in the framework of the circular economy.
  - All liquid fertilising products, derived from manure cannot obtain a CE mark: high nutrient values are not realistic

	Raw digestate	Liquid fraction digestate	Evaporated LF digestate	Mineral concentrate digestate	Effluent biol. treatment digestate
LIQUID ORGANIC FERTILIZER	NO (C, N and K too low)	NO (C, N, P and K too low)	NO (C, N, P and K too low)	NO (C, N, P and K too low)	NO (C, N, P and K too low)
LIQUID INORGANIC MACRONUTRIENT FERTILISER	NO (Nutrient content too low)	NO (Nutrient content too low)	NO (Nutrient content too low)	NO (Nutrient content too low)	NO (Nutrient content too low)

Use of authorised CMCs as input materials to composting and anaerobic digestion

If materials such as plant parts (CMC2), food industry by-products (CMC6), appropriately sanitised animal by-products (CMC11) are eligible directly as CMCs, then they should also be clearly authorised as inputs to compost (CMC3) and digestate (CMC5). Also, digestate is often composted, and there is no reason to exclude the converse.

<u>Proposed amendment to Annex II – Component Material Categories</u>

Add to CMC-3-1 and CMC-5-1:

"*materials conform to CMC2, CMC3, CMC4, CMC5, CMC6, CMC11*"

Input for composts and digestates (CMC 3 & 5)

Proposed Council Presidency amendments of 7/9/16

→ only sanitised animal manures could be used as input materials to (EU labelled) compost and digestate production (CMC3, CMC5).

This is not logical as the composting/anaerobic digestion process itself can, subject to respecting Animal By-Product Regulation (ABPR) end point operating conditions, ensure sanitisation. Pre-sanitisation of manures before their input into composting or digestion would effectively mean processing twice and paying twice, and would result in pointlessly duplicated energy consumption and uneconomic costs.

The text should be modified to specify clearly that the composting / digestion process must ensure ABPR end point sanitisation if non-sanitised animal manure is an input material.

Component material category 11

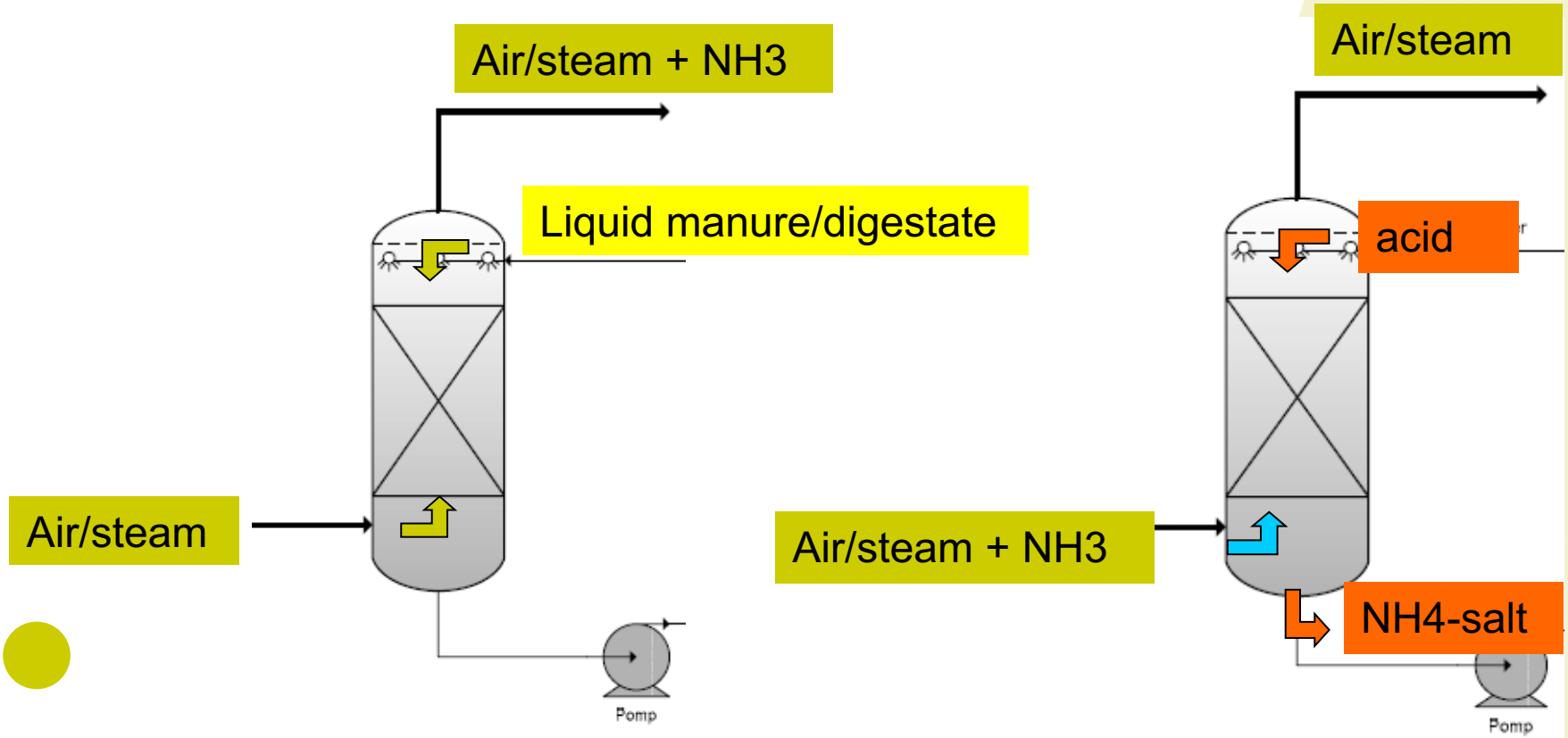
In Flanders the largest amount of nitrogen is processed with a biothermal drying process (see report VCM-enquiry 2014). However the biothermal drying process does not comply with the temperature-time profiles, described in CMC3 ‘compost’.

It is therefore necessary to include the pasteurised products, derived from manure (according to Regulation (EC) No 1069/2009), within the component material category 11, as this table is lacking at the moment.

→ Which products derived from ABP (EU1069/2009) will be included in the list of CMC11?
→ What will be the “end point” to be reached?

Extra: ammoniumsulphate/nitrate from stripping/scrubbing of manure/digestate

In Flanders, as well as the Netherlands, France, etc., the technique of **ammoniumstripping/scrubbing** is used in practice for processing of manure and digestate. This results in **ammonium sulphate**, or in the case nitric acid is used, the end product is **ammonium nitrate**.



Extra: ammoniumsulphate/nitrate from stripping/scrubbing of manure/digestate

As this end-product is generated from gas/air, this does not contain any carbon/contaminants.

Can this be seen as a liquid inorganic fertiliser (PFC1(C)(I)(b)(i), which consist of a CMC1 material (= air), or would this product be seen as derived from animal by-products (CMC11) (end point to be reached)?

Free movement

"Member States shall not impede the making available on the market of CE marked fertilising products which comply with this Regulation."

It is important that, next to 'making available on the market', the use of the CE marked fertilising product cannot be impeded by Member States. Therefore it is needed to make the direct link to the Nitrates Directive, in order to have a direct relation with the use of the EU fertilising products.

Nitrates Directive → defines a chemical fertilizer as a fertilizer manufactured by an industrial process and livestock manure as waste products excreted by livestock, even in processed form (art. 2(g) Nitrates Directive). Consistency between the Nitrates Directive and the EC Regulation 2003/2003 would therefore be necessary to create a level playing field between chemical fertilizers and the manure based alternative.

Thank you for your attention

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Quality and safety of nutrient recycling

Christopher Thornton | ESPP

Fertilisers Regulation revision: Quality and safety of recycled nutrients

Chris Thornton - European Sustainable Phosphorous Platform

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www.phosphorusplatform.eu @phosphorusfacts

Fertilisers Regulation revision: Quality and safety of recycled nutrients

Objectives:

- Nutrient and carbon recycling
- Safety
- Consumer and farmer confidence
- Agronomic value

Regulatory requirements:

→ sufficient, not excessive

→ Clear, workable

Contaminant limits

Essential for safety … but over-precaution → unnecessary processing → energy/chemicals use, costs, risk to block recycling

Questions:

- Chromium Cr_{total} and/or CR_{VI} ?
- Pathogens – not stricter than ABP (Animal By Products) requirements (what safety benefit to add Toxocara or Ascaris? What testing standard?)
- Copper, zinc:
  - are micro-nutrients – address through labelling not limits?
- Biuret, perchlorate:
  - pointless to require testing in materials where not present
- Arsenic, lead, nickel, cadmium
  - too low levels may block recycling of some materials
  - limits should be supported by risk assessment

Safety

Safety should be required of products, not of input materials

Sanitisation of manures:

- not useful where manure is input material for compost or digestate, where composting/digestion process ensures ABP endpoint
  → double processing & energy use → will block manure use

Contaminants in input materials:

- intro. Annex II CMCs: not limit contaminants in input materials if CMC process ensures removal (not dilution) to achieve PFC criteria
- Art. 42.1 (definition new CMCs) – risk should be assessed for the CMC after processing, not for the raw material
- *Example: sewage sludge incineration ashes may contain heavy metals. This should not exclude use as raw materials, subject to processing & monitoring to remove contaminants down to PFC safety levels.*

Traceability

… of possible organic contaminants: pathogens, pharmaceuticals
- for farmer and consumer confidence
- to limit risk in case of contamination

- Traceability back to source for organic material inputs
- For all products susceptible to contain organics
  → not necessary after incineration, chemical treatment, etc.
- Traceability of batch back to supplier farm, food factory, sewage works
  → goes beyond surveillance traceability (only back to product producer)
- Coherence with current dispositions for Animal By Products*

Need for more information:

- monitoring data, risk assessment, reductions in recycling processing

** article 22 from EC regulation n° 1069/2009 and article 17 from EC regulation n° 142/2011*
*** draft Fertilisers Regulation proposal text: Art. 6(5) – 6(7), 'Whereas' (29)*

Definitions = clarity for farmers

Definitions of "*mineral*" and "*organo-mineral*"
- *mineral* should have < 1-2 % organic carbon
- *organo-mineral* should have at least 7,5-10 % organic carbon
- what about products in between

(this does not modify the criteria of Annex I (PFCs) but requires appropriate vocabulary)

Define "*sufficiently effective*" in Art. 42,1

Phosphorus: require labelling of total P, water soluble, P_{NAC}

Add: C_{org}/N_{org} ratio in labelling requirements (PFCs 1A, 1B, 3C)

Clarify all specifications % dry matter or % wet weight

Prefer solid/liquid definition (rather than by % dry solid content)

Fertilisers Regulation revision:

A major opportunity to enable:

- Nutrient circular economy
- Recycling technology deployment
- Soil carbon enrichment/storage

But proposal text needs work to ensure:

- coherence of safety guarantees with recycling
- clarity of wording → confidence for investors, farmers

Fertilisers Regulation revision: Quality and safety of recycled nutrients

Chris Thornton - European Sustainable Phosphorous Platform

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European Water Services vision

Bertrand Vallet | EurEau

Fertiliser Regulation
European Water Services vision

Bertrand Vallet

EurEau – European Federation of Water Services

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How to ensure quality and safety?

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Introduction

- Waste water treatment is removing nutrients from waste water not to pollute water courses.
- End-up with sewage sludge full of C, N and P.
- Used as fertiliser already in many European countries for nutrient and structure.
- Heavy, difficult to transport, not suitable for European market as it is
- However, compost and digestate might
- Struvite and ash-based product also.
- Max potential for recycling: 10% of P imported for min. fertiliser production (full recovery)

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EurEau

Position Fertilisers Regulation

- Main point: no exclusion of input materials for CMCs, especially compost and digestates
- 20-30% of EU demand of phosphate fertilisers very ambitious without sewage sludge.
- Exclusion of sewage sludge for compost and digestate: why?
  - Most sewage sludge **comply with actual requirements and has increased quality due to control at source**
  - **Innovation** could bring solution for not yet compliant sewage sludge
  - **Traceability and source control** are more and more implemented (REVAQ example, Metals concentration improvement).
  - Important to clarify the fate of org. contaminant in soils: impact?

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Recommendations

- **No exclusion of input material** but qulity requirement on the final product.
- Both CE-fertiliser and national fertiliser should remain in the same treatment plant with identification and control of separate treatment **lines**.
- Adding traceability instrument to identify batches and their origin.
- Business model?
  - Can we justify the investments required by an uptake of the market?
  - Blending regulation like biofuel?
  - Need for multiple solution, especially in remote areas

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ECOFI perspective on contaminants in the Fertilisers Regulation proposal

Benoît Planques | ECOFI

European Consortium of the Organic-Based Fertilizer Industry

ECOFI perspective on contaminants in the draft EU regulation on fertilising products

25 January 2017 –Workshop organized by Jan Huitema, MEP, the Netherlands Nutrient Platform and the European Sustainable Phosphorus Platform

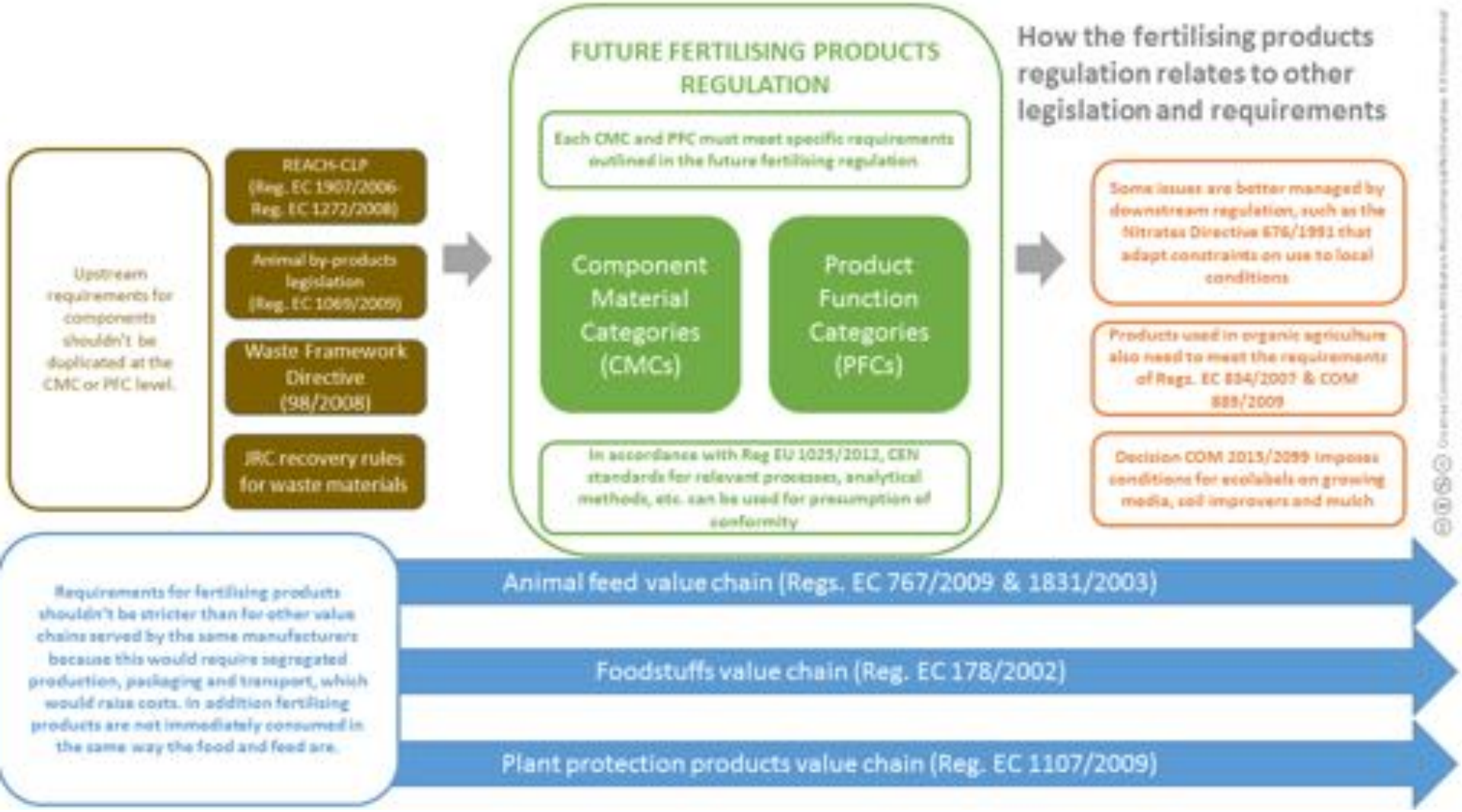
Benoît PLANQUES – ECOFI representative to DG GROW's FWG
ITALPOLLINA S.p.A. - Regulatory Manager

About ECOFI

- Producers of organic fertilizers, organo-mineral fertilizers and organic soil improvers
- Members active in most European countries, the Mediterranean and the Middle East
- Accounts for roughly 60% of the European market in organic-based fertilizers, which is worth about €250 million euros
- The industry is dominated by SMEs

An abbreviation

- Throughout this presentation, we use the term “organic-based fertilizers” to mean organic fertilizers, organo-mineral fertilizers and organic soil improvers


Upstream requirements for components shouldn't be duplicated at the CMC or PFC level.
REACH-CLP (Reg. EC 1907/2006- Reg. EC 1272/2008)
Animal by-products legislation (Reg. EC 1069/2009)
Waste Framework Directive (98/2008)
JRC recovery rules for waste materials
FUTURE FERTILISING PRODUCTS REGULATION
Each CMC and PFC must meet specific requirements outlined in the future fertilising regulation
Component Material Categories (CMCs)
Product Function Categories (PFCs)
In accordance with Reg EU 1025/2012, CEN standards for relevant processes, analytical methods, etc. can be used for presumption of conformity
How the fertilising products regulation relates to other legislation and requirements
Some issues are better managed by downstream regulation, such as the Nitrates Directive 676/1991 that adapt constraints on use to local conditions
Products used in organic agriculture also need to meet the requirements of Regs. EC 834/2007 & COM 889/2009
Decision COM 2015/2099 imposes conditions for ecolabels on growing media, soil improvers and mulch
Requirements for fertilising products shouldn't be stricter than for other value chains served by the same manufacturers because this would require segregated production, packaging and transport, which would raise costs. In addition fertilising products are not immediately consumed in the same way the food and feed are.
Animal feed value chain (Regs. EC 767/2009 & 1831/2003)
Foodstuffs value chain (Reg. EC 178/2002)
Plant protection products value chain (Reg. EC 1107/2009)

Pathogens

[Annex I, Part II, PFC 1(A)(4), PFC 1(B)(5), and PFC 3(A)(3]

- Organic-based fertilizers may contain raw materials from processed Animal By-Products (CMC-11)
- Therefore, the draft text proposes limits for *Salmonella spp.* and Escherichia coli or Enterococcaceae
- However, in order to qualify for use in a fertilizing products, these materials will have to reach an endpoint and exit the requirements of the ABPR
- Therefore, **this requirement should be deleted at the product level to reduce cumulative regulatory burden because the relevant Component Materials will already have been tested for the pathogens**

Harmonise the heavy metal limits across the PFCs to facilitate market surveillance of mixed products.

Contaminant	PFC 1(A) Organic fertilizers	PFC 1(B) Organo-mineral fertilizers	PFC 3(A) Organic Soil Improver
(Proposed) CADMIUM	1,5 mg/kg	(1) Total phosphorus (P) content <5 % P_2O_5: 3 mg/kg dry matter, or (2) Total phosphorus (P) content >5 % P_2O_5: 60/40/20 mg/kg	3 mg/kg
(ECOFI's position)	**(1) Total phosphorus (P) content <5 % P_2O_5: 3 mg/kg dry matter, (2) Total phosphorus (P) content >5 % P_2O_5: [Levels agreed for mineral fertilizers]**		
CHROMIUM VI	**2 mg/kg**		
MERCURY	**1 mg/kg**		
NICKEL	**50 mg/kg**		
LEAD		**120 mg/kg**	
BIURET	~~Biuret 12 g/kg~~	**When urea is a raw material - Biuret ($C_2H_5N_3O$) 12 g/kg**	--

Virgin substances & materials REACH requirements

[Annex II, Part II, CMC]

Delete the requirement to impose Annex VI, VII & VIII requirements regardless of tonnage and the chemical safety report and reinstate all exemptions mentioned in REACH.

- Imposing the 10t-100t data requirements that apply under REACH for any substance even if it's produced in very small quantities would add at least 100,000 euros to manufacturers' costs
  - It would thus make it very **difficult to find suppliers willing to assume these additional costs**.
  - It would become virtually **impossible to develop and market products at a low volume, which is often the case with innovative products** before they gain traction in the market. This would effectively interrupt the innovation cycle,.
  - It **would shift the logic behind REACH from a risk assessment to a hazard-based approach.**
- It would shift REACH requirements from the company placing substances & materials on the market to downstream users who purchase them. This would disrupt the basic functioning of REACH.
- Co-formulants used in PPPs that are REACH registered are not subject to these additional requirements even though they are also used in the food chain.
- Some REACH key exemptions are not included in the Commission's original proposal, including for natural polymers.

Thank you for your attention

- For more information, including ECOFI's detailed comments on the draft regulation: http://www.ecofi.info/2016/05/ecofi-responds-eu-commissions-proposal-regulation-fertilising-products/
- **Contact the speaker** benoit.planques@italpollina.com
- **Contact ECOFI's secretariat**
  c/o Kristen Sukalac, kristen@prospero.ag

Digestate in agriculture: getting quality and safety right

Nicolas de la Vega | EBA

Digestate in agriculture: getting quality and safety right

European Biogas Association
Nicolas de la Vega, Senior Policy Advisor
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EBA European Biogas Association

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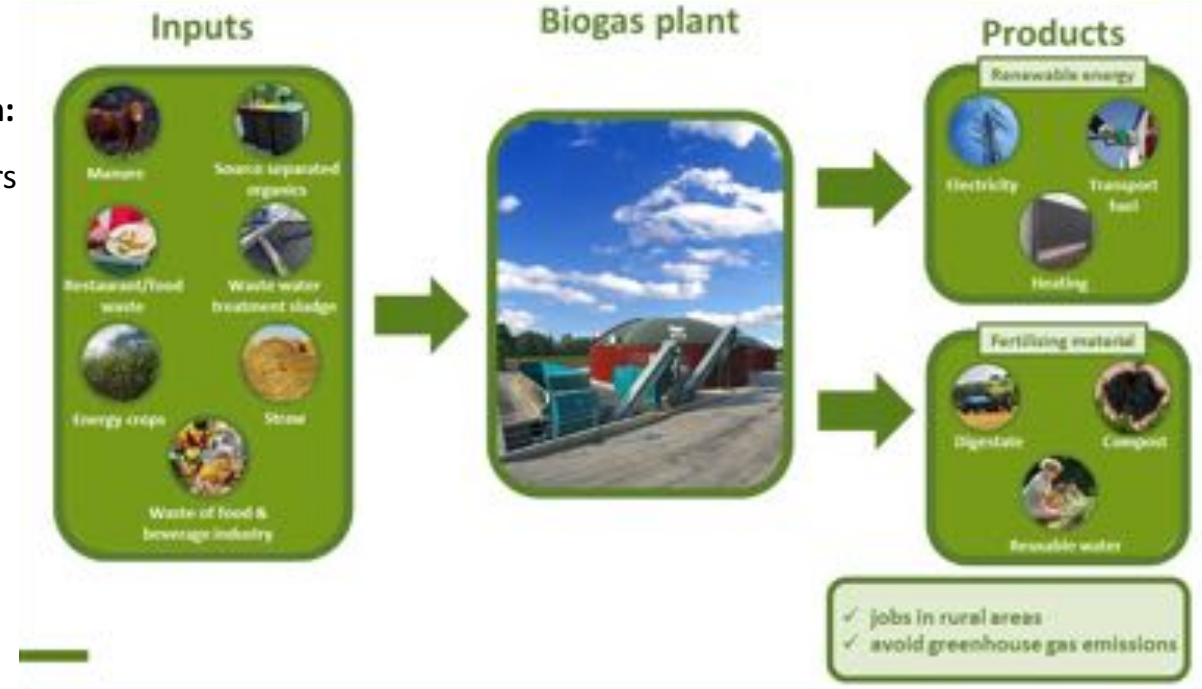
Introduction

About the European Biogas Association:

- Represents digestate & biogas sectors
- 90+ member in 25 European countries
- Gathers companies, national associations and academia
- Based in Brussels since 2009



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EBA European Biogas Association

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Position on Fertilisers Regulation

Safety requirements applied to digestate:

- Heavy metals - digestate samples well within values proposed for PFC 1(A); PFC3
- Animal pathogens – digestate processing requirements effective and feasible (CMC4 & 5)
- Glass, metal & plastics – reasonable requirements, few input streams are of actual concern

Quality requirements:

- Organic fertilisers (PFC 1(A)) – **most digestates excluded** by high nutrient and organic carbon requirements in fresh matter
- Organic soil improvers (PFC 3) – **most digestates excluded** by high dry matter and Organic carbon requirements in fresh matter

→ Therefore **digestate falls out of the scope**. This is a lost opportunity for nutrient recycling!

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Recommendations of the digestate sector

Change quality requirements in Annex 1**:**

- PFC 1(A) & PFC 3 – following nutrient & organic carbon requirements, substitute words "by mass" to "in dry matter" (labeling of products to stay in fresh mass)
- PFC 1 (A) (i) & (ii) – change dry matter requirements to:
  - "DM ≥ 20%" for solid organic fertilisers
  - "DM ≤ 20%" for liquid organic fertilisers
- PFC 3 - Split organic soil improvers into 2 categories in dry matter content:
  - "DM ≥ 20%" for solid organic soil improvers
  - "DM ≤ 20%" for liquid organic soil improvers

Safety requirements for animal by-products:

- Maintain coherence with existing ABP legislation
- COM and EFSA to keep up with ABP processing technology (e.g. pasteurisation alternative)
- Add manure & straw (crop residues) to inputs list of CMC4 "Energy crop digestate"

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Contaminants in mineral fertilizers

Antoine Hoxha | Fertilizers Europe

Contaminants in mineral fertilizers

Dr. Antoine Hoxha

Fertilizers Europe

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fertilizers europe

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Introduction

Phosphorous inputs to EU agriculture

- From organic sources
about 5,5 Mio Tons P_2O_5

- From mineral fertilizers
about 3 Mio Tons P_2O_5

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Cadmium limits

	Commission proposal (mg/ dry matter)	EU Presidency draft (mg/ dry matter)
Cr VI	2	2
Cr Total		100
Hg	2	1
Ni	120	100
Pb	150	120
As	60	40
Cu		600
Zn		1500

Cu and Zn are micronutrients ! These limits will limit recycling

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