

Joint position for the attention of Member State representatives on the R&D programming committee for the preparation of EU 9<sup>th</sup> Framework Programme:

- European Sustainable Phosphorus Platform
- Eureau – Europe’s drinking water and waste water service operators
- EBA – European Biogas Association
- ECN European Compost Network
- European Environment Bureau
- Growing Media Europe

**The need for research into organic contaminants in sewage biosolids and in manure, to support the bio- and nutrient circular economy**

Recycling of organic wastes (treated sewage biosolids, manures, non-avoidable food wastes, green wastes, food processing by-products ...) back to agricultural soil is under pressure because of real or perceived concerns about organic contaminants (pharmaceuticals, organic chemicals ...) and their possible impacts on crops, human health, soils and the environment.

Actions are engaged in different countries to improve quality and ensure dialogue with end-users (farmers, agri-food companies, supermarkets and retailers, consumers) and to address upstream source reduction, e.g. REVAQ Sweden.

However there is a lack of information (data, risk assessment), both because these contaminants are “emerging” (most past data addressed heavy metals and pathogens) and because pharmaceuticals are studied more in water (surface waters, sewage works discharge) than in solids (sludges, soils).

Also, sewage-related research and dialogue is generally organised at a national or regional level, and there is a need to improve exchange and synergy between national actions, and to enable European level dialogue with agri-food companies and retailers which are in many cases global operators.

Why recycling of biosolids to agricultural soil is important

- The EU currently returns around 50% of sewage biosolids and nearly all manure to farmland. Preserving this recycling is a priority of the nutrient Circular Economy
- Return of stable organic carbon to soils: 4/1000 soil carbon climate change commitment, improving soil quality (water retention and drought resistance, nutrient retention, soil erosion prevention ...)
- Synergy with renewable energy production (biogas) and agronomic value of digestate
- Economic benefits for farmers (nutrient input, manure disposal) and for local taxpayers (sludge management costs are a major operating cost for sewage works)
- Reduce EU dependency on phosphorus and nitrogen fertilisers (imported phosphate rock and natural gas)
- Ensure both food security (nutrients, soil quality) and food safety (risk from contaminants)

Regulatory drivers

- Phosphate rock is on EU list of critical raw materials
- Synergy with reducing phosphorus and nitrate losses (Water Framework Directive) and ammonia emissions (National Emissions Ceilings Directive)
- Reducing toxicity of recycled products is included in EU Circular Economy Package , based on a 7<sup>th</sup> Environment Action Programme priority
- EU Fertilisers Regulation revision (underway) : will already CE label certain biosolids or manure based products and probably others in the future, a lack of data concerning organic contaminants has already been identified

- Circular Economy: in the EU public consultation on the Circular Economy Package 2015, 30% of respondents identified bio-nutrients as “materials the EU should target first” and overall 54% cited bio-nutrients or phosphorus
- EU objectives on food waste valorisation
- EU renewable energy targets (anaerobic digestion of biowastes)

#### Lack of information

- Organic contaminants in biosolids are highly complex: very many different substances (pharmaceuticals, consumer chemicals), partial breakdown metabolites generated during treatments
- Most past knowledge (and regulation, spreading plans) were based on heavy metals (e.g. EU 7<sup>th</sup> FP project ROUTES on sewage sludge contaminants, looked mainly at heavy metals)
- Considerably more data and research is available on pharmaceuticals in water (surface and ground water, sewage works treated discharge) than in biosolids and soils. Although most pharmaceuticals are by design water soluble, some are found in biosolids (both in the solid fraction and in the water content)
- Knowledge is lacking concerning the breakdown of pharmaceuticals in treatment processes, their biodegradability and fate in soil and the risk, their impacts in soils and their possible uptake by crops

#### Need for European applied research

- Collate data on organic contaminants in biosolids (differently treated sewage sludges, manures, food wastes, digestates ...) which are developed by national programmes, water industry, etc (c.f. US National Sewage Sludge Repository and Human Health Observatory) and in other food-chain by-products which are recycled to land (e.g. animal by-products, such as feathers, green waste, industrial vegetal by-products such as wine cake, stillage ...)
- Collate and develop data on fate in soil, impact on soil organisms, possible development of antibiotic resistance in soil, uptake by crops.
- Risk assessments for farmers, public health, soil ecosystems
- Collate data and develop research into the effectiveness of different wastewater plant configurations and biosolids treatment processes in reducing organic contaminant risks
- Provide science base (data, analysis, accessible presentation summaries) for dialogue with stakeholders and end-users, and to develop upstream prevention policies
- Transfer of experience concerning successful upstream source reduction actions or treatment mitigation technologies

#### Need for European dialogue

- Concerns about pharmaceuticals and organic contaminants in biosolids may be based on perception and image rather than data
- Influencing public opinion is not the objective of research. However, dialogue with the stakeholders which can lead public opinion is important (farmers organisations, retailers, agri-food sector, environmental NGOs ...), in order to ensure that research responds to their concerns.
- This dialogue is needed at the EU level, because retailers and agri-food companies are global operators, as are pharmaceuticals companies, and in order to enable input to EU policies (Fertilisers Regulations, standards, chemicals policy ...)