ECN

Feedback

EVALUATION / FITNESS CHECK ROADMAP

Roadmaps aim to inform citizens and stakeholders about the Commission's work to allow them to provide feedback and to participate effectively in future consultation activities. Citizens and stakeholders are in particular invited to provide views on the Commission's understanding of the problem and possible solutions and to share any relevant information that they may have.

TITLE OF THE EVALUATION	*Evaluation of the Sewage Sludge Directive 86/278/EEC*
LEAD DG – RESPONSIBLE UNIT	*DG ENV – unit B3 Waste Management & Secondary Materials*
INDICATIVE PLANNING	*Start – Q3 2020*
(PLANNED START DATE AND COMPLETION DATE)	*End – Q3 2021*
ADDITIONAL INFORMATION	*https://ec.europa.eu/environment/waste/sludge/*

The Roadmap is provided for information purposes only. It does not prejudge the final decision of the Commission on whether this initiative will be pursued or on its final content. All elements of the initiative described by the document, including its timing, are subject to change.

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Feedback

With the European Commission's ambitions for a greener future enshrined in its landmark 'Green Deal' and related initiatives, as well as the imperatives for our society to live within planetary boundaries, adopting more circularity across the entirety of our lifestyles and economies is critical to build a more sustainable and resilient future.

In this context, the questions of sludge, the valuable biological resource resulting from wastewater treatment, needs to be carefully considered. The ongoing wide review of water-related policy has already confirmed the need to align better with circular economy objectives.

The **ECN**, the European Compost Network and the **EFAR**, the European Federation for Agricultural Recycling, welcome the revision of the Sewage Sludge Directive (SSD). The SSD was a pioneering initiative in the sector when it made it possible to establish safety thresholds that are referenced in other official texts. The attempts to revise the directive in 2000 and 2010 have not been successful, however, the preparatory work can be resumed to serve as a basis for reflection (especially the 3rd draft for a revised SSD from 2001).The evaluation report of 2014 shows that the directive has achieved its objectives, particularly with regard to the use of sludge in agriculture.

However, the lack of revision of this Directive, which dates back to 1986, has led to a growing mistrust of the waste and recycling sector. Thus, practices and the desire to ensure food safety, combined with regulatory acts that have not been amended for more than 20 years are reasons for national regulations and food production schemes to ban the use of "high quality biosolids" on soil.

European wastewater operators are constantly improving their wastewater treatment performance to serve citizens and provide essential services that are adapted to new challenges and demographic and social evolutions such as growing and aging populations, urbanisation, changing consumption patterns. Recent data suggests that, in the European Union, the treatment of wastewater produces over 8.5 million tons of dry solid matter of sludge every year. This is a valuable amount of resources which can be recycled locally without additional energy consumption promoting the circular economy.

Land use criteria must be identical or at least consistent between the different fertilizing materials and crop supports (concerning the safety threshold, agronomic efficiency, dose input, etc.). For example, it´s not acceptable that P-fertilisers are allowed with an Cd content up to 75 mg/kg phosphate (Austrian fertiliser regulation) even in organic farming and biosolids, with an Cd content around 1 mg/kg phosphate are totally banned.

We propose to use the following definition of "Biosolids" in the SSD (the treated sewage sludge-product, that meets strict quality standards) – in contrast to "sewage sludge" (untreated product). **Biosolids** may be defined as organic wastewater solids that can be reused after suitable sewage sludge treatment processes leading to sludge stabilization such as anaerobic digestion and composting.

The use of biosolids (like sludge compost) on land helps to combat global warming, counteract the constant loss of soil organic matter and allow independence in the use of mineral fertilisers. The return of biosolids to the soil is a concrete example of the circular economy. The simple recycling, where gentle processes on the treatment plant are used, ensures that not only phosphorus in the biosolid-product is reused as fertilizer on farmland but also other nutrients is recycled and the carbon itself is

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stored in the soil. European regulations in this area need to be regularly reviewed to update thresholds and criteria, preserve good practices and thus reassure the public.

Finally, quality controls of biosolids (like sludge compost) are indeed necessary. Therefore, ECN calls within the revision of the SSD to implement quality assurance as a prerequisite for the use of biosolids (like sludge compost) in agricultural without harmful effects on soils, crops and ground water. This should include, as well, the necessary control of the broad discharger to minimize pollutants and contaminants in the environment and in water.

We propose that thresholds, source tracing and quality requirements be harmonized at EU level based on "best practice" in the member states. Reference: Evaluation reports from the process 2014.

Focus on strict thresholds motivates to source sources of pollution, treat the pollution locally and not mix polluted sources with clean sources. Strict thresholds increase the credibility and legitimacy of the farmer as the recipient of the fertilizer product and in society in general. This also motivates society to take responsibility for its own residual products for the benefit of climate and the environment - circular economy.

EFFECTIVENESS

1. What progress has been made over time towards achieving the objectives and targets set out in the SSD in the various Member States? To what extent have the objectives been met?

If we refer to the 2014 ex post evaluation report, and more particularly to its effectiveness (§ 6.1.1) it is written that “The Directive has generally achieved its initial objectives, by increasing the amount of sludge used in agriculture and by contributing to reducing environmental harm by ensuring that heavy metals in soil and sludge do not exceed the limits set by the Directive”. Of course, SSD heavy metals thresholds in sludge need to be updated and lowered because of technical improvements done, since 30 years in urban and industrial waste water treatment that have led to cleaner sludge. For example, cadmium, mercury and lead mean levels are 5 to 8 times lower than in 1975.

Table 1: Heavy metals – limit values and content in France

ETM	Arrêté du 08/1/98	1975*	1990**	1996***	1999***	2017***	
						average value	Pct 90
Zn	3 000	2 100	921	745	626	711	1 330
Cu	1 000	380	334	309	303	271	535
Hg	10	3,7	2,7	3	2,4	0,7	1,3
Cd	10	8	5,3	2,9	2,1	1	1,8
Cr	1 000	75	80	59	50	40	65
Ni	200	46	39	32	24	30	41
Pb	800	310	133	107	77	38	78

*Evolution pattern of the mean trace metals levels of urban biosolids (ppm/DS) - Sources : * Pommel Tétart, ** Wiart & Réveillére, *** SYPREA*

Table 2: Heavy metals and AOX – average content 2019 and limit values in Upper Austria

	Mittelwerte	Grenzwert (LGBl. 62/2006)
Blei	20 mg/kg TS	400 mg/kg TS
Cadmium	0,69 mg/kg TS	5 mg/kg TS
Chrom	31 mg/kg TS	400 mg/kg TS
Kupfer	213 mg/kg TS	400 mg/kg TS
Nickel	19 mg/kg TS	80 mg/kg TS
Quecksilber	0,48 mg/kg TS	7 mg/kg TS
Zink	664 mg/kg TS	1.600 mg/kg TS
AOX	142 mg/kg TS	500 mg/kg TS

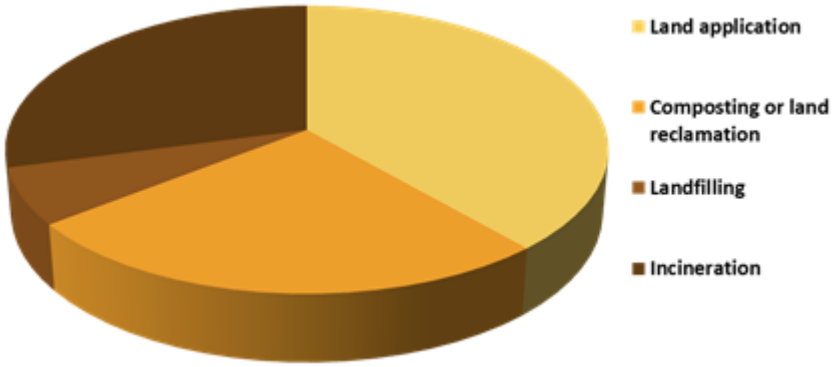
(https://www.land-oberoesterreich.gv.at/24712.htm)

National regulations have systematically adopted lower thresholds and it is necessary to update the SSD heavy metals thresholds in sludge and to control other organic pollutants concentrations in sludge as PAH or PCB.

2. What factors have contributed to or hindered their achievement?

Sludge Directive 86/278/EEC is valid since over thirty years and national and local authorities have moved away from EU minimum rules by adopting their requirements for sludge management, stricter than the Directive and with starkly different approaches across regions. The result is a patchwork of measures with a chain of negative effects. In addition, there is limited capacity and incentive for economic actors to exploit resources in sludge due to low competition. Faced with uncertainty at national level, plant operators nevertheless have no choice but to dispose of sludge and may need to look at different regions, or even countries, for receiving outlets; thus affecting the functioning of the internal market by encouraging sludge exports with different rules as well as increasing distance transport with related costs and CO_2 emissions. Furthermore, this affects more heavily rural and remote regions, with longer distances and where plants operators have lower in-house capacities. With the correct uniform framework in place (including a European ban of landfilling any treated and untreated sludge) however, sludge may not need to be exported and can be kept as a local resource and reused closest to where it is produced and in the most affordable manner. For a fair and well-functioning system across Europe, harmonised and up-to-date quality standards to ensure the safety of sludge reuse are paramount, ensuring more trust into the final products, supporting local economy and providing legal certainty to plant operators. Quality assurance is a prerequisite for placing these materials on the market.

In the European countries where a close relationship and good level of confidence have been established between sludge producers and sludge users (farmers) with help of professionals, we can state that sludge agronomic recovery is more important and very efficient. At European level, 58% of sludge production is directly land spread or composted, 12% is landfilled and 32% is incinerated.

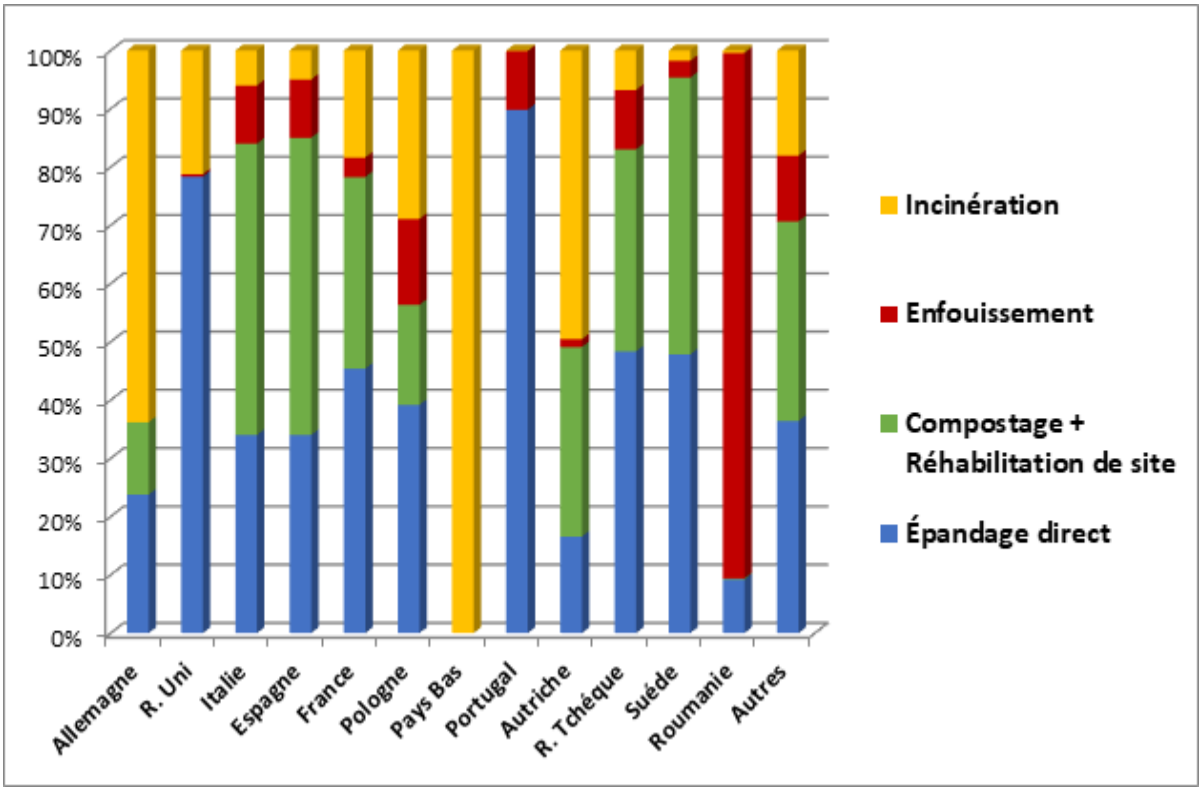


Sources : EUROSTAT 2015

So called "food certification programs" like GLOBALG.A.P. (https://www.globalgap.org/uk_en/who-we-are/about-us/Our-Core-Values/) are a driver for banning sludge from use in agriculture. One of the reasons are the different regulations in countries and regions. Instead of referencing an existing regulation, which is accepted by EU member states, the schemes include a ban for sludge which is much easier to be controlled by their auditors.

3. How effective has the implementation and enforcement of the SSD been in the 27 Member States and to what extent has this safeguarded agricultural soils from pollution?

The following figure (source Eurostat 2015) shows great variations of agronomic recovery global rate (direct land spreading + composting) from one country to another: 0% in the Netherlands because of too much animal residues from agriculture and only 35% in Germany because of policy developments, but 70 to 80% in UK, France and Italy where quite strict regulations have been implemented and allow sludge agronomic recovery without significant environmental impacts on soils and agricultural products .



In France, regulation has contributed to the improvement of the quality of the wastewater and the wastewater treatment which designed the improvement of the sludge quality. For example, cadmium, mercury and lead mean levels are 5 to 8 times lower than in 1975 (see Table 1).

Besides, many scientific devices have been held for over 20 years to evaluate the environmental, health and food impact when agricultural soils were amended with different input (such as bio-waste compost, biosolids, biosolids composts, digestate, livestock manure…). For example, INRA (the French National Institute for Agricultural Research) conducts two long term scientific devices: QUALIAGRO (https://www6.inrae.fr/qualiagro) and INRA COLMAR.

4. What have been the (quantitative and qualitative) effects of the SSD?

The sludge Directive 86/278/EEC was the first framework for encouraging EU member states to set frameworks for sludge to become a valuable fertilizer and soil improver. The SSD enabled quality sludge to be safely spread onto land. The opportunity for biosolids to be used in agriculture has been the most important driver to have a look on pollutants in wastewater, sludge and soils. One example to improve the quality of wastewater and sludge is the ordinance for indirect wastewater distributors to set limit values for different pollutants which are typical for non-household-like wastewater produced from special industrial or commercial branches. Therefore, the use of sludge/biosolids in agriculture has an indirect effect on sludge quantity and quality. A total ban of agricultural utilisation would reduce the motivation to control the quality of wastewater and sludge. Addressing sludge only to incineration would reduce the acceptance of stringent regulations to keep the wastewater clean and to disregard the principles of circular economy in this field.

5. What have been the unintended/unexpected effects of the SSD?

The French example and the quite unique case in the EC by which one product status has been created in 2004 for composted sludge with help of the NF U44-095 standard can be considered at one example. It was an unintended effect of the SSD that it became a waste regulation and not a product regulation. The French regulatory framework enabled the establishment of the professionalization of the sector and pushed the sector to improve the quality of biosolids produced.

Setting limit values for heavy metals in 1986 was an urging step to define a minimum quality standard, at this time. Keeping the limits for more than 30 years was not helpful for the acceptance of sludge utilisation on land. The limits are far away from current contents of heavy metals in sludge, but the old limits are very often referred to as burden for the environment by opponents of regional utilisation of biosolids. So, an unintended effect of setting quality standards 34 years ago is that these old limits now are considered as threat for soils and environment (Table 1).The utilisation of biosolids, especially sludge compost, in agriculture fits into the circular economy, if stringent criteria and quality assurance are required. A regular review of the regulation using scientific research to set new limits and criteria are a must to preserve those good practices and reassure the public.

EFFICIENCY

6. To what extent has the SSD been cost-effective? Are the costs related to the Directive proportionate to the benefits?

If we consider again the 2014 ex post evaluation report and figure 21 from §6.4.1.1, it appears that use on land is quite more cost effective than incineration and landfilling and that composting is quite less expensive than incineration.

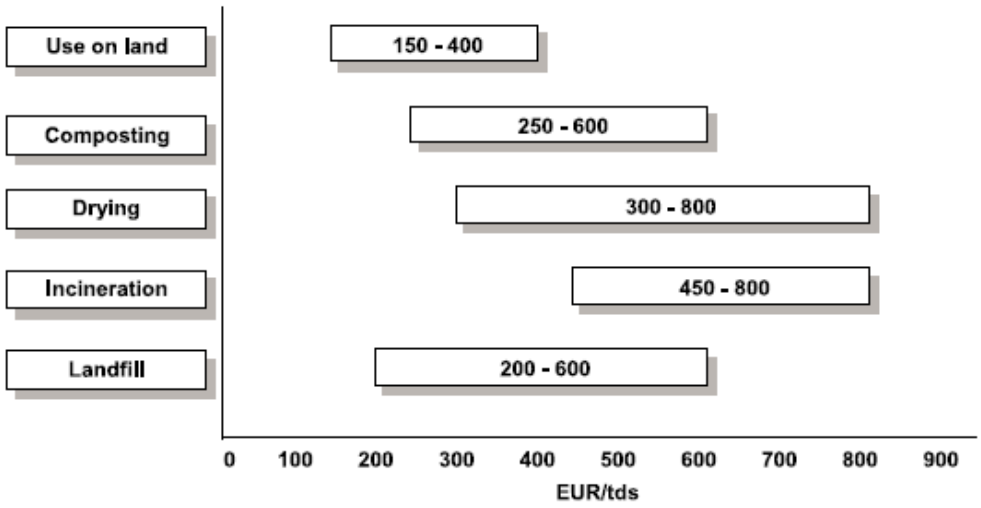


Figure 21: Sludge treatment and disposal costs (EUR/tDS (tonnes of dry solid))[360]

But the extra cost due to analysis and soils monitoring are still reasonable compared to the economic benefit of the use on land. Those analysis and monitoring enabled us to maintain the use on land by providing assurances of quality and safety.

7. To what extent do the requirements of the SSD influence the efficiency with which the observed achievements have been attained? What other factors influence the costs and benefits?

The French regulation and even more for the SSD, are quite old (the oldest 1986 the most recent, in 2004) resulting to unintended effects: the mistrust of the waste sector and recycling practices, the will to ensure food safety combined to regulatory acts that have not been amended since over 20 years hinder today the return quality assured biosolids to the soils. But the extra cost due to quality assurance, including soil analysis and monitoring, are still reasonable compared to the economic benefit of the use on land. Those analysis and monitoring enabled us to maintain the use on land by providing assurances of quality and safety.

The utilisation of biosolids – especially sludge compost - in agriculture is a real example of circular economy with low CO_2 emissions to the atmosphere. A regular review of the regulation using scientific research to set new limits and criteria are a must to preserve those good practices and reassure the public. And even more important, the criteria of use on land must be the same or at least coherent between different fertilizing material and crop supports (regarding safety threshold, agronomic efficiency, dose input…). Biosolids land application (directly or after composting) helps to control global warming, contributes to counteracting the steady loss of soil organic matter, and enables the independence in mineral fertilizer use.

8. Are there opportunities to simplify the legislation or reduce unnecessary regulatory costs without undermining the intended objectives of the intervention?

To fully reap the benefits offered by sludge and biosolids – including nutrient or energy recovery - it is essential to operate a change in the way we collectively view and address this biological resource., within the correct framework, it can be a great resource that contributes to Green Deal objectives and sustainable development. For this to happen, several pre-conditions are necessary, starting with political courage to address an unpopular issue at all levels – EU, national and local, with the participation of citizens, and to acknowledge the inevitable continued production of sludge. Furthermore, it is critical to acknowledge that sludge is a collective responsibility which goes beyond the sole prerogative of wastewater operators and calls for cooperation amongst all actors to find common solutions and overcome divergences in an informed manner. Finally, a key instrument is to not only ensure strong EU sludge policy but also coherence between policy goals, as well as streamline circular economy objectives throughout sectoral policies.

The only effective approach to improve biosolids quality is to control and to implement systems upstream to minimize pollutants and contaminants into the environment and into water. Therefore, ECN calls within the revision of the SSD to implement quality assurance as a prerequisite for the use of biosolids (composted sludge) intended for agricultural use without harmful effects on soils, crops, and ground water. This should include, as well, the necessary control of the broad discharger to minimize pollutants and contaminants in the environment and in water.

9. Are there significant differences in costs (or benefits) between Member States, and if so, what are the underlying causes? How do these differences link to the SSD?

In France, biosolids compost became e reference of quality with more demanding criteria, and benefits of guarantee of hygienisation, value for agriculture, controlling olfactory nuisance, social acceptance which are as important as the innocuity guarantee, to sustain use on land of biosolids.

The example of Germany shows that the ban of sludge utilisation in agriculture leads to increasing costs because of creating monopolies for treatment and disposal. The price before the ban were at

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a level of ~ € 70/t for dewatered sludge (~30 % DM) used regionally on arable land. Nowadays operators of wastewater treatment plants have to pay up to € 300/t because of missing alternatives.

SSD should commit member states to ban landfilling of any kind of treated or untreated sludge. Primarily, the direct recycling of high-quality biosolids (composted sludge) as direct use in agriculture should be promoted. Secondly, the topic of technical P-recycling should be addressed as well This would be a clear sign to establish the direct use of biosolids as state of the art and to make clear, that thermal/chemical treatment solutions are available if utilisation on land is not possible.

10. How timely and efficient is the process for reporting and monitoring?

Reporting per country: it seems that reporting is lacking. EUROSTAT seems to be relevant, but it is missing some homogeneity between the different systems (of each country) of qualification and quantification.

EUROSTAT should clearly distinguish between the input materials and the treatment processes (composting, anaerobic digestion, thermal and chemical treatment). Specific waste codes for the input materials have to be introduced.

COHERENCE

11. To what extent is the SSD internally consistent and coherent?

The intention of the SSD to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to prevent harmful effects on soil, vegetation, animals, and man was defined in 1986. This aim was fulfilled at this time but now it is crucial to improve the management of sludge to move to a true circular economy. There is an urgent need to set up a streamlined and efficient framework that achieves EU objectives. The solutions that are adopted today should help to face the future and avoid resulting in unsustainable, unrealistic and unfair situations.
The expected revision of the “Urban Wastewater Treatment Directive” as well as a potential review of the “Sewage Sludge Directive” are opportunities to contribute to a greener framework. Intensive work across silos and sectors will realise the potential of biological resources.

12. To what extent is the SSD coherent with other EU legislation such as the Urban Waste Water Treatment Directive, the Fertilising Products Regulation, Waste Framework Directive, the Water Framework Directive (and its daughter directives), Marine Strategy Framework Directive, the Landfill Directive, the Nitrates Directive, Renewable Energy Directive, the Energy Efficiency Directive, Air Quality Directive, National Emissions Ceiling Directive, Industrial Emissions Directive, the REACH Regulation, General Principles of Food Law Regulation?

The SSD was pioneer regarding safety thresholds which are referred to in other statutory texts. A regular review of the regulation using scientific research to set new limits and criteria are a must to preserve and expand those good practices and reassure the public. And even more important, the criteria of use on land must be the same or at least coherent between different fertilizing material and crop supports (regarding safety threshold, agronomic efficiency, dose input…). The key is to define target results instead of methods results.

13. To what extent is the SSD coherent with wider EU policy?

The SSD, must be coherent with the EU policy of promoting circular economy and regain food and N,P,K self-sufficiency. Biosolids enable or contribute to this policy and self-sufficiency by returning to the soil with renewable fertilizer N, P, and K in quality and quantity. The nitrogen from biosolids allows to reduce using mineral nitrogen and phosphorus which is an important energy user. The problem of the organic matter decline in the soil is a real stake as much as the Greenhouse Gas emissions, use on land of biosolids (sludge compost) contributes to this fight.

RELEVANCE

14. To what extent is the SSD still relevant and does it correspond to the needs within the EU, in particular as regards the stated policy ambitions in the European Green Deal, (which include the Farm-to-Fork strategy, the upcoming Environmental Action Plan, the new Circular economy Action Plan, the upcoming zero-pollution initiatives, the Biodiversity Strategy and newly proposed EU Climate Law) as well as national ambitions as reflected in the observed changes in the national legislation and management of sewage sludge?

It is widely acknowledged that pollution prevention is significantly more efficient than treatment. Once certain pollutants, which could be avoided, enter the wastewater system, they become difficult to detect and remove with conventional treatment. In accordance with the precautionary principle enshrined in EU treaties, measures need to be taken to prevent pollution at the source through a consideration of sectoral, market and trade policies, to improve the framework for a circular economy. Furthermore, focusing on end-of-pipe solutions raises a set of issues related to higher treatment levels: the cost of water services for households as, based on the cost-recovery principle, citizens risk burdening the costs generated by polluting industries; or increased energy use in an already energy-consuming process. All in all, ensuring that action is taken to reduce pollution altogether results in higher quality sludge and cleaner water with less treatment.

All efforts, resulting from the upcoming Environmental Action Plan, Circular Economy Action Plan, zero-pollution initiatives, etc. will be visible in decreasing concentrations of pollutants in sludge/biosolids. Therefor member states should be encouraged to support the utilisation of sludge in agriculture because it helps to convince industry, commerce, and retailers to focus on environmental, friendly solutions.

15. To what extent are the pollutants and their respective threshold values set in the Directive still appropriate? Does the set of pollutants covered in the SSD still cover the most important pollutants in sewage sludge? If not, what are the missing pollutants in the Directive or pollutants that no longer need to be covered and why?

Heavy metals and AOX are significant parameters to demonstrate the environmental situation in a region and to supervise the trend of development.

16. Has the initiative been flexible enough to respond to new issues and emerging risks (e.g. contaminants of emerging concern)? Does the SSD contain moot or redundant stipulations?

The experience since 1986 shows the phenomenon of “pollutants of the year”. Based on studies and more or less scientific work different substances have been discussed, methods for analyses have been developed and strategies to reduce the concentration in wastewater have been realised. SSD should enable a flexible approach which includes fixed parameters as indicators for the quality of

the wastewater and the possibility to concentrate on new substances which are discussed and may be problematic. Based on this approach it would be possible to find out the sources and to interact with other regulations to avoid emissions at the source.

EUROPEAN ADDED VALUE

17. Are the results of the 2014 evaluation still valid with respect to the European added value of the SSD? What has changed and which new risks have emerged?

Microplastics, substances with hormone effects and residues of medicine are mainly discussed related to the utilisation of biosolids on land. Unfortunately, there are no real efforts to take actions at the sources.

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