



**EFAR** welcomes the fact that the EC has launched an impact study about the 86/278/EEC directive revision and the consultation of the different stakeholders.

Indeed **EFAR** strongly believes that regulation is the most effective tool to increase or limit the rate of sludge land spreading throughout Europe.

The main criteria for EFAR which will influence dramatically the use of sludge in agriculture are in order of importance:

- Threshold values for PTEs in sludge.
- Threshold values for heavy metal concentrations in soils.
- Requirement for sludge treatment prior to land spreading.
- Sludge quality control and monitoring of the landspreading operations.
- Information for the farmers on the agronomical value of the sludge.
- Complete service and fertilisation plans with guarantees for farmers

**EFAR's** comments on the two reports submitted by the EC for review are listed here after.

## **Report 1 - Assessment of the existing knowledge**

In a general way the report represent a good synthesis of the current knowledge about sludge disposal or recovery but is much more focussed on the land spreading outlet than on any other outlet. As the decision to revise the 86/278/EEC directive will potentially lead to the extension of alternative routes it is desirable to develop in greater detail the interests and limits of the different sludge disposal options.

Moreover there is also a significant imbalance between the presentation of the benefits of sludge land spreading which stands in one page and half and the review of the risks associated to this practice which are presented in nearly ten pages. For an insufficiently informed reader this could represent an issue.

Finally as the directive revision will potentially also have a significant impact on industrial sludge spread on land, we believe that this point has to be integrated into the assessment.

**EFAR** also regrets that the other land application outlets like land reclamation, energy crop and forestry are not afforded a more positive judgment. Land reclamation, energy crops and forestry is a use on land and not an alternative to the use on land.

## **§ 21 - Sludge quantity**

To determine the quantity of sludge which is spread on land it is necessary to sum up the data concerning direct land spreading and composting. If you do this type of calculation for the 2005 **EUROSTAT** data (replacing the missing values for the most recent one completed) you come to a figure of 5162 KT of D.S. This represents 50% of the global tonnage and is probably more accurate than the 37% mentioned into the report. Composting isn't an outlet but a further treatment like liming and makes only sense when compost is used for pot plant substrates or on land.

## **§ 3.1 - Legislation**

The European waste catalogue should be mentioned. As in this document the urban sludge is referenced under the 190805 code and therefore **EFAR** considers that there is no doubt that sewage sludge is to be considered as a waste.

## **§ 3.2 - Member state regulation and policy**

Switzerland's policy about sludge disposal should not be mentioned as this country is not an EU country.

There is a need here for some discussion about the relevance of set limit values on total heavy metal concentrations in soil due to the fact that generally a very limited fraction is available. Every discussion about limit values has to include any other kind of fertilizer which can be used as a substitute for sludge or sludge compost. Manure, compost or mineral fertilizers may have even higher concentrations and lead to the same or higher PTE - freights.

pH also varies a lot on the same plot of land during the year which makes control operations potentially difficult.

In the identification of the costs and benefits of the directive revision any tightening of soil limit values has to be assessed taking into account the existing data about heavy metal concentration in EU soils (particularly for nickel and cadmium). **EFAR** proposes to provide local data on that point.

#### Table 7:

- For France the maximum concentrations of pathogens in sludge mentioned are used to determine whether the sludge has been correctly sanitized or not. France 97/11/33 decree: The annual report has to be prepared and submitted to local authorities at the same time as the spreading forecast and in any case one month prior to the first spreading campaign of the year.
- Helminths have been detected in Lombardy (Italy region) for the last 20 years analysing the presence of live eggs in sludges. After some thousand of analysis, no trace of live eggs has been found

#### Table 8:

Limit value for AOX in Upper Austria is 500, limit values for PCB, PCDD/F have been set about 10 years ago with periodical analyses. The need for periodical analyses was changed to analyses when there is a suspect by special wastewater distributors or accidents. During ~ 10 years of periodical analyses was no extension of limit values and so the costs for analyses have been considered as “waste of money”. AOX is the indicator for organic pollutants.

### **§ 4 - Economics of sludge treatment and disposal**

Figures about treatment costs and benefits of sludge land spreading are historic from 2002! They need to be updated.

### **§ 6-3-2 -Pathogen exposure and consequences**

The existence in France of the “cellule de veille sanitaire sur les épandages” should be mentioned and particularly the fact that since 1997 there is no animal disease registered due to sludge application when the land spreading is carried out in accordance with the regulation.

In Austria, two barrier approaches in the federal countries where sludge spreading are possible. No animal or human disease due to sludge application registered since sludge use is reported. Spreading of untreated night soil is possible even within the regulations of the agricultural environment programs on arable and grassland.

### **§ 5 - Agricultural value of sewage sludge**

The maximum nitrogen amount applicable in NVZ is of 170 kg/ha instead of the 175 kg/ha mentioned.

In Austria, sludge and sludge compost are not considered as manure and so 170 kg/ha N limit of ND can be extended to 175/210 kg/ha limited by national water regulations.

### **§ 8 - Greenhouse gas emissions**

The main assumptions taken into account to establish the comparison of greenhouse gas emissions need to be presented.

Particularly the dry matter content and the calorific value of the sludge used to establish the calculation have to be compared with the average quality of the European sludge for these parameters.

In Austria, a new study shows that main CO<sub>2</sub> emission of sludge disposal/utilisation comes from incinerating when all C of organic matter is burnt. Use on land leads to carbon sequestration of high percentage of organic C.

## **§ 9 - Stakeholder interests and public perception**

The unfolding and main conclusions of the “conference citoyenne sur les épandages de boues” held by the French ministry of the environment shall be presented.

## **§ 11 - Monitoring record keeping and reporting**

Regarding the information required to be made available it is necessary to integrate:

- The spreading rate per land unit.
- The supply of total and available fertilisers spread per land unit.

The amount of sludge should be recorded in tons not in meters cubed (ton is a measure, meter cubed is an estimation).

Table 13: pH is expressed in mg kg<sup>-1</sup> which is not the usual unit.

In Austria, a voluntary internet data base has been installed by Mueller Abfallprojekte GmbH ([www.mueller-umwelttechnik.at](http://www.mueller-umwelttechnik.at)) where operators of WWTP, farmers and authority can search for sludge related data (contact details, field data, analyses, statistics, etc.).

### **§ 11.1 - Sludge analysis**

Sludge analysis frequency shall be increased and adapted to the size of the WWTP.

### **§ 12.6 Organic contaminants**

Chlorine solvents have been analysed over the last 20 years in Lombardy as routine and no trace of these substances has been found

## **Report 2 -Base line scenario analysis of risk and opportunities**

Once again EFAR believes that industrial sludge at least produced by the food and paper industries need to be integrated in the baseline scenario.

### **§ 2.2 - Sludge disposal routes**

Costs don't have to be broken down into transportation and dewatering or drying costs because decision making is on the global cost of each route. In some cases availability of farm land could be a more important criterion.

### **§ 2.2.1 - Regulatory framework (table)**

The fact that the EC Landfill Directive could have a negative impact and that the EC Incineration Directive could have a positive impact on sludge land spreading need to be clarified.

The Waste Directive could also have a negative impact on sludge land spreading if the composted sludge does not meet the end of waste criteria.

### **§ 2.2.2 - Population density and land availability**

As mentioned previously the heavy metal soil concentrations have to be integrated as a key factor of the base line scenario. Any modification of the thresholds limit could have a dramatic impact on the land spreading outlet by reducing significantly the available landbank.

The Impact of modified threshold limits on alternative fertilizers has to be considered.

### **§ 2.2.3 - Incineration as an alternative**

One cannot continue to present sludge incineration as a potential source of renewable energy. Sludge average dry matter content in Europe is probably circa 20 % which means that it will need energy to be burn! Combustion of dried sludge is energy consumptive.

Digestion is the only way to provide renewable energy during sludge treatment and has also the advantage to produce a final product that is easy to handle and odourless.

In Austria, a new study shows that the incineration of carbon, contained in ~25 tons (load of one lorry) of dried sludge, produces approximately the amount of CO<sub>2</sub> a middle class car emits by driving ~200.000 km. Use on land guarantees C-sequestration of a high percentage.

### **§ 2.2.4 - Past, current and future trends**

In the list of the overall trends could you give concrete examples which allow you to write down that there will be new restrictions on the type of crops being used for sludge landspreading?

In figure 4 we would like to know how the forecast for the other routes has been established. EFAR wants also to stress that compost, representing the main part of the other routes, is only a treatment before use on land and partly use for pot plant substrates. This fact has to be integrated in the assessment of the directive revision scenarios.

### **§ 2.3 - Sludge quality**

EFAR believes that sludge quality is an essential point to assess the impact of the sludge directive revision particularly regarding any change of threshold values in PTE or OC in sludge. Or there is a lack of information in the current version of the report about these data.

It is necessary to dispose per country of data on sludge quality per size of WWTP or at least balanced taking into account the DS production.

On that point great variations could be expected between EU 15 and EU 27.

### **§ 2.7.1 - Competition with inorganic fertilizers**

This paragraph has to be adapted to the EU context and shall not be limited to a global worldwide overview. It will then be possible to demonstrate that even with extended sludge land spreading only a small part of the crops needs in fertilizers will be covered.

Much more emphasis on the decline in Phosphate reserves is needed and the beneficial closed loop recycling sewage sludge contributes to the Phosphate picture will be a vital part of the need to recycle to agriculture - it is becoming a need, not an option.

A new phosphorous balance for Austria shows that P contained in sludge, meat and bone meal and not recycled biowaste can feed ~ 70 % of the whole crop area.

Table 7: we will appreciate the expression of the costs in € instead of \$.

## Questions for consultation

Country: AUSTRIA

**Q9 - In your country, what are the special conditions that encourage or discourage the amount of agricultural recycling?**

Some federal countries enable land spreading under controlled conditions. Land spreading has to be based on analyses and exact fertilisation plans and nutrient balances. Agricultural environment programs enable the use on sludge and acceptance by farmers, authority and stakeholders is high.

Some federal countries disable use on land. Most of the sludge disappears on diffuse paths. Acceptance of sludge treatment plants and use of sludge is low.

Marketing programs of retailers, sugar industry, the Austrian Agrarmarketing Agency and organic farming are examples how to limit the use of sludge on land even under controlled conditions.

**Q10 - What change do you expect to take place in the rate of agricultural recycling by 2020?**

50 % of municipal sludge in Austria derives in Vienna and ~ 50 % of sludge in federal countries derives in their main towns. These amounts are currently incinerated. As soon as possible, plants for the recovery of P should be installed at these treatment plants. Smaller plants in the countryside deliver sludge to land for short transport distances and efficient use of nutrients. This level will be kept stable.

**Q13 - In your country what are the most significant local restrictions on sewage sludge quality that affect the availability of land for sewage sludge recycling?**

After installing the indirect distributor regulation ~ 10 years ago, the quality of sludge increased significantly and more stringent regulations wouldn't affect the availability of land so much. Only copper could cause problems because of increasing contents. Zinc and copper should be considered as trace nutrients and not be limited by strict threshold values. The acceptable content should be detected by soil analyses and nutrient balances.

**Q14 - What changes to local statutory or practice requirements do you expect up to 2020 (in terms of limits on quality, etc.)?**

There are a lot of statutory and practice requirements and changes will be only marginal.

**Q15 - To what extent do the current requirements in the EU sludge directive affect the availability of land for sludge recycling? To what extent are the requirements believed to be unsuited to current farming and public needs?**

Every regulation of Austrian federal countries is more stringent than the current EU sludge directive. A new EU sludge directive should give more stringent requirements but also a need for enabling the use of sludge on land.

**Q20 - What are the likely impacts of the Nitrates Directives on the current sludge recycling proportion in your country? By how much?**

No effect by ND because sludge and sludge compost are not considered a manure. Time and N limits exist since ~ 20 years by the national water regulation.

**Q 21 - What local codes of practice or other restrictions related to land use have the greatest impact on sludge recycling to agricultural land in your country?**

Different regulations in federal countries, production contracts by food industry, retailers and Austrian Agrarmarketing Agency, organic farming.

**Q22 - What changes in land use are likely to affect sewage sludge recycling?**

Areas with high percentage of organic farming cause higher requirements on sludge treatment and extended transport distances.

**Q24 - Are further restrictions needed on types of crops and or specific land areas (i.e. forest) or longer harvesting intervals?**

Crop production has to be based in any case on fertilization plans and nutrient balances. Restrictions by special conditions (sandy soils, steep slopes, close to open water, etc.) have to affect every fertilizer! Manure as well as compost as well as organic fertilizers as well as mineral fertilizers!!!

**Q25 - Should formal risk management methods be consistent throughout the EU?**

Risk management has to be done by a quality assurance system. CEN/TC 308 should create a standard as a basis for a consistent regulation throughout the EU.

**Q26 - Is sewage sludge likely to be used as a replacement for inorganic fertilizers? To what degree is the use of sewage sludge influenced by the market for inorganic fertilizers? Are the qualities of sewage sludge as a replacement for inorganic fertilizers sufficiently well understood to increase the demand for sewage sludge recycling onto agricultural land**

Sewage sludge is one of several fertilizers to deliver nutrients and organic matter required by soils and plants. Fertilization plans and nutrient balances give exact information about limitations or the amount to be combined with manure or mineral fertilizers. Limitations by high nutrient contents in soils can be detected with analyses. High nutrient loads by high animal stocks or alternative waste fertilizers (compost, residues from food production, etc.) can be detected by nutrient balances.

**Q27 - How will public opinion in Member States that currently send high levels of sludge to landfills (e.g. EU12) react to greater use of sewage sludge on land?**

In all areas where sludge is used on land under controlled conditions, the public acceptance is very high. People who are informed that sludge is compost derived from their wastewater accept the use on land when the benefits for protecting resources and reducing energy consumption by short transport distances and standard treatment are shown properly.



## Questions for consultation

Country: FRANCE

**Q9 - In your country, what are the special conditions that encourage or discourage the amount of agricultural recycling?**

Strong regulation and high traceability level are giving confidence to the different stakeholders and globally influence positively sludge landspreading. The fact that there is a high level of land available also encourages the agricultural recycling.

**Q10 - What change do you expect to take place in the rate of agricultural recycling by 2020?**

Increase of sludge landspreading due to decrease of landfill disposal for which additional taxes are going to apply.

**Q11 - How will the existing regulations noted above affect your recycling and other disposal routes?**

We do not believe that the landfill directive will have a negative impact on sludge landspreading and that the incineration directive will have a positive one. The implementation of the IPCC directive will globally increase the costs of the different sludge outlets.

Composted sludge shall be integrated in the thinking about the end of waste criterion establishment for compost as it is currently considered as a product in France.

**Q12 - Will the Nitrate Directive and the WFD have a significant effect on restricting or reducing the availability of land for agricultural recycling of sewage sludge? How much of an effect?**

Nitrate directive has already impacted the sludge landspreading outlet mainly by the reduction of spreading rates and spreading periods. We do not expect new out coming impacts. For the WFD see our remark above.

**Q13 - In your country what are the most significant local restrictions on sewage sludge quality that affect the availability of land for sewage sludge recycling?**

Spreading rates are mainly determined by the agronomical value of the sludge and are in very limited situations driven by PTE flows over 10 years.

Soil heavy metal concentrations due to background level can affect the availability of land and lead to the establishment of a derogation file submitted to the local authorities as specified within the French regulation.

**Q14 - What changes to local statutory or practice requirements do you expect up to 2020 (in terms of limits on quality, etc.)?**

None.

**Q15 - To what extent do the current requirements in the EU sludge directive affect the availability of land for sludge recycling? To what extent are the requirements believed to be unsuited to current farming and public needs?**

Not enough requirements on the sludge quality control and on the traceability and monitoring of the sludge landspreading operations.

**Q16 - In your country what changes to the concentrations of metals in sludges do you expect up to 2020?**

Slightly decrease.

**Q20 - What are the likely impacts of the Nitrates Directives on the current sludge recycling proportion in your country? By how much?**

Very limited impact except potentially a slight increase of the spreading areas.

**Q 21 - What local codes of practice or other restrictions related to land use have the greatest impact on sludge recycling to agricultural land in your country?**

Soil threshold value in heavy metals.  
Specifications of production contracts set out by food industries or retailers.

**Q22 - What changes in land use are likely to affect sewage sludge recycling?**

Development of organic farming but this will probably be quite limited.

**Q24 - Are further restrictions needed on types of crops and or specific land areas (i.e. forest) or longer harvesting intervals?**

No unless if there is a well demonstrated threat for human being or animals health.

**Q25 - Should formal risk management methods be consistent throughout the EU?**

Yes and it has to be the basis used for the determination of threshold values.

**Q26 - Is sewage sludge likely to be used as a replacement for inorganic fertilizers? To what degree is the use of sewage sludge influenced by the market for inorganic fertilizers? Are the qualities of sewage sludge as a replacement for inorganic fertilizers sufficiently well understood to increase the demand for sewage sludge recycling onto agricultural land**

Sludge is used as a replacement for inorganic fertilizers and is influenced by the price of the later.

To enhance the understanding of the agronomical value of the sludge by the farmer it is necessary to provide him more information on:

- the sludge quality,
- the total and available quantity of fertilizing elements brought by sludge spreading on each plot of land,
- soils analysis results integrating fertilizing elements.

**Q27 - How will public opinion in Member States that currently send high levels of sludge to landfills (e.g. EU12) react to greater use of sewage sludge on land?**

The public is generally not aware of the exact quantity of sludge spread on land. Increase of sludge quality control and deeper monitoring of sludge landspreading operation is the best mean to increase public confidence.

## Questions for consultation

Country: ITALY

**Q9 - In your country, what are the special conditions that encourage or discourage the amount of agricultural recycling?**

The application of landfill directive encourages the landspreading of sludge. The application of nitrate directive discourages the landspreading in Northern Italy. This choice is NOT BASED on technical assessment, but it is only based on political choice to support the critical situation in managing the animal effluents from livestock.

**Q10 - What change do you expect to take place in the rate of agricultural recycling by 2020?**

We foresee a stable situation regarding the agricultural landspreading.

**Q12 - Will the Nitrate Directive and the WFD have a significant effect on restricting or reducing the availability of land for agricultural recycling of sewage sludge? How much of an effect?**

The application of the WFD will increase the production of sewage sludge in Italy. The application of nitrate directives is reducing the availability of land in Northern Italy for a precise political decision to support and to facilitate the use of animal effluents although the landspreading represents < 5% of the available lands.

**Q13 - In your country what are the most significant local restrictions on sewage sludge quality that affect the availability of land for sewage sludge recycling?**

Soil heavy metal concentrations due to background level can affect the availability of land and other general restrictions issued by national and regional authorities (such as distance from houses or from rivers and lakes or public wells). Strict regional limits on As reduce the use of some sludges.

**Q14 - What changes to local statutory or practice requirements do you expect up to 2020 (in terms of limits on quality, etc.)?**

We expect new limits on organics pollutants by regional authorities.

**Q15 - To what extent do the current requirements in the EU sludge directive affect the availability of land for sludge recycling? To what extent are the requirements believed to be unsuited to current farming and public needs?**

The application of the directive in Northern Italy has limited the quantity of the sludges in agriculture in 2008 respect 2007. Further reduction has been expected in 2009 as new rules will be applied on regional basis.

**Q 21 - What local codes of practice or other restrictions related to land use have the greatest impact on sludge recycling to agricultural land in your country?**

Sludge limits regarding As and other organic contaminants like MBAS and NPE.

**Q28- Will the co-treatment of sludge with municipal solid waste become important path for the future?**

No, we don't think that this will be an important path for the use of the sludge in agriculture.

## Questions for consultation

Country: UNITED KINGDOM

**Q9 - In your country, what are the special conditions that encourage or discourage the amount of agricultural recycling?**

Availability of land for land spreading, suitable treatment capacity available and overall cost per tonne recycled.

**Q10 - What change do you expect to take place in the rate of agricultural recycling by 2020?**

It will remain the same in ds terms but increase in tonnage terms as drying is phased out.

**Q11 - How will the existing regulations noted above affect your recycling and other disposal routes?**

There will be very little impact other than if lower PTE levels for soils are adopted.

**Q12 - Will the Nitrate Directive and the WFD have a significant effect on restricting or reducing the availability of land for agricultural recycling of sewage sludge? How much of an effect?**

UK already operates within the Nitrate Directive restrictions and thus it will have no further impact. There is a real danger that the misinterpretation of Nitrogen application levels (Total versus Available) limits application rates to non-beneficial levels when the negatives of soil compaction and low levels of Phosphate addition are taken into account.

**Q13 - In your country what are the most significant local restrictions on sewage sludge quality that affect the availability of land for sewage sludge recycling?**

Sludges that have raised PTE levels (very rare nowadays) and soils with naturally occurring high PTE levels (e.g. Mendip Hills).

**Q14 - What changes to local statutory or practice requirements do you expect up to 2020 (in terms of limits on quality, etc.)?**

None

**Q15 - To what extent do the current requirements in the EU sludge directive affect the availability of land for sludge recycling? To what extent are the requirements believed to be unsuited to current farming and public needs?**

The omission of pathogen controls and cropping restrictions (as laid out in the UK Safe Sludge Matrix) does not allow full public confidence in agricultural sludge use. Other than that, PTE limits are the only restrictive areas and at current levels, are appropriate.

**Q16 - In your country what changes to the concentrations of metals in sludges do you expect up to 2020?**

There is no scientific or agricultural evidence to suggest the lowering of any PTE soil levels but there seems to be an intention to do this.

**Q20 - What are the likely impacts of the Nitrates Directives on the current sludge recycling proportion in your country? By how much?**

None

**Q 21 - What local codes of practice or other restrictions related to land use have the greatest impact on sludge recycling to agricultural land in your country?**

The Safe sludge Matrix

**Q22 - What changes in land use are likely to affect sewage sludge recycling?**

The unlikely increase in organic farming area

**Q24 - Are further restrictions needed on types of crops and or specific land areas (i.e. forest) or longer harvesting intervals?**

No

**Q25 - Should formal risk management methods be consistent throughout the EU?**

Yes, to avoid the unnecessary restrictions the oft used Precautionary Principle imposes.

**Q26 - Is sewage sludge likely to be used as a replacement for inorganic fertilizers? To what degree is the use of sewage sludge influenced by the market for inorganic fertilizers? Are the qualities of sewage sludge as a replacement for inorganic fertilizers sufficiently well understood to increase the demand for sewage sludge recycling onto agricultural land**

Sewage sludge is always used as an inorganic fertiliser replacement and the sales value responds to inorganic fertiliser price movements. The replacement value of sewage sludge vs inorganic fertilisers is thoroughly understood and only normally qualified fertiliser practitioners (FACTS scheme) sell sewage sludge to agriculture.

**Q27 - How will public opinion in Member States that currently send high levels of sludge to landfills (e.g. EU12) react to greater use of sewage sludge on land?**

Initially there will be resistance but with education there will be acceptance. The decline in phosphate resources needs emphasising as does the damage landfill emissions cause the environment.