EUROPEAN BIOGAS ASSOCIATION (EBA)

Avenue de la Fauconnerie 73

1170 Brussels

Belgium

European Commission

Directorate-general Environment

Unit G.4 "Sustainable production and consumption"

B-1049 Brussels

12 March 2009

Ladies and Gentlemen

We acknowledge the opportunity to submit our comments on the Green Paper: Management of bio-waste in the European Union.

The European Biogas Association (EBA), formed only recently in January 2009, represents by today 14 national biogas associations. Their about 4'000 members are affected directly by the EU bio-waste directive.

Question 1: Waste prevention is at top of the EU´s waste treatment hierarchy. From your experience, what could be specific bio-waste prevention action at EU level?

As the EU, some of the national waste laws, such as the Recycling and Waste Management Act in Germany or the Waste Management Act in Austria, give top priority to the prevention of waste in the waste hierarchy. However, a difference should be made between biogenous waste from food industry and retailers or biogenic waste from households, restaurants and similar sources.

It is known that large amounts of food is produced in excess that is treated as waste and must be disposed of by the food industry or retailers. However, this material might be recycled in first hand. Counter-measures (such as education campaigns at European level and management training courses in the food trade) would be a requisite to disseminate these new opportunities. Educating children and other young people and raising in them an awareness of the value of food would also be important.

A solution practiced in some countries is the setting up of so-called social (i.e., low-price) markets selling consumable food products which cannot be sold in the regular market, at lower prices to less well-off buyers. Cooperation with these low-price markets could be made mandatory for food chain stores.

Municipal waste contains between 30 and 70 % biogenic waste. In order to effectively reduce this proportion, the best solution is separate collection of biogenous waste ensuring that the energy is recovered through biogas production and nutrients in the waste are recycled as a fertilizer Particularly, the increasing scarcity of phosphorus as natural mineral should be mentioned here.

In addition, with the biogas a carbon-neutral energy can be produced from such waste.

Question 2: Do you see benefits or disadvantages of further restricting the amount of biodegradable waste that is allowed on landfills beyond the targets already set in the EU Landfill Directive? If yes, should this be done on EU level or left decide by Member States?

View the fact that every effort must be taken to fight the climate change and counter the threatening scarcity of nutrient resources, the implementation of a complete ban on bio-waste disposal in landfills is mandatory. This can be achieved most efficiently by the separate collection of waste. Biological material remaining in the mixed fraction should be stabilized by mechanical-biological or thermal treatment before land filing.

Question 3: Which options for the treatment of bio-waste diverted from landfills would you prefer to see strengthened and what would you see as their main benefits? Do you think that the choice of the treatment of bio-waste diverted from landfills should benefit from a wider and more consistent use of life-cycle assessment studies?

In addition to the problem areas posed by the energy and the climate change, the highest priority should be given to the recycling of natural nutrient resources. They have a multitude of advantages.

Minerals: 1 ton of fresh vegetable waste contains about 1 kg nitrogen, 0.15 kg phosphorus and 0.22 kg potassium plus all the trace elements needed for growth.

Energy: The production of 1 kg of nitrogen consumes about 10 kWh energy, without considering the prior product stages or the subsequent mineral fertilizer logistics. Producing this energy by natural gas yields emissions of about 2 kg CO_2 / kg nitrogen.

Soil effects: Organic fertilisers have positive effects on soil live, protection against plant diseases and help to prevent that soils are drying out. Not to talk about the huge losses of humus that can be replaced by digestate or compost.

The anaerobic digestion of bio-waste is a combined way of making use of energy and materials. It ensures that all nutrients in the feedstock are made available to crops in the field as fertilizer and the energy contained is used efficiently as biogas, a high-grade energy source. The biogas contains much of the chemically bonded energy as methane and has several advantages:

- Energy source of high energy content (approx. 5 – 7 kWh /m^3)
- Clean incineration (reduces NOx emission by about 80 % and dust emission nearly to 0 in comparison with diesel and fuel oil)
- Versatile use
- Combined generation of heat and electricity

- Injection in the natural gas distribution system
- Fuel

Separate collection of waste is the most reasonable and most efficient way of using bio-degradable waste, both as a resource and a source of energy. The simultaneous use of digestate as fertilizer is undoubtedly a recycling method within the meaning of utilization methods R3 and R10 of Annex 1 of the Waste Framework Directive. As such, they should be ranked higher than thermal utilization.

In the case of the undifferentiated thermal utilisation of biogenous waste, on the other hand, the minerals are either found in the ash or the exhaust gases which can only be recovered by extensive filtration. Organic compounds are destroyed. Especially when mixed with other types of waste and thereby increasing the concentration of heavy metals, neither the grate ash nor the filter ash is suitable as fertiliser of agricultural crops but would, in turn, entail high energy and cost inputs.

Experience with life-cycle analyses has shown that the results depend strongly on which parameters are considered. Regrettably, studies comparing purely thermal treatment, composting and digestion have failed to consider parts of a comprehensive LCA. We have experienced that carbon sinks, minerals and high molecular cycles and their effects on soil properties are not considered with LCA methods available at present. Consequently, they cannot be referred to as valid basis for decision-making.

Question 4: Do you think that energy recovery from bio-waste can make a valuable contribution to sustainable resource and waste management in the EU and meeting the EU´s renewable energy targets in a sustainable way, and, if so, under which conditions?

The energy recovery from bio-waste by anaerobic digestion is a sustainable technology but even more though when the nutrient cycles are closed. Digestate can be used for soil improvement and fertilization in farming and landscaping. The target of a bio-waste directive should be to recover all organic waste in a good state of purity that permits its conversion into energy and a high quality organic fertilizer.

Incineration is an option only for grey waste after source separation. Volumes to be incinerated should be minimized in order to reduce the fly and bottom ash that must be disposed of in landfills. The co-incinceration of biowaste rich in water reduces the calorific value of the feedstock and therefore also the energy efficiency of the incineration system.

Digestion of source separated bio-waste (or mechanically separated if not otherwise possible) and incineration of the remaining grey waste is for sure the most sustainable treatment.

Question 5: Do you see a need for promoting bio-waste recycling (i.e. compost production or use on land of composted material) and, if so, how? How can synergies be achieved between bio-waste recycling and energy recovery? Please provide the necessary evidence.

Digestate is an excellent product for virtually all field applications. If solid digestate is post-composted it becomes a very valuable product also for green house and pot soil applications. The liquid fraction is an outstanding fertilizer e.g. for grass land because it can

be distributed homogeneously. As mentioned before, the value of digestate is its content of humus and nutrients. As the prices of mineral fertilizers are going up substantially, the need for alternatives is increasing correspondingly. A wide information campaign could demonstrate the advantages of source separation, energy recovery and fertiliser value.

The area-wide collection of biogenous waste followed by biological treatment is a target worthwhile pursing on European level from an ecological and economic viewpoint. Therefore, the definition of obligatory collection targets for bio-waste from households and industry is a promising way to success. The most sensible way is the fixation of a certain weight source separated waste per capita. This value can be increased over the years up to a proven value of 150kg per capita and year.

Question 6: In order to strengthen the use of compost/digestate:

-Should quality standards be set for compost as a product only or also for compost of lower quality still covered by the waste regime (e.g. for applications not linked to food productivity)?

-Should rules for the use of compost/digestate (e.g. limits on pollutant concentration in compost/digestate and land on which compost/digestate is applied) be set?

-Which pollutants and concentrations should these standards based on?

Basically, a uniform product regime for quality compost from separately collected bio-waste would be desirable. Actually, the quality regulations vary widely among the EU member states. Therefore it would be helpful to define a uniform quality standard (e.g., limits for heavy metals, minimum content of organic substance, plant compatibility, biological stability, etc.).

The required quality should always be linked to the intended application and that would reasonably be a national competence. In any case, limits on pollutant should be related to the absolute load applied per hectare and year and not to the relative concentration in compost/digestate. This guarantees the most effective protection of soil and ground water.

After a first appraisal, we suggest to focus, in Europe, on the implementation of separate collection, at first, because this is the most efficient quality assurance. With regards quality criteria, we suggest to define a minimum standard for organic fertilizer as „product“ within the meaning of an end-of-waste status. Member states can then define more stringent national rules to ensure national soil protection and product declaration.

The system of quality assurance according to which statutory requirements must be met and a product is required to comply with certain higher product quality parameters if it is to be put in a higher product quality has proven practicable in Germany and Austria. To encourage participation in a quality assurance scheme and thereby assure a higher quality standard, some relief has been granted by law for those taking part in a quality assurance scheme.

-Which are the arguments for/against the use of post (digestate) from mixed solid waste?

The German and Austrian waste laws prohibit mixing of waste to exclude contaminated waste from being recycled. From this, it is clear that mixed municipal waste is not suitable for sustainable recycling as intended by utilization method R10. Where municipal waste is not collected separately, the diffuse entry of contaminants that cannot reliably be defined is

unavoidable. In view of this, a final risk assessment in terms of soil protection would not be implementable neither professionally nor financially even if the range of contaminants to be analysed was extended appropriately. The essential quality assurance for the production of fertilizer is based on the restriction of organic inputs which can be collected systematically, separately cleanly as defined fractions at their origins.

Studies have shown that composts from mixed waste have a higher content of contaminants and therefore cause a higher accumulation of contaminants in the soil to which they are applied regularly. This is not acceptable under the approach of precautionary ecological protection, in particular, because there is sufficient evidence that the utilization of separate organic fractions is more cost effective than other methods.

The technical expenditure of mixed waste treatment is much higher requiring higher capacities and collection areas and causes higher transport costs. Sustainable local organisational structures can only be obtained on the basis of separate collection.

Based on twenty years of experience of our members and underlined by opinion polls, institutional as well as private buyers of compost give three critical aspects as confidence-building and maintaining measures in a product:

- transparent quality assurance (accepted quality label)
- the separate collection of the input materials.
- Many also refer to the regional circular flow economy.

The mechanical/biological treatment of mixed residual waste should, in any case, be restricted exclusively to the treatment before disposal in a landfill or possibly for recultivation of landfill areas and for road building, etc.

Question 7:

Is there any evidence of gaps in the existing regulatory framework concerning the operational standards for plants which do not fall under the IPPC scope and if so, how should this be addressed?

We suggest that biogas plants processing source separated kitchen waste from households should fall under the waste management and no longer under the hygiene regulations. Environmental requirements, most of which concern emission such as odour, dust, germs, effluent, are only of local significance as a function of local conditions and relate to process management and less to the technologies applied. Therefore, legislation in these matters should exclusively be left to member states. The definition of the state-of-the-art in engineering on European level would inevitably lead to an over-proportional demand for technologies which could neither be substantiated nor bear a reasonable proportion to the achievable ecological benefit in terms of their cost-benefit ratio.

Question 8: What are the advantages and disadvantages of the abovementioned bio-waste management techniques? Do you see obstacles preventing the further developments and introductions of these techniques?

Professional composting is a good and low-cost way to recycle organic waste. However it is an energy consuming technology.

The incineration of bio-waste can only substitute fossil fuels if a certain minimum efficiency is obtained because greenhouse gas emissions can only be prevented in this way. The energy balance of the incineration of kitchen waste is very low due to the high content of water in the waste. Thermal treatment destroys nutrients and organics essential to soil. Large scale thermal treatment requires high transportation expenditure.

Digestion represents the only combination of the uses of material and energy, that no further energy supply is necessary. The high-quality digestate produced contains humus and all nutrients, including trace elements with good plant availability. The application of digestate improves the pore volume, the water retention capacity of the soil and increases the microbial activity of soil. Thus, the treatment of bio-waste in digestion plants and the subsequent application of the digestate closes a sustainable cycle. In addition, fossil fuels are substituted by biogas, a methane gas which can be put to versatile use. A minor portion is needed for the operation of the biogas plant, any excess quantity can be converted to electricity, heat or cold or be upgraded for injection in the natural gas grid and/or used as renewable fuel. Combustion produces far lower emissions than diesel or petrol.

Decentralized biogas plants require only very short transportation distances and a high level of regional value creation is involved.

The focus among the methods should be on making use of bio-waste materials in order not to lose the valuable organic substance and nutrients. If, in addition, excess energy is generated like is the case with digestion, this method should also be preferred.

Concerning regulatory obstacles, we often observe that the European Hygiene regulation 1774/2002 is often being over interpreted in disfavour of the local utilisation of organic waste. Rules should be put in place that allow the local processing and utilisation of biogenous waste to further the recycling concept as described in these comments. Generally, digestate should no longer be classed as waste but as product (Article 6, Directive 2008/98/EC).

We once more express our thanks for having been given the opportunity of submitting these comments and will be available to you for answering any questions you may have.

Kind regards,

Dr. Arthur Wellinger

EBA President