REFERTIL NEWSLETTER

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In This Issue

Page1
- Summary of the REFERTIL policy support work
- Refertil partners

Page 2
- The current status of the Fertiliser Regulation
- The Mutual Recognition Regulation

Page 3
- Biochar authority permit - HU case study
- The first biochar permit in EU
- Upgraded biochar permit in 2015
- Extension to other MS

Page 4
- REFERTIL recommended biochar quality and safety parameters
- Standardization of analytical methods
- BIOCHAR and the REACH
- Contacts

REFERTIL PARTNERS

SUMMARY OF REFERTIL POLICY SUPPORT WORK

When biochar is irrevocable applied to open and complex soil ecological system, there is also a direct interlink to subsurface water systems, therefore only qualified and safe biochar must be applied. The policy aim is to ensure that the applied biochar quality and safety criteria are fully consistent with EU-wide Directives, Regulations and MS law harmonized for long term.

The Fertiliser Regulation (EC No. 2003/2003) is only regulating the mineral fertilizers and in current form is not applicable for biochar products. **One of the key objective of the REFERTIL project is providing a strong policy support for the EU Commission in revision of the Fertiliser Regulation and inclusion of biochar - as safe organic fertiliser and soil additive.** In this context, voluntary biochar certificates having no legal effects.

The REFERTIL consortium integrated the biochar applied scientific research, industrial engineering, environmental, legal and economical aspects. All the biochar knowledge and experience generated during the REFERTIL project time and past 30+ years has been united. The respective EU directives, regulations and also the relevant MS national legislations have been reviewed.

"ABC" - Animal Bone bioChar

Moreover, the **economical sustainability of different types of biochar under market based competitive commercial conditions has been evaluated and developed.** Harmonized and standardized analytical measurements have been developed for determination of the physic-chemical properties, potentially toxic element content and organic pollutants in the biochar materials.

Based on applied scientific evidence and proven industrial demonstrated practice; biochar quality and safety criterion system has also been set up which is maximizing the Potential Toxic Element and Organic Pollutant content for safe application.

Several workshop meetings have been organized with the EU Commission representatives for joint considerations and also wide range of European biochar science and technology groups have been consulted for knowledge and experience exchange. Detailed policy support reports has been submitted to the European Commission.

The REFERTIL project is co-funded by the European Union, Seventh Framework Programme under Grant Agreement number 289785. 2011-2015.

The current status of EU Fertiliser Regulation (EC No. 2003/2003)

- Regulation (EC) No. 2003/2003 (the Fertilisers Regulation) of the European Parliament and of the Council of 13 October 2003 aims to ensure the **free circulation on the internal market of "EC fertilisers" i.e. those inorganic fertilisers that meet the requirements of the Regulation for their nutrient content, their safety, and the absence of adverse effects on the environment**.
- The Fertiliser Regulation **does not affect the so-called "national fertilisers" placed on the market of the Member States** in accordance with national legislation. Some Member States have very detailed national rules whereas others do not. Producers can choose to market a fertiliser as "EC fertiliser" or as "national fertilisers".
- There are increasing quantities of fertilisers placed on the market in the EU that are not of inorganic origin, but are produced from organic waste streams, or are a combination of both, which are not covered by the current Regulation. **Other products relevant as inputs for agriculture, such as soil improvers and growing media, are also not within the scope of Fertiliser Regulation.**
- **The Fertiliser Regulation focuses on the quality of fertilisers with regard to their nutrient content and on providing information to farmers about the nutrient content of fertilisers.**
- **It is recognized that the current provisions of the Fertilisers Regulation do not offer a clear framework to address these new concerns like environmental concerns** (e.g. presence of PTEs).

Reference: Proposal for a Regulation of the European Parliament and of the Council relating to fertilisers, liming materials, soil improvers, growing media and plant biostimulants and repealing Regulation (EC) No 2003/2003
http://ec.europa.eu/smart-regulation/impact/planned_ia/docs/183_entr_fertilisers_en.pdf

	EC - FERTILISER	NATIONAL FERTILISERS	Organic soil improvers and fertilisers (compost and biochar)
REGULATION	EU level Reg EC. 2003/2003	National level	National level
CONTENT	ONLY quality specification	Quality specification, maximal level of contaminants (not identical in all MS)	Quality specification, maximal level of contaminants (not identical in all MS)
PERMIT AREA	EU 28	National Permit Mutual Recognition (EC 764/2008)	National Permit Mutual Recognition (EC 764/2008)

The Mutual Recognition Regulation (EC No. 764/2008)

- Regulation (EC) No 764/2008 on mutual recognition (hereinafter the Mutual Recognition Regulation) ensures the free movement of goods on the Internal Market in the non-harmonised area through mutual recognition between Member States. It obliges Member States to accept products lawfully marketed in other Member States unless the Member State of destination can demonstrate that the product poses a risk for human health or the environment.
- **The implementation of the principles of the Mutual Recognition Regulation appears to be problematic for many Member States. They are reluctant to accept national authorisations delivered by other Member States, as they are not convinced that the requirements relating to the protection of human health or the environment are equivalent to their own. This affects seriously the free movement of national fertilisers on the Internal Market and hence obliges operators to apply for authorisation of their products according to separate national procedures.**

Reference: Proposal for a Regulation of the European Parliament and of the Council relating to fertilisers, liming materials, soil improvers, growing media and plant biostimulants and repealing Regulation (EC) No 2003/2003
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BIOCHAR AUTHORITY PERMIT - HU CASE STUDY

The first biochar permit received in the European Union: year 2009

Biochar is irrevocable applied into open and complex soil ecological system. For this reason **manufacturing, placing on the market and application of all types of biochar products in the European Union require mandatory EU/MS Authority permits,** same as for all soil improver and other soil products.

The first European biochar national Authority permit has been issued in Hungary in 2009 under protocol number 02.5/67/7/2009 (applicant: Terra Humana Ltd./Edward Someus). This specific biochar product is classified as yield enhancing substance. The permit and test procedure has been executed in the accredited test fields and accredited laboratories of the Government Authority between 2005-2009. The reason for the four years extensive tests was that there has been no any prior Authority reference in Europe for **biochar accredited permitting** and definition of biochar safety, quality and application conditions. Terra's biochar S&T works since 1980's and biochar pilot operations with wood and straw carbonisation in the 1990's has been informative only to the Authorities, as no accredited biochar tests has been made at that time.

ABC biohar quality and safety parameters in the permit	
Limit value for toxic elements (36/2006 (V.18.) FVM decree, HU)	
As (mg/kg)	10
Cd (mg/kg)	2
Co (mg/kg)	50
Cr (mg/kg)	100
Cu (mg/kg)	100
Pb (mg/kg)	100
Hg (mg/kg)	1
Se (mg/kg)	5
Limit value for organic pollutants: PAH[19] (mg/kg)	1
Quality parameters	
Particle size distribution	Below 3.2 mm (100%)
Dry matter content	>80%
pH	8
N and K total	declaration
Total P (P2O5)	>29 %
Total Ca	>25
Germination inhibition assay	No inhibition
Phytotoxicity	No phytotoxicity
Agronomic efficiency	Proved

Authority upgraded biochar permit in 2015

The original permit, received in 2009, has been comprehensive and detailed re-evaluated by the Authority (**National Food Chain Safety Office Directorate of Plant Protection, Soil Conservation and Agri-Environment**) according to all the new and recent EU regulations after 2010, such as CLP Regulation (EC 1272/2008). **The Authority consolidated and harmonized permit meet the past 5 years EU regulation changes and in line with the EU Fertilizer Regulation revision mandatory biochar standardization and law harmonization.** This biochar permit is key technical and legal EU case, and is a real technical, legal and market break though for the biochar case. After careful and comprehensive investigations, the competent **Authority** upgraded the biochar permit. An amendment decision, under number 02.4/102-2/2015, has been issued on June 22, 2015. This biochar permit sets the requirements for high quality and safety conditions including minimum nutrient content, maximum level of contaminants and product labeling conditions. This biochar permit is also issued on English language together with and English language official Certification.

The achieved standardization results are based on the past decades of extensive scientific RTD and industrial engineering efforts of Terra Humana Ltd. Under 2002-2015 several large scale biochar specific RTD EU FP programmes has been executed, for which projects Edward Someus has been the coordinator, biochar key S&T designer and original source.

Extension of the permit to other MS

The EU Fertilizer Regulation revision is rapidly developing towards the mandatory biochar law harmonization on EU level. At the same time and from now on the 02.5/67/7/2009 permit can be extended to other EU Member States based on the EU Mutual Recognition Regulation (according to Reg. EC 764/2008). This means that specific biochar product can be authorized and applied in other EU Member States. Works also under progress on the biochar/pyrolysis oil REACH registration, that is truly challenging for all biochar cases.

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REFERTIL recommended biochar quality and safety parameters

EU harmonisation efforts: The Commission intends to revise Regulation (EC) No 2003/2003 to extend its scope to other fertilisers and fertilising materials including organic fertilisers (such as "ABC" Animal Bone bioChar), growing media, soil improvers (including compost and plant origin biochar) and possibly biostimulants.

Biochar composition is depending on the feed material, but finally the product quality is critically depending on the pyrolysis technology performance quality level. In this context making plant based biochar is technologically less challenging than animal bone based one, that require a truly high end technology design.

REFERTIL recommended Biochar parameters (Notice)	ORGANIC P-FERTILISER	SOIL IMPROVER
Potential toxic elements (mg/kg)		
As	10	10
Cd	1.5	1.5
Cr	100	100
Cu	200	200
Pb	120	120
Hg	1	1
Ni	50	50
Zn	600	600
Organic pollutants		
PAH16 (Notice)	6	6
PCB 7	0.2	0.2
PCDD/F (ng/kg I-TEQ)	20	20
Particle size distribution	ABC: 1-5mm, 90%	PBC: 1-20 mm, 90%
Bulk density	declaration	declaration
Dry matter content	>80%	>60%
pH	6 - 10	6 - 10
Total Organic C	declaration	20%
N and K total	declaration	declaration
Total P (P_2O_5)	>25%	declaration
Total Ca, Mg	declaration	declaration
Germination inhibition assay	No inhibition	No inhibition
Phytotoxicity	No phytotoxicity	No phytotoxicity
Agronomic efficiency	Should be proved	Should be proved

Notice: all proposed parameters are maximum allowable limits on EU level, which in justified environmental cases may be MS amended to lower limits. PAHs are key performance indicators. In some MS PAH19 one mg/kg is permitted only since long time as maximum limit for soil improver. Biochar producer's extended responsibility and liability for product safety to be applied.

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Standardization of biochar analytical methods

Biochar is a new product; therefore material specific consideration is needed for all analytical items to determine product quality-safety-performance with internationally accredited methods and standards.

The REFERTIL partner - The Environmental Testing Laboratory of WESSLING - is the first laboratory in Europe who obtained accredited status, under **Wessling-NAT-1-1398/2012(2014.10.08)**, for comprehensive analyses of biochar samples. The accreditation has been developed for the both types of biochar ("PBC" and "ABC") for organic Phosphorus fertiliser, soil improver and growing media applications.

Accreditation of the biochar analytical activities is an important step to support the legal standardization and mandatory permit process of biochar industrial production, application and commercialisation.

BIOCHAR and the REACH

The REACH Regulation (Regulation (EC) No 1907/2006) sets up a system for the Registration, Evaluation, Authorisation and Restriction of Chemicals. Biochar is also subject to REACH registration (under Article 6) for manufacturing, importing, using and/or placing on the market in quantities of 1 ton/year or more. The complex environmental/climate protection challenge and the high responsibility for biochar manufacturing, importing, supply, use and irrevocable soil applications; provides justified strict EU/MS regulations and legal/technical control on the biochar case. **In this context the REACH registration is more than justified in all the biochar cases above 1 t/y capacity, that are chemically amended products with relatively large variability of composition.**

Disclaimer: The author is solely responsible for the content of this newsletter, which does not represent the opinion of the European Community.

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