A Legal Framework for Plant Biostimulants and Agronomic Fertiliser Additives in the EU

Report for the European Commission
Enterprise & Industry Directorate - General

Brussels, 17 Mars 2014

Agenda

- Study objectives & scope
- Methodology
- Context:
  - Description of the industry
  - Current policies for similar products
  - What can be learned from existing EU regulatory frameworks?
- Approach to a legal framework for PB&AFA
  - Definitions and general principles
  - Date requirements
  - Registration process
- Questions & discussion
Global objective(s)

To support the ongoing activities for the revision of the Fertilisers Regulation by proposing

1) appropriate data requirements and
2) efficient administrative procedures to carry out the assessment of risks and efficacy of plants biostimulants and agronomic fertiliser additives (PB&AFA)

for granting authorisation related to their placing to the market.

Specific objective(s)

1) To examine the main national and international legislations related to the placing of PB&AFA to the market. How do Member States and Third Countries currently address the marketing of such type of products?

2) To analyse existing and comparable EU regulatory system which could be found suitable for regulating the marketing of PB&AFA. What can be learned from existing and comparable EU legal frameworks? Can any of the existing EU framework fit for the purpose of placing PB&AFA to the EU market?

3) To study the current & future EU business environment for plant biostimulants and agronomic fertiliser additives;

4) To develop a proposal for the most appropriate regulatory framework including data requirements and efficient administrative procedure that should be established in the context of the new Fertilising materials Regulation.
Methodological approach - Overall project workflow

How do Member States (7) and Third Countries (4) currently address the marketing of such type of products?

- None of the studied regulatory frameworks defines the term “plant biostimulants” but substances/products can be placed on the market in all countries covered under the study.
- Plant biostimulants are regulated either under the fertiliser acts or the plant protection products acts. In some cases by both schemes (e.g. Canada).
- The regulatory processes are highly variable ranging from free access to the market to a complete registration process that includes a risk assessment process and including a variety of notification procedures with or without data requirements.
- The different regulatory schemes ask for a detailed characterisation and identification of the substances but allow the application of non-fully defined/characterised substances. In the majority of the schemes under study the furniture of analytical methods is not a mandatory requirement.
How do Member States (7) and Third Countries (4) currently address the marketing of such type of products?

- Toxicological & ecotoxicological data are required only in few schemes (based on a complete registration process). However, none of the legal texts analysed lists the tests and study results to be provided. The regulatory schemes remain general in indicating that safety to human health and the environment has to be demonstrated and risk management measures presented. It is of the applicant responsibility to present data it considers necessary to this end.

- Efficacy has to be demonstrated in all countries. Data requirements are preferably based on field trial data but efficacy can also be demonstrated by results from lab testing or other assays. Belgium has established a system which obliges applicants to demonstrate field efficacy preferably at the moment of the submission or later on when the provisional authorisation has been delivered as supplementing data to confirm the authorisation.

- The most demanding schemes in terms of data seems to have a long (> 1 year) and non-predictable data examination timing (from application to registration).

What can be learned from existing and comparable EU legal frameworks?

Regulatory frameworks under scrutiny:
- Reach
- Plant protection products
- Biocides
- Cosmetic products
- Food additives
- Feed additives
What can be learned from existing and comparable EU legal frameworks?

- Two types of EU regulation co-exist: REACH and the other regulatory frameworks based on a pre-market approval (the food safety frameworks).
- These other regulatory frameworks have been developed in the 1960s. They are all based on the assessment of chemical substances. The majority of them have developed specific schemes and requirements for non-chemical products. However, it can be observed that in a majority of cases, these adaptations are not perceived as fully satisfactory by a majority of stakeholders.
- None of these two types of approaches can be considered as fully suitable for PB&AFA and a novel approach should be considered:
  - Designing a regulatory approach on the basis of REACH would lead to the impression that PB are dangerous chemical products when the majority of them are not of synthesised chemical nature;
  - Applying a pre-market approval system with an in-depth risk assessment procedure would lead to excessive costs for applicants (> € 500,000).

What can be learned from existing and comparable EU legal frameworks?

- Several substances that are used as PB&AFA are already registered under other regulatory frameworks. These substances can be ranged in three categories:
  - Substances already registered under REACH for fertiliser and other usages;
  - Substances already registered notified at MS levels;
  - Substances authorised at EU level in another EU legislation (e.g., seaweed extracts in cosmetics, feed additives).
- All studied regulatory frameworks are risk-based approaches that fully consider the business environment of each sector.
Current & future EU business environment for PB&FA

The plant biostimulants and the agronomic fertiliser additives businesses are two separate and different ones for the majority of criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Plant biostimulants</th>
<th>Agronomic fertiliser additives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market trend (estimated annual growth rate)</td>
<td>&gt; 10%</td>
<td>1.5-2.5%</td>
</tr>
<tr>
<td>Business maturity</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Business structure</td>
<td>Ongoing consolidations</td>
<td>Mature</td>
</tr>
<tr>
<td>R&amp;D investment</td>
<td>Medium to high</td>
<td>Medium</td>
</tr>
<tr>
<td>Type of industry</td>
<td>Mainly SMEs</td>
<td>Mainly large companies</td>
</tr>
<tr>
<td>Business perimeter</td>
<td>Often local to national</td>
<td>Regional to international</td>
</tr>
<tr>
<td>Number of industry players</td>
<td>High (&gt;200)</td>
<td>Low</td>
</tr>
<tr>
<td>Marketing approach</td>
<td>Two-fold:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Marketing of stand-alone products</td>
<td></td>
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<tr>
<td></td>
<td>- Incorporation into fertilisers to optimise nutrient uptake</td>
<td></td>
</tr>
</tbody>
</table>

Both product types take place in the context of global agricultural policy which is to “produce more and produce better”. These two types of products also act on the protection of the environment as they help reducing the needs of chemical products.

The number of registration dossiers to be expected is difficult to estimate at this stage. EBIC has estimated that for its members only about 600-700 PB registration dossiers will have to be prepared. The number of registration dossiers for AFA will be limited (less than 50) as most AFA substances are already included in Annex I of Regulation (EC) No 2003/2003.

Poor regulatory knowledge and history in the sector (mainly PB)
What can be learned from history of use?

- Farmers are asking for alternative products to chemical substances and are willing to use PB&AFA together with the existing chemical products.

- Historical data on the efficacy of PB and AFA indicates that it tends to vary considerably in time and space, raising some scepticism among users and scientists. However, several PB substances such as raw dried seaweeds have been used by farmers as soil improvers and fertilisers for decades.

- Historical use of PB and AFA shows that no severe safety issues have been observed/identified.

Which approach to a legal framework for plant biostimulants and agronomic fertiliser additives?
Definitions

- Definitions have been adapted and our proposal reads as follows:
  - A **plant biostimulant** is any substance or microorganism, in the form in which it is supplied to the user, applied to plants, seeds or the root environment with the intention to stimulate natural processes of plants benefiting nutrient use efficiency and/or tolerance to abiotic stress, regardless of its nutrients content, or any combination of such substances and/or microorganisms intended for this use.

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Definitions

- An **agronomic fertiliser additive** is any substance or microorganism, in the form in which it is supplied to the user, added to a fertiliser, soil improver, growing medium with the intention to improve the agronomic efficacy of the final product and/or to modify the environmental fate of the nutrients released by the fertilisers, or any combination of such substances and/or microorganisms intended for this use.

  In the above definitions, **substance** means a chemical element and its compounds, as it occurs naturally or by manufacture, including any impurity inevitably resulting from the manufacturing process.
Data requirements

- Applicant companies (the registrants) will have to submit a registration dossier that shall include a relevant set of information to a EU Agency (ECHA or EFSA).

- The registration dossier will have to include the following informations:
  - Identification and characterisation of the substance (incl. biological properties when relevant and physico-chemical properties);
  - Mode of action and function of the substance;
  - Absence of contaminants;
  - Manufacturing, quality control, and analytical method(s);
  - Toxicology, ecotoxicology, environmental fate, and residues in plants where relevant;
  - Demonstrated agronomic efficacy of the concerned claim(s).

Data requirements - principles

- Applicants are encouraged to use existing data submitted in other EU regulatory contexts.

- The future PB&AFA scheme shall allow applicants to use existing data (data sharing and data bridging) as long as technical equivalence is demonstrated in order to avoid repeating studies (especially animal testing) and optimise costs.

- Argumentation and data justification based on history of use shall be fully considered by the regulatory authority.

- Registrants shall be allowed to waive certain data when the nature of the registered substances or the absence of exposure of a given environmental compartment is not of concern.

- Mechanisms for 1) the grouping of substances and 2) grouping of crops for the demonstration of efficacy are proposed to limit the number of applications for similar substances.
### Data requirements - Characterisation

Data requirements for characterisation have been developed to allow registration of non-fully defined substances due to their natural origin (similar to the REACH- UVCB approach or PPP-botanicals).

<table>
<thead>
<tr>
<th>Well defined substances</th>
<th>Non well defined substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of the formulation by presenting all chemicals on the basis of their CAS number (or any other identifiers)</td>
<td>Characterisation of the substance by the use of 2 or more biomarkers</td>
</tr>
<tr>
<td>Identification of the substance by presenting:</td>
<td></td>
</tr>
<tr>
<td>- All raw material being used</td>
<td>- Detailed description of the manufacturing process</td>
</tr>
</tbody>
</table>

### Data requirements - Contaminants

Requirements for:
- Trace-elements/heavy metals
- Organic contaminants
- Pathogens/microbials
- Plant pathogens/diseases/invasive species

Aligned to current national requirements (FR, IT & HU)
Data requirements – Quality control

Requirements for the provisions of tools for quality control have been developed to cover all types of substances:

- from well-defined substances for which an analytical method has to be provided
- to non-well-defined natural extract for which the quality control will rely on a detailed description of the raw material and of the manufacturing process.

Data requirements – Safety (tox, ecotox & environmental fate)

For proof of human and environmental safety a 3 tier risk-based approach is proposed to capture the specificities of these wide and varying groups of substances.
## Data requirements – Safety (tox, ecotox & environmental fate) – Tier 1

<table>
<thead>
<tr>
<th>Test guidelines</th>
<th>In vitro (M=mandatory)</th>
<th>In vivo (M=mandatory)</th>
<th>Expert judgement</th>
<th>Data waiving</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human toxicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Skin irritation/corrosion</td>
<td>OECD TG 430, 431, 435</td>
<td>Required</td>
<td>Not permitted</td>
<td></td>
</tr>
<tr>
<td>1) Acute dermal toxicity</td>
<td>OECD TG 402 or EU B.3</td>
<td>Required</td>
<td>Not permitted</td>
<td></td>
</tr>
<tr>
<td>1) Acute inhalation toxicity</td>
<td>OECD TG 403</td>
<td>Required</td>
<td>Not permitted</td>
<td></td>
</tr>
<tr>
<td><strong>Human toxicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Acute oral toxicity</td>
<td>OECD 401 or OECD 420 or EU B.1 bis</td>
<td>Required</td>
<td>Not permitted</td>
<td></td>
</tr>
<tr>
<td>1) Acute dermal toxicity</td>
<td>OECD 402 or EU B.3</td>
<td>Required</td>
<td>Not permitted</td>
<td></td>
</tr>
<tr>
<td>1) Acute inhalation toxicity</td>
<td>OECD 403</td>
<td>Required</td>
<td>Not permitted</td>
<td></td>
</tr>
</tbody>
</table>

## Data requirements – Safety (tox, ecotox & environmental fate) – Tier 2 & 3

<table>
<thead>
<tr>
<th>Test guidelines</th>
<th>In vitro (M=mandatory)</th>
<th>In vivo (M=mandatory)</th>
<th>Expert judgement</th>
<th>Data waiving</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human toxicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1) Repeated dose toxicity (chronic toxicity)</td>
<td></td>
<td></td>
<td>Required</td>
<td>Permitted</td>
</tr>
<tr>
<td>1.1.1) 90-day oral toxicity study in rodents</td>
<td>EU B.26 or OECD TG 408</td>
<td>Required</td>
<td>Permitted</td>
<td></td>
</tr>
<tr>
<td>1.1.2) 90-day oral toxicity in non-rodents</td>
<td>EU B.27 or OECD TG 409</td>
<td>Required</td>
<td>Permitted</td>
<td></td>
</tr>
<tr>
<td>1.1.3) 90-day dermal toxicity study</td>
<td>EU B.9 or OECD TG 410</td>
<td>Required</td>
<td>Permitted</td>
<td></td>
</tr>
<tr>
<td>1.1.4) 90-day inhalation toxicity study in rodents</td>
<td>EU B.8 or OECD TG 412</td>
<td>Required</td>
<td>Permitted</td>
<td></td>
</tr>
</tbody>
</table>

## Data requirements based on expert judgment from Tier 1 and Tier 2 hazard identification. The possible list of tests and the data waiving principles to be followed principles should follow the Plant Protection Products guidelines.
Data requirements – Efficacy

Registrants have to demonstrate agronomic efficacy of their products (2 options are discussed) and guarantees product efficacy to producers.

**Option A:** Applicants provide data showing that a positive biological activity and/or some field efficacy are observed ahead of registration AND mandatory post-registration field studies have to be carried-out to confirm efficacy.

**Option B:** Applicants shall provide a minimum data set showing efficacy of the PB&AFA in field conditions for crops and/or group of crops it is requesting registration. Under this option no mandatory post-registration field studies results are required.

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### Advantages and disadvantages of the two options for the data requirements related to PB&AFA efficacy

<table>
<thead>
<tr>
<th>Option</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| A      | • Balanced workload before and after authorisation  
        • Secure flow of information down to farmer via an information chain  
        • Preferred options for farmers and several industry players  
        • Reduce risks of lack of efficiency  
        • Add credibility to the sector  
        • Spread the registration costs over a longer period  |
|        | • Risk of registering a product without knowing how it will behave under various soil-climatic conditions and various use conditions  
        • How to protect the data (and for how long) when they are provided after registration? |
| B      | • May provide better knowledge of product efficacy for the registration process  |
|        | • Difficulties for proving reliable efficacy before authorisation  
        • Require the provision of multi-year and multi-location field trials that will make the registration process longer |
Step 1: Reception of the application dossier by the EU Agency (EFSA or ECHA) which will immediately perform a completeness check.

The completeness check will be systematically required for each application and limited to a validation of the correct classification of the substance and a control of the existence of all elements expected for a dossier.
Registration process

Step 2: Compliance check will be performed on a limited number of dossiers on the basis of the following rules:

- For dossiers containing only Tier 1 toxicological and ecotoxicological data: 30% of the total number of dossiers will be randomly selected for compliance;
- For all other dossiers a compliance check will be automatically performed.

Additionally it is recommended that at least one dossier per applicant company is selected for compliance.

Registration process

Compliance checks will aim at:

(1) Ensuring that the dossier includes all necessary information and documentation as prescribed by the future Fertilisers Regulation and the relevant guidance documents to be developed;
(2) Assessing whether data waivers in tier 1 dossiers are well justified; and
(3) Conducting deeper analysis of tier 2 and 3 dossiers.
Registration process

Step 3: If the completeness check can be cleared by the Agency, the latter will deliver a registration number, which then allows the placing of the plant biostimulant or the agronomic fertiliser additive on the market under the conditions specified by the registrant and reported in a transparent way in the EU registry.

The registration will remain valid for a period of 15 years and the data submitted by the applicant will be subject to data protection for the equivalent period of time.

Confidentiality will be granted on registrant request. As under similar regulatory framework a data sharing mechanism will be provided for if a second applicant applies for a similar substance.

Registration process

Step 3: The results of the compliance check could lead either to:

- Keep the registration;
- Require mitigation measures to be mentioned in the Registry;
- A request from the Agency to complement the existing information; or finally
- A rejection of the application if a non-manageable risk is identified. In the latter case, the substance will be included in the negative list which will be a part of the Fertilisers Regulation and will be amended by delegated/implementing Act.
Registration process

Step 4: At any moment after registration was granted and eventually confirmed, the data submitted by applicants as well as their conclusions regarding the safety and/or the efficacy of the PB&AFA may be subject to re-examination by Member State Competent authorities on a voluntary basis in view of changing or confirming the conditions of the existing registration.

Register process

Step 5: If this/these reviewing Member State(s) conclude(s) that there is a need for reconsidering an existing registration, the Agency will be organising a peer-review of the conclusions drawn by this(ese) Member State(s)

Step 6: The conclusion of the peer-review will be formalised as an opinion of the Agency and submitted to the Commission if its conclusions are putting the existing registration into question. The Commission might then proceed with an adaptation of the negative list through a Commission delegated/implementing Act.
## Registration costs

### Summary of cost for registrant (Estimation per dossier - in €)

<table>
<thead>
<tr>
<th>Cost estimation (in €)</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Fees for application</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Annual fees per dossier</td>
<td>2,000</td>
<td>4,000</td>
</tr>
<tr>
<td>Identification, characterization, analytical methods &amp; quality control</td>
<td>100,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Well defined substances</td>
<td>10,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Identification, characterization, analytical methods &amp; quality control</td>
<td>100,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Tier 1 only</td>
<td>10,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Tier 1 + Tier 2</td>
<td>300,000</td>
<td>350,000</td>
</tr>
<tr>
<td>Tier 1 + Tier 2 + Tier 3</td>
<td>&lt;500,000</td>
<td>Up to 1-2 million</td>
</tr>
<tr>
<td>Efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre application data</td>
<td>10,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Post application data</td>
<td>30,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Option B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation of registration dossier</td>
<td>About 20% of above mentioned costs</td>
<td></td>
</tr>
<tr>
<td>Preparation of registration dossier</td>
<td>Cost specific to individual dossier. No estimation given</td>
<td></td>
</tr>
</tbody>
</table>

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Thanks for your attention!

Questions?