

## **Phosphonic acid in organic products: The way forward**

### **Proposal by the Anti Fraud Initiative (AFI)**

**15/10/2020, decision matrix modified on 22/02/2021**

#### **1. Introduction**

This document is the result of multiple discussions and a literature survey.

Although this document is the result of intensive work on particularities related to the detection of phosphonic acid, some aspects of this proposal apply to other findings of pesticides in organic products as well. These aspects are described in parts 2.1; 2.3; 2.5 and 3.

Detections of fosetyl-Al (sum) in organic products have increased over the last years and are currently the main problem in OFIS cases. The majority of such cases concern perennial crops and processed products of perennial crops (e.g., wine, processed fruit products of red fruits, mangos, avocados, ...).

Data analysis of various sources indicate

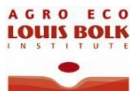
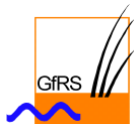
- A huge variability in detected concentrations of phosphonic acid: ranging from 0.01 mg/kg to more than 10 mg/kg. Moreover, concentrations for the same lot also vary with time.
- The data also indicate the presence of phosphonic acid in different types of inputs (fertilisers, plant protection products and “mixed formulations”) which have been used by organic farmers. Labelling of fertilisers does not contain information about phosphonic acid. Phosphonic acid has not been found in products or by-products of animal origin.

Scientific research also demonstrated that phosphonic acid remains present in the woody parts of vines until up to 6 years after the last application which corresponds with the start of the conversion period to organic production.

The authorised use of non-organic propagation material (e.g., for grafting in fruit production) also represents a potential source of introducing phosphonic acid in organic production.

Currently, stakeholders of the organic movement acknowledge that detections of fosetyl-Al (sum) in organic products may be due to multiple origins, not all of which are connected non-compliant production methods. The aim of this proposal is to focus the limited resources to those cases where the likelihood of non-compliance is highest.

It belongs to the Member States to authorise commercially available plant protection products. EU Regulation 1107/2009 and implementing Regulation 547/2011 lay down compulsory indications for labelling of plant protection products: the name of each active substance (point c) and the type of action and the mode of action are mandatory information (point j). EU Regulation 2003/2003, regarding labelling of fertilisers in the EU obliges operators who put on the market these products to refer to the total amount of phosphorous or phosphate. EU Regulation 2019/1009, which will apply from 15/07/2022, lays down particular aspects related to phosphonic acid in fertilisers, stating that phosphonic acid cannot be added to fertilisers and accidental presence may not exceed 0.5% by mass.



Currently, the analysis of a sample in view of detection of “fosetyl-Al” requires a single residue method. The accuracy of the analytical single residue method is higher than for multiresidue methods (meaning that there are less cases of false positive reporting).

Phosphonates are molecules which contain phosphorous in a certain state (oxidation level +III). Phosphonates are e.g., herbicides (glyphosate or N-phosphono-methyl-glycine and amino-methyl phosphonic acid or AMPA), growth regulators (ethephon or 2 chlor-ethane-phosphonic acid), softener for hard water treatment (ATMP) but are also naturally present in membranes of many living organisms (Amino ethyl phosphonic acid or AEPA) and as antibiotic (Fosfomycin). However, fosetyl-Al degrades rapidly in fosetyl (and aluminium) and the degradation process proceeds through hydrolysis of the ethyl ester bond, resulting in the formation of phosphonic acid and ethanol. All other examples mentioned above do not have such an ester bond and degrade differently. Other phosphonates (like glyphosate etc) degrade in phosphate. Transformation of phosphate to phosphonate does not occur under natural circumstances.

Plants are able to take up inorganic phosphate, phosphonate and organo-phosphonates via roots and leaves. Once taken up in the plant, phosphonate does not “replace” an eventual lack of phosphate and by consequence does not contribute to growth. Phosphonic acid is not a fertiliser. It only interferes in the auto-regulatory systems of the plant to protect itself against fungi attacks.

## 2. The proposal

The participants of the AFI event “Residue testing in organic production: Investigations after detection of phosphonic acid and its salts” held on 13/10/2020 propose the following approach:

### 2.1 Pro-active approach to identify non-compliant production methods

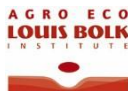
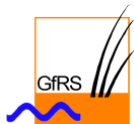
- 2.1.1. The risk-based sampling plan of control bodies and control authorities shall be adapted by integrating sampling and analysis of critical farm inputs. In the event of positive analytical detections, the results and the corresponding documentation shall be handed over swiftly to the competent authorities of the member states responsible for the surveillance of plant protection products (Reg. (EC) 1107/2009) and/or fertilizers (Reg. (EC) 2003/2003) in agriculture. Results of such positive detections should be made public.
- 2.1.2. Extend (if necessary) the annual production plan with the information on the inputs used by the farmer or describe them in the inspection report.

### 2.2. Requirements for lab reports

The lab report should always include the results for Fosetyl (a such), phosphonic acid (as such) and finally Fosetyl-Al (sum, according to the residue definition).

### 2.3. Scope of investigation

- 2.3.1. The scope of the investigation activities is limited to the verification of compliance of the organic activities of the operator where a sample was taken.
- 2.3.2. The products which are blocked during this investigation are the products which are under the responsibility of the operator where the sample was taken.



## 2.4. The aim<sup>1</sup> of the investigation

### 2.4.1 If the sampled products are “post-harvest products”

The aim of the investigation is to detect non-compliant commingling of organic and in-conversion and/or conventional lots by verifying traceability and mass balance. The investigating party verifies the organic guarantees of the products represented by the sample and seeks confirmation of:

- Traceability of the organic products by identifying organic ingredients/raw materials and proof of registration and separation by relying on internal records of the operator involved
- Mass balance for the products of the entire lot represented by the sample by comparing incoming and outgoing volumes (in combination with eventual operator related quality requirements regarding e.g., size, colour, shape etc)

If compliance is confirmed, the decision matrix in 2.3.3 shall be used to evaluate whether a high likelihood of non-compliance remains and additional investigations at operator level are required.

### 2.4.2 If the sampled products are “pre-harvest products”

The aim of the investigation is to detect non-compliant use of prohibited substances fosetyl-Al and the salts of phosphonic acid by evaluating the likelihood of use<sup>2</sup> of these prohibited substances. The decision matrix in 2.4.3 shall be used to evaluate whether a high probability of non-compliance remains and an investigation at operator level is required.

### 2.4.3 Decision matrix (specific for phosphonic acid)

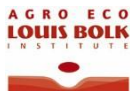
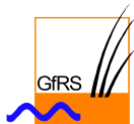
Likelihood for non-compliant presence	Low	High
Previous non compliances regarding the use of prohibited inputs	No	Yes
Duration since start of conversion of perennial crop	Less than 6 years	6 years or more
Analytically determined concentration of 1. fosetyl as such 2. other prohibited pesticides	Below the reporting limit None	Above the reporting limit Above the reporting limit
Use of inputs in organic production with a risk of PA content*	None	Yes
Authorised use of non-organic vegetative propagation material	Yes	No

(table updated on 22/02/2021)

\* indicators for a risk of PA content in farm inputs: (i) the input is repeatedly encountered on farms which suffer from unexplainable PA residues; (ii) the input comes from a ‘dubious’ source; (iii) the label or PR material for the input makes claims of plant health which cannot be explained by the declared components.

In case all parameters indicate low likelihood, the investigation can be closed.

<sup>1</sup> The AFI proposal does not aim at identifying the real cause (or causes) of phosphonate detection because there can be several causes which are out of the sphere of influence of organic operator’s precautionary measures.



In case one or more parameters indicate high likelihood, then these parameters have to be integrated in the next on-site inspection. During the on-site inspection, missing information shall be collected and available information shall be reviewed to determine compliance of the production process.

## 2.5. Expected outcome of the investigation and follow up

### 2.5.1 Detection of non-compliance

Application of the catalogue of measures as regards products and the operator

Adjustment of the risk assessment of the operators/suppliers

Adjustment of the risk-based sampling program by integrating farm inputs in the certification process


In the event of detection of inconsistencies in the labelling of farm inputs, the remaining part of the investigation is handed over the competent authority in charge of the surveillance of plant protection products (Reg. (EC) 1107/2009) and fertilizers (Reg. (EC) 2003/2003).

### 2.5.2 No detection of non-compliance

Unblock the products represented by the sample

## 3. AFI interpretation of the aim of the investigation based on Art 29.1(a) of EU Reg 2018/848

Legal context: Art 29.1(a) of Reg 2018/848
<p><i>Article 29</i></p> <p><b>Measures to be taken in the event of the presence of non-authorised products or substances</b></p> <p>1. Where the competent authority, or, where appropriate, the control authority or control body, receives substantiated information about the presence of products or substances that are not authorised pursuant to the first subparagraph of Article 9(3) for use in organic production, or has been informed by an operator in accordance with point (d) of Article 28(2), or detects such products or substances in an organic or an in-conversion product:</p> <p>(a) it shall immediately carry out an official investigation in accordance with Regulation (EU) 2017/625 <b>with a view to determining</b> the source and the cause in order to verify compliance with the first subparagraph of Article 9(3) and with Article 28(1); such investigation shall be completed as soon as possible, within a reasonable period, and shall take into account the durability of the product and the complexity of the case;</p> <p><b>AFI Interpretation of “with a view to determining” the source and the cause:</b></p> <p>(i) <i>This formulation acknowledges that it is often not possible to fully unveil the causes of a given residue. The investigation must aim to clarify as much as possible. Each investigation has its limitations and in complex cases, a sequence of investigations may be required. If an investigation results in the exclusion of one or more possible causes, then the investigation can also be seen as successful.</i></p> <p>(ii) <i>If the causes of a residue cannot be determined with such an investigation, the certification decision will have to be based on the most likely reason. To gain additional certainty, however, the certifier may decide to re-sample the products concerned in the next season.</i></p>

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