Being prepared
for residues of Phosphonic Acid and Bromides in Ukraine

Sergiy Galashevskyy,
Organic Standard LLC
27.05.2025

Residues of Phosphonic Acid and Bromides in Ukraine

Phosphonic Acid:

- 2023: 89 out of 129 residue cases (69%)
- 2024: 79 out of 120 residue cases (66%)
- 9 OFIS notifications since 2022
- Nearly all cereal and oil crop producers were affected
- In 2024, Organic Standard clients exported >163,000 tons;

  exporters responsible for >140,000 tons had at least one PA case in 2023 or 2024

Bromides:

- > 120 residue cases
- 7 OFIS notifications since 2017

Typically found only in products from a few specific regions of Ukraine, e.g. Poltava region

Be prepared!

Actions in advance to be ready by Organic Standard

Risk Assessment procedure

defines:

* high-risk operators
* high-risk products
* high-risk supply chains

>>> **physical checks** are performed for high-risk consignments

Export procedure

includes recommendations for exporters to mitigate risks

Sampling procedure

describes the sampling process in detail, including required forms:

+ inspection report for export /consignment, covering traceability, storage, transport, packaging, labelling, etc.
+ sampling report
+ photo-report
+ mass balance of lot/consignment

= all of this ensures important records for the future

1) View product storage / sampling place from the outside

2) View product storage / sampling place from the inside

3) Sampled lot

3) Sampled lot


6) Sample

7) Final samples

Actions in advance to be ready by Organic Standard

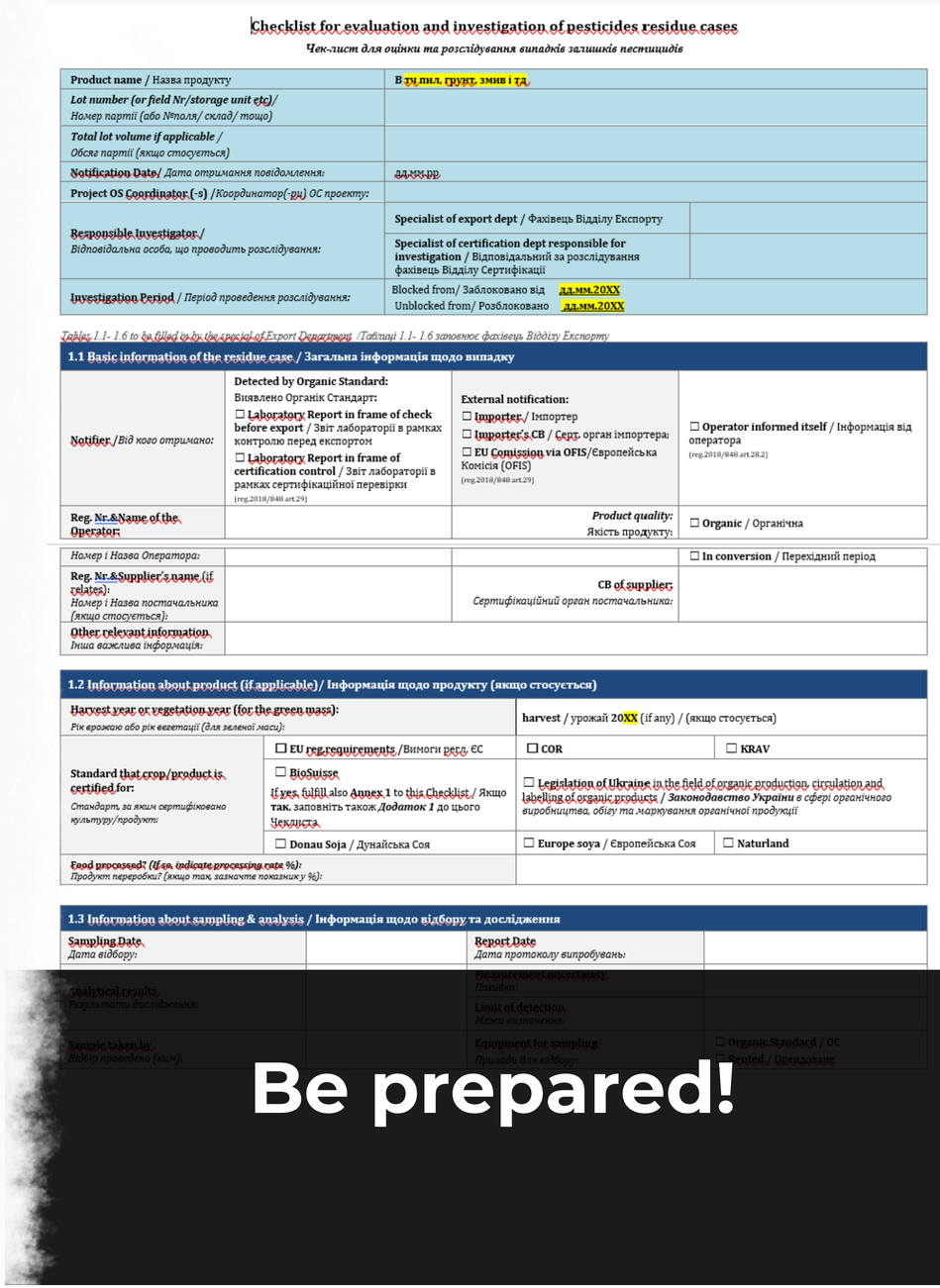
General Investigation procedure

defines the investigation process in detail, including: roles/responsibilities and expected time frames

Includes an **Investigation Checklist**, covering:

- ✓ Basic information of the residue case
- ✓ Information about product
- ✓ Information about sampling & analysis
- ✓ Information about operator (e.g. previous cases of residues)
- ✓ Information on the detected substance
- ✓ Operator's feedback (internal investigation)
- ✓ Hypotheses and their plausibilityArguments for and against each possible hypothesis
- ✓ Investigation Conclusions

= serves as a structured investigation tool



Checklist for evaluation and investigation of pesticides residue cases

Чек-лист для оцінки та розслідування випадків залишків пестицидів

Product name / Назва продукту	**В** ту пил, грунт, змив і тд	
Lot number (or field Nr/storage unit etc)/ *Номер партії (або №поля/ склад/ тощо)*		
Total lot volume if applicable / *Обсяг партії (якщо стосується)*		
Notification Date/ *Дата отримання повідомлення:*	дд.мм.рр	
Project OS Coordinator (-s) /*Координатор(-ри) ОС проекту:*		
Responsible Investigator / *Відповідальна особа, що проводить розслідування:*	**Specialist of export dept** / Фахівець Відділу Експорту	
	Specialist of certification dept responsible for investigation / Відповідальний за розслідування фахівець Відділу Сертифікації	
Investigation Period / *Період проведення розслідування:*	Blocked from/ Заблоковано від дд.мм.20XX Unblocked from/ Розблоковано дд.мм.20XX	

Tables 1.1- 1.6 to be filled in by the special of Export Department /Таблиці 1.1- 1.6 заповнює фахівець Відділу Експорту

1.1 Basic information of the residue case / Загальна інформація щодо випадку

Notifier /*Від кого отримано:*	**Detected by Organic Standard:** Виявлено Органік Стандарт: ☐ **Laboratory Report in frame of check before export** / Звіт лабораторії в рамках контролю перед експортом ☐ **Laboratory Report in frame of certification control** / Звіт лабораторії в рамках сертифікаційної перевірки (reg.2018/848 art.29)	**External notification:** ☐ **Importer** / Імпортер ☐ **Importer's CB** / Серт. орган імпортера; ☐ **EU Comission via OFIS**/Європейська Комісія (OFIS) (reg.2018/848 art.29)	☐ **Operator informed itself** / Інформація від оператора (reg.2018/848 art.28.2)
Reg. Nr.&Name of the Operator:		***Product quality:*** Якість продукту:	☐ **Organic** / Органічна
Номер і Назва Оператора:			☐ **In conversion** / Перехідний період
Reg. Nr.&Supplier's name (if relates): *Номер і Назва постачальника (якщо стосується):*		**CB of supplier:** *Сертифікаційний орган постачальника:*	
Other relevant information *Інша важлива інформація:*			

1.2 Information about product (if applicable)/ Інформація щодо продукту (якщо стосується)

Harvest year or vegetation year (for the green mass): *Рік врожаю або рік вегетації (для зеленої маси):*		**harvest** / урожай 20XX (if any) / (якщо стосується)	
Standard that crop/product is certified for: *Стандарт, за яким сертифіковано культуру/продукт:*	☐ **EU reg.requirements** /Вимоги регл. ЄС	☐ **COR**	☐ **KRAV**
	☐ **BioSuisse** If yes, fulfill also **Annex 1** to this Checklist / Якщо **так**, заповніть також ***Додаток 1*** до цього Чеклиста	☐ **Legislation of Ukraine** in the field of organic production, circulation and labelling of organic products / ***Законодавство України*** *в сфері органічного виробництва, обігу та маркування органічної продукції*	
	☐ **Donau Soja** / Дунайська Соя	☐ **Europe soya** / Європейська Соя	☐ **Naturland**
Food processed? (If so, indicate processing rate %): *Продукт переробки? (якщо так, зазначте показнику %):*			

1.3 Information about sampling & analysis / Інформація щодо відбору та дослідження

Sampling Date *Дата відбору:*		**Report Date** *Дата протоколу випробувань:*	
Analytical results *Результати дослідження:*		**Measurement uncertainty** *Похибка:* **Limit of detection** *Межа визначення:*	
Sample taken by *Відбір проведено (ким):*		**Equipment for sampling** *Прилади для відбору:*	☐ **Organic Standard** / ОС ☐ **Client** / Замовник

Be prepared!

Be prepared!

Actions in advance to be ready by Organic Standard: specific

Substance-Specific Investigation Procedures, e.g. for Phosphonic Acid and Bromides

based on:

- Our own investigation experience
- External expertise: Lach & Bruns, EOCC, AFI, Vade Mecum, Eurofins, Bio Suisse, IFOAM, OPTA, etc.
- Most recent updates

These procedures:

- Provide a detailed overview of the nature of the substance
- Outline potential contamination sources
- Focus on evaluating hypotheses, their plausibility, and supporting or contradicting evidence from past cases

🔍 **Core principle:**

It is essential to first verify and rule out all plausible scenarios that may indicate a violation of organic standards — such as the use of non-authorised substances or commingling/substitution of lots

Chronology of the case

Physical checks of the consignments (exporter)
Traceability check, mass balance check, PCM and (photo) reports.
Lot 1 (500 tons) & 2 (1 500 tons)

Receipt of laboratory report (Lot 1) indicating presence of **Fosetyl (Sum) = 0,015 mg/kg; Phosphonic acid = 0,011 mg/kg**

Receipt of laboratory report (lot 2) indicating presence of **Fosetyl (Sum) = 0,019 mg/kg, Phosphonic acid = 0,014 mg/kg**

Started official investigations.

The investigations were finished.
Lots were unblocked.

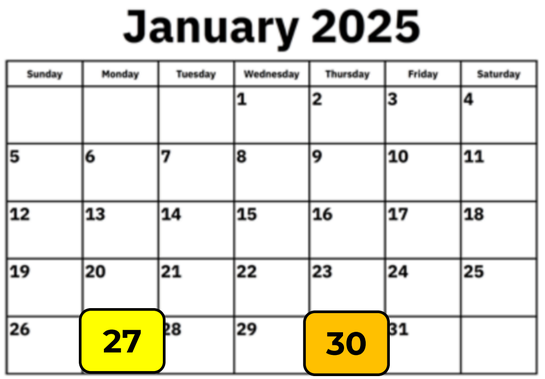
Chronology of the case

Lots were exported
Consignments from both Lot 1 & 2 were exported by train carriages

Sampling by importer

Importer informed by mail regarding laboratory report (Lot 1) indicating presence of
Fosetyl (Sum) = 0,024 mg/kg;
Phosphonic acid = 0,018 mg/kg
Bromides = 9,9 mg/kg

Importer informed by mail regarding laboratory report (lot 2) indicating presence of
Fosetyl (Sum) = 0,019 mg/kg,
Phosphonic acid = 0,014 mg/kg
Bromides = 12,1 mg/kg



Correspondence with Importer/exporter

✓ Effective communication with the exporter/importer and an immediate reaction on our side. We started official investigation process.

Received OFIS notification

Investigation was finished, and answer provided to the OFIS

✓ Exporter and importer were informed.

OFIS Notification case was accepted in the system

✓ Products were released as organic; rest of the lot was exported next days.

Decision making process

According to the investigation procedures for phosphonic acid (PA) and bromides, the following hypotheses may explain the presence of residues:

Potential violation of organic standards:

- ✓ **Use of non-authorised substances**

  (e.g. intentional use of fosetyl-aluminium or potassium phosphonate for PA, or bromide-based pesticides)

- ✓ **Commingling or substitution of lots**

  (e.g. unintentional or intentional mixing with conventional products, confusion or replacement of organic lots during post-harvest handling)

Hypotheses not necessarily indicating non-compliance:

- ✓ **Contamination from external equipment or neighbouring fields**

  (e.g. drift from conventional fields, or residues remaining in shared equipment)

- ✓ **Environmental contamination by heritage chemicals**

  (e.g. residues from applications prior to organic conversion — relevant for both PA and bromides)

- ✓ **Natural occurrence/presence in plants or the environment**

  (e.g. microbial activity, abiotic stress, background levels in soil or water)

- ✓ **Use of authorised inputs**

  (e.g. animal manure, biostimulants, fertilisers, or soil improvers with unavoidable or undeclared phosphonates)

Decision making process

#	Hypothesis	Arguments in favour	Arguments against
1	**Use of non-authorised substances (caused PA)**	Potassium phosphonates and fosetyl-aluminium are known for their fungicidal activity, so theoretically they could be used on soya, especially in wet conditions or poorly drained soils.	The operator carries out only organic activities. There is no direct or indirect evidence or suspicion of the use of non-authorised products. Phosphonate-based fungicides are not commonly registered or required for soya production, unlike in crops such as grapes or fruit trees.
	Use of non-authorised substances (caused Bromides)	Two bromide-containing products are authorised in the region.	Soil treatment with bromide is limited to small-scale vegetable farms and is very rare in the region. Bromide was detected in green mass samples, which excludes desiccation. If a bromide-based desiccant had been used other substances like diquat would be expected.
	Use of non-authorised substances during storage (fumigation) (caused Bromides)		Bromide residues were detected earlier in the green mass of several crops from this operator. Bromide-containing fumigants are not authorised in the region. The practice is extremely rare, not relevant in this context, and any such use would result in significantly higher residue levels.
2	**Commingling or substitution of lots**		The product is traceable from production to export and was also visually verified by the inspector at different stages. Mass balance has been completed. The operator uses its own facilities and has implemented clear precautionary measures to avoid commingling.

Decision making process

#	Hypothesis	Arguments in favour	Arguments against
3	**Contamination from external equipment or neighbouring fields**		The operator conducts only organic activities. Records confirm cleaning of equipment with water and high-pressure air before harvesting. The operator has implemented effective precautionary measures, including buffer zones.
4	**Environmental contamination by heritage chemicals**	The region has a long agricultural history. Persistent substances such as phosphonic acid may remain in soils from past conventional use.	The operator has been engaged in organic production for over 10 years. There is also no information indicating that the fields were previously used for orchards.
5	**Natural presence of PA in plants or the environment**	The operator applies inoculants on soybeans as part of standard organic practices. Certain Rhizobia strains used in inoculants can produce phosphonic acid as a by-product of nitrogen fixation, which may explain low-level residues. Scientific publications report phosphate contamination of surface waters in the Poltava region. This environmental background may lead to trace uptake of phosphonic acid by crops through irrigation or rainwater.	
	Natural presence of Bromides in plants or the environment	Bromide residues have been repeatedly detected in products from various operators in this region, including in the green mass of several crops from this operator. Scientific studies confirm elevated bromide levels in local soils. The farm is located in the Poltava region, known for bischofite deposits and mineral-rich groundwater, both naturally high in bromides.	
6	**Use of authorised inputs**		The operator has not used any authorised inputs known to contain phosphonic acid or bromides.

Conclusion

Investigation conclusion

The final conclusion is based on the **most probable hypothesis** regarding the source and cause of the residue.

Source: natural presence

Phosphonic Acid (PA)

Due to microbial activity (e.g. Rhizobia inoculants in soybean production) and phosphate contamination of surface water.

Bromides

Linked to elevated bromide content in local soils and groundwater, including natural mineral deposits (e.g. bischofite) in the Poltava region.

Cause: external factors (not under the operator’s control)

Conclusions

As control bodies, we always have two key “clients” when dealing with residue cases and investigations:

Competent authorities

⏱️ Expect detailed reports within 30 days

🎯 Focused on the quality and justification of conclusions

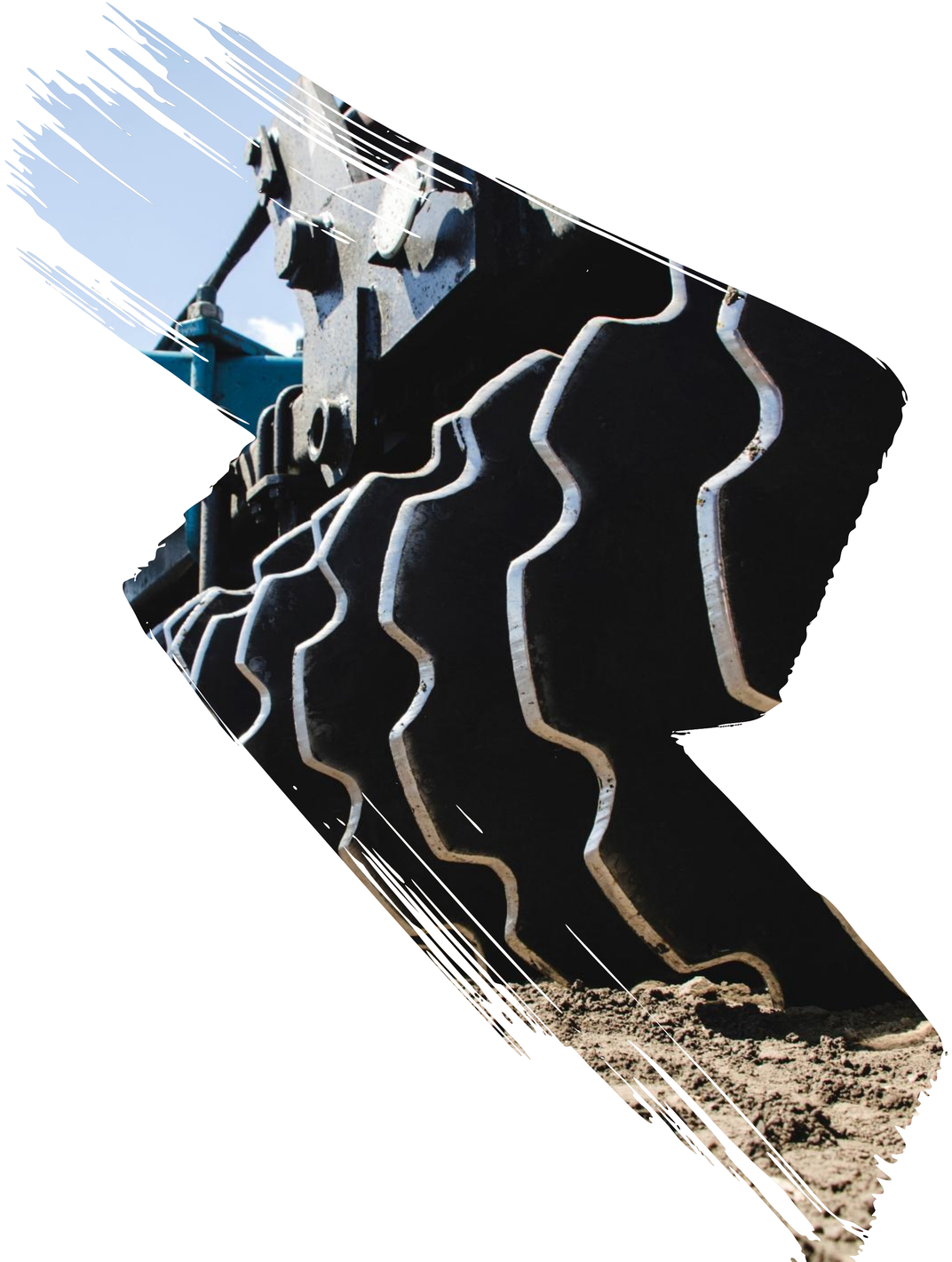
Exporters

⏱️ Usually (but not always) want results as soon as possible

🎯 Expect clear communication and minimal disruption to exports

🛡️ Our task is to satisfy both — especially in terms of speed.

👉 For this, we must: **Be Always Prepared** in advance



Thank you for the attention!