AntiFraud Initiative

Good implementation practices for Articles 28 and 29 of Regulation (EU) 2018/848

Handles, keys and levers for investigation of residue cases in EU organic production

Open discussion on the concept and the content

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Table of Content

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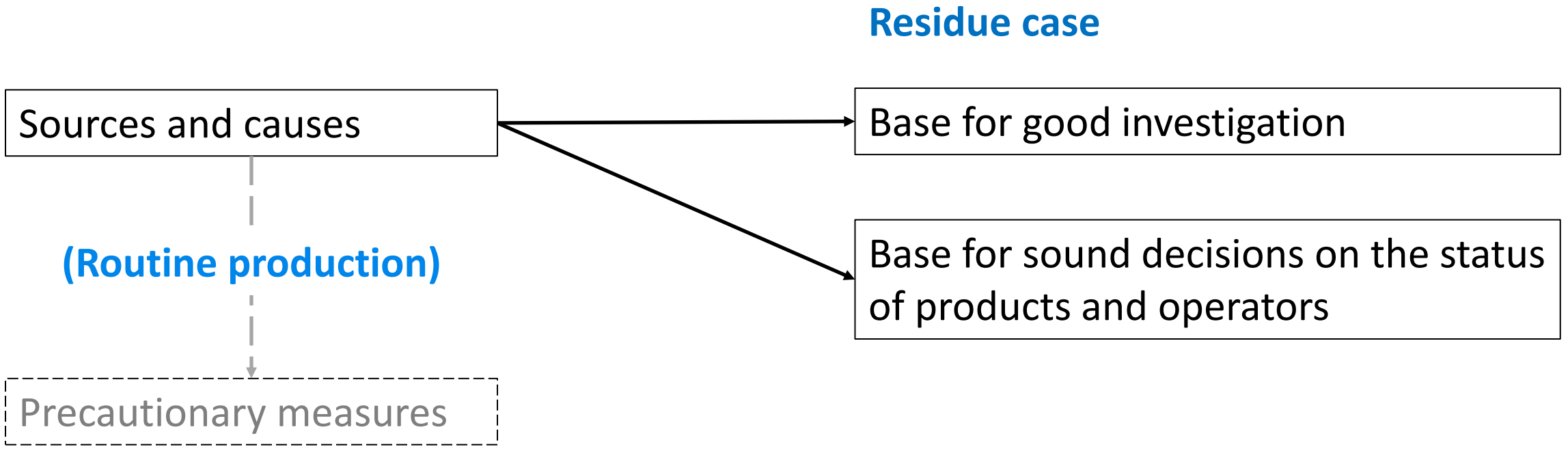
1 Why is it important to know the potential sources and causes of contamination?



2 Major sources, causes and contamination pathways

2.1 Use

- Substance was applied in the organic operation (reasons: see later chapters; more details in the guideline)

2.2 Commingling

- Non-organic product (to which the substance was applied) is commingled/exchanged with an organic product (reasons: see later chapters; more details in the guideline)

2.3 Internal contamination (also known as ‘cross-contamination’)

- Organic product is contaminated in the installations or equipment of the operator, or in packaging / containers which are not under the control of the operator
(example: phosphine in cereals and other dry food)

2 Major sources ... (continued)

2.4 Environmental contamination

- from the air, distance typically 1-100 m („classical drift“, overspraying)
- from the air, distance up to 1000 km (long-range drift)
- from the soil („heritage chemicals“ deposited before conversion; best-known example: organochlorine pesticides taken up by cucurbitaceae)
- from water
- heritage in woody plant parts of perennials (e.g. phosphonic acid)

2 Major sources ... (continued)

2.5 Natural source

A number of substances which may be used as pesticides also have alternative origins unrelated to pesticide use (natural occurrence, metabolized by plants, formed during processing…).

- Example I: anthraquinone in tea
- Example II: bromide
  (remark: if it comes from sea spray, it could also be considered as ‘environmental contamination‘)

(2.6 non-confirmed residues)

Some reports of residue findings are not confirmed, when further investigated.

- Contaminated sample
- Analytical mistakes

Chapter 3: sources and causes

Many contamination pathways are possible !

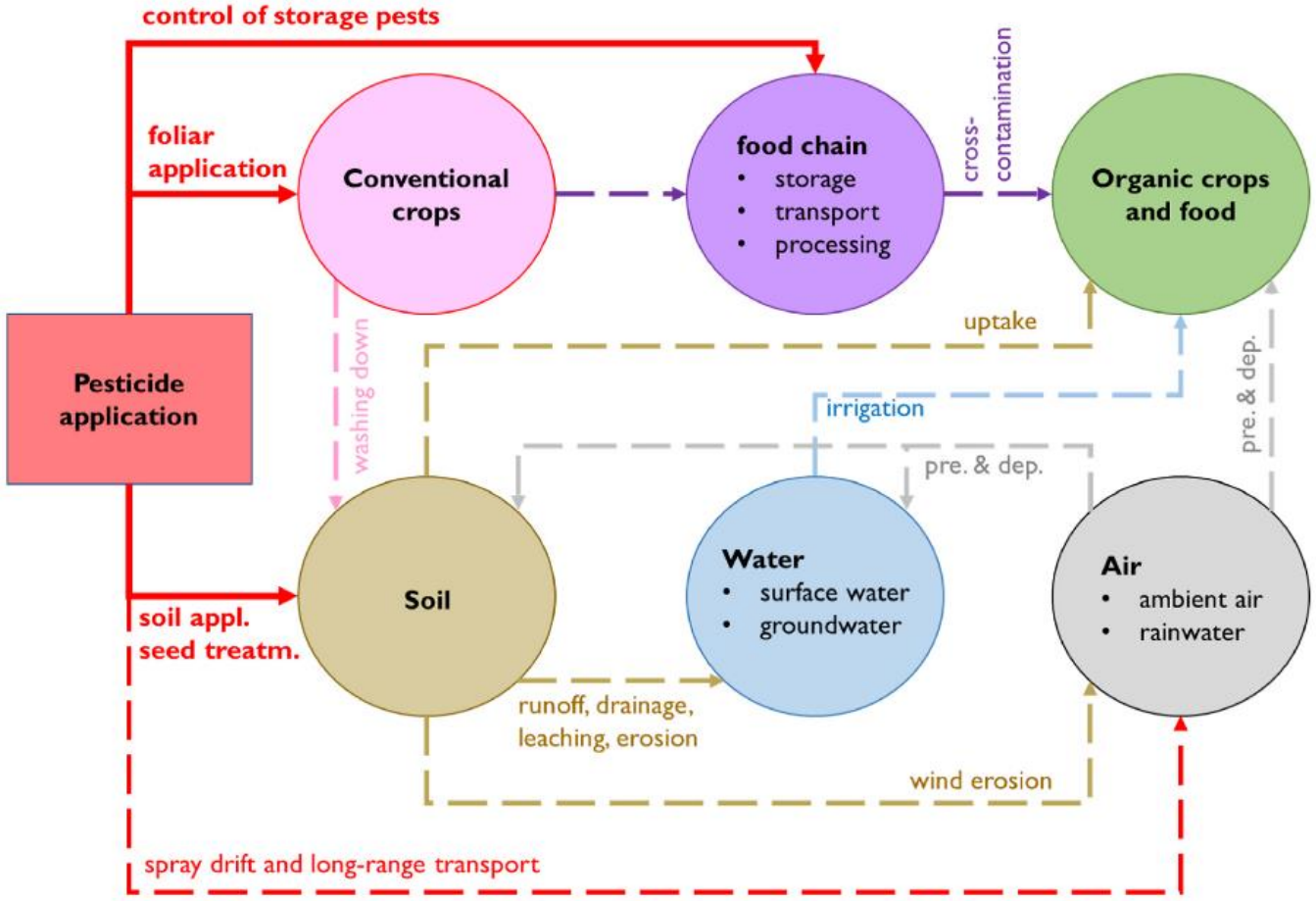


Figure from Schleiffer and Speiser (2022).
https://orgprints.org/id/eprint/44485/

3 Characterization of major sources, causes and contamination pathways

3.1 Intentional use

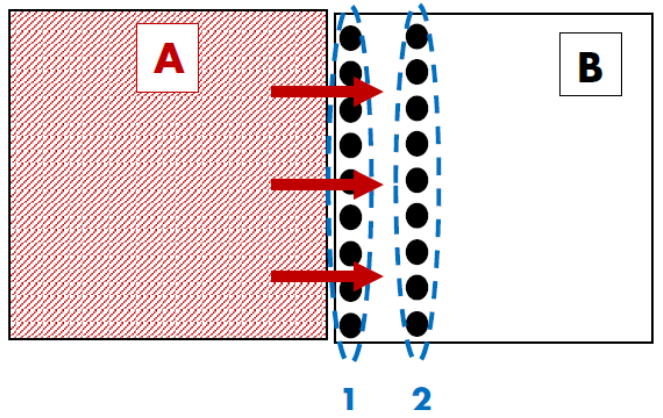
Considerations in case of a residue finding:

- Intentional use always aims to solve a specific production problem. Would the application of the specific substance have any agronomic benefit on the crop on which it was detected?
- Can residues of the pesticide be found on the spraying equipment?

3 Characterization of major sources... (continued)

3.2 Drift

- Can occur in almost every crop and with almost every pesticide
- The extent of drift depends mainly on
  - distance to nearest conventional neighbour plot
  - Type of neighbour crop (orchard / wineyard / field crop)
  - Spraying methods on the conventional neighbour plot
  - Wind



- When drift occurs, residues are usually much higher in the immediate vicinity to the neighbour plot than in the middle of the organic field

3 Characterization of major sources... (continued)

3.3 Soil contamination

- Frequent example: uptake of OCP ('organochlorine pesticides', e.g. lindane, DDT) by cucurbitaceae (cucumber, pumpkin, etc)
- Not very common in other crops and with other pesticides (occasionally issues with root crops and dieldrin)
- Only with poorly degradable pesticides
- In Europe, OCP were withdrawn from the market several decades ago

3 Characterization of major sources... (continued)

3.4 Natural source I: Anthraquinone in tea

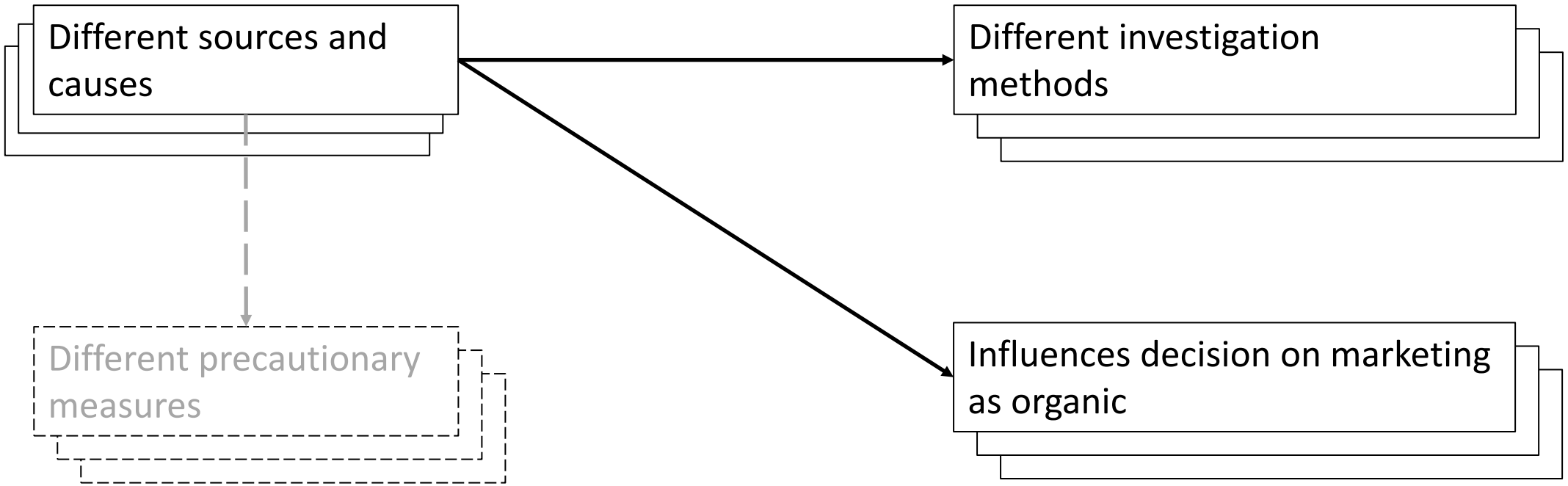
- Anthraquinone has been used as a seed treatment (bird repellent)
- Anthraquinone is also formed during incomplete combustion, and is thus a natural constituent of smoke
- As a traditional manufacturing method, tea leaves are dried over fire (➔contamination risk by the smoke)

3 Characterization of major sources... (continued)

3.4 Natural source II: Bromide

- Inorganic bromide is a metabolite of methyl bromide, which can be used as insecticide in stock protection, or as soil nematicide.
- Inorganic bromide is also a natural constituent of all animals, plants, soils and water.
- Bromide levels are naturally elevated in sea water, and therefore also in coastal areas.
- Marine-derived fertilisers (seashells, seaweed extracts, etc.) naturally contain elevated bromide levels.
- Bromide levels are naturally elevated in certain volcanic soils.
- Some crops naturally concetrate bromide (e.g. Brazil nuts)

4 Sources and causes in the overall process



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Sensitive & complex issues and challenges

Sensitive & complex issues

- Multitude of substances and situations
- Incomplete knowledge

Challenges

- This presentation can only highlight a few selected situations
- The corresponding chapter in the guideline aims to be complete. To what extent we can achieve this ambitious aim is open at the moment.

Thank you for your attention !