

IFS Guideline

Product Fraud Mitigation





Introduction

Product fraud encompasses a wide range of deliberate fraudulent acts relating to food and food packaging, all of which are economically motivated and have serious ramifications to consumers and businesses. The most serious of these fraudulent acts is the intentional and economically motivated adulteration (EMA) of food and packaging, where there is an elevated risk in relation to consumer health.

Product fraud is not a new crime and there are well documented incidents dating back many hundreds of years. Reoccurring food scandals raise the profile of food fraud and expose the deficiencies of even some of the industry's larger companies. They highlight the challenges the food industry faces to the integrity and safety of its food supply chain, as the supply chains become more complex and global in nature.

In line with the changing food industry landscape and expectations from consumers, regulatory bodies and retailers, IFS has incorporated and expanded on the need for product fraud mitigation measures in several of its Standards and Programs.

Chapter 2 is a new addition for version 3 of this guideline and introduces the topic of supply chain transparency: the concept, the challenges and the relevance to product fraud.

Putting theory into practice, chapter 3 is the "how – to" approach and gives detailed instructions for the necessary steps to be performed for the product fraud mitigation plan. Chapter 4 refers to the IFS Standards and Programs and highlights particularities of the industry and/or specific product fraud requirements for IFS Logistics version 3 and IFS Broker version 3.2. The Annex gives several examples of mitigation plans and possible auditor questions are listed thereafter.

It should be noted that the method of risk assessment for the vulnerability assessments may vary from company to company and it is recommended that companies use the risk assessment methodology, which they feel most comfortable with.

It is reiterated that IFS does not prescribe a particular methodology for the risk assessment.

Despite the variety of risk assessment methodologies, there are criteria which shall always be considered in relation to product fraud vulnerabilities. These criteria are specific to identify possible product fraud exposure and differ considerably from those criteria related to food safety and food defence.

This guideline has been designed to assist IFS certified businesses to understand the concept of risk management in relation to product fraud threats and how vulnerability assessments are an integral part of the risk management process.

NOTE:

The information in this document is not intended to be mandatory, the intention is to provide guidance for companies implementing the IFS Standards and Programs product fraud requirements.

In case of any queries regarding the interpretation of IFS Standards and Programs, please contact standardmanagement@ifs-certification.com

IFS Risk Management tools

Knowing, analysing, and monitoring the risks in your supply chain is a vital part of delivering safe food products. Having an effective and comprehensive risk management system for food safety in place is therefore of high importance for food companies and quality assurance managers. IFS offers its certified businesses, auditors and consultants various tools that provide information about the latest issues in their markets. This way, they receive an excellent overview of the most important developments that are relevant to them, and it saves them a lot of time. These services are all complimentary.

IFS helps our stakeholders to stay on top of their risk management!



IFS Trend Risk Monitor

This is the homepage of the IFS Database. Here, you find a comprehensive overview of alerts sorted by IFS Product Scopes and hazards.



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IFS Trend Risk Report

This monthly report gives an overview of food fraud cases, recalls, news, price developments and other relevant topics.



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IFS Food Fraud Fact Sheets

The fact sheets give a visual presentation of the most common fraud issues per product or IFS Product Group.



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Table of content

1	Terms and definitions	7
2	Supply chain transparency	9
	2.1 Challenges for supply chain transparency	10
	2.2 Improving supply chain transparency	11
	2.2.1 Supply chain mapping	12
3	Product fraud process flow	14
4	Guideline for the development, implementation and maintenance of a product fraud mitigation plan	17
	4.1 Defining responsibilities	17
	4.2 Principles of a product fraud vulnerability assessment	18
	4.3 Identification of potential product fraud risk	19
	4.4 Conducting the vulnerability assessment – products	20
	Product risk factor classification	22
	4.4.1 Example of a vulnerability assessment for a raw material	23
	Extra virgin olive oil	24
	4.5 Conducting the vulnerability assessment – supplier	25
	4.6 Developing the mitigation plan	28
	Criteria for control measures	29
	4.7 Review of the mitigation plan	32
	4.7.1 Changes to risk factors and review of the vulnerability assessment	33
	4.7.2 Review of control and monitoring requirements	33
5	IFS Standards and Programs – Specific guidance	35
	5.1 Product fraud risk assessment and mitigation control measures for IFS Logistics version 3	36
	5.2 Implementation of a vulnerability assessment and mitigation plan by suppliers for IFS Broker version 3.2	37
6	ANNEXES	39
	Annex 1	
	Examples of a vulnerability assessment, mitigation plan development and review – Low & high-risk food; packaging materials	40
	Annex 2	
	Examples of a vulnerability assessment, mitigation plan development and review – Differentiation in same product group (spices)	49
	Annex 3	
	Auditor questions and documentation	55
	Annex 4	
	Examples of data resources	57

1



1 Terms and definitions

For the purposes of this document, the key terms and definitions relating to product fraud are:

Supply chain transparency

Identifying and collecting data from the upstream supply chain, including direct as well as indirect suppliers, their process streams and activities, and adequately communicating this knowledge both to internal and external stakeholders.

Product fraud

The intentional substitution, mislabelling, adulteration or counterfeiting of food, raw materials or packaging placed upon the market for economic gain. This definition also applies to outsourced processes.

Economically motivated adulteration (EMA)

The fraudulent, intentional substitution or addition of a substance in a product for the purpose of increasing the apparent value of the product or reducing the cost of its production, i.e., for economic gain.

Product fraud vulnerability assessment

A systematic documented form of risk assessment to identify the risk of possible product fraud activity within the supply chain (including all raw materials, food and packaging) until delivery to the customer.

The method of risk assessment may vary from company to company, however the systematic methodology for a product fraud vulnerability assessment shall include as a minimum the points mentioned in chapter 4.4 of this guideline.

Hereafter, the term “vulnerability assessment” is used for ease of reading.

Food defence

Procedures adopted to assure the security of food and their supply chain from malicious and ideologically motivated threats. The intention of the criminal here is different to product fraud and therefore the risk assessment must also be different, but the overall risk assessment approach is the same.

Please refer to the IFS Guideline “Product and food defence (food and non-food)” for more details.

Product fraud mitigation plan

A process that defines the requirements on when, where and how to mitigate fraudulent activities, identified by a vulnerability assessment. The product fraud mitigation plan will define the measures and checks that are required to be in place to effectively mitigate the identified risks.

Hereafter, the term “mitigation plan” is used for ease of reading.

2



2 Supply chain transparency

In recent years, there has been an increasing demand for transparency in the food industry, with consumers becoming more interested in where their food comes from and how it is produced. This can be seen in the ever-increasing presence of product claims on the market, highlighting the origin of raw materials, such as PDO (Protected Designation of Origin), the type of processing involved in farming, such as organic, or social welfare criteria being employed in the production of the raw material, such as fairtrade.

In addition, companies are under pressure to disclose information about their supply chains from governments and NGOs and failure to do so can result in reputational damages. Many food producing companies have adopted transparency as a key element of their supply chain management to comply with these demands and ensure continuous verification of product claims.



Product Claims

- Over the last decade, the presence of claims (certified or not certified) has steadily increased.
- Claims represent an added value, often associated with animal welfare, environmental or corporate social responsibility or highlighting the origin of the raw materials.
- Claims also tend to come with a premium in price – organic products vs conventional or extra virgin olive oil from a specific country/region vs a non-specified olive oil.
- Ensuring product integrity for these claims and products is especially important for customer trust. If a claim turns out to be false or fake, customers feel cheated and are upset on an emotional level, rather than „just“ complaining about poor quality products.

Supply chain transparency refers to the practice of openly sharing information about the journey of a product from its origin to the end consumer – for food, this is from the farm to the table. It involves providing customers with detailed information about the various stages involved in the production, processing and distribution of products, as well as the sourcing of ingredients and the use of production techniques.

To achieve transparency, food producing companies must firstly “map” their supply chain, i.e., collecting and analysing data at every stage of the supply chain. This includes information on the origins of raw materials, the processing and packaging of products, and the transportation and storage of goods. Companies must also be willing to share this information with customers and other stakeholders, through chain of custody data or channels such as packaging labels, websites and social media.

The depth of required interactions in the supply chain is company specific, depending for example on the code of conduct (requirements about supplier practices regarding environmental, social and governance compliance) and sensitivity of raw materials to product authenticity.

Transparency can benefit food producing companies in several ways. Firstly, it can help build trust and credibility with customers, who are more likely to purchase products from companies that are transparent about their operations. Secondly, it can help companies identify and address any potential issues in the supply chain, such as food safety or product fraud risks. By having a clear view of the entire supply chain, companies can take steps to mitigate these risks and improve their operations.

2.1 Challenges for supply chain transparency

Many companies find it difficult to obtain the information they need from their upstream suppliers or other stakeholders, for example logistics or storage service providers. One reason for this is that supply chains were not designed to be transparent. Companies and suppliers fear that divulging too much information would undermine their competitive advantage or expose them to criticism. Another reason is relevant information, such as details of upstream supply chain practices, may not be collected or if it does exist, may be erroneous.

Collecting information from suppliers can be a challenging task for companies. Some of the challenges they may face include:

1. **Lack of visibility:** As products move, it can be difficult to track their origin and production. Indirect suppliers may be located in different regions or countries, and may use different production methods or materials. This can make it hard for food producing companies to gain visibility into their entire supply chain.
2. **Limited resources:** Collecting information from a large number of suppliers can be a time-consuming and a resource-intensive task. Food producing companies may not have the personnel or technology needed to effectively manage a complex supply chain.
3. **Data quality:** Even when information is collected, it may not be accurate or up-to-date. Smaller suppliers further down the supply chain may not have the same level of resources or expertise as larger companies, which can lead to errors or inconsistencies in data.
4. **Communication barriers:** Language and cultural barriers can also be a challenge when communicating with suppliers in different regions or countries. Misunderstandings or miscommunications can lead to delays or errors in the supply chain.

2.2 Improving supply chain transparency

To overcome the above-mentioned challenges requires team work within organisations, a coordinated effort from different departments. Multi-departmental teams can use existing tools and frameworks to deepen the understanding of the company's supply chain.

Food producing companies can take the following steps:

1. Implement a supplier engagement program: Engage with suppliers to build a relationship of trust and encourage them to share information. This can include regular meetings or surveys to gather information on their practices and performance.
2. Simplify the process: Develop a streamlined process for collecting information that is easy for suppliers to follow. Use clear language and provide examples to ensure that suppliers understand what is required.
3. Use technology: Utilize technology such as supplier portals or automated data collection tools to simplify the process of gathering information.
4. Set clear expectations: Clearly communicate the expectations for suppliers regarding the quality and accuracy of the information they provide.
5. Audit and monitor: Conduct regular audits and monitor supplier performance to ensure that they are meeting the required standards and to identify any areas for improvement.



2.2.1 Supply chain mapping

“Mapping” a supply chain means to systematically outline all suppliers and activities that are involved in a supply chain. It is a detailed representation of how products or services move from raw material suppliers to manufacturers, distributors, retailers and customers. The goal of supply chain mapping is to provide a clear and comprehensive view of the entire supply chain network, which serves as a basis for risk analysis and optimised control measures.

What is the added value in mapping the supply chain?

Improved governance while being compliant with regulation

A better understanding of the supply chain translates into stronger governance and compliance with own corporate policies and values. Integrating supply chain transparency is the best way to build trust between suppliers, companies, and customers.

As a first step, companies located in Europe need to start getting ready to comply with national laws on due diligence where transparency throughout the supply chain is a key.

Identify, assess and improve risk assessment

When it comes to business partners, they expect to know how and where their products are manufactured. When companies map their supply chains, they can better understand the risks within the supply chain. Knowing where suppliers are located helps to understand the magnitude of risks.

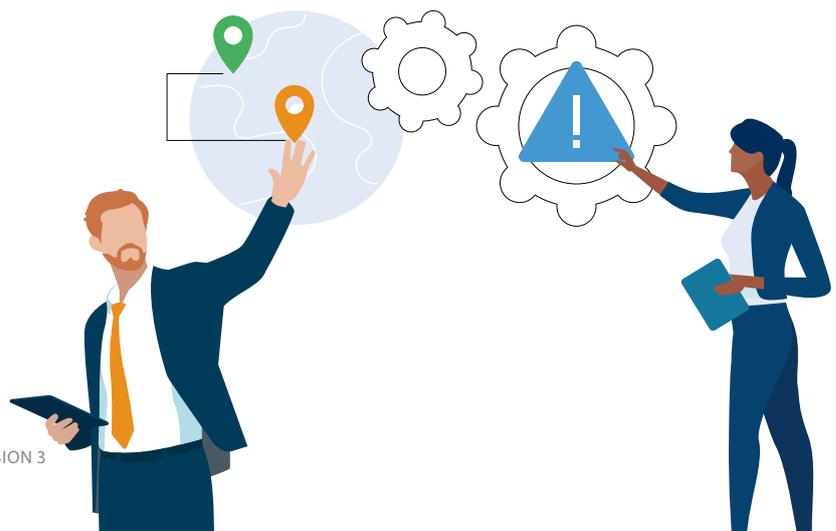
Make informed business decisions and prevent risks gathering data

By gathering data about their supply chains, companies may prevent and mitigate risk, build long-term supplier partnerships, and support suppliers. In the digital age, data has become one of the most valuable assets to businesses.

Engage with more business partners

Incorporating supply chain mapping into a complete due diligence program is key to reassuring partners that companies understand their supply chains and have genuine visibility of the risks that exist within them.

Ultimately, transparency gives companies the ability to prepare for possible disruptions and react quickly when a situation or unexpected event occurs. This is true whether the disruption is a single event, a seasonal peak in sales, or a pandemic, war etc. And, as a result, supply chain operators can respond to disruptions faster than ever before.



Where to start?



1. Define a policy and identify the scope

Determine the boundaries of the supply chain mapping exercise, if necessary. The company decides whether to map the entire end-to-end supply chain or focus on specific segments or products. Use the results of your supplier risk assessments/vulnerability assessment as a basis for decision making.

It is very important to understand the complexity and length of the upstream supply chain, i.e. how far into the supply chain is the source of the raw materials and how many indirect suppliers are involved. Poor knowledge of the linkages and activities within complex supply chains exposes companies to increased risks.



2. Identify key players and collect information

Map the suppliers that are of priority to the company based on the criticality of the raw materials or services supplied. Include details such as the type of operation (i.e. manufacturer, farmer, broker, service provider) and the products / services they deliver.



3. Visualise the supply chain

List contact details of suppliers, including headquarters and manufacturing sites to identify risks associated with locations, i.e. countries with a high(er) corruption index or potential disasters.

This process can be done using visual collaboration software or a flow chart tool, but it can also be done using sticky notes and a white board – it is not about the technology involved, it is about the quality of information.



4. Identify dependencies

Identify the dependencies and relationships between different entities in the supply chain. Determine which suppliers are providing critical raw materials, which distribution centers serve specific regions and which customers are most important for the business.



5. Analyse risk

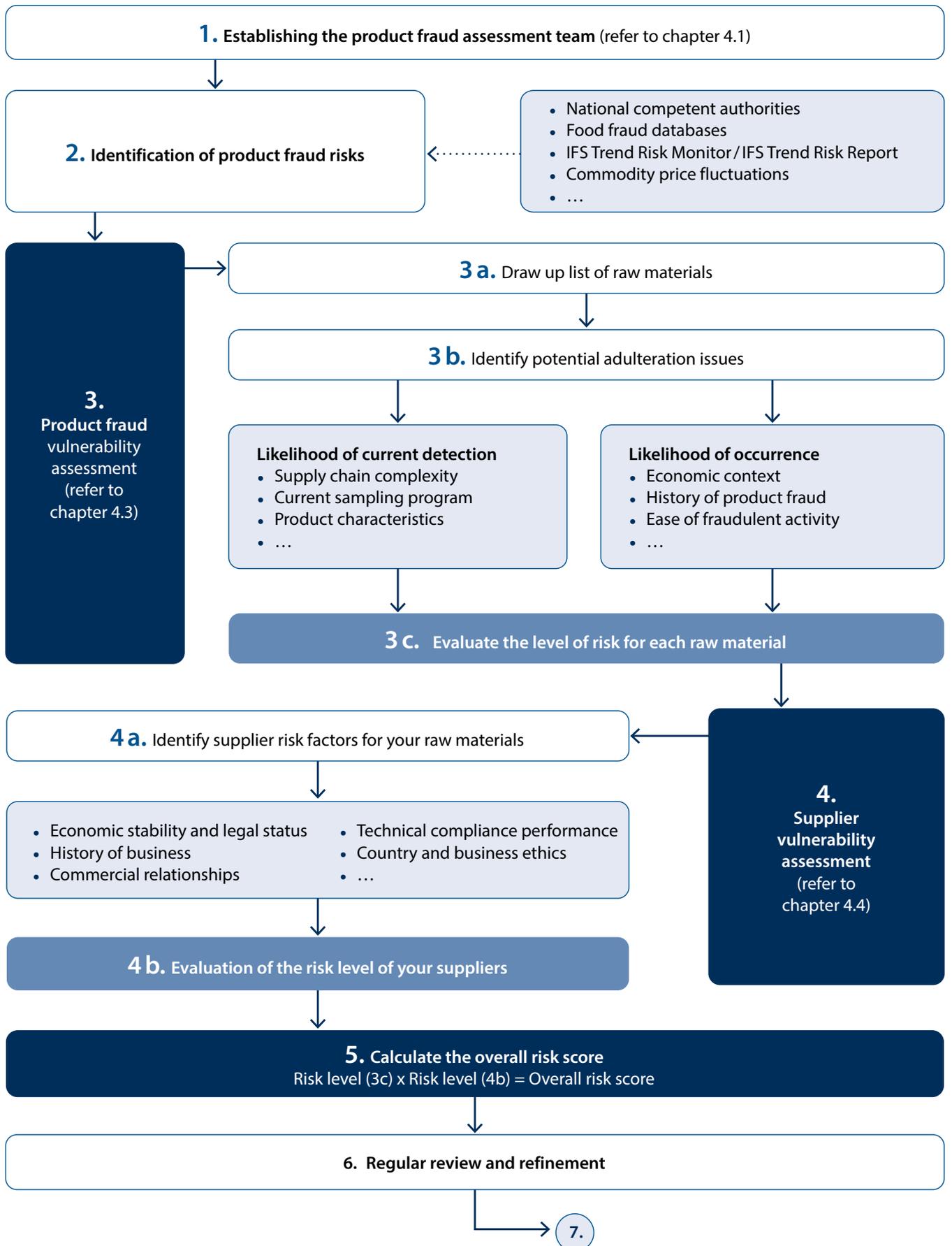
Identify what kind of information you need from your suppliers and the best approach to gather the data. – Please refer to chapter 4 for the risk analysis of products and suppliers as a basis for further analysis.



6. Regularly update the map

Regularly review and refine the supply chain strategy to adapt to changing market conditions, customer needs, or internal capabilities.

3 Product fraud process flow



6.

7. Mitigation plan (refer to chapter 4.5)

7 a. Rating of current control measure (refer to chapter 4.6)

High overall risk score
Strong control measures with regards to product fraud

Medium overall risk score
Medium control measures with regards to product fraud

Low overall risk score
Weak control measures with regards to product fraud

7 b. Analyse vulnerability assessment score against current control measures

7 c. Team decision
Are current control measures sufficient or do they need to be adjusted?

Discontinuation of the use of supplier(s)

Modify current control measures dependent upon product and control measures

Discontinuation or reduction of use of a raw material, packaging material or food

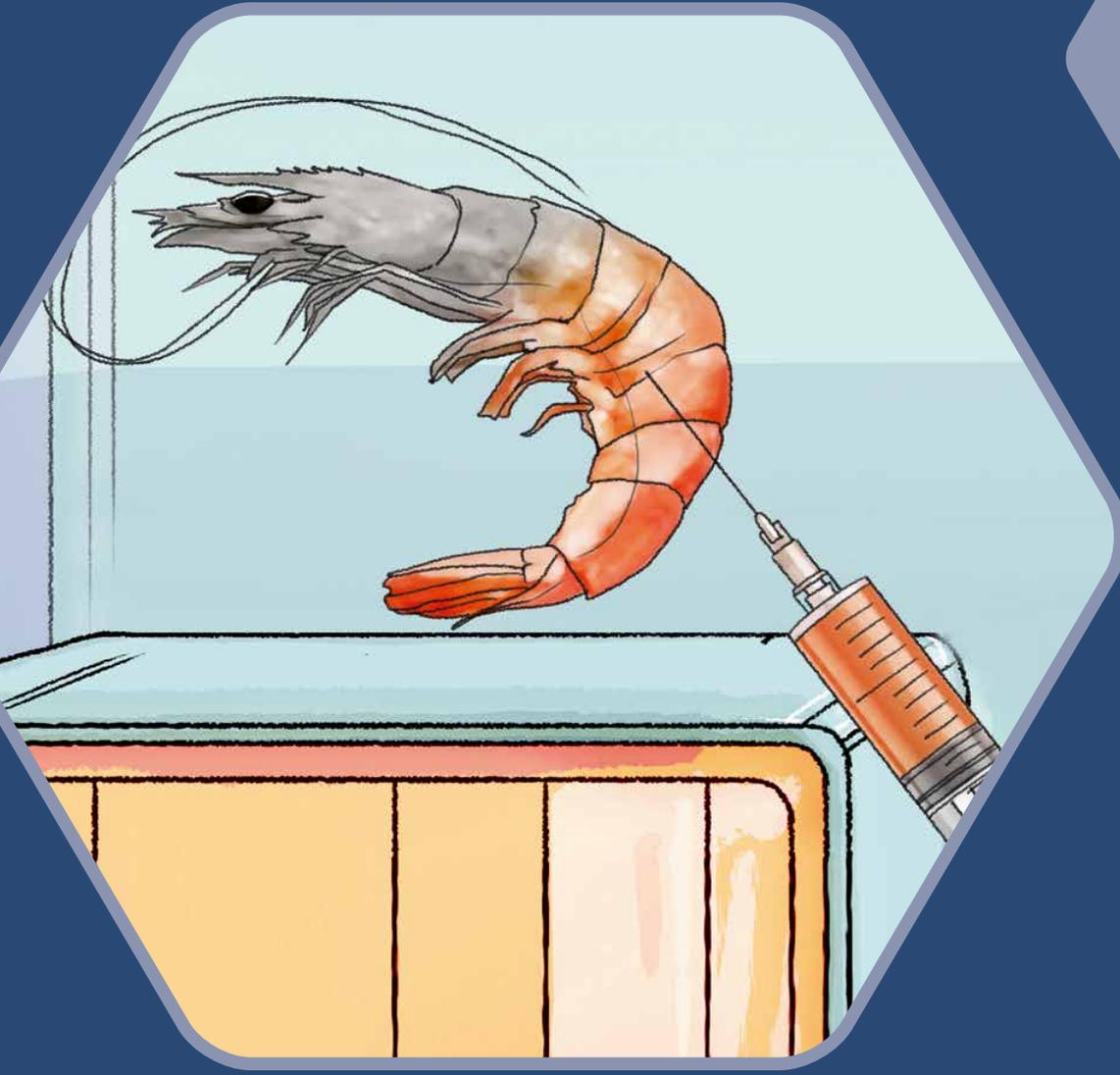
Modification of current control measures

Retain current control measures

7 d. Implementation and monitoring of new control measures

8. Regular review and refinement (refer to chapter 4.7)

4



4 Guideline for the development, implementation and maintenance of a product fraud mitigation plan

This chapter explains all necessary process steps to develop, implement and maintain a product fraud mitigation plan. It is helpful to review the outline of the process flow from chapter 3 when studying the following information.

Please note that the product fraud requirements from IFS Food are used as reference and baseline in this guideline. The topic of product fraud is comprehensively addressed in IFS Food as the standard takes a broad perspective at the product supply chain. Therefore, this chapter gives an overview of all required steps necessary to develop, implement and maintain a product fraud mitigation plan and chapter 5 gives reference to specific requirements of other IFS Standards or Programs, if applicable.

The IFS definition of fraud includes four (4) types, which shall be considered when establishing the vulnerability assessment:

Type of fraud	Example in food product	Example in packaging product
Substitution	Vegetable oil to replace olive oil	Non sustainable source of material in a packaging material sold as "100 % from sustainable source"
Mislabelling	Declaration of wrong country of origin	Material containing BPA in a packaging labelled as "BPA-free" (Bisphenol A)
Adulteration	Addition of forbidden dye in a product to enhance its colour	Multi-layers PET film sold with fewer layers
Counterfeiting	Illegally copying a big brand product	Illegally copying a big brand product

4.1 Defining responsibilities



WHY

It is important to appreciate that the effectiveness of the development and maintenance of any mitigation plan is dependent upon the competence of the individuals within the assessment team and the quality of the data available for the assessment.



HOW

The first step for setting up a vulnerability assessment and mitigation plan is to define the responsible person(s). Depending on the size of the business, either a team is appointed, or, if the company consists of a limited number of employees, it can be just one person being responsible.

If the team consists of several individuals, the roles and responsibilities of the assessment team shall be defined and there should be representatives of purchasing, logistics and of the technical department (that may include product, process and packaging, laboratory and quality technologists), who should have knowledge in risk management and the industry's specific supply chains.

If the above functions are neither defined nor available, in case of a small enterprise, the most appropriate person(s) should be appointed, as long as the person(s) is/are competent in product fraud assessments. Competencies can be justified either by training or by past experience and shall always be documented.

Where specific expertise is not available within a company, external expertise should be used, clearly documenting the roles and responsibilities between the expert and the owner(s) of the business.

Full support of the company's senior management is fundamental for a successful development of the mitigation plan and long-term effectiveness of any control measure implemented. The internal audit program should include the review of the activities of the assessment team and there should be commitment for continual improvement of the process.

Documented evidence

- The name and function(s) of responsible person(s)
- Competencies (through training, past/gained experience, etc.)
- Involvement and support of senior management for the vulnerability assessment and mitigation plan, demonstrated through e.g. signature/ validation by the management of the mitigation plan, of the annual plan review, or the inclusion of product fraud topics in the agenda of the annual management review.

4.2 Principles of a product fraud vulnerability assessment



WHY

An effective, systematic and documented vulnerability assessment will identify potential weaknesses and risks of possible fraudulent activity within the supply chain. These weaknesses and risks have to be addressed in the mitigation plan to minimize the risk of fraud.



HOW

The initial information that should always be collated, is an exhaustive list of all products (raw materials and packaging) and the supplier of each of the products; where a process is outsourced, the supplier should be identified.

Mapping the company's supply chain provides the required overview of the range of raw materials, products, suppliers, and other service(s) the business has (please refer to chapter 2 for more details).

Without this knowledge, the following data review might not be effective: upstream processes could be missed or countries of origin or production not considered.

The assessment team should therefore firstly draw up a list of all raw materials, packaging and out-sourced processes to be able to rate these against their product risks.

4.3 Identification of potential product fraud risk

It is necessary to review data from a variety of sources to identify potential product fraud risks that are associated with the raw materials used by the company. The integrity of this information shall be carefully assessed to ensure that only reliable data sources are used.



WHY

In order to undertake an effective vulnerability assessment, the assessment team should identify the data and information sources that relate to the risk factors used within the vulnerability assessment. Commercial data, such as price and availability, should be the responsibility of the purchasing department team members. Technical data, such as reports of fraudulent activity and detection methodology developments, should be the responsibility of the team members of the technical department.



HOW

The information and data sources used to assess the potential risk of product fraud and other associated information should be researched and once agreed, documented prior to the vulnerability assessment. The frequency at which the data is assessed and by whom should also be noted down.

The responsibility for the review of the sources of information should be documented. New data sources should always be considered for inclusion within the data source listing.

Typical data sources are as follows (this list is not exhaustive):

- IFS Trend Risk Report (monthly publication)
- IFS Trend Risk Monitor
- EU RASFF - Rapid Alert System for Food and Feed
- EFSA - European Food Safety Authority
- National government authorities – product recall alerts
- National government authorities – changes in legislation and guidelines
- Trade associations websites & newsletters
- Food fraud databases
- Testing laboratory information
- Commercial trade press – commodity price fluctuations
- Commercial trade press – harvest information
- Country risk classification
- Corruption index

Information for food products are more likely publicly available than for food contact packaging materials.

Following questions may help to identify potential fraud risks for food contact packaging materials:

- Are all criteria of packaging specification authentic (e.g. weight, number of layers if appropriate, composition, claim, etc.)?
- For multi-layer films; how does the supplier control and ensure the right number and quality of layers?
- Were migration tests performed with the right methods and simulants?

- Is the packaging weight accurate and how is it controlled?
- If the packaging is sold with a specific claim (e.g. “made with 20 % recycled PET”, or “free from BPA”), how does the manufacturer ensure the accuracy of such claims?

The table below shows a list of raw materials (non-exhaustive) that have been subjected to fraudulent activities more often than others in history. If a company handles or produces any of these foods, it is recommendable to pay particular attention to them within the vulnerability assessment – having no control measures in place could expose the company to product fraud.

Raw materials with a higher risk for food fraud

- Olive oil
- Fish
- Meat
- Organic foods
- Milk products
- Grains
- Honey
- Maple syrup
- Coffee and tea
- Spices/spice mixes
- Wine
- Fruit juices

4.4 Conducting the vulnerability assessment – products

A vulnerability assessment shall be conducted on every raw material, packaging material, food and outsourced process.

Please refer to the Product fraud process flow for a detailed step-by-step description.



WHY

An effective, systematic and documented vulnerability assessment will identify risks of possible fraudulent activity within the supply chain. The identified potential weaknesses in the supply chain have then to be addressed in the mitigation plan to minimize the risk of fraud.



HOW

Companies may undertake a number of risk assessments, which follow risk management principles, but may differ in their detailed methodologies. Typical risk assessments commonly used within the food industry are based on HACCP principles.

IFS cannot prescribe the detailed methodology of a risk assessment a company should use; they should use the method they feel most comfortable with and are experienced in using. Typical approaches can include the use of a simple matrix (quadratic matrix), decision tree, spreadsheet/matrix or multi matrices.

If the company decides to use a decision tree, the following questions may help to define the riskiest products:

- Have there been fraud incidents in the past and if yes, how often?
- Are the products expensive, seldom on the market, seasonal? Are the prices stable or subject to fluctuation? Are the products broker/supplier or customer branded?
- Are the products packed in sealed containers or in bulk? Are they manufactured or raw? Are transport units sealed? Are storage areas secured?
- Is the supply chain complex with many intermediates?
- Does testing methodology currently exist to detect potential fraud? Does it seem easy to detect fraud with current methods?

When undertaking vulnerability assessments using a risk matrix, criteria to define the product risk score could be:

- **Likelihood of occurrence** (the degree of ease of carrying out the fraud in relation to its profitability for the fraudster), and the
- **Likelihood of detection** (the degree of difficulty to detect potential fraud in the product).

The two (2) criteria can be differentiated as external factors – which risks are outside of a company's control – and internal factors – which risks are associated to a specific company.

One of the more common approaches for risk assessments is the quadratic model, which has been used within the food and non-food sectors for some years.

Within the following chapters of this guideline, an example of the quadratic model is provided to assist those companies, who may not have experience of risk assessment methodologies.

The following product risk factors are given as examples:

Product risk factor

- History of product fraud incidents
- Economic factors
- Ease of fraudulent activity
- Supply chain complexity
- Current control measures/Sampling program for detecting fraud
- Product characteristics

Product risk factor classification

The risk factors used to develop the product vulnerability risk matrix are defined as follows:

Matrix axis	Risk factors	Criteria for consideration – External factors
Likelihood of occurrence	History of product fraud incidents	<ul style="list-style-type: none"> The number, types and frequency of fraud (the more frequently a product has fraud associated with it, the higher the risk)
	Economic factors	<ul style="list-style-type: none"> Specific product claims (i.e., Organic, Fairtrade, PDO, etc. – the higher price increases the risk of substitution with generic material) Price (the higher the profit margin, the higher the risk) Availability of the product (the lower the availability of a product, the higher the risk) Availability of adulterant (the higher the availability and lower cost of an adulterant, the higher the risk) Price fluctuation (the frequency and level of fluctuation will determine risk)
	Ease of fraudulent activity	<ul style="list-style-type: none"> Cost and complexity of a fraudulent process (the more complex and costly a process, the lower the risk) Staff involvement in the fraudulent activity (the more staff involvement, the lower the risk) Packaging formats – raw material and adulterant (if a product is available unmarked and in bulk, the risk is higher. If a product is pre-packaged, marked and requires unpacking, the risk is lower)
Matrix axis	Risk factors	Criteria for consideration – Internal factors
Likelihood of current detection	Supply chain complexity	<ul style="list-style-type: none"> Geographical origin (the longer the distance from source to company, the higher the risk) Number of organizations in the supply chain (the greater the number of organizations in the supply chain, the higher the risk) Types of organization (the greater the number of manufacturers and agents within the supply chain, the higher the risk) Number of factories within the supplier organization (the greater the number of manufacturing units within one supplier organization, the higher the risk)
	Sampling program for detecting fraud	<ul style="list-style-type: none"> Testing authority (accredited testing companies pose the lowest risk, unaccredited or unknown companies pose the highest risk) Testing methodology (accredited testing methodologies pose the lowest risk; unaccredited or unknown testing methodologies pose the highest risk) Testing frequency (the higher the frequency of testing, the lower the risk)
	Product characteristics	<ul style="list-style-type: none"> Level of processing (the more complex the processing, the higher the risk) Physical nature of product (liquids and mixing of individual components pose the highest risk, whereas produce as comparison pose a lower risk) Processed food using more than one ingredient (the more ingredients, the higher the risk)

The product risk factors are analysed against the two (2) criteria of 'likelihood of occurrence' and 'likelihood of detection' using risk management principles. For this analysis, a quadratic risk matrix is used, which is introduced below.

The values on the horizontal and vertical axis of the matrix can be modified from the typical risk matrix. In this case, the vertical axis shall represent likelihood of occurrence and the horizontal axis shall represent likelihood of current detection (figure 1).

FIGURE 1

An example of a product vulnerability risk matrix with scored risk rating

Likelihood of occurrence	Very Likely 5	Medium 5	Medium 10	High 15	High 20	High 25
	Likely 4	Low 4	Medium 8	Medium 12	High 16	High 20
	Quite likely 3	Low 3	Medium 6	Medium 9	Medium 12	High 15
	Not very likely 2	Low 2	Low 4	Medium 6	Medium 8	Medium 10
	Not likely 1	Low 1	Low 2	Low 3	Low 4	Medium 5
		Very likely 1	Likely 2	Quite likely 3	Not very likely 4	Not likely 5
		Likelihood of current detection				

The colour of the cells within the product vulnerability risk matrix are indicative of the product risk – high (red), medium (yellow) and low risk (green). The determined product risk can be used to indicate the need for increased control measures for the mitigation of product fraud.

4.4.1 Example of a vulnerability assessment for a raw material

The company is assessing the risk of extra virgin olive oil for their business activities.

The assessment team will assign a scoring of each risk factor, using the risk factors and criteria for consideration as described in this guideline.

The overall product risk can be scored for each product/process by multiplying the likelihood of occurrence (highest score assigned) and likelihood of current detection (highest score assigned) to determine a product/process position within the product vulnerability risk matrix.

Extra virgin olive oil

Likelihood of occurrence scoring

Likelihood of occurrence	History of product fraud incidents	Economic factors	Erase of fraudulent activity	Highest score assigned
5 (Very likely)	5			5
4 (Likely)			4	
3 (Quite likely)				
2 (Not very likely)		2		
1 (Not likely)				

Likelihood of current detection scoring

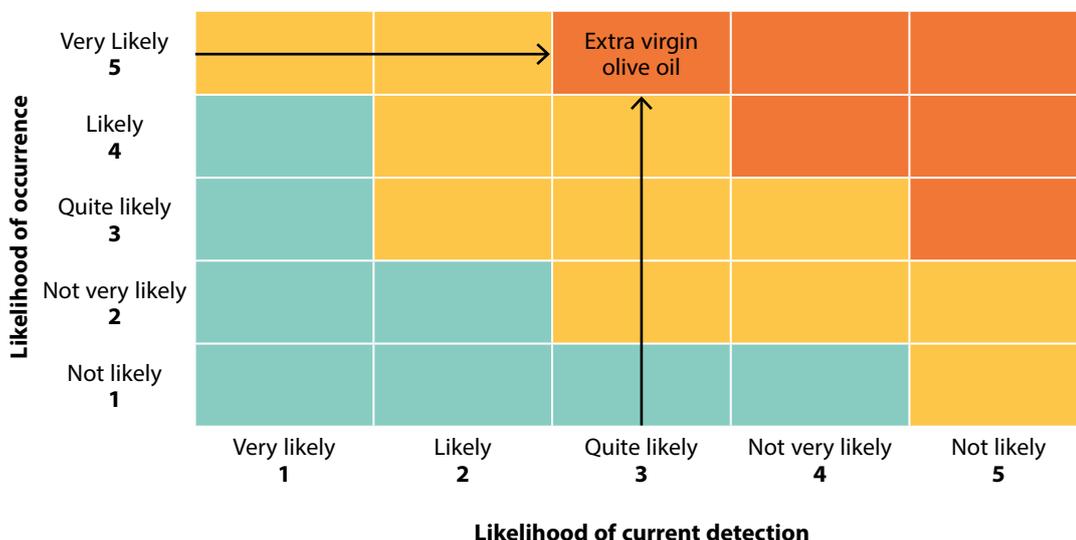
Likelihood of current detection	Supply chain complexity	Sampling program	Product characteristics	Highest score assigned
5 (Not likely)				
4 (Not very likely)				
3 (Quite likely)		3	3	3
2 (Likely)	2			
1 (Very likely)				

Likelihood of occurrence (5) x Likelihood of current detection (3) = 15

Overall product risk score for extra virgin olive oil = 15

Extra virgin olive oil has a “very likely” rating for likelihood of occurrence and a “quite likely” rating for likelihood of current detection, which shows an overall risk rating within **the high-risk area** of the matrix.

FIGURE 2



Annex 1 shows the above example plus further vulnerability assessments for ingredients and packaging materials.

Outsourced processes

Outsourcing production processes can be a complex topic and the associated risks are highly reliant on the contractual arrangement between the company and the supplier, as well as the status of the raw material, packaging or food. It is important to assess if the company fully controls the purchasing and/or technical control mechanisms or if the purchasing and/or technical control mechanisms are completely outsourced to the supplier.

If the company has direct control of the purchasing and technical control mechanisms, the risk is reduced and the control measures relate to those specific criteria associated with supplier approval and monitoring requirements. The outsourced processes have to be evaluated in the vulnerability assessment as prescribed in the respective IFS Standard.

4.5 Conducting the vulnerability assessment – supplier

In addition to the product vulnerability assessment, it is equally important to assess the supplier risk. For example, a product has a defined risk; however, the same product may be procured from a number of sources, all of which will have a differing risk – this can be assessed using the supplier vulnerability assessment.

The following table illustrates the risk factors that can be used for the assessment of supplier risk:

Supplier risk factors	Criteria for consideration
Economic stability and legal status	<ul style="list-style-type: none"> • Economic stability of the supplier • Legal entity of the supplier
History of business	<ul style="list-style-type: none"> • Duration of business between the companies (the longer the duration of business between the supplier and the company, the lower the risk) • Good business history e.g. no disputes, no commercial or technical issues (the better the business relationship history between the supplier and the company, the lower the risk)
Commercial relationships	<ul style="list-style-type: none"> • Partnership supplier, contracted supplier, un-contracted supplier, or open market supplier (Partnership lowest risk, open market supplier highest risk) • Regular contracted quantities and supplier reliant on good relationship with the company (the more regular quantities are procured, the lower the risk) • Commercial knowledge – margin control, supply chain knowledge, being commercially aware • Subcontracting or outsourcing of production (the more the supplier subcontracts or outsources, the higher the risk) • Direct control/ownership of raw materials (if the supplier has direct control and ownership of raw materials, the risk is lower)
Technical relationships	<ul style="list-style-type: none"> • Quality, accuracy and timely provision of technical information such as specifications, requests for specific information and complaint response (the more technically responsive, the lower the risk) • The competence of the supplier's technical staff (the higher the competence of technical staff, the lower the risk) • Supplier transparency on technical issue (the more transparent the supplier is, the lower the risk) • Company's knowledge of supply chain, process steps and technologies used by the supplier • The supplier's knowledge of technical issues and fraud control measures (the more knowledgeable regarding technical issues and food fraud measures, the lower the risk) • Effectiveness of quality management systems (if the supplier has an effective QM system, the risk is lower)

Supplier risk factors	Criteria for consideration
Technical compliance performance	<ul style="list-style-type: none"> • Compliance to agreed performance KPI's (the more compliant with KPI's, the lower the risk) • Gaining or maintaining a level of certification or audit score (the better the level of certification and continued good performance, the lower the risk) • Consistent supply of safe products compliant to product specifications (if the performance is consistent regarding agreed product specifications, the risk is lower) • Intake rejections-quality, temp, etc. (the better the rejection rate, the lower the risk) • Consumer complaints (the lower the complaint level, the lower the risk) • Waste/damage during manufacture (the lower the waste/damage level, the lower the risk)
Country of supply regulatory infrastructure and controls	<ul style="list-style-type: none"> • Level of regulatory control at the source of product in relation to country regulatory quality (the higher the level of comparable regulatory control, the lower the risk) • Intergovernmental relationships with the country of supply (the higher the level of government interfaces and controls, the lower the risk)
Country and business ethics	<ul style="list-style-type: none"> • Level of corruption within product supplier's country (the higher the level of corruption, the higher the risk) • Ethical working conditions (the poorer the ethical working conditions within the supplier, the higher the risk) • Environmental conditions (the poorer the environmental conditions within the supplier, the higher the risk)

The supplier risk is rated depending on the confidence the company has with the supplier. It is to be noted that the rating takes into account all of the above details and can be divided as follows:

1. **Very high confidence**
2. **High confidence**
3. **Medium confidence**
4. **Low confidence**
5. **Very low confidence**

Calculating the overall risk score

Once the scoring is defined for each product for each supplier, the overall risk score is determined by multiplying the individual scores.

The overall risk score can be different:

- For a product considered as risky in terms of fraud but supplied by a trusted, financially stable supplier located in a stable country
- For a product considered as a bit risky but supplied by a supplier recently approved which started the supply of this commodity in an unstable country

Implementation of a vulnerability assessment can never be “not applicable”: even if the business does not identify any overall risks, an assessment (showing low or no risks) shall be developed and documented.

Documented evidence shall be available for:

- The list of reliable data/information which was used to rank/score the risks
- The full vulnerability assessment, including:
 - All products used by the company
 - Used methodology
 - Criteria to define and classify the risks
 - If the products were put in groups in the assessment, justification of reasons.

4.6 Developing the mitigation plan



WHY

An effective mitigation plan will define the measures and controls that are required to mitigate the risks identified in the vulnerability assessment. The completed mitigation plan is an important document, as it reflects the results of the product fraud mitigation strategy of the business.

The main objective is to mitigate the risks through appropriate control measures.



HOW

Once the vulnerability assessment is performed and the overall risk score for each product/supplier is assigned, the company shall then decide:

- Which ones shall be considered as of higher risk (risk priority)?
- Which mitigation measures are already in place and/or need to be enhanced/implemented for each level of risk?

It is expected at this stage to list the current control measures in place and to define whether those control measures are enough or if they need to be strengthened, based on the risk scores defined in the vulnerability assessment, to provide effective mitigation against possible fraud threats.

The following rating scale could be used to rate the current control measures on their effectiveness:

For example:

High – Good level of control measures relating to product fraud activity

Medium – Medium level of control measures relating to product fraud activity

Low – Low level of control measures relating to product fraud activity.

Criteria for control measures

The following list (non-exhaustive) shows control measures with their associated criteria for considerations that have proven to be useful:

Control measures	Criteria for consideration
Economic and legal status verification	<ul style="list-style-type: none"> • Financial stability verification • Legal entity verification
Analytical testing	<ul style="list-style-type: none"> • Accreditation of laboratory • Testing methodology and frequency • Level of detection • Sampling procedure • Controls at receipt: orders making reference to agreed specifications, verification of delivery documents, origin and batch related inspection • If analytical testing is performed by manufacturer or supplier, the company shall frequently verify the analysis results with own analysis
Availability of certificates of analysis	<ul style="list-style-type: none"> • Issued by an accredited laboratory • Certificate relating to the actual batch/lot code of production • Certificates ensuring product compliance (e.g. "organic" for a food product, certificate of cleaning for a transport provider who transports any type of products but who is appointed for the transport of allergen free products)
Product inspection prior to export/delivery	<ul style="list-style-type: none"> • Inspection criteria • Status of inspection body – Government, independent accredited body, independent non-accredited body, appointed by the company or non-appointed by the company • Inspection frequency • Inspection sampling methodology
Third party audit	<ul style="list-style-type: none"> • Accredited certification body against a known and recognized standard • Audit report and certificate

Control measures	Criteria for consideration
Second party audit	<ul style="list-style-type: none"> • Accredited certification body against a company standard • Audit frequency and scope of audit
Internal audit	<ul style="list-style-type: none"> • Audit undertaken by own employees • Audit frequency and scope of audit
Chain of custody certification	<ul style="list-style-type: none"> • Accredited certification body against a known and recognized standard to ensure traceability of raw material/ products across the different intermediates • Audit report and certificate
Mass balance testing	<ul style="list-style-type: none"> • Mass balance testing as part of technical or chain of custody certification audit to ensure that the quantity of raw materials/ products coming from the manufacturer are the same when arriving at the customer • Extraordinary testing of mass balance (extraordinary testing under company control)
Supplier questionnaires	<ul style="list-style-type: none"> • Level of detail of questionnaire and evaluation thereof • Level of use within supply chain (the level to which questionnaires are used e.g. primary, secondary, tertiary suppliers)
Legal compliance checking of supply chain suppliers	<ul style="list-style-type: none"> • Review of legal conformity (existence and number of prosecutions)

The following additional information are important for some of the above-mentioned control measures:

- Product analyses can be performed by the manufacturer/ supplier, the business itself or the customer. The owner of the analyses shall be taken into consideration to assess the effectiveness of this control measure, as the level of trust and reliability may not be the same. Therefore, it is expected that the business frequently verifies the results of external reports through their own analyses.
- Use of product inspections before delivery is very common for some type of businesses (like brokers) and a key control measure, as brokers may use different service providers across the shipment of the products to the customers. The more inspections are made, with clear criteria to be checked, according to a defined methodology and frequency, the better the risk is controlled.
- Product supplier audits can be performed by the business, by the customer or by an external auditing company/ certification body. The source and type of audit shall be taken into consideration to assess the effectiveness of this control measure, as the level of trust and reliability may not be the same. If the business relies on audits performed by an external auditor/ certification body, it is crucial that the audit report is available after the audit. Audits may be a good control measure if the audit outcome is documented, assessed and reviewed for a good understanding on how the supplier controls their fraud risks.
- If the suppliers are IFS certified or certified against a GFSI recognized standard, this may impact the assessment of effectiveness of mitigation measures in a positive way, but it is often not enough to ensure robust mitigation measures that are specific to the company's needs in regard to raw materials and the associated fraud risks.

The next step is the development of the mitigation plan (figure 3), using the product & supplier risk scores, the overall risk rating score and the assessment of current control measures (current control measure rating – high, medium or low).

Please refer to the product fraud process flow for a detailed step-by-step description.

FIGURE 3
Product fraud mitigation plan template

Raw materials, packaging, food and outsourced processes	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures

Taking into account the review of the collated risk score and current control measures rating, the assessment team shall reach a decision by consensus if the control measures in place are sufficient or if new ones need to be implemented.

The decisions of the assessment team may lead to changes in purchasing strategies, modified control measures or adherence to the current approach.

Possible decisions:

- The discontinuation or reduction of use of a raw material, packaging or foodstuff
- The discontinuation of the use of supplier(s)
- The reduction in quantity of a raw material, packaging or foodstuff for specific supplier(s)
- Modified control measures depending on the product and control measures, e.g. increased analytical surveillance, use of accredited laboratories and methods, increase in inspections, independent inspections prior to shipment, etc.
- Retain current levels of control.

Implementation of a mitigation plan may be “not applicable”, if the vulnerability assessment concludes that all raw materials, products, ingredients and packaging material have low or no fraud risks.

Documented evidence shall be available for:

- Current control measures to mitigate the risks
- Assessment of the effectiveness of those measures, in line with the fraud risk rank/score of each product and supplier
- Monitoring and adjustment of those control measures (strengthening, implementation, etc.) accordingly.

When finalizing the mitigation plan, the members of the assessment team should be mindful of the commercial impact of the decisions they consider to be appropriate. This may involve criteria such as the limited availability of a product, the cost of approving new suppliers versus the cost of increased surveillance measures and the overall turnover/importance of the product to the company.

The mitigation plan will allow for a prioritization of actions to mitigate overall risk posed by the higher risk products and suppliers. Some judgments may need to be made in relation to the overall budget for all food controls, particularly in relation to analytical costs for food safety and food fraud.

The mitigation plan, and any subsequent revisions of the plan, should be fully documented, dated and reviewed in alignment with the quality management system review.

4.6.1 Example of a mitigation plan – Extra virgin olive oil

Raw materials, packaging, food and outsourced processes	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures
Extra virgin olive oil	W	15	1	15	Medium	Retain supplier	Retain control measures. Product analysis program – 2 analysis per year.
Extra virgin olive oil	X	15	2	30	Medium	Retain supplier	Increase product analysis program to 4 analyses per year.
Extra virgin olive oil	Y	15	2	30	Medium	Retain supplier	Increase product analysis program to 4 analyses per year.
Extra virgin olive oil	Z	15	4	60	Medium	Consider discontinuing	If retained, increase product analysis program to 8 analyses per year. Certificate of analysis for every consignment.

Attention is drawn to the process of reaching the team decision – this is where it is decided if current controls are adequate or if the assessment team needs to develop new control measures. Decisions made at this point have multi-level consequences: in this example, the analysis program has been increased by 10 analysis samples a year!

4.7 Review of the mitigation plan

A mitigation plan will only remain effective if changes to the risk factors from the vulnerability assessment are identified and reviewed. This review is required to maintain integrity of the control measures.

4.7.1 Changes to risk factors and review of the vulnerability assessment



WHY

The company shall review the vulnerability assessment for all raw materials, packaging and outsourced processes at least once within a 12-month period or whenever significant changes occur within the business.



HOW

The members of the assessment team should have access to the appropriate data and information regarding risk factors used for the vulnerability assessments.

It should be acknowledged that the initial mitigation plan is a 'snap shot in time', and there should be recognition that risk factors will change within a dynamic industry such as the food industry. This means it should be possible to revisit individual product risk assessments (and the suppliers of these products), to assess if there are changes to the overall risk in relation to product fraud.

The following list shows significant changes that could prompt the team to conduct a review of the vulnerability assessment:

- Change in supply of raw materials e.g. new supplier
- Change in cost of raw material(s)
- Change that effect the cost of finished products e.g. tariff increases, transport costs
- Change in supply chain e.g. additional suppliers, type of supplier
- Change in raw material availability, e.g. seasonal shortage, poor quality
- Non-compliance with one of the implemented control measures (e.g. audit report indicating major non-conformity related to fraud, product analysis results showing non-conformities)
- Evidence of increased customer or consumer complaints which are related to possible fraud, e.g. poor quality and inconsistent quality
- Emergence of a newly recognised adulterate
- Development of scientific information regarding process, product or analytical identification

The assessment team should use the same methodology for the review, and analyse their data and information sources to check if these are still valid and/or if there are new sources. The review of the vulnerability assessments shall be documented and dated in accordance with document control requirements.

4.7.2 Review of control and monitoring requirements



WHY

As a consequence of the reviews of the vulnerability assessments, there is a need to review the current control and monitoring requirements of the mitigation plan, which should be amended and implemented immediately after the review.



HOW

The assessment team should use the same methodology for the development of the mitigation plan and should review the decisions regarding the control measures. If there are changes to the current control measures, these changes should be made as soon as practical.

Any changes to the mitigation plan should be documented and dated in accordance with document control requirements.

An example of a mitigation plan plus review can be found in annex 1.

5



5 IFS Standards and Programs – Specific guidance

The requirements for product fraud mitigation in IFS Food serve as a reference and baseline to the other IFS Standards and Programs. Depending on the scope of other IFS Standards or Programs, the requirements are similar or adapted to the respective area of application. The basic principles described in this guideline apply and the interpretation of individual requirements can be transferred accordingly.

Please refer to selected examples and further explanations, if applicable, for the individual IFS Standards and Programs.



The PACsecure version 3 requirements for product fraud are identical to those of IFS Food version 8. Within chapter 4, materials used for packaging have been considered in all explanations and examples given.



IFS Wholesale/Cash & Carry version 3 has expanded its requirements for product fraud by adding aspects of responsibility and review. The requirements are therefore near identical to the ones from IFS Food version 8 and the interpretation can be transferred.



In contrast to the other IFS Standards mentioned, IFS Logistics version 3 combines product fraud and product defence in one section. The requirements for product fraud are identical to those of IFS Food version 8, considering logistics services.

Please refer below to chapter 5.1 for examples of control measure in the logistics supply chain.



The IFS Broker Standard version 3.2 has one additional product fraud requirement to the IFS Food version 8, which deals with the own suppliers of the broker.

Please refer below to chapter 5.2 for examples.



IFS HPC version 3 has no specific requirements dedicated to product fraud. However, the risk management processes described in this guideline (i.e., the vulnerability assessment of product and suppliers and control measures), could be of added value for HPC certified businesses in areas such as supplier approval & control and incoming goods checks.



The IFS Progress Food Program addresses food manufacturers to start and/or gradually progress to food safety and quality management and supports and simplifies the steps towards the IFS Food Standard, for businesses willing to achieve IFS Certification. The relevant requirements for product fraud in version 3 have been closely aligned with IFS Food version 8, focussing specifically on the food fraud vulnerability assessment and mitigation plan implementation.



The IFS Progress PACsecure Program is intended to support small and/or less developed businesses in the development of their product quality management system and to take the first step towards the implementation of the IFS PACsecure Standard. The relevant requirements for product fraud are therefore slightly less demanding in version 1 than in the IFS PACsecure version 3 Standard.

5.1 Product fraud risk assessment and mitigation control measures for IFS Logistics version 3

Substitution and counterfeiting could be expected throughout storage, transport and other services (e.g., logistics processing service: re-packing, labelling, simple packing of fruits and vegetables) involving goods within the logistics sector. The fraudsters could use the logistic supply chain to substitute or adulterate raw materials, particularly loose or unpackaged product, or use the legitimate supply chain system to place counterfeit product onto the market. Mislabelling is also considered as fraud, for example when best before dates are extended during re-packing or packing activities. Another example is the dilution with water poured into tankers. Good examples for controls are implemented and documented traceability/lot coding systems as evidence for control measures and where tamper-proof seals are incorporated in the packaging design.

Product fraud risk assessment and mitigation control measures

Food fraud risk	Supplier fraud risk	Examples of control measures
Unlabeled packaged product – risk-substitution	Supplier X – large storage and transport corporation, short supply chain (one company) Low risk	<ul style="list-style-type: none"> • Contract requiring locked containers and fitted with company seal during transport. • Review of records of container seals and receipt notes • Company procedures review • Review of intake records • Authorized receipt notes for all deliveries with traceability/lot code data (audit trail) • Review of journey log • Intake quality checks – medium sampling level
Loose product in open trays – risk-substitution	Supplier Y – small transport company driver owned Low risk	<ul style="list-style-type: none"> • Contract requiring locked containers and fitted with company seal during transport. • Review of records of container seals and receipt notes • Company procedures review • Review of intake records • Authorized receipt notes for all deliveries with traceability/lot code data (audit trail) • Review of journey log • Intake quality checks – low sampling level
High value brand product – risk-counterfeiting	Supplier Z – small storage facility poor systems and security High risk	<ul style="list-style-type: none"> • Contract requiring locked containers and fitted with company seal on dispatch • Review of records of product storage and quantity • Company procedures review • Review of intake records • Authorized receipt notes for all products stored with traceability/lot code data • Unannounced audits • Intake quality checks – high sampling level
Mislabeling of product during co-packing or relabeling activities	Customer requesting shelf-life extension or change Medium risk	<ul style="list-style-type: none"> • Consistency with product specifications • Operations traceability • Legal advisory

5.2 Implementation of a vulnerability assessment and mitigation plan by suppliers for IFS Broker version 3.2

The term “food fraud” in the IFS Broker Standard is a generic term which includes the following products:

- Food products, including their packaging material(s)
- Packaging materials for food products.

Other products within the scope of IFS Broker, like packaging materials for non-food products or household and personal care products, are not covered by the food fraud chapter of IFS Broker.

The broker shall include in the scope of the vulnerability assessment all purchased products which are food and/or food contact packaging materials, regardless if they are:

- Broker own branded products,
- Customer branded products,
- Supplier branded products.

The type of brands will have an impact on the fraud risk scoring, as the level of liability of the broker may vary.

As a pre-requisite of the broker's own vulnerability assessment, the broker shall ensure that suppliers themselves have performed a vulnerability assessment and mitigation plan for the products they manufacture.

This requirement applies to all product suppliers the broker is working with.

Compliance to this requirement can be ensured for example by, but not limited to, the following means:

- Verification that the suppliers are IFS certified or certified against other GFSI recognized standards. Such verification needs to cover the following aspects:
- The broker shall get the audit reports and assess if the findings and level of compliance related to food fraud give enough confidence for the products the broker is receiving.
- The broker shall have a process in place to continuously monitor and ensure that the suppliers are certified. Maintaining an updated list of suppliers, with their certification status could be a way if this is regularly checked for completeness and accuracy.
- Note that IFS Broker standard requirement 4.4.4 requires that all suppliers of the broker shall be certified and that exceptions can only be made if the customer is expressly accepting other conditions. If the suppliers are not IFS/GFSI certified (and if the customer has accepted alternative control measures), the broker shall identify another mean to verify the implementation of a vulnerability assessment and mitigation plan by the suppliers (e.g. own audit, supplier questionnaire, etc.).
- Audit of suppliers on food fraud aspects: the broker can perform audits or outsource this audit to a competent person, to check if the suppliers have performed and documented a vulnerability assessment and a mitigation plan. Competencies of the auditor and audit conclusions verification shall be reviewed and documented. Frequency of such audits shall be risk based and in line with the results of the brokers' own mitigation plan.
- Supplier questionnaires: the broker may send questionnaires on a regular basis to their suppliers to challenge them on the implementation of a vulnerability assessment and mitigation plan. Results of questionnaires shall be verified and the broker shall document such reviews. The frequency of sending such questionnaire shall be risk based and in line with the results of the brokers' own mitigation plan.

For all these types of verifications, the broker shall check if the products described in the vulnerability assessment and mitigation plan of suppliers correspond to the ones related to the agreement between the broker and the business partners.

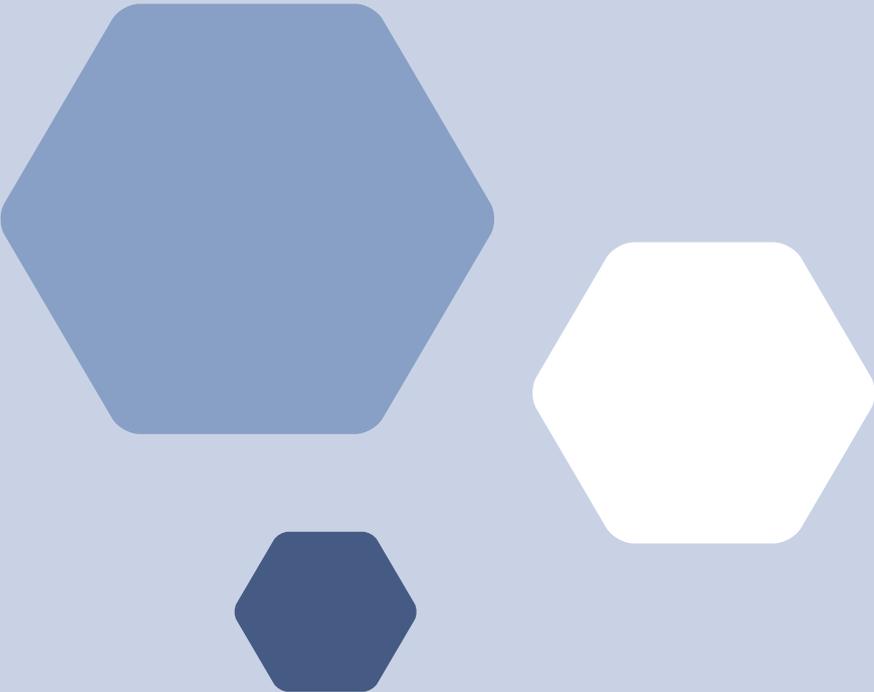
6 Annexes

ANNEX 1
Examples of a vulnerability assessment, mitigation plan development and review – Low & high-risk food; packaging materials 40

ANNEX 2
Examples of a vulnerability assessment, mitigation plan development and review – Differentiation in same product group (spices) 49

ANNEX 3
Auditor questions and documentation 55

ANNEX 4
Examples of Data Resources 57



ANNEX 1

Examples of a vulnerability assessment, mitigation plan development and review – Low & high-risk food; packaging materials

1. Examples of product vulnerability assessments

The company is assessing the risk in relation to:

Raw materials

- Extra virgin olive oil
- Tomato paste

Packaging materials

- Card board PEFC mark (Programme for the Endorsement of Forest Certification) compliance
- Vacuum and modified atmosphere film – thickness/specification

The assessment team will assign a scoring of each risk factor by using the risk factors and criteria for consideration; this in turn will confirm the product's position within the product vulnerability risk matrix (reference tables within chapter 4.3).

The overall product risk can be scored for each product by multiplying the likelihood of occurrence (highest score assigned) and likelihood of current detection (highest score assigned) to determine a product position within the product vulnerability risk matrix.





Extra virgin olive oil

Likelihood of occurrence scoring

Likelihood of occurrence	History of product fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)	5			5
4 (Likely)			4	
3 (Quite likely)				
2 (Not very likely)		2		
1 (Not likely)				

Likelihood of current detection scoring

Likelihood of current detection	Supply chain complexity	Sampling program	Product characteristics	Highest score assigned
5 (Not likely)				
4 (Not very likely)				
3 (Quite likely)		3	3	3
2 (Likely)	2			
1 (Very likely)				

Overall product risk score for extra virgin olive oil

Likelihood of occurrence (5) × Likelihood of current detection (3) = **15**



Tomato paste

Likelihood of occurrence scoring

Likelihood of occurrence	History of product fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)				
3 (Quite likely)				
2 (Not very likely)	2	2	2	2
1 (Not likely)				

Likelihood of current detection scoring

Likelihood of current detection	Supply chain complexity	Sampling program	Product characteristics	Highest score assigned
5 (Not likely)				
4 (Not very likely)				
3 (Quite likely)				
2 (Likely)		2	2	2
1 (Very likely)	1			

Overall product risk score for tomato paste

Likelihood of occurrence (2) × Likelihood of current detection (2) = **4**



Card board PEFC mark

Likelihood of occurrence scoring

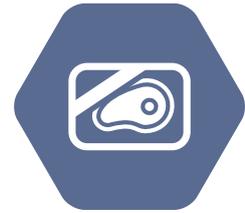
Likelihood of occurrence	History of product fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)			4	4
3 (Quite likely)	3			
2 (Not very likely)		2		
1 (Not likely)				

Likelihood of current detection scoring

Likelihood of current detection	Supply chain complexity	Sampling program	Product characteristics	Highest score assigned
5 (Not likely)				
4 (Not very likely)				
3 (Quite likely)	3		3	3
2 (Likely)		2		
1 (Very likely)				

Overall product risk score for card board PEFC mark

Likelihood of occurrence (4) × Likelihood of current detection (3) = **12**



Vacuum and modified atmosphere film

Likelihood of occurrence scoring

Likelihood of occurrence	History of product fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)				
3 (Quite likely)			3	3
2 (Not very likely)	2	2		
1 (Not likely)				

Likelihood of current detection scoring

Likelihood of current detection	Supply chain complexity	Sampling program	Product characteristics	Highest score assigned
5 (Not likely)				
4 (Not very likely)				
3 (Quite likely)				
2 (Likely)				
1 (Very likely)	1	1	1	1

Overall product risk score for vacuum and modified atmosphere film

Likelihood of occurrence (3) × Likelihood of current detection (1) = 3

From the assigned scores and the product risk matrix (figure 1)

- Where a raw material such as extra virgin olive oil has a “very likely” rating for likelihood of occurrence and a “quite likely” rating for likelihood of current detection, the overall risk rating is within a **high-risk area** of the matrix.
- Where a raw material such as tomato paste has a “not very likely” rating for likelihood of occurrence and a “likely” rating for likelihood of current detection, the overall risk rating is within a **low-risk area** of the matrix.
- Where packaging such as card board (PEFC mark) has a “likely” rating for likelihood of occurrence and a “quite likely” rating for likelihood of current detection, the overall risk rating is within a **medium-risk area** of the matrix.
- Where packaging such as vacuum and MA film has a “quite likely” rating for likelihood of occurrence and a “very likely” rating for likelihood of current detection, the overall risk rating is within a **low-risk area** of the matrix

FIGURE 4
Raw materials

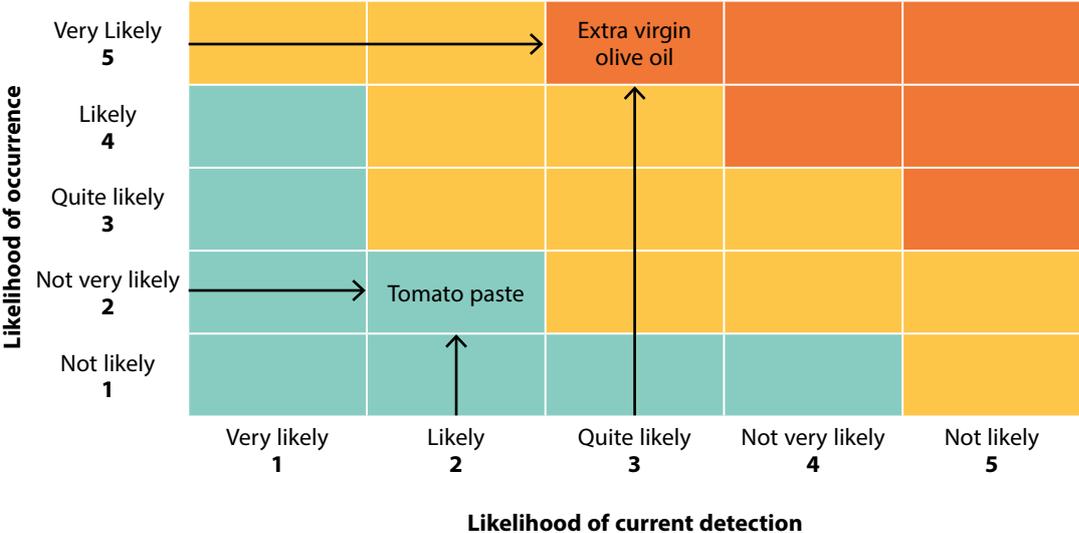
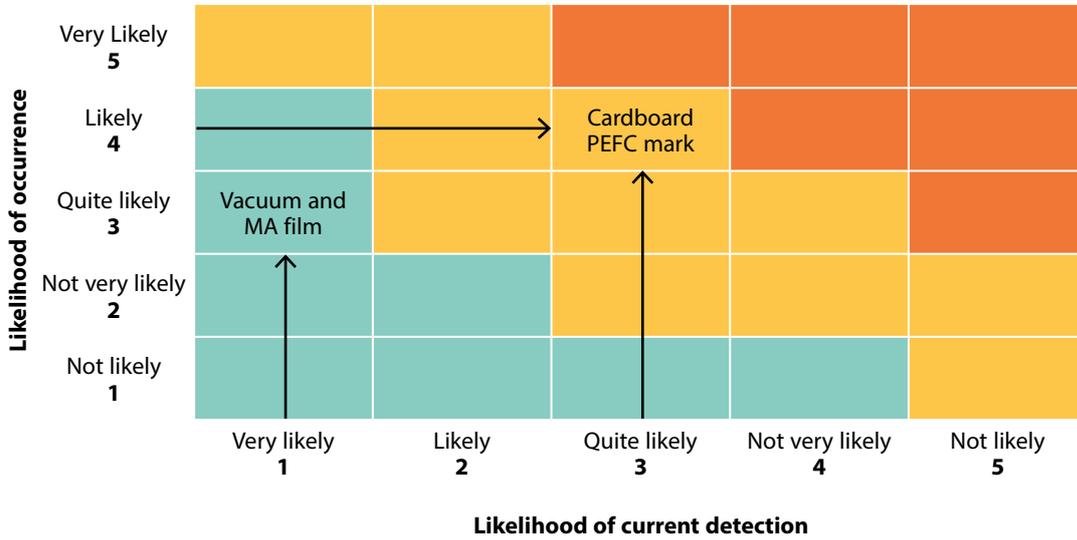


FIGURE 5
Packaging materials



The position of the product within the product risk matrix will determine the need for action to be taken to mitigate any possible risk of product fraud activity. This means in relation to the above examples:

- Extra virgin olive oil: it would be **expected** that, if adequate control measures are not in place, additional control measures should be urgently considered and actioned.
- Tomato paste: it would be **expected** that the current control measures are reviewed for effectiveness and, if necessary, appropriate decisions taken.
- Card board PEFC mark: it would be **expected** that, if adequate control measures are not in place, additional control measures should be urgently considered and actioned.
- Vacuum and modified atmosphere film: it would be **expected** that the current control measures are reviewed for effectiveness and, if necessary, appropriate decisions taken.

2. Example of a product fraud mitigation plan

An example of a mitigation plan is provided below for raw materials and packaging materials:

Date of assessment: 16 May 2022

Raw materials and packaging materials	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures
Extra virgin olive oil	W	15	1	15	Medium	Retain supplier	Retain control measures Product analysis program – 2 analyses per year
Extra virgin olive oil	X	15	2	30	Medium	Retain supplier	Increase product analysis program to 4 analyses per year
Extra virgin olive oil	Y	15	2	30	Medium	Retain supplier	Increase product analysis program to 4 analyses per year
Extra virgin olive oil	Z	15	4	60	Medium	Consider discontinuing	If retained, increase product analysis program to 8 analyses per year Certificate of analysis for every consignment
Tomato paste	A	4	1	4	High	Retain supplier	Retain control measures Certificates of analysis and intake checks
Tomato paste	B	4	1	4	High	Retain supplier	Retain control measures Certificates of analysis and intake checks
Tomato paste	C	4	2	8	High	Retain supplier	Retain control measures Certificates of analysis and intake checks
Kraft board PEFC mark	W	12	1	12	High	Retain supplier	Retain control measures Rely on certification report and chain of custody certification
Kraft board PEFC mark	Y	12	2	24	High	Retain supplier	Certification report and chain of custody certification Additional annual audit with mass balance exercise
Kraft board PEFC mark	Z	12	4	48	High	Consider discontinuing	Certification report and chain of custody certification Additional annual audit with mass balance exercise
V and MA film	D	3	2	6	Low	Retain supplier	Increase control measures by increased sampling on receipt
V and MA film	E	6	3	18	Medium	Retain supplier	Increase product analyses to every receipt Certificate of analysis for every consignment (accredited laboratory and method)

3. Example of a mitigation plan review and amendment

Below is an example of a reviewed mitigation plan (cells highlighted in yellow indicate where changes to the control measures have been made):

Date of Review: 16th May 2023

Raw materials and packaging materials	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures
Extra virgin olive oil	W	15	1	15	Medium	Retain supplier	Retain control measures Product analysis program – 2 analysis per year
Extra virgin olive oil	X	15	2	30	Medium	Retain supplier	Issues identified in supply region Increase product analysis program to 6 analyses per year
Extra virgin olive oil	Y	15	2	30	Medium	Retain supplier	Issues identified in supply region Increase product analysis program to 6 analyses per year
Extra virgin olive oil	Z	15	4	60	Medium	Consider discontinuing	If retained, increase product analysis program to 8 analyses per year Certificate of analysis for every consignment
Tomato paste	A	4	1	4	High	Retain supplier	Retain control measures Certificates of analysis and intake checks
Tomato paste	B	4	1	4	High	Retain supplier	Retain control measures Certificates of analysis and intake checks
Tomato paste	C	4	2	8	High	Retain supplier	Retain control measures Certificates of analysis and intake checks
Kraft board PEFC mark	W	12	1	12	High	Retain supplier	Retain control measures Rely on certification report and chain of custody certification
Kraft board PEFC mark	Y	12	5	60	High	Consider discontinuing supplier	Issues identified by certification body and mass balance chain of custody certification issues and certificate suspended Do not order this product
Kraft board PEFC mark	Z	12	4	48	High	Consider discontinuing	Certification report and chain of custody certification additional annual audit with mass balance exercise
V and MA film	D	3	4	12	Medium	Consider looking for new sources	Increased control measures have identified inconsistent product Increased sampling on intake on every receipt
V and MA film	E	6	3	18	Medium	Retain supplier	Increase product analyses to every receipt Certificate of analysis for every consignment (accredited laboratory and method)

ANNEX 2

Examples of a vulnerability assessment, mitigation plan development and review – Differentiation in same product group (spices)

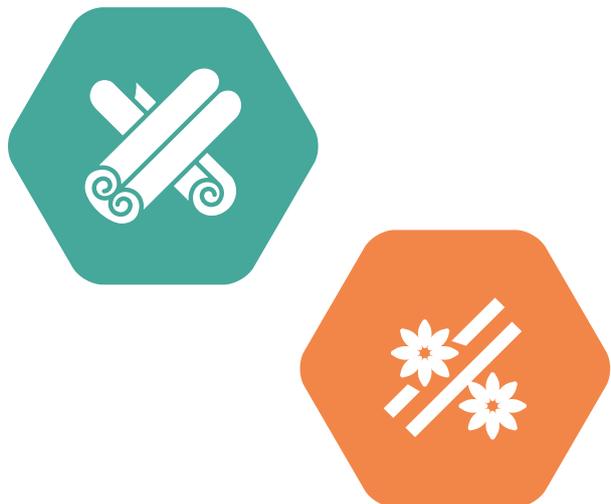
4. Examples of product vulnerability assessments

Purchased products

- Ground cinnamon (Ceylon)
- Ground cinnamon (Cassia)

The assessment team will assign a scoring of each risk factor by using the risk factors and criteria for consideration; this in turn will confirm the product's position within the product vulnerability risk matrix (reference tables within chapter 4.3).

The overall product risk can be scored for each product by multiplying the likelihood of occurrence (highest score assigned) and likelihood of current detection (highest score assigned) to determine a product/process position within the product vulnerability risk matrix.





Ground cinnamon (Ceylon)

Likelihood of **occurrence** scoring

Likelihood of occurrence	History of product fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)		5		5
4 (Likely)	4		4	
3 (Quite likely)				
2 (Not very likely)				
1 (Not likely)				

Likelihood of **current detection** scoring

Likelihood of current detection	Type of product	Supply chain complexity	Sampling program	Product characteristics	Highest score assigned
5 (Not likely)					
4 (Not very likely)					
3 (Quite likely)			3	3	3
2 (Likely)	2	2			
1 (Very likely)					

Overall product risk score for ground cinnamon (Ceylon)

Likelihood of occurrence (5) × Likelihood of current detection (3) = 15



Ground cinnamon (Cassia)

Likelihood of **occurrence** scoring

Likelihood of occurrence	History of product fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)				
3 (Quite likely)				
2 (Not very likely)				
1 (Not likely)	1	1	1	1

Likelihood of **current detection** scoring

Likelihood of current detection	Type of product	Supply chain complexity	Sampling program	Product characteristics	Highest score assigned
5 (Not likely)					
4 (Not very likely)					
3 (Quite likely)					
2 (Likely)	2			2	2
1 (Very likely)		1	1		

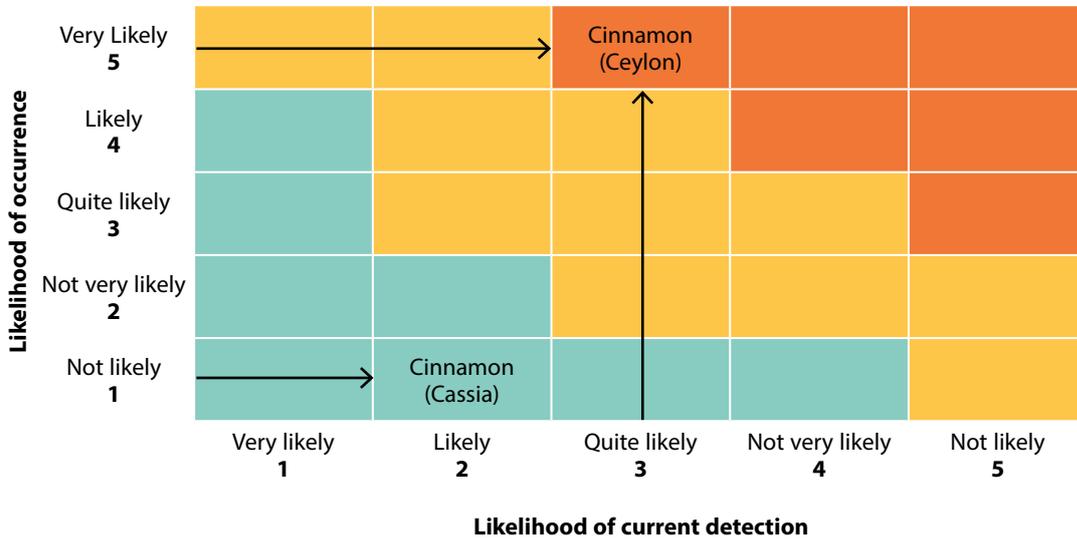
Overall product risk score for ground cinnamon (Cassia)

Likelihood of occurrence (1) × Likelihood of current detection (2) = **2**

From the assigned scores and the product risk matrix (figure 1)

- Where a product such as ground cinnamon (Ceylon) has a “very likely” rating for likelihood of occurrence and a “quite likely” rating for likelihood of current detection, the overall risk rating is within a high-risk area of the matrix.
- Where a product such as ground cinnamon (Cassia) has a “not likely” rating for likelihood of occurrence and a “likely” rating for likelihood of current detection, the overall risk rating is within a low-risk area of the matrix.

FIGURE 6
Purchased product



The position of the product within the product risk matrix will determine the need for action to be taken to mitigate any possible risk of food fraud activity. This means in relation to the above examples:

- Ground cinnamon (Ceylon): it would be **expected** that, if adequate control measures are not in place, additional control measures should be urgently considered and actioned.
- Ground cinnamon (Cassia): it would be **expected** that the current control measures are adequate and sufficient.

5. Example of a product fraud mitigation plan

An example of a mitigation plan is provided below for purchased products: Date of assessment: 16 May 2022

Purchased product	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures
Ground cinnamon (Ceylon)	W	15	1	15	Medium	Retain supplier	Retain control measures Product analysis program – 2 analyses per year
Ground cinnamon (Ceylon)	X	15	2	30	Medium	Retain supplier	Increase product analysis program to 4 analyses per year
Ground cinnamon (Ceylon)	Y	15	4	60	Medium	Consider discontinuing	If retained, increase product analysis program to 8 analyses per year Certificate of analysis for every consignment
Ground cinnamon (Cassia)	Z	15	1	15	High	Retain supplier	Retain control measures Certificates of analysis and intake checks by service provider
Ground cinnamon (Cassia)	A	4	2	8	High	Retain supplier	Retain control measures Certificates of analysis and intake checks by service provider
Ground cinnamon (Cassia)	Y	4	4	16	High	Consider discontinuing	Retain control measures Certificates of analysis and intake checks by service provider

6. Example of a mitigation review and amendment

Below is an example of a reviewed mitigation plan (cells highlighted in yellow indicate where changes to the control measures have been made):

Date of assessment: 16 May 2023

Purchased product	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures
Ground cinnamon (Ceylon)	W	15	1	15	Medium	Retain supplier	Retain control measures Product analysis program – 2 analyses per year
Ground cinnamon (Ceylon)	X	15	4	60	Medium	Consider looking for new source or increase volume of supplier W	Increased control measures have identified impurity levels of type cassia for certain batches Increased sampling on intake on every batch
Ground cinnamon (Ceylon)	Y	15	3	45	High	Retain supplier	Retain control measures Consider lowering analysis program to 6 analyses per year for next year
Ground cinnamon (Cassia)	Z	15	1	15	High	Retain supplier	Retain control measures Certificates of analysis and intake checks by service provider
Ground cinnamon (Cassia)	A	4	2	8	High	Retain supplier	Retain control measures Certificates of analysis and intake checks by service provider
Ground cinnamon (Cassia)	Y	4	4	16	High	Consider discontinuing	Retain control measures Certificates of analysis and intake checks by service provider

ANNEX 3

Auditor questions and documentation

The IFS Auditor shall perform an assessment of the development and implementation of the product fraud mitigation plan and other relevant documentation.

Assessment team and data sources

Questions that the auditor should ask:

- Who are members of the assessment team?
- How have the members of the team been trained?
- Are the responsibilities of the assessment team clearly defined?
- How does senior management support the assessment team?
- How are potential data sources relating to product fraud identified?
- Is there a list of data sources with information relating to its review and frequency of review?
- Are credible data sources used?
- How is the data used by the members of the assessment team?

Documents that the auditor may wish to assess:

- Training records of assessment team members
- List of information and data sources
- Evidence for the regular review of information and data sources

Vulnerability assessment

Questions that the auditor should ask:

- What is the defined vulnerability assessment methodology?
- Which risk factors are defined for products (raw materials and packaging materials) and suppliers?
- Are all raw materials and packaging materials subject to the vulnerability assessment?
- Are vulnerability scores, ranking or grading available for review?
- How often are vulnerability assessments undertaken?
- Are vulnerability assessments undertaken on all new raw materials and packaging materials and the suppliers of these products?

Documents that the auditor may wish to assess:

- Vulnerability assessment records
- List of raw materials and packaging materials and their suppliers
- Results of internal audit reviews

Product fraud mitigation plan

Questions that the auditor should ask:

- Is there a mitigation plan procedure in place?
- What are the control measures applied to mitigate the risk of potential product fraud activity identified within the vulnerability assessment?

- Are the control measures appropriately and consistently applied in accordance with identified risks?
- Who monitors issues identified by the control measures?
- Are control measures regularly reviewed for suitability and effectiveness?

Documents that the auditor may wish to assess:

- Product fraud mitigation plan
- Product fraud mitigation plan control measure records and reviews (and actions)
- Customer and consumers complaints
- Results of internal audits

Review and monitoring requirements

Questions that the auditor should ask:

- How often is a vulnerability assessment undertaken?
- Is there, within the mitigation plan procedure, criteria defined when the vulnerability assessment shall be reviewed in addition to the annual review, i.e. when changes to risk could occur?
- Is the effectiveness of the mitigation plan reviewed? If so, how is this undertaken?
- Are control and monitoring requirements changed, and if so, why?

Documents that the auditor may wish to assess:

- Product fraud mitigation plan procedures
- Product fraud mitigation plan control measures, records and reviews (and actions)
- Customer complaints
- Results of internal audits

ANNEX 4

Examples of data resources

The following references may be useful in relation to data sources:

- IFS Trend Risk Monitor / IFS Trend Risk Report
- RASSF Portal
<https://webgate.ec.europa.eu/rasff-window/portal/?event=SearchForm&cleanSearch=1>
- FAO Food Price Index (Food and Agriculture Organisation of the United Nations)
<http://www.fao.org/worldfoodsituation/foodpricesindex/en/>
- Animal Disease – EMPRES (Food and Agriculture Organisation of the United Nations)
<http://www.fao.org/ag/againfo/programmes/en/empres/home.asp>
- Food Outlook/Crop Forecasting – GIEWS (Global Information and Early Warning System, Food and Agriculture Organisation of the United Nations)
<http://www.fao.org/giews/en>
- Country Risk Index
- Corruption Index – Transparency International
- Food Fraud Database – Decernis <https://decernis.com/solutions/food-fraud-database>
- Food Protection and Defense Institute <https://foodprotection.umn.edu>
- EU Food Fraud Network https://ec.europa.eu/food/safety/food-fraud_en
- Europol Interpol Operation Opson <https://www.europol.europa.eu/operations/opson>

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