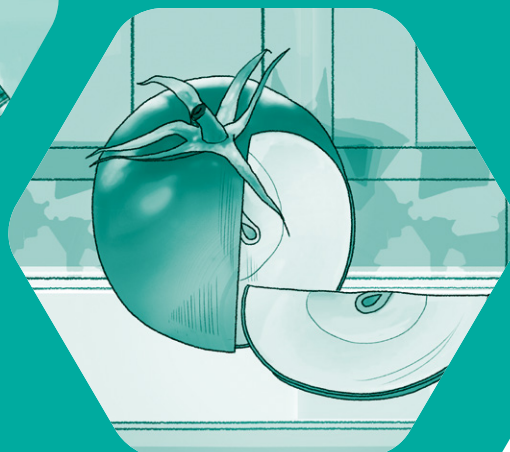
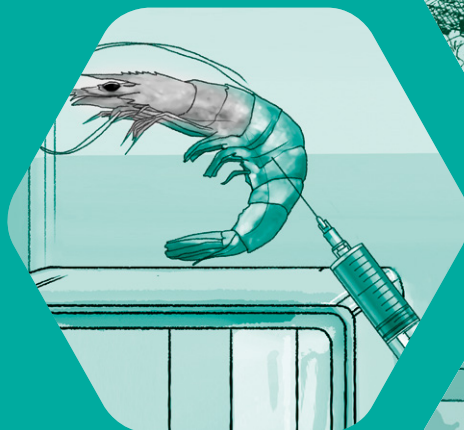



IFS Standards Product Fraud

Guidelines for Implementation





IFS would like to thank all members of the national working groups, international technical committee, IFS team and experts who have actively participated in the conception and review of this guideline.

We are particularly grateful to Kevin Swoffer, whose experience, knowledge and insight have made this Guideline possible, presenting a practical approach to the implementation of food fraud mitigation principles.

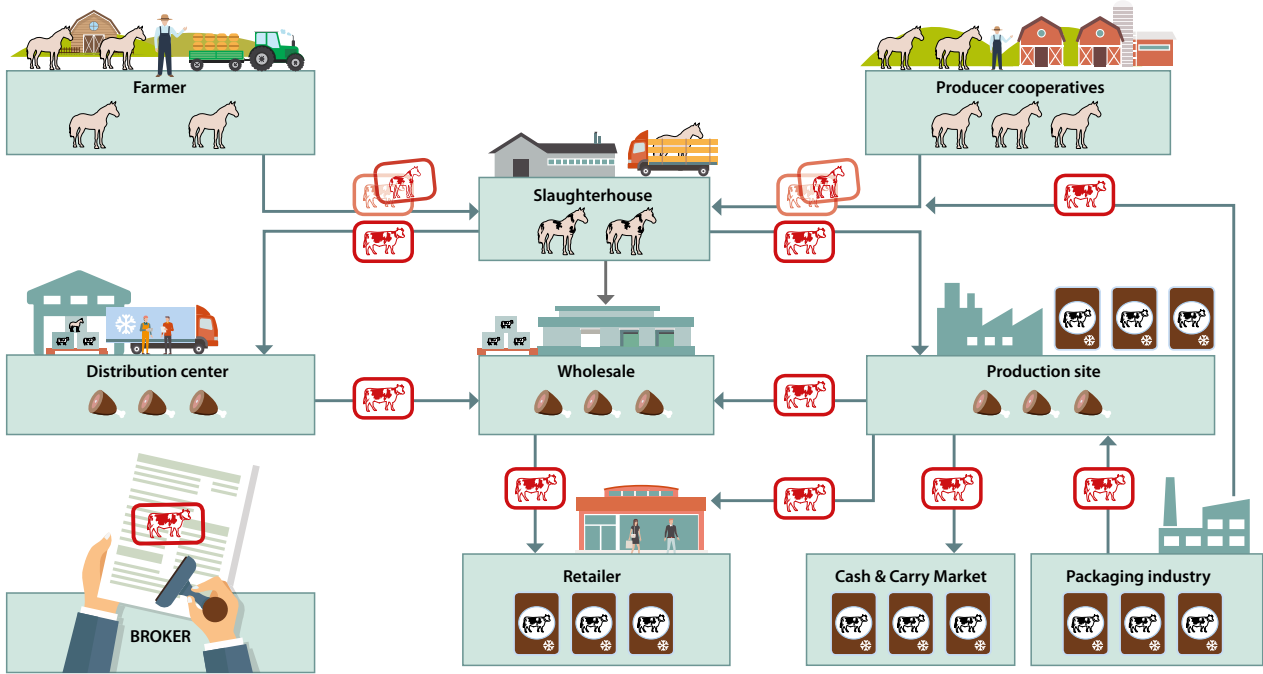
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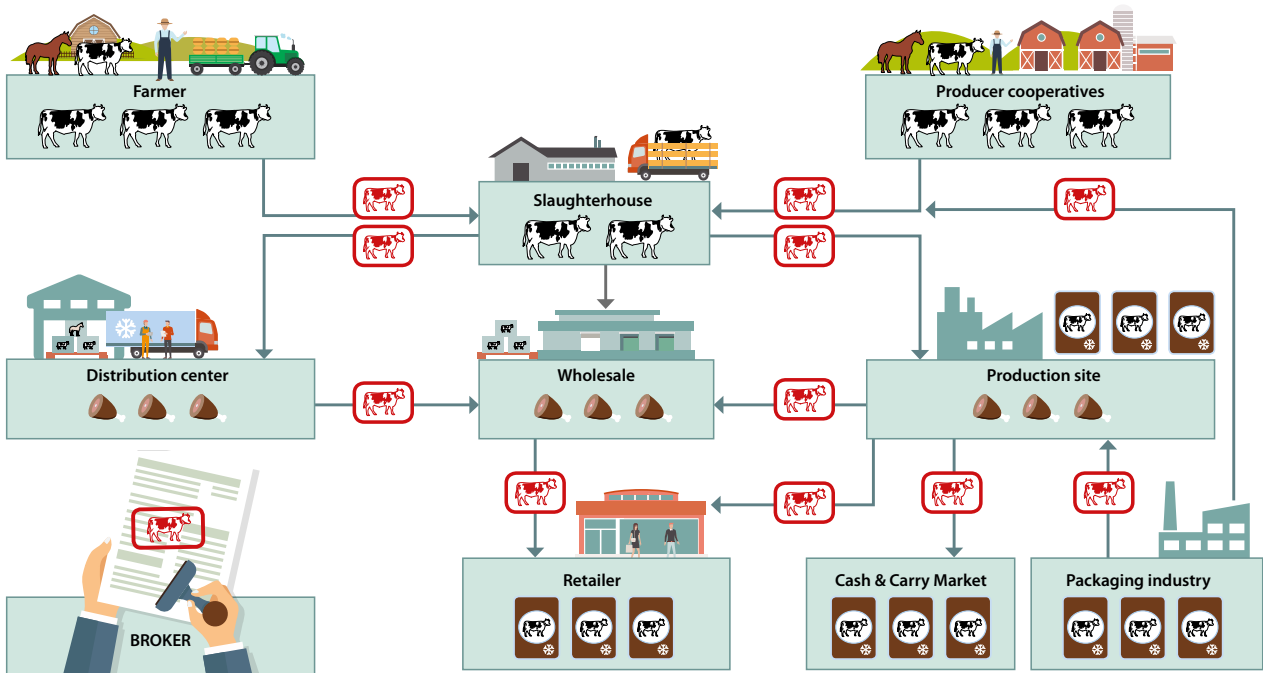
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Food Fraud along the supply chain ...



... with IFS certification



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 act is the intentional and economically motivated adulteration (EMA) of food and packaging, where there is an elevated risk in relation to consumer health. The example of melamine adulteration of infant formula and milk in 2008, serves to remind the Food Industry how vulnerable the systems are within the supply chain and the total lack of regard for human health by the fraudsters.

Product fraud is not a new crime and there are well documented incidents dating back many hundreds of years and was one of the main drivers for the drafting and implementation of Food Law. The European horsemeat scandal in 2013, however raised the profile of food fraud and exposed the deficiencies of even some of the industry's larger companies and highlighted the unprecedented challenges the Food Industry faces to the integrity and safety of its food supply chain, as the chain itself becomes more complex and global in nature. Depending on sources, it is estimated that food fraud costs the global Food Industry US\$20 – \$50 billion per year.

In addition to legislative requirements, which have been enacted to prevent product fraud and subsequent enforcement activity both nationally and internationally, Industry bodies such as the Global Food Safety Initiative (GFSI) have driven for food safety schemes, such as IFS, to introduce and implement systems to mitigate the risk of food fraud.

Product fraud can occur at any point within the food supply chain and therefore IFS Standards (IFS Food V 6.1, IFS PACsecure V 1.1 and IFS Logistics V2.2) have incorporated the need for product fraud mitigation measures to meet the requirements of the Global Food Safety Initiative (GFSI) Benchmarking Requirements Document v7.1.

These Guidelines have been developed to assist users of IFS standards to understand the intent of IFS product fraud requirements and to gain an understanding of how practices can be applied to meet these requirements in relation to the scope of the specific standard.

NOTE:

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



1. Terms and Definitions

For the purposes of this document, the key terms and definitions relating to Product Fraud are:

Product Fraud

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

Fraud Assessment Team

A team of persons who are appointed to undertake develop, implement and review the Product Fraud Mitigation Plan.

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, ingredients, food and packaging) until delivery to the customer.

The method of risk assessment may vary from company to company, however the systematic methodology for product fraud vulnerability assessment shall include as a minimum:

The identification of potential product fraud activities, using known and reliable data sources

The evaluation of the level of risk; both product and supply source

The evaluation for the need for additional control measures

Use of the results of the Product Fraud Vulnerability Assessment to develop and implement the Product Fraud Mitigation Plan

Reviewed annually, or when there is increased risk identified by change to defined risk criteria.

The criteria used to evaluate the level of risk should be as follows:

- History of product fraud incidents
- Economic factors
- Ease of fraudulent activity
- Supply chain complexity
- Current control measures
- Supplier confidence

Product Fraud Mitigation Plan

A process that defines the requirements on when, where and how to mitigate fraudulent activities, identified by a product fraud vulnerability assessment. The resulting plan will define the measures and controls that are required to be in place to effectively mitigate the identified risks. The control measures required to be put into place may vary according to the nature of the product fraud (substitution, mislabeling, adulteration, counterfeiting), detection methodology, type of surveillance (inspection, audit, analytical, product certification) and the source of the raw material, ingredient and packaging.

Food Defense:

Procedures adopted to assure the security of food and their supply chain from malicious and ideologically motivated threats.

Economically Motivated Adulteration:

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.

2. Key Points for the Development, Implementation and Maintenance of a Product Fraud Mitigation Plan

It should be noted that the method of risk assessment may **vary** from company to company and it is recommended that, where possible, companies use the risk assessment methodology, which they feel most comfortable with. The outcome of a quantitative risk assessment is typically a 'numerical' or 'level' of risk rating, which can then be used to decide upon the appropriate level of monitoring and control measures to mitigate fraudulent acts against the company. **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 should 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 defense.

These guidelines have been designed to assist users of IFS Standards 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. Risk management includes risk management planning, risk identification, the qualitative and quantitative analysis of risks, risk response planning, monitoring and controlling the risk responses. (Reference Figure 1).

How the concept of risk management has been applied to food fraud vulnerabilities can be seen in Figure 2 below.

FIGURE 1
Risk assessment

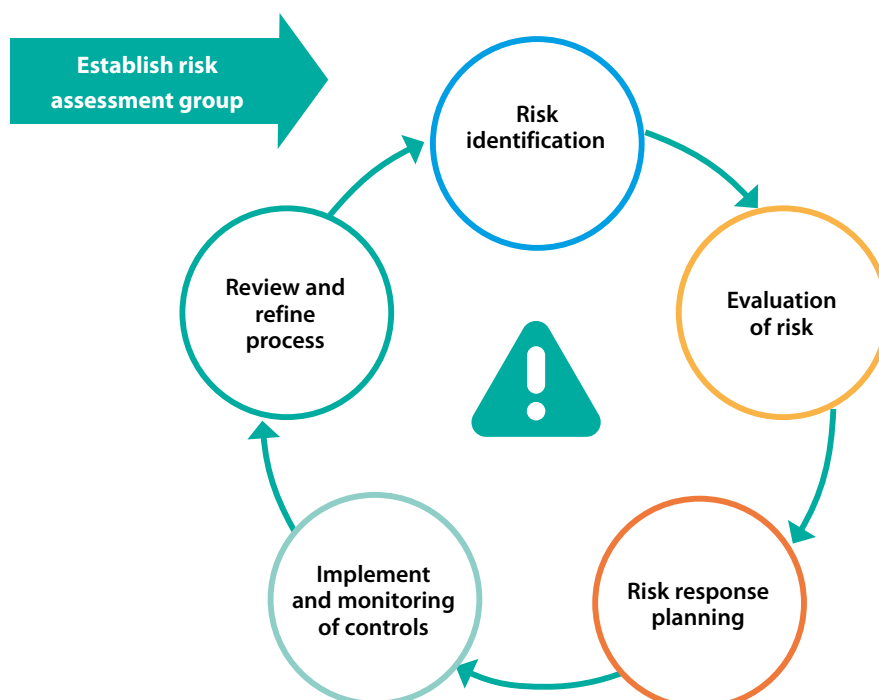
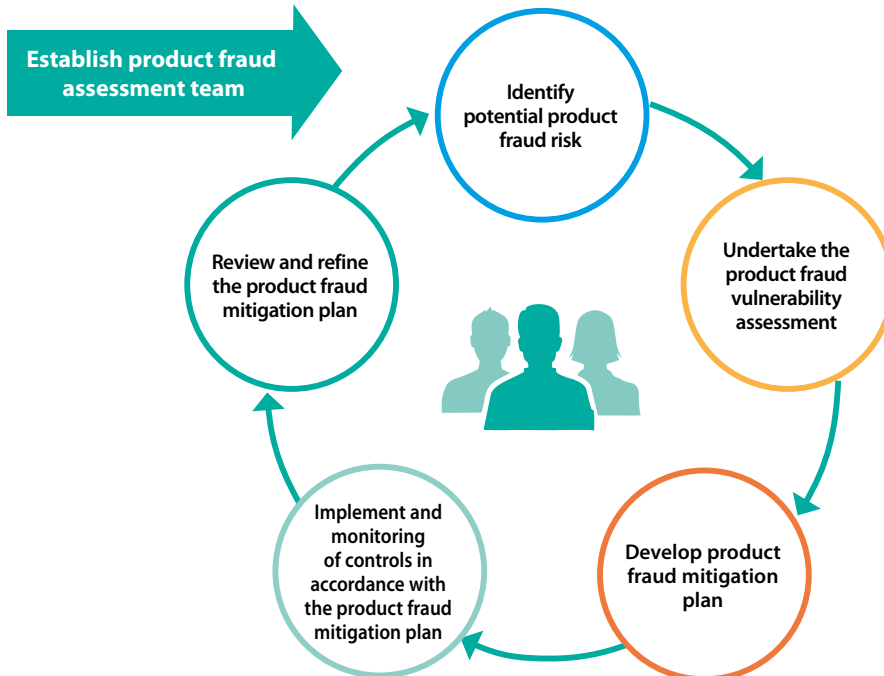


FIGURE 2
Product fraud mitigation plan



In the case of IFS Standards, the principles of risk assessment will be followed and applied to the development of a Product Fraud Mitigation Plan.

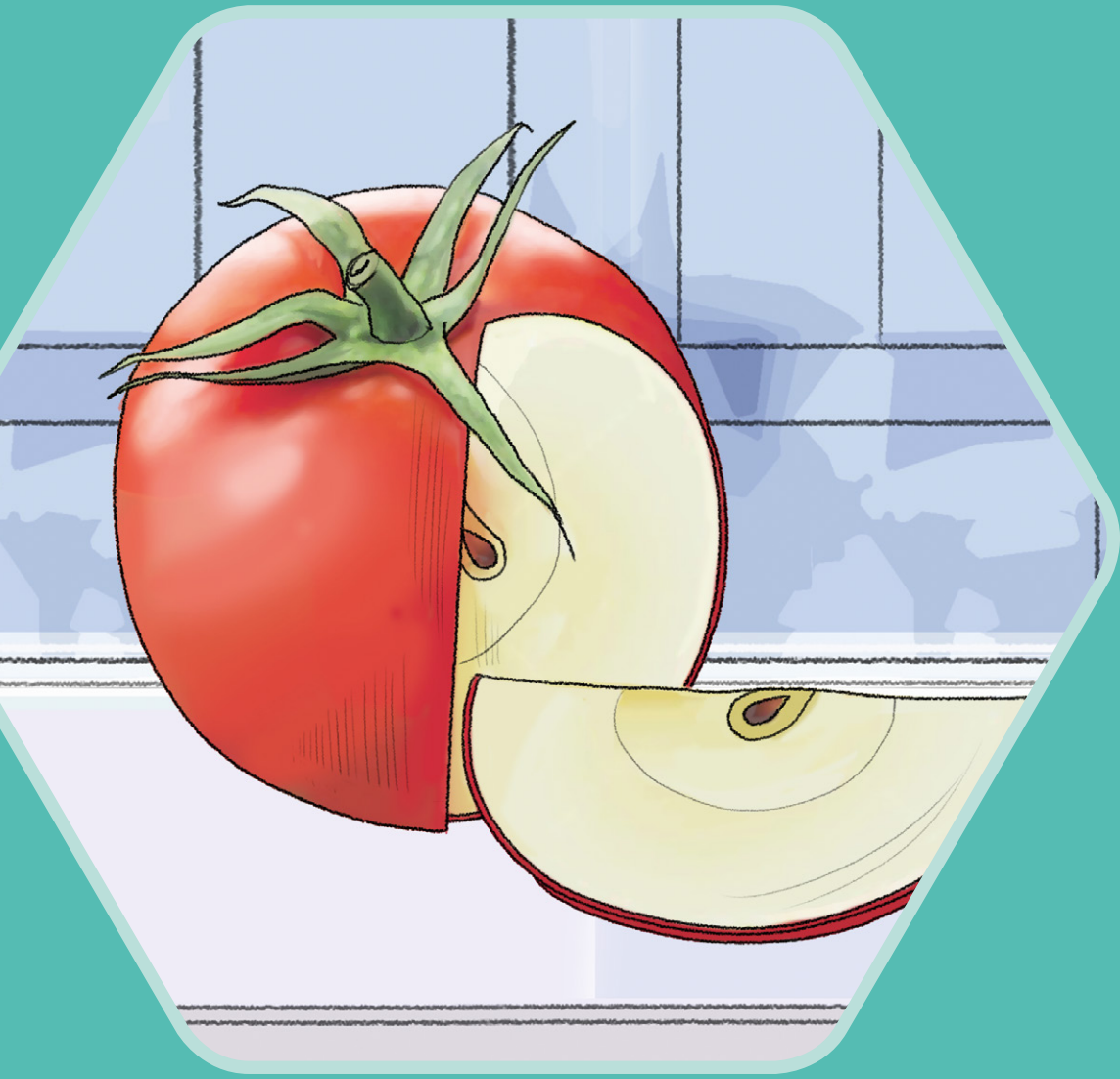
The development of a Product Fraud Mitigation Plan has a number of steps, namely:

- The identification of potential product fraud activities, using known and reliable data sources
- The evaluation of the level of risk; both product and supply source by carrying out a Product Fraud Vulnerability Assessment
- The evaluation for the need for additional control measures
- Use of the results of the Product Fraud Vulnerability Assessment to develop the Product Fraud Mitigation Plan
- Implement monitoring and control measures defined in the Product Fraud Mitigation Plan
- The Product Fraud Vulnerability Assessment and Product Fraud Mitigation Plan shall be reviewed annually, or when there is increased risk identified by change to defined risk criteria.

It is important to appreciate that the effectiveness of the development and maintenance of any Product Fraud Mitigation Plan is dependent on the quality of the data available for assessment and the competence of the individuals within the Product Fraud Assessment Team. As the technical and commercial expertise differs in relation to the scope of the Standard in question, and the team members may vary within any Product Fraud Assessment Team, this is reflected within the Guidelines; examples of these are technical management, analysts, packaging technologists, buyers and logistics/supply chain management.

In the sections of these Guidelines, general guidance has been developed and for each standard, specific examples have been incorporated within a section or within an appendix:

- IFS Food Version 6.1 (Appendix 1)
- IFS PACsecure Version 1.1 (Appendix 2)
- IFS Logistics Version 2.2 (section 5)



3. IFS Standards – Product Fraud Requirements

3.1. IFS Food Version 6.1

There are three requirements relating to product fraud within IFS Food Version 6.1. These are:

Requirement 4.21.1:

A documented food fraud vulnerability assessment shall be undertaken on all raw materials, ingredients, packaging, and outsourced processes, to determine the risk of fraudulent activity in relation to substitution, mislabeling, adulteration or counterfeiting. The criteria considered within the vulnerability assessment shall be defined.

Requirement 4.21.2:

A documented food fraud mitigation plan shall be developed, with reference to the vulnerability assessment, and implemented to control any identified risk. The methods of control and monitoring shall be defined and implemented.

Requirement 4.21.3:

In the event of increased risk, food fraud vulnerability assessment shall be reviewed.

Otherwise all vulnerability assessments shall be reviewed at least annually.

Control and monitoring requirements of the food fraud mitigation plan shall be reviewed and amended, when applicable.

3.2. IFS PACsecure Version 1.1

There are three requirements relating to product fraud within IFS PACsecure Version 1.1. These are:

Requirement 4.20.1:

A documented product fraud vulnerability assessment shall be undertaken on all raw materials (raw materials, additives, inks, adhesives, solvents, wrapping, materials and rework), product formula/configuration, processes (including outsourced), packaging and labelling, to determine the risk of fraudulent activity in relation to substitution, mislabeling, adulteration or counterfeiting. The criteria considered within the vulnerability assessment shall be defined.

Requirement 4.20.2:

A documented product fraud mitigation plan shall be developed, with reference to the vulnerability assessment, and implemented to control any identified risk. The methods of control and monitoring shall be defined and implemented.

Requirement 4.20.3:

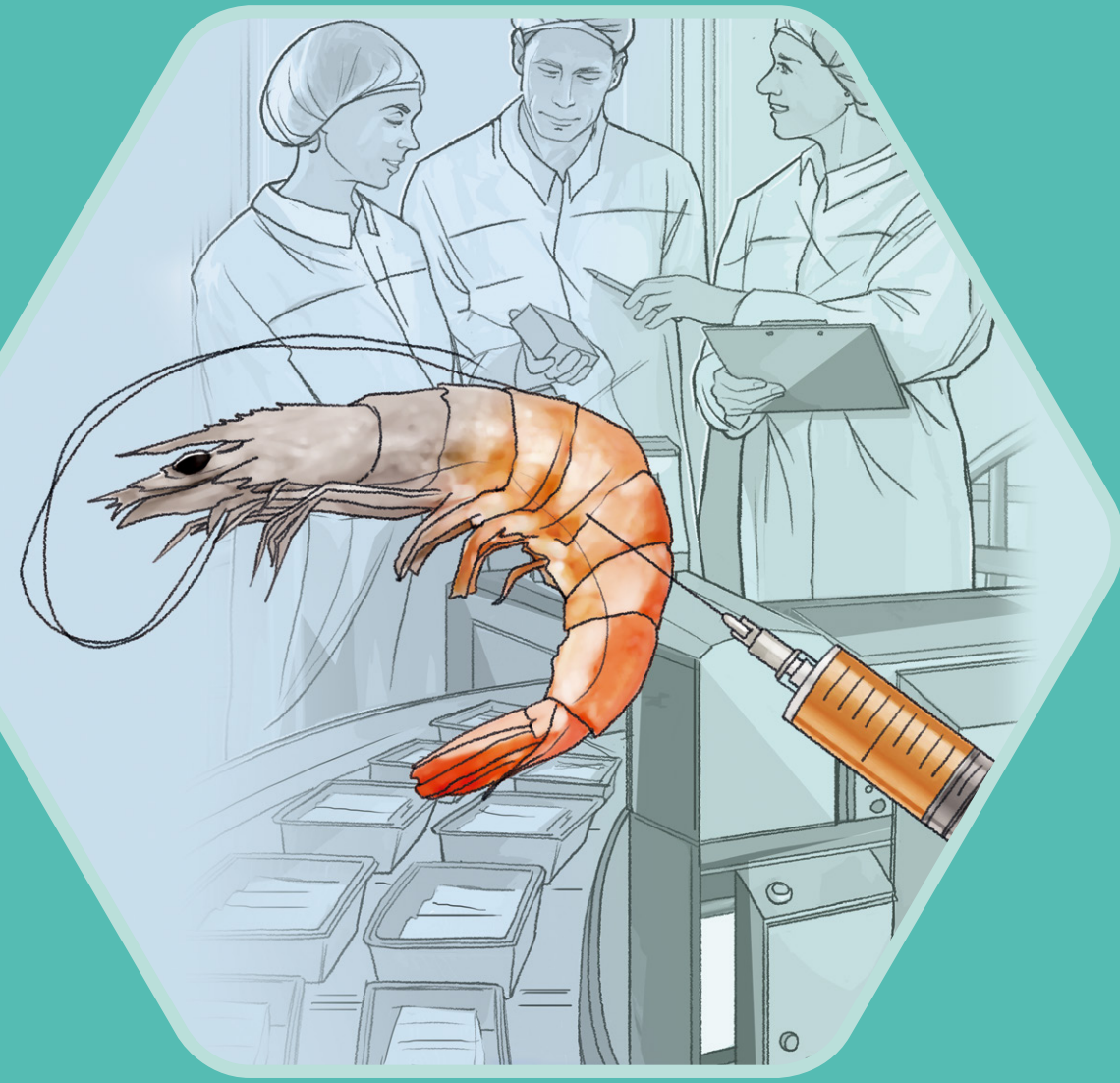
In the event of increased risks, the vulnerability assessment and mitigation plan shall be reviewed and amended accordingly. Otherwise all the vulnerability assessments, shall be reviewed at least annually.

3.3. IFS Logistics Version 2.2

In contrast to IFS Food and IFS PACsecure, IFS Logistics has one requirement which reflects the level of risk associated with the scope of the Standard.

Requirement 4.2.4.8:

A hazard analysis and assessment of associated risks for possible food fraud is in place, which realistically can be expected within the process. Based on this, appropriate measures for risk mitigation shall be documented and implemented, if necessary.



4. Guidelines for the Development, Implementation and Maintenance of a Product Fraud Mitigation Plan – IFS Food and IFS PACsecure

The Product Fraud Mitigation Plan is developed by a systematic process defined within Figure 2 of these Guidelines.

4.1. Establishing the Product Fraud Assessment Team

The team developing and implementing the Product Fraud Mitigation Plan shall include specifically representatives of purchasing (who are directly involved with purchasing of product), logistics management, and of technical management (that may include product, process and packaging, laboratory and quality technologists), who should be trained in product fraud vulnerability assessment techniques.

Where specific expertise is not available within the company, external expertise should be used.

The roles and responsibilities of the Product Fraud Assessment Team should be clearly defined and the Team should have full support of the Company's senior management. The internal audit program should include the review of the activities of the Product Fraud Assessment Team and there should be commitment for continual improvement of the process.

4.2. The Identification of Potential Product Fraud Risk

4.2.1. Data Gathering and Review

A review of data should be undertaken, in order to identify potential product fraud risk. Based upon the review of this data the Product Fraud Assessment Team should be able to effectively undertake the vulnerability assessment process.

WHY

In order to undertake an effective vulnerability assessment the Product Fraud Assessment Team should identify the sources of information and data that relate to the risk factors, that will be used within the vulnerability assessment. The sources of data should be documented and the frequency at which the data should be assessed and by whom. For example, commercial data, such as price and availability, should be the responsibility of the purchasing department Team members and technical data, such as reports of fraudulent activity and detection methodology developments should be the responsibility of the technical department Team members.

HOW

The information and data sources used to assess the potential of product fraud and other associated information should be researched and once agreed, documented prior to the vulnerability assessment. The initial information that should always be collated is an exhaustive list of all product (raw materials, ingredients and packaging) and the supplier of each of the products; where a process is outsourced the supplier should be identified.



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

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

General

- Blogs
- Media
- Trade Associations
- Research Associations
- Industry network and personal networking

Specific

- EU RASFF-Rapid Alert System for Food and Feed
- EFSA-European Food Standards Agency
- National Competent Authorities – product recall alerts
- National Competent Authorities – changes in legislation and guidelines
- Commercial service provider of data scanning and advice on threats
- Food Fraud Databases
- Testing Laboratory Information
- Commercial Trade Press – Commodity price fluctuations
- Commercial Trade Press – Harvest information
- Country Risk Classification – Amfori-BSCI
- Corruption Index – Transparency International

The following table provides further guidance regarding the type of information to be found within these data sources, who would be expected to review these and where necessary highlight possible increased risk.

Probable Data Sources

General data Source	Data value	Responsibility for review
Blogs	General information on product fraud matters/incidents	Technical/Packaging Technologist/Logistics
Media	Product fraud incidents	Technical/Packaging Technologist/Logistics
Trade associations	Guidance and information transfer	Technical/Packaging Technologist/
Research associations	Guidance and information transfer	Technical
Industry network and personal networking	General information	Technical/Packaging Technologist/Purchasing/Logistics

Specific data source	Data value	Responsibility for review
EU RASFF – Rapid Alert System for Food and Feed	<ul style="list-style-type: none"> Information of product quality safety issues egarding border rejections 	Technical
EFSA – European Food Standards Agency	<ul style="list-style-type: none"> General information on food fraud matters/incidents 	Technical
National competent authorities	<ul style="list-style-type: none"> Product Recall Alerts Food fraud incidents National legislation Guidance 	Technical
Commercial service provider of data scanning and advice on threats	<ul style="list-style-type: none"> Trend analysis on food fraud issues General advice 	Technical
Food fraud databases	<ul style="list-style-type: none"> Data on food fraud incidents 	Technical
Testing laboratory information	<ul style="list-style-type: none"> Information on analytical methodology Guidance and advice 	Technical/Analyst
Commercial trade press	<ul style="list-style-type: none"> Commodity price – forecasts and fluctuations Product supply information and shortages 	Purchasing (Food and Packaging)
Country risk classification – Amfori – BSCI	<ul style="list-style-type: none"> Information on country governance 	Purchasing
Corruption index – transparency international	<ul style="list-style-type: none"> Information on country corruption level 	Purchasing

4.3. Undertaking the Product Fraud Vulnerability Assessment

A product fraud vulnerability assessment shall be conducted on every raw material, ingredient, packaging, food and outsourced process, considering the supply chain steps under the supplier's responsibility until delivery to customer.

WHY

An effective, systematic documented product fraud vulnerability assessment will identify risk of possible fraudulent activity within the supply chain. As product fraud may take the form of deliberate and intentional substitution, adulteration, mislabeling or counterfeiting, the product fraud vulnerability assessment shall be conducted on raw materials, ingredients, food packaging and the food itself (including outsourced product). The product fraud vulnerability assessment, if carried out correctly, will identify potential weaknesses in the supply chain, which have to be addressed in the Product Fraud Mitigation Plan to minimize the risk of fraud.

Product fraud could have significant consumer safety implications, affect company profitability and potentially damage company reputation.





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 a food industry are HACCP and within incident management procedures, to establish course of action.

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

By far the most common approach of risk assessment is the quadratic model, which has been used within the food and non-food sectors for some years.

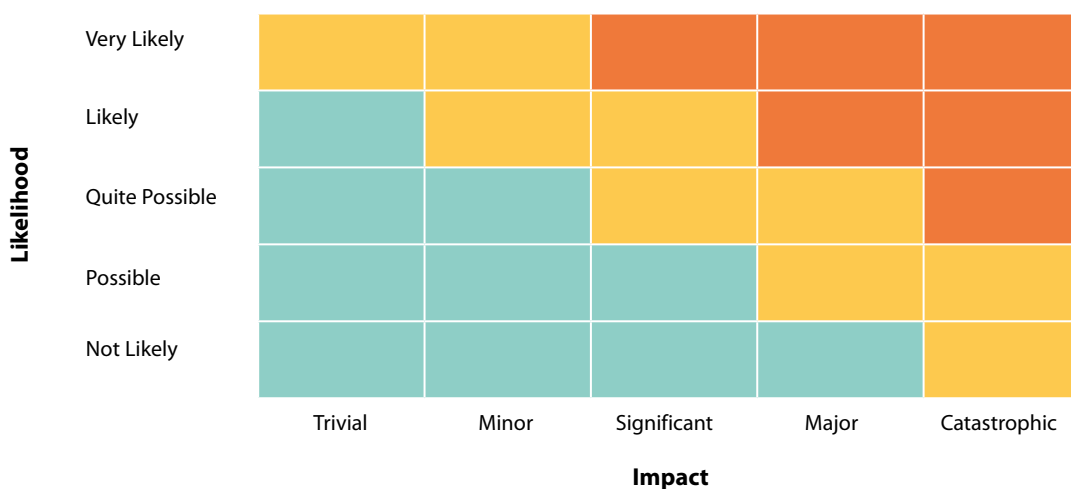
(Ref http://ec.europa.eu/consumers/archive/ipm/risk_assesment_guidelines_non_food.pdf).

Within the following sections of these Guidelines, a recommended example is provided to assist those companies, who may not have experience of risk assessment methodologies.

Figure 3 illustrates a typical quadratic risk matrix commonly used within the food industry for issues such as decision making on product safety incidents and potential foreign body occurrence. Please note the quadratic risk matrix format may vary according to individual company requirements.

FIGURE 3

An example of a typical quadratic risk matrix



When undertaking vulnerability assessments there are three main criteria, which are of the utmost importance to the food fraudster namely: **profitability**, the **risk of detection** and the **ease of carrying out** the fraud.

Within any risk or vulnerability assessment there are risk factors that have to be defined to allow the assessment to be carried out effectively. These Guidelines have been developed to provide advice and guidance on these product fraud risk factors, which can be used to develop a quadratic risk matrix, and in turn can be used to develop the most appropriate control measures to mitigate risk.

The vulnerability assessment shall have two basic elements; the **product** risk and the **supplier** risk.

4.3.1 Product Fraud Vulnerability Assessment Principles

In relation to product vulnerability assessment, the quadratic matrix approach provides a useful tool and as vulnerability assessments are specifically designed to identify product fraud risk, then values on the matrix horizontal and vertical axis can be modified from the typical risk matrix (Figure 3). In this case, the vertical axis shall represent likelihood of occurrence and the horizontal axis shall represent the likelihood of current detection (Figure 4).

FIGURE 4
An example of a Product Vulnerability Risk Matrix with Risk Rating for Likelihood of Occurrence and Likelihood of Detection on Axes

Likelihood of Occurrence	Very Likely 5	Medium	Medium	High	High	High
	Likely 4	Low	Medium	Medium	High	High
	Quite Possible 3	Low	Low	Medium	Medium	High
	Possible 2	Low	Low	Low	Medium	Medium
	Not Likely 1	Low	Low	Low	Low	Medium
		Very Likely 1	Likely 2	Quite Possible 3	Possible 4	Not Likely 5
		Likelihood of Current Detection				

FIGURE 5
An example of a Product Vulnerability Risk Matrix with Scored Risk Rating for Likelihood of Occurrence and Likelihood of Detection on Axes and Product Risk Rating within the Matrix

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 Possible 3	Low 3	Low 6	Medium 9	Medium 12	High 15
	Possible 2	Low 2	Low 4	Low 6	Medium 8	Medium 10
	Not Likely 1	Low 1	Low 2	Low 3	Low 4	Medium 5
		Very Likely 1	Likely 2	Quite Possible 3	Possible 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, medium and low risk. Therefore, by their very nature, as assessed, the determined product risk can be used to indicate the need for possible increased control measures for the mitigation of food fraud.

The following table illustrates the risk factors and examples of criteria for consideration for the assessment of product risk.

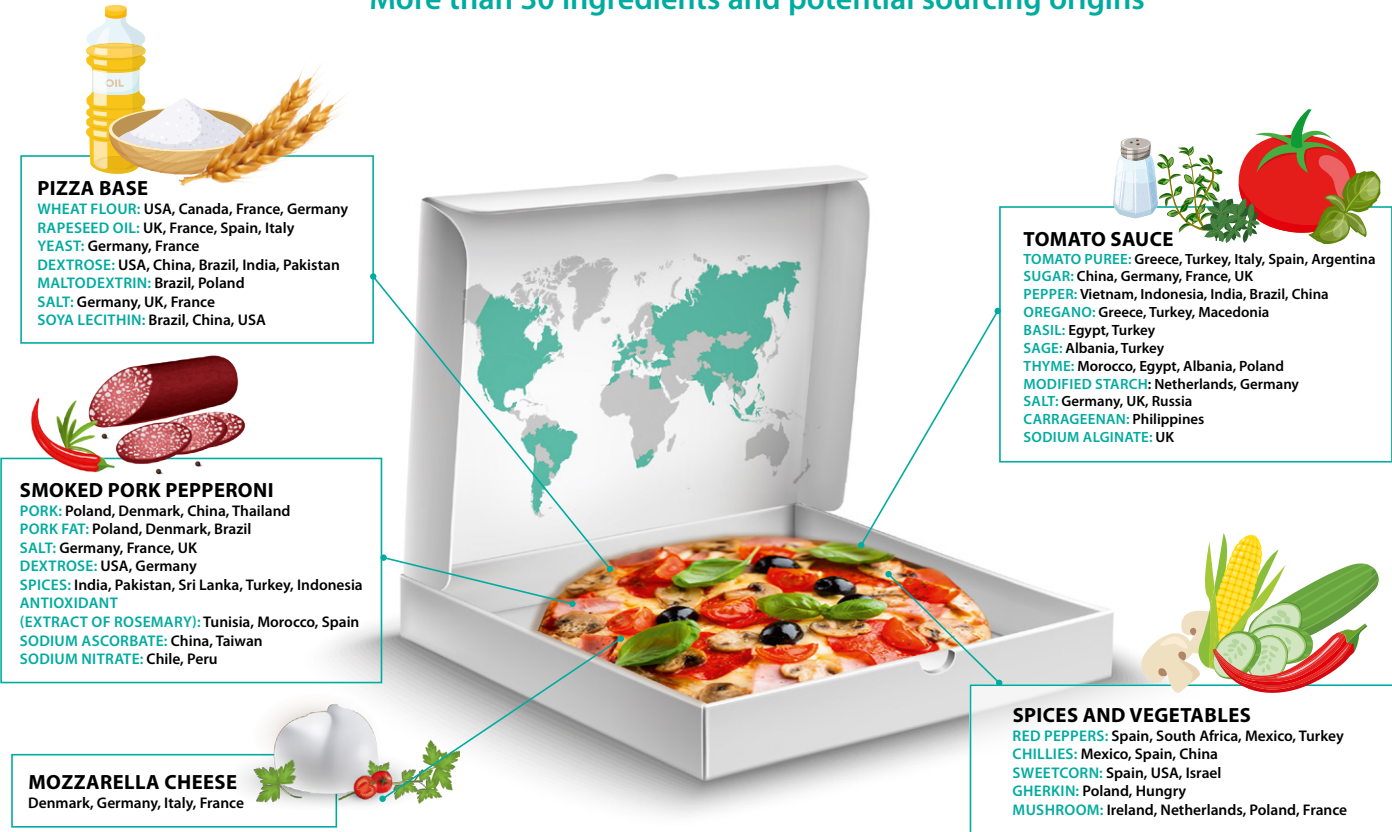
Product risk factors	Criteria for consideration
History of product fraud – incidents	<ul style="list-style-type: none"> • The number, types and frequency of fraud carried out in relation to product.
Economic factors	<ul style="list-style-type: none"> • Price (profitability of the product e.g. profit margin and quantity) • Availability of the product (seasonality, reduce quantity / quality, high consumer demand, quota) • Availability of adulterant (quantity, price, nature of the adulterant) • Tariff (increased or fluctuating government tariffs affecting price and availability) • Price Fluctuation (seasonality, reduced quantity / quality, high consumer demand, quota, price setting mechanisms)
Ease of fraudulent activity	<ul style="list-style-type: none"> • Physical nature of the product (liquid, powder, minced pieces, whole) • Cost and complexity of fraudulent process (location, processing machinery, costs of production, packaging cost, distribution cost) • Staff involvement in the fraudulent activity (number, ease of concealment, number of locations) • Packaging formats (packaging of raw material and adulterant)
Supply chain complexity	<ul style="list-style-type: none"> • Geographical origin (location of source and length of supply chain) • Types and number of organization in the supply chain (manufacture, storage, distribution, agent or broker) • Number of factories within the supplier organization
Current control measures for detecting fraud	<ul style="list-style-type: none"> • Testing authority (certification bodies, auditing body, testing laboratories and status [accredited / non-accredited], inspection bodies and status [accredited / non accredited]) • Testing methodology (accredited / non-accredited analytical methodology, auditing [certificated / non-certificated], product inspection, product testing body and status [accredited / non-accredited]) • Testing frequency (auditing, product inspection, product testing) • Cost of testing (product inspection, product testing, analytical testing complexity)

The diversity of outsourcing of process is wide and is highly reliant on the contractual arrangement between the company and the supplier and the status of the raw material, ingredient, packaging or food, i.e. does the company fully control the purchasing and/or technical control mechanisms or are the purchasing and/or technical control mechanisms completely outsourced to the supplier?

If the company has direct control of the purchasing and technical control mechanisms, the risk is therefore reduced and the control measures relate to those specific criteria aligned to the supplier approval and monitoring requirements.

SUPPLY CHAIN GLOBALIZATION

More than 30 ingredients and potential sourcing origins



The product risk factors used for the risk rating within the matrix are defined within the table above, and the risk factors used to develop the product vulnerability risk matrix are defined as follows:

Product Risk Factor Classification

Matrix axis	Risk factors	Criteria for consideration
Likelihood of occurrence	History of product fraud incidents	<ul style="list-style-type: none"> The number, types and frequency of fraud (the more frequent that a product has food fraud associated with it, the higher the risk)
Likelihood of occurrence	Economic factors	<ul style="list-style-type: none"> 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 high availability and low cost of an adulterant, the higher the risk) Tariff Costs (the higher the tariff cost, the higher the risk) Price Fluctuation (the frequency and level of fluctuation will determine risk)
Likelihood of occurrence	Ease of fraudulent activity	<ul style="list-style-type: none"> Physical nature of the product (liquids pose the highest risk and mixing of individual components e.g. whole fish, pose the lowest risk) Cost and complexity of 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 product is available unmarked and in bulk the higher the risk, if product is prepackaged, marked and requires unpacking, the lower the risk)
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 organization 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)
Likelihood of current detection	Current control measures 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) Cost of testing (the higher the cost of testing the greater the risk)

4.3.2 Supplier Vulnerability Assessment Principles

In addition to the product vulnerability assessment, it is equally important to assess supplier risk. For example, the product will have a defined risk; however, the same product may be procured from a number of sources, all of which will have a differing risk, assessed by 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"> • Economical stability of 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 (more regular quantities procured the lower the risk) • Commercially knowledgeable-margin control, supply chain knowledge, commercially aware (the more commercially knowledgeable the lower the risk) • 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 lower the risk)
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 measure the lower the risk) • Effectiveness of quality management systems (if the supplier has an effective QM systems the lower the risk)

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 (a good level of certification and continued good performance the lower the risk) • The consistent supply of safe and specification compliant product (the better consistent performance regarding agreed safety and quality product the lower the risk) • Minimal intake rejections-quality, temp, etc. (the better the rejection rate the lower the risk) • Minimal consumer complaints (the lower the complaint level the lower the risk) • Minimal 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 with country regulatory quality (the higher level of comparable regulatory control the lower the risk) • Intergovernmental relationships with the country of supply (the higher the level of government interface 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, like product risk, can be graded dependent upon the confidence the company has with the supplier and is based upon defined risk factors and risk sub-factors within the table above.

For example:

- 1 Very High Confidence
- 2 High Confidence
- 3 Medium Confidence
- 4 Low Confidence
- 5 Very Low Confidence

4.4 Developing the Product Fraud Mitigation Plan

4.4.1 Food Fraud Mitigation Plan Principles



WHY

An effective Product Fraud Mitigation Plan will define the measures and controls that are required to be in place to mitigate the risks identified in the Product Fraud Vulnerability Assessment. The completed Product Fraud Mitigation Plan constitutes the most important document, as it reflects the results of all the product fraud mitigation strategy of the supplier.



HOW

The product and supplier vulnerability assessment are undertaken on every raw material, ingredient, packaging and food and the resultant overall risk assessment reviewed against current control measures, that the company undertakes to identify fraudulent activity, in order to determine if these provide effective mitigation against possible fraud threats.

Unlike product and supplier vulnerability assessments, it is suggested that the current control measures should be rated, in accordance with an assessment of the likely effectiveness of controls by the technical member(s) of the Product Fraud Assessment Team. 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.

The control measures that can be used are numerous and are specific in nature to the raw material, ingredient, packaging or food, but should however, be implemented to effectively control risks. The following list is not exhaustive, but are those control measures that are typically used:

- Economical and legal status of supplier verification
- Raw material, ingredient and packaging analytical testing
- Certificates of analysis
- Product inspection prior to delivery
- Third party technical audit
- Second party technical audit
- First party technical audit
- Chain of custody certification
- Mass balance testing
- Supplier questionnaires
- Legal compliance of supply chain suppliers

Criteria for Control Measures

There are a number of criteria examples which should also be considered when assessing the effective of control measures:

Control measures	Criteria for consideration
Economic and legal status verification	<ul style="list-style-type: none"> • Financial stability verification • Legal entity verification
Raw material, ingredient and packaging analytical testing	<ul style="list-style-type: none"> • Testing methodology-accredited methodology (if the testing methodology is accredited, the lower the risk) • Testing methodology – detection level (the lower the detection level, the lower the risk) • Accredited / non-accredited laboratory (if the laboratory is accredited the lower the risk, if the laboratory is non-accredited, the higher the risk) • Reliability /validation of the laboratory (if there is evidence of good reliability of the laboratory, the lower the risk) • Controls at reception: orders making reference to agreed specifications, verification of delivery documents, origin and batch related inspection
Certificates of analysis	<ul style="list-style-type: none"> • Issued by an accredited / non-accredited laboratory (if the certificate is issued by an accredited laboratory, the lower the risk) • Certificate relating to the actual batch / lot code of production (if the certificate is lot/batch specific, the lower the risk)

Control measures	Criteria for consideration
Product inspection prior to export / delivery	<ul style="list-style-type: none"> • Status of inspection body – Government, independent accredited body, independent non-accredited body, appointed by the company or non-appointed by the company (inspection undertaken by government or an accredited body poses, the lowest risk) • Inspection frequency (the more frequent the inspection, the lower the risk) • Inspection sampling methodology (the more thorough the sampling, the lower the risk)
Third party technical audit	<ul style="list-style-type: none"> • Accredited certification body against a known and recognized standard (an accredited certification body poses, the lowest risk) • Non-accredited certification body against a known and recognized standard (a non-accredited certification body poses, the highest risk) • Audit report and Certificate (a detailed audit report and certificate poses the lowest risk) • Certificate (a certificate without a report poses, the highest risk)
Second party technical audit	<ul style="list-style-type: none"> • Accredited certification body against a company standard (an accredited certification body poses, the lowest risk) • Non-accredited certification body against a company standard (a non-accredited certification body poses, the highest risk) • Audit frequency and scope of audit (the more frequent and robust scope, the lower the risk)
First party technical audit	<ul style="list-style-type: none"> • Audit undertaken by own employee (the more competent the employee, the lower the risk) • Audit frequency and scope of audit (the more frequent and robust scope, the lower the risk)
Chain of custody certification	<ul style="list-style-type: none"> • Accredited certification body against a known and recognized standard (an accredited certification body poses, the lowest risk) • Non-accredited certification body against a known and recognized standard (a non-accredited certification body poses, the highest risk) • Audit report and Certificate (a detailed audit report and certificate poses, the lowest risk) • Certificate (a certificate without a report poses, the highest risk)
Mass balance testing	<ul style="list-style-type: none"> • Mass balance testing as part of technical or chain of custody certification audit (testing carried out in accordance with certification process, the lowest risk) • Extraordinary testing of mass balance (extraordinary testing under company control poses, the lowest risk) • Frequency and scope of testing (the more frequent and robust scope, the lower the risk) • Report (a detailed audit report poses, the lowest risk)
Supplier questionnaires	<ul style="list-style-type: none"> • Robustness of questionnaire and evaluation (a robust and detailed questionnaire poses, the lowest risk) • 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 Product Fraud Mitigation Plan can then be developed (Figure 6) by the Product Fraud Assessment Team from the product and supplier vulnerability assessments for each raw material, ingredient, packaging and food using an overall risk rating score and the assessment of current control measures (current control measure rating – high, medium or low).

For the development of the Product Fraud Mitigation Plan, the following criteria shall apply:

- The overall risk score is the product risk score multiplied by the supplier risk score
- The raw material, ingredient, packaging and food risk score shall be determined first and shall be the same, irrespective of the supplier risk rating. Therefore, there will be a 'common product risk score', but there may be differing supplier risk scores dependent upon confidence the company has of the supplier.
- It is strongly advised to group all raw material, ingredient, packaging and food together and list suppliers as this will add decision making and plan review.

The Product Fraud Assessment Team shall, by reviewing the collated risk scores and current control measure rating (high, medium or low), reach a decision by consensus on need for control measures.

FIGURE 6
Food Fraud Mitigation Plan Template

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

4.5 Implementation and Monitoring of the Product Fraud Mitigation Plan Control Measures

4.5.1 Control Measures

The decisions of the Product Fraud Assessment Team may be numerous, dependent on the evidence reviewed and may lead to changes in policy in relation to supply of product, modification of current control measures, or to retain current control measures:

- the discontinuation or reduction of use of a raw material, ingredient, packaging or food
- the discontinuation of the use of supplier(s)
- the reduction in quantity of a raw material, ingredient, packaging or food for specific supplier(s)
- modify current control measures dependent upon product and control measures, e.g. increase analytical surveillance, use of accredited laboratories and methods, increased intake inspection, independent inspection prior to shipment, etc.
- retain current levels of control

The Product Fraud Mitigation Plan, and any subsequent revisions of the Plan, should be fully documented and dated.

When finalizing the Product Fraud Mitigation Plan, the members of the Fraud 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 the 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 Product Fraud Mitigation Plan will allow for a prioritization of actions to be made in order to mitigate overall risk posed by the higher risk products and suppliers. For obvious reasons, particularly in relation to company analytical costs, some judgments may need to be made in relation to the overall budget for all food controls, both safety and food fraud and it is extremely important that the Product Fraud Assessment Team have full support of company management.

The Product Fraud Mitigation Plan should be reviewed in alignment with the quality food safety management system review.

4.6 The Review and Refinement of the Product Fraud Mitigation Plan

4.6.1 Changes to Risk Factors and Product Fraud Vulnerability Assessment Review



WHY

A Product Fraud Mitigation Plan will only remain effective, if changes to the risk factors that determine the risk within the food vulnerability are identified and these changes reviewed, in order to maintain the required level of control measures.



HOW

The members of the Product Fraud Assessment Team should have access to the appropriate data and information regarding the risk factors used for the vulnerability assessments.

When carrying out the initial Product Fraud Mitigation Plan, this should be regarded as 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 will mean there should be in place the ability to revisit individual products' (and the suppliers of these products) risk assessments, if there are possible changes to the overall risk in relation to possible food fraud.

The Product Fraud Assessment Team should review the product fraud vulnerability assessment when significant changes occur. The following list are those regarded as significant changes, that will prompt the Team to undertake a revised vulnerability assessment:

- › change in supply of raw materials e.g. new supplier
- › change in management or financial situation of supplier
- › change in cost of raw material(s)
- › change that effect the cost of finished product 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
- › evidence of fraud found by control measures such as analytical testing
- › 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

4.6.2 Formal Review of the Product Fraud Vulnerability Assessments

WHY

A Product Fraud Mitigation Plan will only remain effective, if changes to the risk factors that determine the risk within the food vulnerability are identified and these changes reviewed, in order to maintain the required level of control measures. Although within the first part of this requirement there is need for regular review, there is also a requirement for an annual vulnerability assessment of all raw materials, ingredients, packaging and outsourced processes.

HOW

The members of the Product Fraud Assessment Team should have access to the appropriate data and information regarding the risk factors used for the vulnerability assessments, which will allow effective vulnerability assessments to be undertaken.

In accordance with the first part of this requirement, the Team members should regularly review data and information for significant change, however all raw materials, ingredients, packaging and outsourced product should be reviewed by undertaking a full vulnerability assessment at least annually. The Product Fraud Assessment Team should use the same methodology for vulnerability assessment, however they should review data/information sources to assess if new data/information sources are appropriate.

The full vulnerability assessments shall be documented and dated in accordance with company documentation control requirements.



4.6.3 Control and Monitoring Requirements Review and Implementation

WHY

A Product Fraud Mitigation Plan will only remain effective, if changes to the risk factors that determine the risk within the product vulnerability assessment are identified and these changes reviewed, in order to maintain the required level of control measures. Within the first part of this requirement there is need for regular review, and in the second part of this requirement there is also a requirement for an annual vulnerability assessment of all raw materials, ingredients, packaging and outsourced product, as a consequence of these requirements, there should be a need to review the current control and monitoring requirements of the product fraud mitigation plan, which should be amended and implemented immediately after review.

HOW

When the Product Fraud Assessment Team undertake the full annual vulnerability assessments or interim vulnerability assessments of individual raw materials, ingredients, packaging or outsourced processes, there is a need to also review the effectiveness of the control measures defined within the Product Fraud Mitigation Plan.

The Product Fraud Assessment Team should use the same methodology for the development of the Product Fraud Mitigation Plan, but should review the decision regarding control measures. If there are changes to the current control measures, these changes should be made as soon as practical.

Any changes to the Product Fraud Mitigation Plan should be documented and dated in accordance with company documentation control requirements.



5 Guidelines for chapter 4 of IFS Logistics Version 2.2

Although the Logistics Service Provider have few possibilities to mitigate directly product fraud, as they have less interaction with the product itself, product fraud activity may occur within the logistics sector of the supply chain and therefore reference is made to the assessment of risk and the requirement for measures to be in place to mitigate any identified risk.

Although within the requirements of IFS Logistics Version 2.2 reference is not specifically made to vulnerability assessments or a formal risk mitigation plan and is part of section 4.2.4, Receipt of Goods and Storage, it is advisable that the general principles which apply to product fraud vulnerability assessment (section 4 of these Guidelines) are utilised for the assessment of risk within the logistics supply chain.

5.1.1 Food Fraud Risk Assessment Principles and Mitigation Control Measures

The storage, transport and other services (e.g., packing and labeling) involving raw materials and finished product within the logistics sector, is an area where substitution and counterfeiting could be expected as a major food fraud threat. 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. Mislabeling is also considered as fraud, for example when best before dates are extended during co-packing activities.

As there is no processing or production of food within the logistics sector, consideration should be given to factors such as economic factors, ease of the fraudulent activity, supplier business history, commercial relationships, supplier technical control measures and country and business ethics. Other factors that are relevant are the nature of the product and its status; typically, loose or unpackaged product are a higher risk than product that has been packaged and labelled.

The controls that can be used to mitigate Food Fraud within the logistics supply chain are similar to those which apply to Food Defense controls and should be considered (Reference IFS Food Defense Guideline); good examples are where traceability/lot coding systems should be evident as a measure of control and where tamper evidence is incorporated within the packaging design.

The most vulnerable products would be loose or unpackaged product, which are brought into the company or dispatched from the company. The control and monitoring systems must therefore be considered and are similar to those used to mitigate the risk of malicious contamination, e.g. sealed containers, inspection, site security measures, documentation control and regular monitoring of logistic control systems by first, second or third-party audits.



WHY

An effective, systematic documented hazard analysis and assessment will identify risk of possible food fraud activity within the logistics supply chain. As food fraud may take the form of deliberate and intentional substitution, adulteration, mislabeling or counterfeiting, the hazard analysis shall be conducted on raw materials, ingredients, food packaging and food within the logistics supply chain. The hazard analysis, if carried out correctly, will identify potential weaknesses in the logistics supply chain, which should be addressed by risk mitigation control measures.



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 a food manufacturing industry are HACCP, and within incident management procedures, to establish course of action; however those principles presented in section 4 of these Guidelines, should greatly assist companies with this process.

Below is an example of table of assessed product and supplier risk and mitigation control measures for use within the logistics sector.

Food Fraud Risk Assessment and Mitigation Control Measures

Food fraud risk	Supplier 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 consignment notes • Company procedures review • Review of intake records • Authorized consignment 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 consignment notes. • Company procedures review • Review of intake records • Authorized consignment 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 consignment 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 Middle risk	<ul style="list-style-type: none"> • Consistency with product specifications. • Operations traceability • Legal advisory

Appendices

Appendix 1

Example IFS Food Version 6.1 – Vulnerability Assessment,
Mitigation Plan Development and Mitigation Plan Review

Appendix 2

Example IFS PACsecure Version 1.1 – Vulnerability Assessment,
Mitigation Plan Development and Mitigation Plan Review

Appendix 3

Auditor Questions and Documentation

Appendix 4

References



APPENDIX 1

Example IFS Food Version 6.1 – Vulnerability Assessment, Mitigation Plan Development and Mitigation Plan Review

1. Examples of Product Vulnerability Assessments

The Company is assessing the risk in relation to:

- Extra virgin olive oil
- Tomato paste
- Preprinted Kraft board tray sleeves
- Minced Beef Frozen block thawing process (outsourced process and raw material purchasing outsourced)

By assessment using the risk factors and criteria for consideration, the Product Fraud Assessment Team will, through consensus, assign a scoring of each risk factor, which in turn will confirm the product's position within the product vulnerability risk matrix. (Reference tables within section 4.3).

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





Extra Virgin Olive Oil

Likelihood of Occurrence Scoring – Extra Virgin Olive Oil

High risk of occurrence	History of food fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)	5			5
4 (Likely)			4	
3 (Quite possible)				
2 (Possible)		2		
1 (Not likely)				
Low risk of occurrence				

Likelihood of Current Detection – Extra Virgin Olive Oil

High risk of current detection	Supply chain complexity	Current control measures	Highest score assigned
5 (Not likely)			
4 (Possible)			
3 (Quite possible)		3	3
2 (Likely)	2		
1 (Very likely)			
Low risk of current detection			

Overall Product Risk Score for Extra Virgin Olive Oil = 15

Likelihood of Occurrence (**Highest Score Assigned**) x Likelihood of Current Detection (**Highest Score Assigned**)

Likelihood of Occurrence 5 x Likelihood of Current Detection 3 = **15**



Tomato Paste

Likelihood of Occurrence Scoring – Tomato Paste

High risk of occurrence	History of food fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)				
3 (Quite possible)				
2 (Possible)	2	2	2	2
1 (Not likely)				
Low risk of occurrence				

Likelihood of Current Detection – Tomato Paste

High risk of current detection	Supply chain complexity	Current control measures	Highest score assigned
5 (Not likely)			
4 (Possible)			
3 (Quite possible)			
2 (Likely)		2	2
1 (Very likely)	1		
Low risk of current detection			

Overall Product Risk Score for Tomato Paste = 4

Likelihood of Occurrence (**Highest Score Assigned**) x Likelihood of Current Detection (**Highest Score Assigned**)

Likelihood of Occurrence 2 x Likelihood of Current Detection 2 = **4**



Preprinted Kraft Board Tray Sleeves

Likelihood of Occurrence Scoring-Preprinted Kraft Board Tray Sleeves

High risk of occurrence	History of food fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)				
3 (Quite possible)				
2 (Possible)		2		2
1 (Not likely)	1		1	
Low risk of occurrence				

Likelihood of Current Detection-Preprinted Kraft Board Tray Sleeves

High risk of current detection	Supply chain complexity	Current control measures	Highest score assigned
5 (Not likely)			
4 (Possible)			
3 (Quite possible)			
2 (Likely)			
1 (Very likely)	1	1	1
Low risk of current detection			

Overall Product Risk Score for Preprinted Kraft Board Tray Sleeves = 2

Likelihood of Occurrence (**Highest Score Assigned**) x Likelihood of Current Detection (**Highest Score Assigned**)

Likelihood of Occurrence 2 x Likelihood of Current Detection 1 = 2



Minced Beef Frozen Block Thawing Process (Outsourced Process and Outsourced Raw Material Purchasing)

Likelihood of Occurrence Scoring-Minced Beef Frozen Block Thawing Process (Outsourced Process and Outsourced Raw Material Purchasing)

High risk of occurrence	History of food fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)	5			5
4 (Likely)				
3 (Quite possible)		3	3	
2 (Possible)				
1 (Not likely)				
Low risk of occurrence				

Likelihood of Current Detection – Minced Beef Frozen Block Thawing Process (Outsourced Process and Outsourced Raw Material Purchasing)

High risk of current detection	Supply chain complexity	Current control measures	Highest score assigned
5 (Not likely)			
4 (Possible)	4		4
3 (Quite possible)			
2 (Likely)		2	
1 (Very likely)			
Low risk of current detection			

Overall Product Risk Score for Minced Beef Frozen Block Thawing Process (Outsourced Process and Outsourced Raw Material Purchasing) = 20

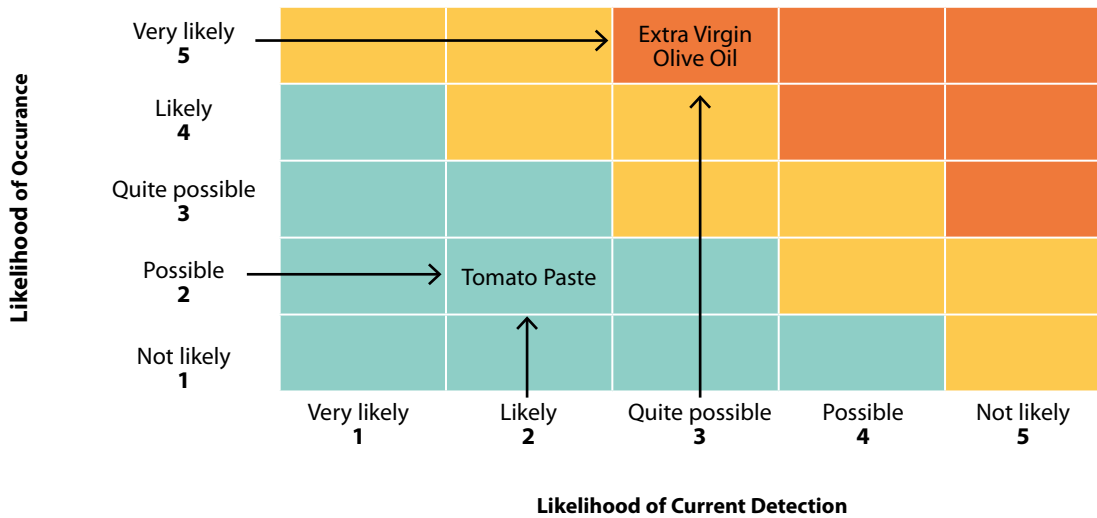
Likelihood of Occurrence (**Highest Score Assigned**) x Likelihood of Current Detection (**Highest Score Assigned**)

Likelihood of Occurrence 5 x Likelihood of Current Detection 4 = **20**

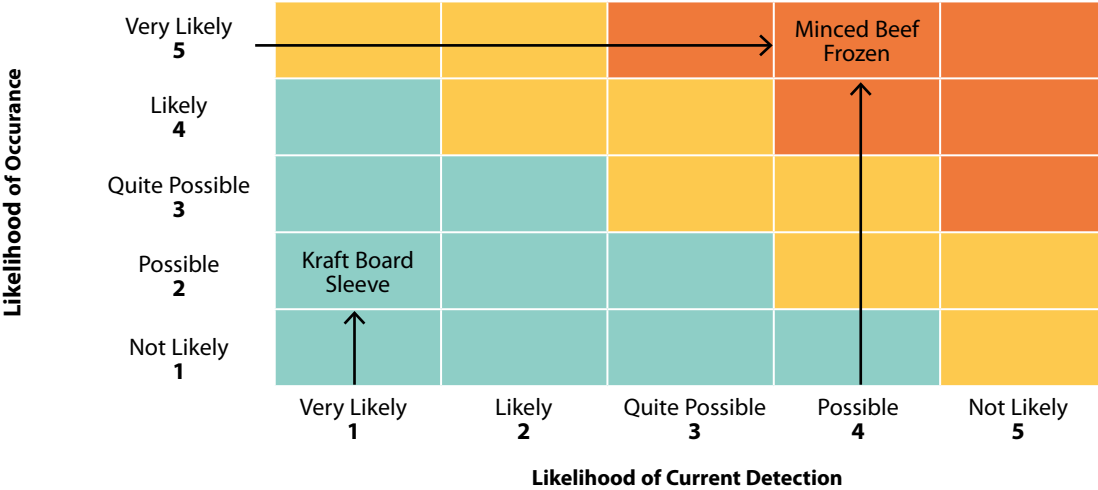
From the assigned scores and the Product Risk Matrix (Reference Figure 5)

- where a raw material such as Extra Virgin Olive Oil has a very likely rating for likelihood of occurrence and a quite possible rating for likelihood of current detection, the overall risk rating within the matrix is within a high-risk area of the matrix.
- where a raw material such as Tomato Paste has a possible rating for likelihood of occurrence and likely rating for likelihood of current detection, the overall risk rating within the matrix is within a low risk area of the matrix.
- where packaging such as Preprinted Kraft Board Tray Sleeves has a possible rating for likelihood of occurrence and a very likely rating for likelihood of current detection, the overall risk rating within the matrix is within a low risk area of the matrix.
- where a raw material such as Minced Beef Frozen Block Thawing Process (Outsourced Process and Outsourced Raw Material Purchasing) has a very likely rating for likelihood of occurrence and a possible rating for likelihood of current detection, the overall risk rating within the matrix is within a high-risk area of the matrix.

Raw Material, Ingredient Vulnerability and Food



Packaging and Outsourced Process/Product



Therefore, the position of product/process within the Product Risk Matrix will determine the need for action to be taken to mitigate any possible risk of food fraud activity. In relation to the examples above:

- 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 be reviewed for effectiveness and any decisions action.
- Preprinted Kraft Board Tray Sleeves: it would be **expected** that the current control measures be reviewed for effectiveness and any decisions action.
- Minced Beef Frozen Block Thawing Process (Outsourced Process and Outsourced Raw Material Purchasing): it would be **expected** that, if adequate control measures are not in place, additional control measures should be urgently considered and actioned.

2. Example of a Food Fraud Mitigation Plan

An example of a Food Fraud Mitigation Plan is provided below for raw materials, ingredients, food and outsourced processes:

Date of Assessment: 16th December 2016

Raw material, ingredient, 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.
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
Frozen beef mince 80% visual lean	D	20	2	40	High	Retain supplier. Direct control	Retain control measures
Frozen beef mince 80% visual lean	E	20	3	60	High	Retain supplier. Direct control	Increase product analysis (PCR) to every consignment. Surveillance sampling on a number of species. Certificate of analysis for every consignment. (accredited laboratory and method).
Frozen beef mince 60% visual lean	F	20	5	100	Medium	Consider discontinuing or reducing business. Long supply chain. Outsourced process and purchasing	Increase product analysis (PCR) to every consignment for species profile. Certificate of analysis for every consignment. (accredited laboratory and method). Unannounced first party audits with mass balance exercise
Kraft board sleeves	H	15	1	15	Low	Must have PEFC Mark and reliable supplier	Undertake checks on PEFC certification and request mass balance data. Undertake a surveillance audit

3. Example of Food Fraud Mitigation Review and Amendment

Below is an example to a reviewed Food Fraud Mitigation Plan (yellow highlighted cells indicate where changes to the control measures have been made)

Date of Review: 16th December 2017

Raw material, ingredient, 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	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
Frozen beef mince 80% visual lean	D	20	3	60	High	Retain supplier. Direct control	Increase PCR due to suspect results
Frozen beef mince 80% visual lean	E	20	3	60	High	Retain supplier. Direct control	Increase product analysis (PCR) to every consignment. Surveillance sampling on a number of species. Certificate of analysis for every consignment. (accredited laboratory and method).
Frozen beef mince 60% visual lean	F	20	5	100	Medium	Consider discontinuing or reducing business. Long supply chain. Outsourced process and purchasing	Increase product analysis (PCR) to every consignment for species profile. Certificate of analysis for every consignment. (accredited laboratory and method). Unannounced first party audits with mass balance exercise
Kraft board sleeves	H	15	1	15	Low	Must have PEFC Mark and reliable supplier	Undertake checks on PEFC certification and request mass balance data. Undertake a surveillance audit

APPENDIX 2

Example IFS PACsecure Version 1.1 – Vulnerability Assessment, Mitigation Plan Development and Mitigation Plan Review

1. Examples of Product Vulnerability Assessments

The Company is assessing the risk of:

- Kraft Board PEFC Mark (Programme for the Endorsement of Forest Certification) Compliant
- Polyester base for lidding film – Polyester Content and PET recyclable mark compliant
- Vacuum and Modified Atmosphere Film for Pouch manufacture – thickness / specification

By assessing using the risk factors and criteria for consideration the Product Fraud Assessment Team should, through consensus, assign a scoring of each risk factor, which in turn will confirm the product’s position within the product vulnerability risk matrix. (Reference tables in section 4.3).

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

Kraft Board PEFC Mark

Likelihood of Occurrence Scoring – Kraft Board PEFC Mark

High risk of occurrence	History of food fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)			4	4
3 (Quite possible)	3			
2 (Possible)		2		
1 (Not likely)				
Low risk of occurrence				

Likelihood of Current Detection – Kraft Board PEFC Mark

High risk of current detection	Supply chain complexity	Current control measures	Highest score assigned
5 (Not likely)			
4 (Possible)			
3 (Quite possible)	3		3
2 (Likely)		2	
1 (Very likely)			
Low risk of current detection			

Overall Product Risk Score for Kraft Board PEFC Mark = 12

Likelihood of Occurrence (**Highest Score Assigned**) x Likelihood of Current Detection (**Highest Score Assigned**)

Likelihood of Occurrence 4 x Likelihood of Current Detection 3 = **12**

Polyester base for lidding film

Likelihood of Occurrence Scoring – Polyester base for lidding film

High risk of occurrence	History of food fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)				
3 (Quite possible)				
2 (Possible)		2	2	2
1 (Not likely)	1			
Low risk of occurrence				

Likelihood of Current Detection – Polyester base for lidding film

High risk of current detection	Supply chain complexity	Current control measures	Highest score assigned
5 (Not likely)			
4 (Possible)			
3 (Quite possible)		3	3
2 (Likely)	2		
1 (Very likely)			
Low risk of current detection			

Overall Product Risk Score for Polyester base for lidding film = 6

Likelihood of Occurrence (**Highest Score Assigned**) x Likelihood of Current Detection (**Highest Score Assigned**)

Likelihood of Occurrence 2 x Likelihood of Current Detection 3 = 6

Vacuum and Modified Atmosphere Film for Pouch manufacture

Likelihood of Occurrence Scoring – Vacuum and Modified Atmosphere Film for Pouch manufacture

High risk of occurrence	History of food fraud incidents	Economic factors	Ease of fraudulent activity	Highest score assigned
5 (Very likely)				
4 (Likely)				
3 (Quite possible)			3	3
2 (Possible)	2	2		
1 (Not likely)				
Low risk of occurrence				

Likelihood of Current Detection – Vacuum and Modified Atmosphere Film for Pouch manufacture

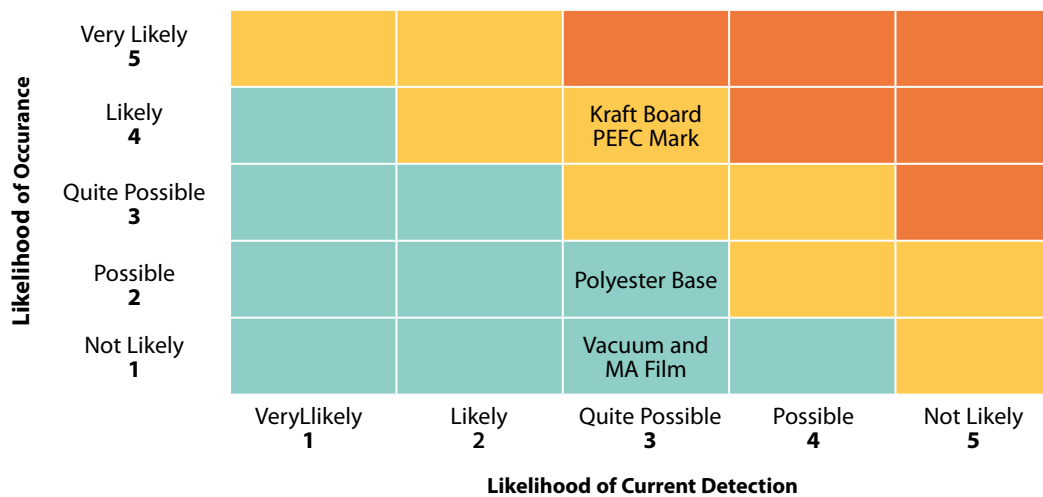
High risk of current detection	Supply chain complexity	Current control measures	Highest score assigned
5 (Not likely)			
4 (Possible)			
3 (Quite possible)			
2 (Likely)			
1 (Very likely)	1	1	1
Low risk of current detection			

Overall Product Risk Score for Vacuum and Modified Atmosphere Film for Pouch manufacture = 3

Likelihood of Occurrence (**Highest Score Assigned**) x Likelihood of Current Detection (**Highest Score Assigned**)

Likelihood of Occurrence 3 x Likelihood of Current Detection 1 = **3**

- From the assigned scores and the Product Risk Matrix (Reference Figure 8)
- where a raw material such as Kraft Board (PEFC Mark) has a likely rating for likelihood of occurrence and a quite possible rating for likelihood of current detection, the overall risk rating within the matrix is within a medium risk area of the matrix.
- where a raw material such as Polyester Base has a possible rating for likelihood of occurrence and quite possible for likelihood of current detection, the overall risk rating within the matrix is within a low risk area of the matrix.
- where packaging such as Vacuum and Modified Atmosphere Film has a quite possible rating for likelihood of occurrence and a very likely rating for likelihood of current detection, the overall risk rating within the matrix is within a low risk area of the matrix



Therefore, the position of product/process within the Product Risk Matrix will determine the need for action to be taken to mitigate any possible risk of food fraud activity. In relation to the examples above:

- Kraft 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.
- Polyester Base: it would be **expected** that the current control measures be reviewed for effectiveness and any decisions action.
- Vacuum and Modified Atmosphere Film: it would be **expected** that the current control measures be reviewed for effectiveness and any decisions action.

2. Example of a Food Fraud Mitigation Plan

An example of a Food Fraud Mitigation Plan is provided below for raw materials, ingredients, food and outsourced processes:

Date of Assessment: 16th December 2017

Raw material, ingredient or food packaging	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures
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	X	12	2	24	High	Retain supplier	Certification Report and Chain of Custody Certification Additional annual audit with mass balance exercise
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 FSC Mark	Z	12	4	48	High	Consider discontinuing	Certification Report and Chain of Custody Certification Additional annual audit with mass balance exercise
Kraft Board FSC Mark	A	12	1	12	High	Retain supplier	Retain control measures. Rely on Certification Report and Chain of Custody Certification
Polyester base	B	6	1	6	Medium	Retain supplier	Retain control measures. Certificates of analysis
V and MA Film	C	3	1	3	Low	Retain supplier	Retain control measures.
V and MA Film	D	3	2	6	Low	Retain supplier	Increase control measures by increased sampling on intake
Polypropylene base for films	E	6	3	18	Medium	Retain supplier.	Increase product analysis to every consignment. Certificate of analysis for every consignment. (accredited laboratory and method).
Environmentally friendly board biodegradable (sugar cane fibre)	F	20	4	80	Medium	Only supplier of this product and in South Africa	Certificate of analysis for every consignment. (accredited laboratory and method). Third party certification Increase to unannounced first party audits with mass balance exercise

3. Example of Product Fraud Mitigation Review and Amendment

Below is an example to a reviewed Product Fraud Mitigation Plan (yellow highlighted cells indicate where changes to the control measures have been made)

Raw material, ingredient or food packaging	Supplier	Product risk score	Supplier risk score	Overall risk score	Current control measure rating	Team decision	Control measures
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	X	12	2	24	High	Retain supplier	Certification Report and Chain of Custody Certification Additional annual audit with mass balance exercise
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 FSC Mark	Z	12	4	48	High	Consider discontinuing	Certification Report and Chain of Custody Certification Additional annual audit with mass balance exercise
Kraft Board FSC Mark	A	12	1	12	High	Retain supplier	Retain control measures. Rely on Certification Report and Chain of Custody Certification
Polyester base	B	6	1	6	Medium	Retain supplier	Retain control measures. Certificates of analysis
V and MA Film	C	3	1	3	Low	Retain supplier	Retain control measures.
V and MA Film	D	3	4	12	Medium	Consider looking for new source or increase volume of supplier C	Increase control measures has identified inconsistent Product Increased sampling on intake on every reel
Polypropylene base for films	E	6	3	18	Medium	Retain supplier.	Increase product analysis to every consignment. Certificate of analysis for every consignment. (accredited laboratory and method).
Environmentally friendly board biodegradable (sugar cane fibre)	F	20	4	80	Medium	Only supplier of this product and in South Africa	Certificate of analysis for every consignment. (accredited laboratory and method). Third party certification Increase to unannounced first party audits with mass balance exercise

APPENDIX 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.

Section 4.2

Questions that the auditor should ask and that the company should be able to reply to:

- Who are members of the product fraud assessment team?
- How members of the product assessment team have been trained?
- Are the responsibilities of the product fraud assessment team clearly defined?
- How does senior management support the product fraud assessment team?
- How are 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 are the data used by the members of the product fraud assessment team ?

Documents that the auditor may wish to assess

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

Section 4.3

Questions that the auditor should ask and that the company should be able to reply to:

- Which is the defined vulnerability assessment methodology?
- Which risk factors are defined for product (raw material, ingredient and packaging) and suppliers?
- Are all raw materials, ingredients and packaging subject to 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 material, ingredient and packaging and the suppliers of these product?

Documents that the auditor may wish to assess

- Vulnerability assessment records
- List of raw materials, ingredients and packaging and their suppliers.
- Results of internal audit review

Section 4.4 and Section 4.5

Questions that the auditor should ask and that the company should be able to reply to:

- Is there a product fraud 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 control measures appropriately and consistently applied in accordance with identified risks?
- Who monitors, and where necessary actions, 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 review (and actions)
- Customer and consumers Complaints
- Results of internal audit

Section 4.6

Questions that the auditor should ask and that the company should be able to reply to:

- How often is a vulnerability assessment undertaken?
- Is there, within the food fraud mitigation plan procedure, criteria defined when the food fraud vulnerability assessment shall be reviewed in addition to the annual review, i.e. when changes to risk could occur?
- Is the effectiveness of the food fraud 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

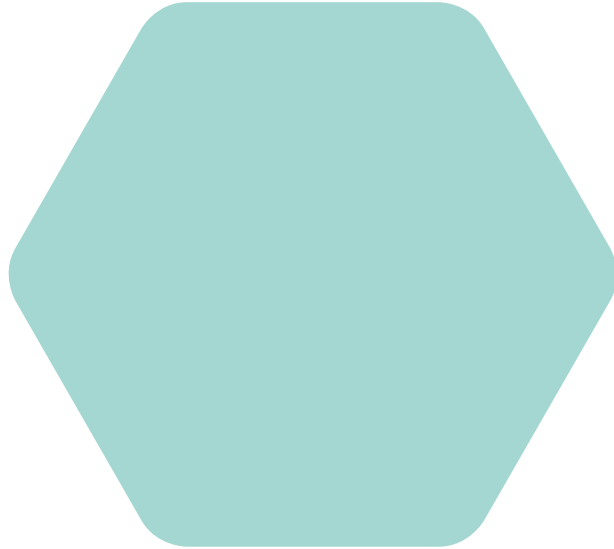
- Product Fraud Mitigation Plan procedures
- Product Fraud Mitigation Plan control measures, records and review (and actions)
- Customer and consumers Complaints
- Results of internal audit

APPENDIX 4

Examples of Data Resources

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

- IFS Dashboard (available from September 2018)
- 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
[http://www.amfori.org/sites/default/files/amfori BSCI CRC V2018_HM_AD.pdf](http://www.amfori.org/sites/default/files/amfori%20BSCI%20CRC%20V2018_HM_AD.pdf)
- Corruption Index – Transparency International
https://www.transparency.org/news/feature/corruption_perceptions_index_2016
- Food Fraud Database – US Pharmacopeil Convention(USP)
<http://www.foodfraud.org>
- Food Protection and Defense Institute
<https://foodprotection.umn.edu>
- EU Food Fraud Network
https://ec.europa.eu/food/safety/food-fraud_en
- EU Science Hub Monthly Report on Food Fraud and Authenticity
<https://ec.europa.eu/jrc/en/science-update/new-monthly-report-food-fraud-and-authenticity>
- Europol Interpol Operation Opson
<https://www.europol.europa.eu/operations/opson>



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