

FOOD SAFETY SYSTEM CERTIFICATION 22000

GUIDANCE DOCUMENT: FOOD FRAUD MITIGATION

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REVISION HISTORY

Date Published	Issue	Changes
May 2019	1	First publication
July 2023	2	Updates made in line with Version 6 of the FSSC 22000 Scheme

1. BACKGROUND

The relevance of food fraud has grown over the last years, not in the least following several food scandals that have led to reduced consumer confidence in the Food Industry.

Although the driver of the food fraud act (cause) may be economic gain, it may nevertheless result in a food safety risk. Such a risk is very often caused by negligence or lack of knowledge by fraudsters. For the consumer, food fraud-related risks can be¹:

- a) *Direct Food Safety risks*: the consumer is put in immediate danger (e.g., the addition of melamine to milk powder that results in an acutely toxic exposure; hiding of substances resulting in undeclared allergens);
- b) *Indirect Food Safety risks*: the consumer is put at risk through long-term exposure (e.g., elevated levels of heavy metals in food supplements causing harm – or lack of benefit – over a more extended period of time)
- c) *Technical food fraud risk*: there is no direct or indirect food safety risk (e.g., misrepresentation of country-of-origin information). However, this indicates that material traceability may have been compromised, and the company is no longer able to guarantee the safety of its food products.

For food manufacturers, the economic impact can be high (e.g., recall, loss of sales, cost of rebuilding reputation, etc.). Additionally, consumer trust is essential, not only for companies but for the food industry (sectors) as a whole.

The FSSC 22000 Scheme contains an additional requirement, 2.5.4, on food fraud mitigation, including a food fraud vulnerability assessment applicable to all products, in line with GFSI requirements.

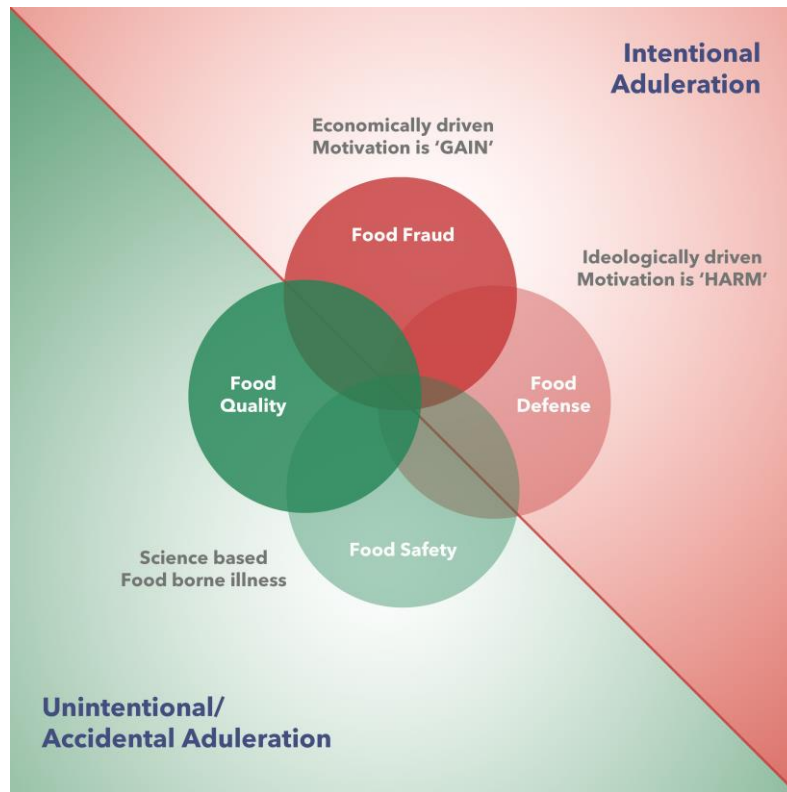
2. DEFINITION

The definition that FSSC uses is based on the definition included within the GFSI Benchmarking Requirement 2020.1.

Food fraud definition: A collective term encompassing the deliberate and intentional substitution, addition, tampering, or misrepresentation of food, food ingredients, feed, food packaging or labeling, product information, or false or misleading statements made about a product for economic gain that could impact consumer health (GFSI 2020.1).

Food defense differs from food fraud in that the motivation is not economic gain but an intent to cause harm to consumers or companies from an ideologically or behaviorally motivated background. The damage could be economic, public health, or terror. Since there are different motivations for food defense than for food fraud, food fraud requires a different approach.

Food fraud is at least as old as ancient Rome and will never be eliminated entirely. The actions taken shall minimize the vulnerability of food fraud by reducing opportunities for fraudsters.

Figure 1. Intentional vs. unintentional adulteration²

3. FSSC 22000 SCHEME REQUIREMENTS

Part 2 – Requirements for organizations to be audited V6.

2.5.4 FOOD FRAUD MITIGATION (ALL FOOD CHAIN CATEGORIES)

2.5.4.1 VULNERABILITY ASSESSMENT

The organization shall:

- Conduct and document the food fraud vulnerability assessment, based on a defined methodology, to identify and assess potential vulnerabilities; and
- Develop and implement appropriate mitigation measures for significant vulnerabilities. The assessment shall cover the processes and products within the organization's scope.

2.5.4.2 PLAN

- The organization shall have a documented food fraud mitigation plan based on the output of the vulnerability assessment, specifying the mitigation measures and verification procedures.
- The food fraud mitigation plan shall be implemented and supported by the organization's FSMS.
- The plan shall comply with the applicable legislation, cover the processes and products within the scope of the organization, and be kept up to date.
- For food chain category FII, in addition to the above, the organization shall ensure that its suppliers have a food fraud mitigation plan in place.

4. IMPLEMENTATION

To assist in implementing the FSSC 22000 food fraud mitigation requirements, the following way of working is recommended:

- 1) Establish a food fraud mitigation team;
- 2) Conduct a food fraud vulnerability assessment (FFVA) identifying potential vulnerabilities linked to the processes and products within the scope of the organization;
- 3) Define the significant vulnerabilities;
- 4) Identify, select, and implement appropriate mitigation measures for the significant vulnerabilities;
- 5) Document the vulnerability assessment, mitigation measures, verification, and incident management procedures in a Food Fraud Mitigation Plan supported by the FSMS; and
- 6) Develop an effective training and communication strategy and implement the Food Fraud Prevention Plan.

In relation to mitigation measures, this needs to address both preventative and control measures.

Note: address all types of food fraud defined by GFSI (substitution, addition, tampering, or misrepresentation of food, food ingredients, feed, food packaging or labeling, product information, or false or misleading statements made about a product) as well as unapproved enhancements, misbranding, counterfeiting, stolen goods or others; address all products from incoming goods (e.g., raw materials, packaging materials) to outgoing goods (e.g. (semi) finished product). See Appendix 1 for more information.

It is important to note that every vulnerability identified will NOT automatically be determined to be significant and will NOT automatically be required to be addressed by a mitigation measure. Identifying as many vulnerabilities as possible is important so they can be assessed.

Also, bear in mind that vulnerabilities and their related severity can change over time, including when significant changes occur in the organization and the industry. For example, horsemeat in beef was not initially considered to be a vulnerability that required a control measure. It is, therefore, essential to conduct a regular review of the assessment to ensure that it is still relevant and that the mitigation measures are appropriate.

When conducting a Food Fraud Vulnerability Assessment, several factors shall be taken into account, such as:

- Economic vulnerability (how economically attractive is fraud?)
- Historical data (has it happened, or are there current developments/cases in the related industry?)
- Detectability (e.g., how easy to detect, routine screening present?)
- Access to raw materials, packaging materials, and finished products in the supply chain.
- Relationship with supplier (e.g., long relationship or spot-buying)
- Certification through an independent sector-specific control system for fraud and authenticity (e.g., chain of custody certification)
- Complexity of the supply chain (e.g., length, origins, and where the product is substantially changed/processed)

Many more aspects may be taken into account as deemed appropriate. A number of tools have been developed to assist companies in setting up an FFVA; one of them is SSAFE³, this tool is freely available. The GFSI Board endorses this SSAFE vulnerability assessment tool. HorizonScan is also another helpful tool that can be utilized⁸.

Supplier certification (forward and backward) by sector-specific control systems, which are specialized to prevent or mitigate food fraud, can substitute their own analytical routine screening. An example is supplier certification via a voluntary control scheme in the sector of fruit and vegetable juices and purees⁴ and chain of custody certification in the seafood industry. Supply chain mapping, including factors such as socioeconomics, behavioral, geo-political, and historical data, is a valuable tool to use. Very often, food fraud prevention (or elements thereof) must be addressed at the business organization level rather than at the site level only.

The key to assessing the vulnerabilities is: “think like a criminal.”

When conducting the FFVA, it is allowed to group materials to start with (e.g., similar raw materials or similar finished products). When significant vulnerabilities are identified within a group, more in-depth analysis may be required.

When defining a mitigation strategy, the potential vulnerabilities identified shall be assessed for their significance. A risk matrix similar to HACCP can be used (e.g., likelihood of occurrence x consequences). Profitability is a key factor in the likelihood of occurrence. ISO 31000 could also be a valuable document to consider when undertaking a risk assessment. A mitigation strategy for the significant vulnerabilities shall be developed and documented.

The plan shall be integrated into and supported by the organization’s FSMS for all its products meaning that it shall contain system elements such as training, internal audits, management review, etc., as well as operational control measures, verification activities, corrections, and corrective actions, responsibilities, record keeping, verification activities, and continuous improvement.

Examples of verification activities include origin/label verification, testing, supplier audits, third-party certification against a GFSI-recognized or approved certification, and specification management. In addition, the FSMS needs the inclusion of the food fraud mitigation element in policies, internal audits, management reviews, etc.

In addition, Category FII organizations need to ensure that their suppliers have a food fraud mitigation plan in place. This can be established by having suppliers complete a supplier questionnaire confirming whether the supplier has a food fraud mitigation plan in place, as well as requesting a copy of the supplier’s food fraud mitigation plan or evidence of the supplier having a GFSI-recognized or approved certification in place.



Figure 2. Differences between HACCP, TACCP, and VACCP (GFSI)

5. FOOD FRAUD PREVENTION TEAM AND TRAINING

The Food Fraud Vulnerability Assessment is performed by a multidisciplinary team with a wide range of expertise (e.g., Security, Legal, Purchasing, Production, Research & Development, Regulatory Affairs, Quality). The composition of the food fraud mitigation team is likely to be different from that of your HACCP team and Food Defense Threat Assessment team. The composition of the team may evolve over time as the understanding of the food fraud opportunity evolves. External expertise may be required.

Training of the team is required. Many training options are available, an example being Food Fraud Prevention Think Tank which provides free web-based courses on food fraud prevention (Food Fraud Prevention – Core Training – MOOC = massive open online course)⁵.

6. AUDITING

Food fraud poses a significant risk, and it is important that around the globe, the food industry takes action. Auditors should assess the food fraud vulnerability assessment and identification and verify that the implementation of mitigation measures is adequate. This can be achieved by asking the following questions for example, but not limited to:

- Is there a team with the correct competencies/knowledge?
- Has a vulnerability assessment been performed and documented?
- Are all types of vulnerabilities covered (substitution, addition, tampering, or misrepresentation of food, food ingredients, feed, food packaging or labeling, product information, or false or misleading statements made about a product)?
- Depth of the vulnerability assessment (historical data including consideration of current developments or cases in related industries, economic motivations, detectability, etc.)?
- Breadth of the vulnerability assessment (all materials covered)?
- Is there a methodology to determine the significance of vulnerabilities?
- When significant vulnerabilities are identified, is there a written food fraud mitigation plan?
- Is the performance of the food fraud mitigation plan evaluated in line with ISO 22000:2018 Clause 9 on Performance Evaluation?
- Is the analysis regularly reviewed, and is the frequency adequate?
- Is the Emergency Response Team prepared (ISO 22000:2018 paragraph 8.4)?
- Is all of the above effectively included and implemented through the organization's FSMS (e.g., Records, awareness of people, internal audits, management reviews)?

For further information, please review the documents on the following site: <https://foodfraudpreventionthinktank.com/primers/> as well as the GFSI Food Fraud Technical Document [Food-Fraud-GFSI-Technical-Document.pdf \(mygfsi.com\)](#)

7. REFERENCES

- 1) John Spink and Douglas C. Moyer. Defining the public health threat of food fraud. Journal of Food Science Vol 76, Nr 9, 2011 p R157-R163
- 2) GFSI position on mitigating the public health risk of food fraud, July 2014. [Food-Fraud-GFSI-Position-Paper.pdf \(mygfsi.com\)](#)
- 3) SSAFE <http://www.ssafe-food.org/our-projects/?proj=365#>
- 4) The Voluntary Control System of SGF International e.v.: <https://www.sgf.org/voluntary-control-system>
- 5) Food Fraud Prevention Think Tank courses: <https://foodfraudpreventionthinktank.com/food-fraud-prevention-academy/>
- 6) PWC: <https://www.pwc.nl/en/publicaties/food-fraud-vulnerability-assessment.html>
- 7) Spink, Fortin, et al. Food Fraud Prevention: Policy, Strategy, and Decision-Making – Implementation Steps for a Government Agency or Industry. Chimia International Journal for Chemistry, vol 70, Nr 5, 2016 p 320-328: https://chimia.ch/chimia/article/download/2016_320/1084/11739
- 8) Fera – HorizonScan: <https://horizon-scan.fera.co.uk/>
- 9) GFSI – Tackling food fraud through food safety management systems. May 2018. [Food-Fraud-GFSI-Technical-Document.pdf \(mygfsi.com\)](#)

APPENDIX 1 TYPES OF FOOD FRAUD - DEFINITIONS AND EXAMPLES

(PWC⁶; Spink, Fortin, et al.⁷)

GFSI (1) Type of Food Fraud	Definition from SSAFE (2)	Examples from GFSI FFTT (3)	General Type of Food Fraud
Dilution	The process of mixing a liquid ingredient with a high value with a liquid of a lower value.	<ul style="list-style-type: none"> Watered down products using non-potable / unsafe water Olive oil diluted with potentially toxic tea tree oil 	Adulterant-substance (Adulterant)
Substitution	The process of replacing an ingredient or part of a product of high value with another ingredient or part of a product of lower value.	<ul style="list-style-type: none"> Sunflower oil partially substituted with mineral oil Hydrolyzed leather protein in milk 	Adulterant-substance or Tampering
Concealment	The process of hiding the low quality of a food ingredient(s) or product.	<ul style="list-style-type: none"> Poultry injected with hormones to conceal the disease Harmful food coloring applied to fresh fruit to cover defects 	Adulterant-substance or Tampering
Unapproved enhancements	The process of adding unknown and undeclared materials to food products in order to enhance their quality attributes.	<ul style="list-style-type: none"> Melamine added to enhance protein value Use of unauthorized additives (Sudan dyes in spices) 	Adulterant-substance or Tampering
Mislabeled	The process of placing false claims on packaging for economic gain.	<ul style="list-style-type: none"> Expiry, provenance (unsafe origin) Toxic Japanese star anise labeled as Chinese star anise Mislabeled recycled cooking oil 	Tampering
Grey market production/theft/diversion	Outside scope of SSAFE tool.	<ul style="list-style-type: none"> Sale of excess unreported products Product allocated for the US market appearing in Korea 	Over-run, Theft, or Diversion (4)

GFSI (1) Type of Food Fraud	Definition from SSAFE (2)	Examples from GFSI FFTT (3)	General Type of Food Fraud
Counterfeiting	The process of copying the brand name, packaging concept, recipe, processing method, etc. of food products for economic gain.	<ul style="list-style-type: none"> Copies of popular foods not produced with acceptable safety assurances Counterfeit chocolate bars 	Counterfeiting

Notes:

(1) GFSI – Global Food Safety Initiative

(2) SSAFE – Safe Secure and Affordable Food For Everyone

(3) GFSI FFTT – Global Food Safety Initiative: Food Fraud Think Tank

(4) Grey Market – a market employing irregular but not illegal methods; Theft – something stolen; Diversion/ Parallel Trade – the act or an instance of diverting, straying from a course, activity, or use

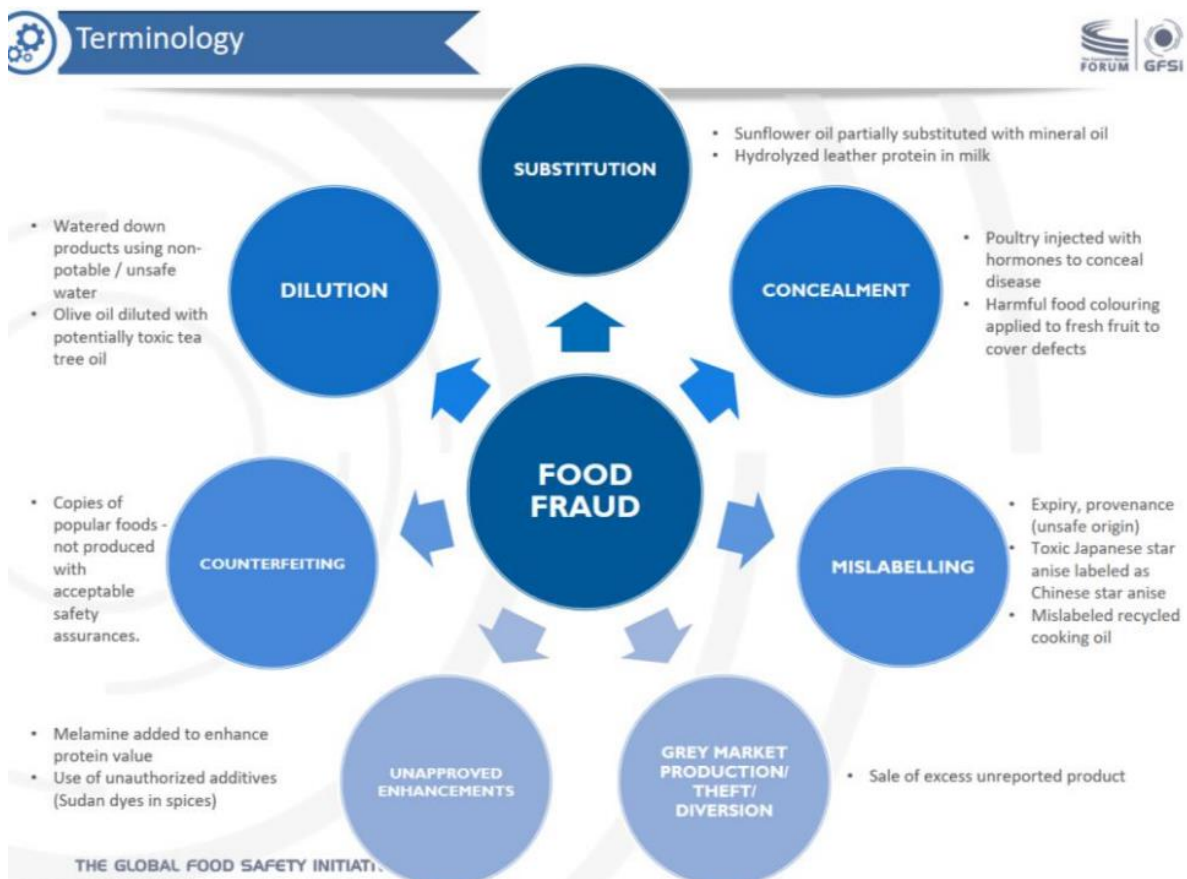


Figure 3. GFSI types of food fraud⁹