Food Threats

Malicious contamination and economically motivated adulteration

There are so many terms that relate to similar risks with food contamination and adulteration, and it can get very confusing! This article tries to provide clarity.

What are the key terms?

Food Defence	Food Defence Plan	Food Fraud	Threat Assessment (TACCP)	Supply Chain Vulnerability Assessment (VACCP)

Food Defence

There are several definitions of food defence. Most definitions focus on the malicious contamination whilst some also include economically motivated adulteration. We will focus on the more widely accepted definitions below:

"Procedures adopted to assure the security of food and drink and their supply chains from malicious and ideologically motivated attack leading to contamination or supply disruption". (PAS96:2017)

The US FDA definition of Food Defence *"the effort to protect food from intentional acts of adulteration where there is an intent to cause wide scale public health harm"*

The Global Food Safety Initiative defines Food Defence as *"The process to ensure the security of food and drink from all forms of intentional malicious attack including ideologically motivated attack leading to contamination."*

Food Defence Plan

The USDA define a food defence plan as *"an important tool an establishment can use to prevent, protect against, mitigate, respond to, and recover from an intentional contamination incident".*

Food Fraud

"Dishonest act or omission, relating to the production or supply of food, which is intended for personal gain or to cause loss to another party". (PAS96:2017)

Malicious contamination and **economically-motivated adulteration** are two of the main types of threat that need to be considered when carrying out assessments of your products.

Threat Assessment Critical Control Points (TACCP)

TACCP identifies the threats of both malicious contamination and economically motivated food fraud.

"The systematic management of risk through the evaluation of threats, identification of vulnerabilities, and implementation of controls to materials and products, purchasing, processes, premises, people, distribution networks and business systems by a knowledgeable and trusted team with the authority to implement changes to procedures" (PAS96:2017).

Vulnerability Assessment Critical Control Points (VACCP)

VACCP is *"used to identify vulnerabilities for a food business due to food fraud. Food fraud includes incidents such as counterfeiting, adulteration, smuggling, stolen goods, dilution and mislabelling. The VACCP system uses similar principles to HACCP but instead of focusing on how to identify and control hazards, the focus is on how to identify and control vulnerabilities."* (Australian Institute of Food Safety)

VACCP focuses on the vulnerability of specific points in the supply chain to food fraud threats. It is primarily concerned with economically motivated actions.

NOTE: VACCP is not to be confused with the US FDA definition of vulnerability assessment: "the identification of vulnerabilities and actionable process steps for each type of food manufactured, processed, packed or held at the food facility". The focus being on intentional (malicious) adulteration within the manufacturing operation rather than food fraud down the supply chain.

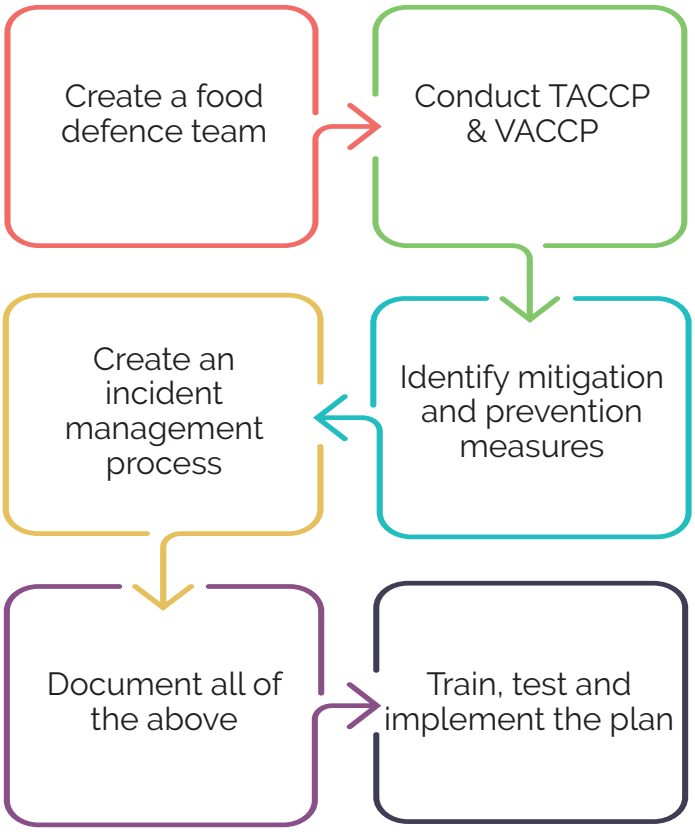
What does BRC require?

There are two key requirements to be addressed. Issue 7 of the British Retail Consortium's (BRC) Global Standard for Food Safety introduced a requirement for organisations to conduct a vulnerability assessment of their supply chain (section 5.4.2).

It is no surprise to see that Issue 8 has expanded section 4.2 which in Issue 7 was entitled "Security" to "Site Security and Food Defence". Section 4.2 of the standard now requires businesses to conduct a documented threat assessment of the potential risk to products from any deliberate attempt to inflict contamination or damage, and both internal and external threats need to be included.

RQA has been working with clients for many years to develop robust vulnerability assessments, threat assessments and food defence plans. The aim of this paper is to share some of that experience and provide some guidance on how to perform a threat assessment and a supply chain vulnerability assessment to meet the BRC requirements.

How do you create a food defence plan?



What about real examples?

Malicious contamination

- Over 100 reports of needles hidden in strawberries in Australia (2018) – including many copy-cat cases.
- Peanuts spread around a nut-free factory by disgruntled worker (2009)
- Major food and drink brands – malicious threat by activist group to contaminate products by hydrochloric acid. (2013) limited withdrawal.

Food fraud

- Cumin spice contaminated by peanut (2015) – 250 different products recalled in US
- Sudan dye contamination of chilli powder (2003 – 2018) products recalled internationally
- Horsemeat contamination of beef (2013) – products recalled internationally
- Adulteration of olive oil with cheaper oils (Roman times to now) – global issue
- In 2016, customs officials in Nigeria confiscated 2.5 tonnes of rice which they suspected was made from plastic.

How to conduct a TACCP threat assessment

1. Put together a cross-functional team, including operations, technical, HR, engineering / facilities, etc. This will probably be your food defence team.
2. Then, the company should consider who they are, what they produce, who might want to attack their products and how.
3. List the types of threats to the business, e.g. economically-motivated adulteration, malicious contamination, extortion, counterfeiting or cyber-crime.
4. Determine which people and groups the threats might come from - extremists, opportunists, extortionists, disgruntled employees, cyber or professional criminals and just irrational individuals.
5. Develop a methodology for assessing the threat.
6. Conduct the assessment - consider aspects such as the impact of the threat, the likelihood of it occurring and the likelihood of the attack being detected through normal QA/QC controls.
7. Multiply these factors together to get the overall threat level for each item on the assessment.
8. Determine priorities of where additional controls are needed.

How to prepare a supply chain vulnerability assessment

1. List all raw materials or groups of raw materials
2. Review the history of certain products being adulterated
3. Determine the potential risk to consumers' health from the adulteration / substitution
4. Assess the ease in which adulteration might occur
5. Consider the risk from the country of origin
6. Determine the likelihood that current test and inspection methods would detect the adulteration
7. Determine the overall vulnerability by combining these factors together

Keep up to date

These threats and vulnerabilities are real, and businesses need to be prepared. In order to do this, businesses need to keep themselves abreast of latest intelligence and emerging threats. You should review your plan and assessments whenever a new risk emerges or if an incident occurs where food defence or food fraud is implicated.

Need help?

RQA can advise on food defence, food fraud, TACCP and VACCP and provide training to help your team understand the risks. Click here for more information or get in touch via contact@rqa-group.com or call +44 (0)118 935 7242

Further reading

PAS96:2017 Guide to protecting and defending food and drink from deliberate attack
https://shop.bsigroup.com/forms/PASs/PAS-962017/

US FDA Mitigation Strategies To Protect Food Against Intentional Adulteration
https://www.federalregister.gov/documents/2016/05/27/2016-12373/mitigation-strategies-to-protect-food-against-intentional-adulteration

Protecting the Food Supply from Intentional Adulteration, such as Acts of Terrorism (US FDA)
https://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm587803.htm