Seafood safety management system

The following article is a part of FIFP webinars conducted on 9th January 2021 on the topic Certifications and regulations in seafood industry (Part 2)

Note from the Chief Editor:

Certifications and regulations in seafood industry (Part 2) comprised the main theme of FIFP webinar conducted on 9th January 2021. In all, three presentations were made that covered Ensuring food safety: an overview of food safety management systems; Emerging standards and certification schemes in global food safety management systems; and Seafood safety management systems. Sri. Sudip Mondal elaborated the three components of food safety management system: food safety; defense; fraud; and brought out the relevance of HACCP/TACCP/VACCP in this context. He described types of food frauds happening in the seafood industry globally and suggested defense mechanism for mitigation. He described steps in Food defense management. The importance of mitigation of food frauds in the context of causing public health harm and associated social and economic implications was highlighted.

Introduction

Food safety, defense and fraud comprise the three elements of food safety management system. Food defense and fraud needs to be given due importance because of wide scale public health harm, public panic, disruption of trade hurting the economy, company closures and associated loss of jobs. Food defense contributes to mitigation of potential risks in intentional contamination and food fraud. It encompasses a range of potential threats from relatively common tamper hoaxes to less probable terrorist attacks. Food defense requires diligence from regulators, industry, consumers and people. Developing comprehensive risk management systems to protect the food supply establishes a foundation for minimizing adverse public health and economic impacts and ultimately promotes food security and resilience. It is necessary to differentiate various terms in food management safety system, definitions of which are given below.

Definitions

Food adulteration

Food adulteration is an act of adding or mixing of poor quality, inferior, harmful, substandard, useless or unnecessary substances to food.

Food safety

It is the scientific process of handling, preparation and storage of food in ways that prevent unintentional/accidental contamination or adulteration of food.

Food quality

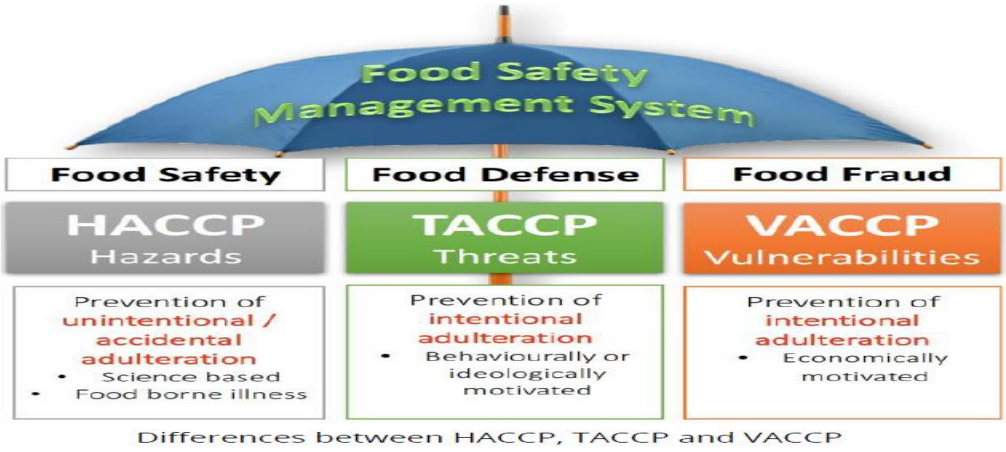
Food Quality refers to the features and characteristics of a food product that is acceptable to consumers and meet their expectations, value for money and meet the required specifications.

Food defense

It is the effort to protect food from intentional contamination or adulteration (by biological, chemical, physical, or radiological agents) intended to cause wide scale public health harm. Wide scale public health harm means many illnesses and even deaths.

Food fraud

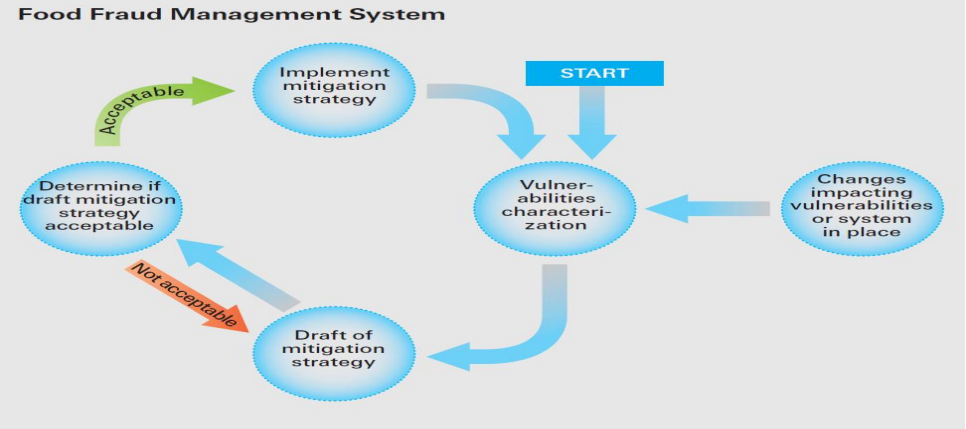
It is the intentional substitution, addition, tampering or misrepresentation of food, food ingredients or food packaging; or false or misleading statements made about a product for economic gain.



Differences between HACCP, TACCP and VACCP

Steps in Food defense management

There are several steps involved in food defense management. Firstly, a multidisciplinary Food defense team needs to be formed. Vulnerability assessment has to be done to identify the vulnerable areas in the existing process/facility. Vulnerability of any system refers to the inability of the system to withstand a hostile threat to its environment and the effects that may be caused by this hostile attack. Actionable areas have to be identified and the actions to be taken for food defense to be listed. Action plans are developed and mitigation strategies need to be implemented. The action plans implemented need to be monitored for effectiveness. In case of a deviation, necessary corrective action has to be taken. Food defense verification procedures are conducted to measure the effectiveness of the monitoring plans. Training programs should be conducted regularly to update on new threats and strategies. Proper documentation is essential for all the activities done. Food defense plan has to be redesigned in case the plan is found to be ineffective.



Types of Seafood fraud

1.Substitution – This happens when one species is substituted for another without changing the label. Once fish is filleted and skinned, its can be difficult to determine the species. Some sellers take advantage of this and substitute a low-valued species for a more expensive one (for example, passing off catfish as grouper).

2. Short weighting – This is misrepresenting the weight of a seafood product through practices such as overglazing, soaking, and breading. Addition of a layer of ice or a preservative to keep a seafood product fresh is a normal and legal practice. However, when excess ice (overglazing) or additives (soaking) are added, and that weight is included in the net weight of the seafood, that's fraud.

3. Mislabeling - Sometimes other qualities of seafood are mislabeled in addition to the species name—such as the country of origin—to avoid regulations and fees, or even to sneak illegally-caught fish into the supply chain.

4. Counterfeiting – Copies of popular brands

5. Dilution - The potential adulterants of fish oil are animal fats. Fish oils are the most expensive oils compared to animal fats such as mutton, beef, chicken, and lard.

6. Increasing raw material weight – This raw material weight is increased by injecting jelly, gum, rice starch and other substances into shrimp

7. Unapproved enhancement - Formalin is a common fish adulterant.

Mitigation of Risks

Risks can be mitigated by Awareness training, Plant security, Alertness, Visitor management, Cyber security, Transport vehicles /Water tanks provided with lock and key, Proper screening before employment, Installation of CCTV etc.

Suspicious events and activities

1.Unescorted Visitors – Visitors should be accompanied by someone with authority.

3. Unusual behavior – Identify people being in an area where they don't belong, and those bringing prohibited personal items into the processing area, handling and opening containers in a suspicious way.

4. Abnormal changes – Alertness is required when materials are found discolored, texture changed, unsealed ingredients or products, boxes or supplies in wrong place, missing keys and locks etc.

Conclusion

Occurrences of incidents related to intentional contamination of food products is a major problem in the whole food supply chain. Therefore, it is necessary to raise awareness of food defense at all levels of the food chain, from farm to fork; from government and academic institutions to retail chains; the media and consumers. The principles of food defense can be applied to each and every level of the food chain. Food Defense is therefore an important element in protecting our business and consumers from internal and external threats.

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