

Assessing threats and vulnerabilities for food defence

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The issue of food defence is becoming increasingly important within the food industry. Well publicised incidents such as the horsemeat contamination in 2013 have focused the attention of manufacturers, retailers, enforcers and consumers on the defence of our food supply. As a consequence, the need for a systematic approach to the task of identifying and managing threats and vulnerabilities is accelerating and becoming incorporated into industry standards.

This article aims to explore the new methodology we have pioneered for threat and vulnerability assessment. This methodology introduces a number of new concepts for assessing threats and vulnerabilities, which will enable manufacturers to carry out and implement robust and structured assessments and management systems. Much of the approach draws from the well established and understood HACCP methodology, providing a familiarity which can facilitate the design and implementation of the system.

The approach can be used for assessing raw material vulnerabilities and threats which may come from other areas of the overall food production process.

The need for assessments

Currently there is much debate surrounding this topic, accompanied with a certain amount of confusion as to how best to tackle this challenge. The horsemeat incident was a key factor in bringing us to where we are today and led to challenges of largely paper based, and at times superficial, supply chain controls.

However, horsemeat was just one incident, threats can come from many different sources and are certainly not restricted to the supply chain.

The requirement to assess the vulnerability of all raw materials for the potential risk of adulteration or sub-

stitution within the BRC Global Standard Food Safety version 7 will no doubt focus minds and drive progress in this area.

However, this must not blinker us from potential threats from different sources such as deliberate contamination from within our own operations. This broader scope can potentially include many different business processes such as recruitment, site security, management of contractors and supervision, all of which may pose serious potential threats.

Risk assessment

Next comes the challenge of creating effective and robust methodology to carry out the assessment. Clearly this is a complex issue and requires some sophisticated methodology to enable the multiple influencing factors to be considered.

The use of a traditional two by two likelihood versus impact matrix is limited and over simplifies the issue. There are multiple important factors which must be taken into account to provide an accurate risk scoring mechanism. The new methodology utilises a four dimensional, cumulative scoring system based on the following factors:

- The impact on the consumer.
- The impact on the business.
- The motivation of the 'attacker'.
- The opportunity for the 'attack' to take place.

Exploring each of these factors in

more detail makes the need for their inclusion very apparent. The initial factor to consider is the potential impact of the threat.

This assessment needs to include the potential impact on the consumer, i.e. upset through to death, which drives the magnitude of the consequence for the business.

The impact of the threat on the business must also be considered, for example, what might be considered a minor financial loss for a large multinational manufacturer may be sufficient to put a smaller sized operation out of business.

The motivation and opportunity must then be assessed. The level of vulnerability the business has to the threat is a product of motivation and opportunity. Without a motivated individual or group there will be no threat. Within the raw material supply chain the motivation is more commonly financial gain, with the attacker often being professional criminal gangs.

The final element for a successful threat is opportunity. This may be opportunity for access to raw materials in the supply chain, 'lone worker' access to open product in the manufacturing process or potential access to raw material storage facilities on site. The distribution chain and retail environment also afford many potential opportunities for threats to be realised.

Therefore, simplistic two-dimensional tools are very limited when assessing such a complex topic, whereas, a cumulative scoring system, driven by the four factors listed above, provides a much more robust and meaningful assessment.

This comprehensive assessment allows businesses to concentrate available mitigation resources much more accurately to where the real vulnerabilities lie.

Management techniques

Once significant risks have been identified there are various options for their management. Again, an

accurate and consistent method for identifying the appropriate threat management technique should be utilised.

Within the new methodology a new decision tree has been incorporated. This new tool allows the threat management technique for each significant risk to be identified in an objective and transparent way.

The options include:

- An existing prerequisite programme – where what is already in place is sufficient to manage the threat.
- A new prerequisite programme – where an existing prerequisite may need expanding or an entirely new prerequisite is required.
- A risk register – for threats which cannot currently be managed.
- An existing critical control point (CCP) within the HACCP system.
- A vulnerable threat point (VTP) – the threat equivalent of a CCP.

The limits and procedures for managing each threat must be carefully documented and maintained.

Summary

There is no doubt that the issue of threat and vulnerability of our food supply is going to remain a major and increasing concern.

It is reasonable to expect that the current focus on the supply chain will need to broaden to include threats from other sources across the entire food chain.

The sooner robust and effective methodology for assessing threats and vulnerabilities is adopted the quicker the industry will be able to effectively target its resources at the truly vulnerable steps. ■

