

Chapter 4

Intentional Food Contamination in the Food Supply Chain: Proposal of a Management System for its Prevention

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ABSTRACT

As globalization increases, supply chains are becoming increasingly complex and vulnerable, making the management of their security an important part of corporate management. The need to adopt control and prevention measures that allow for guaranteeing security in international commercial operations is essential to prevent becoming a target of these threats. Some of these threats are terrorism, piracy and theft. Within the food industry, food terrorism has gained relevance due to the extreme consequences it may have on both public health and the market. Food terrorism refers to the intentional contamination of food in any link of the supply chain, which covers everything from production to consumption. This chapter deals with the problems of food terrorism and makes a proposal that allows to establish a management system to prevent intentional food contamination in the supply chain through managing risks and improving security in the supply chain on this aspect.

INTRODUCTION

In today's globalized world the number of risks in supply chains are increasing and the threats are becoming more complex. All the risks and threats can have a severely negative impact on markets. For this reason it is necessary to have controlled conditions and preventive measures that guarantee that international commerce operations are carried out safely. Such measures help protect against being the

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target of delinquent activities like drug-trafficking, patent violations and terrorism (Kleindorfer & Van Wassenhove, 2004; Kleindorfer & Saad, 2005; Rao & Goldsby, 2009).

Since the terrorist attacks of 2001, there has been greater emphasis on supply chain security. The United States was the first country to adopt and promulgate new heightened security laws due to the terrorist attacks. The United States Customs Agency began enforcing the Container Security Initiative (CSI) in the beginning of 2002. The Customs-Trade Partnership Against Terrorism (C-TPAT) was also founded in 2002. Today many countries are working in order to have a global framework to ensure that their supply chains are safe (Closs & Mcgarrell, 2004).

Intentional food contamination represents a real and potentially catastrophic threat for the society, given that it can produce long reach disastrous effects, including direct morbidity and/or mortality, interruption of food distribution, loss of confidence from the consumers in the Government and the food supply's responsible parties, company bankruptcies, trade restrictions and serious economic effects (Busta & Kennedy, 2011).

In this context, terrorist attacks on water and food supply is a risk that must be controlled. The food supply chain represents an attractive infrastructure that serves as a target for terrorist attacks. In order to have an idea of the magnitude of the food sector consider this: only in the United States, consumers spend more than \$617 billion a year on food, of which \$511 billion are spent on food within the agriculture sector (DHHS, 2005).

Food terrorism has been defined by the World Health Organization as “an act or deliberately try of food contamination for human consumption with chemical, physical or microbiological agents, with the purpose of causing damage or death to civil populations or to interrupt the social, politic or economic stability” (WHO, 2008; Veiga, 2011).

The Food Defense refers to the analysis, control and improvement of prevention mechanisms of those attacks; that is, the Food Defense involves a Risks Management. This management is based on the premise that absolute safety does not exist and that the reliability in each of the components, even the highest, does not imply reliability equivalent to the whole system. Risk management consists of recognizing the risks, evaluating them and regulating some in relation to others, leaving aside the attempt to restore situations in which the risk would be completely excluded (Dourlens et al. 1991). The oversight in this matter can lead to an increase in the failure probability in the security of the food supply chain (Food Supply Chain: FSC); and therefore, generate potentially high costs for its constituents.

Hence, the food supply chain must ensure that its activities follow a preventive approach, so the risks are as low as possible. This need for protection must be addressed from different points of view. One of the most important standpoints is related to the adaptation of the business processes and organizational structures that are involved in food exchange and handling.

The business process approach has gained importance in enterprises since the 90s compared to the traditional hierarchical departmental point of view (Aguilar-Savén, 2004). Some examples of business processes are described in Kettinger et al. (1997), Swanson (2003), Gaitanides (2007), Damij, et al. (2008) and Vanderhaeghen, et al. (2010). The process approach consists of compiling the enterprise activities in a logical sequence, thereby creating a clearer vision of the company's activities. One objective is to attain better understanding, control and productivity in the activities that generate value to the enterprises.

The government of the United States of America has developed ORM (Operational Risk Management) and CARVER+shock for the analysis of Food Defense, following a traditional hierarchical departmental approach (DD, 2000; FAA, 2000; DHHS, 2001; Rasco & Bledsoe, 2006; Kleter & Marvin, 2009). The

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