

AN OVERVIEW OF CURRENT AND EMERGING ISSUES IN FOOD SAFETY

Food safety and security, as well as factors affecting those (e.g. climate change) have been major emerging areas within the food supply chain arena and have attracted a lot of attention from various research, government and regulatory bodies. The vulnerabilities of food supply chains, that define the food safety and security risks imposed on foods, are mainly a direct result of supply chains being long, global and highly interconnected. Food and drink products are often a target of adulteration (intentional or unintentional) while supply chains usually deal with perishable products that could be harmful to consumers if they are not managed properly.



FOOD BORNE ILLNESS

The economic burden of foodborne illness includes the cost of any health care required, productivity losses and lost trade, incurred as a result of restrictions placed on trade if contaminated food is identified as the source and cause of an outbreak of foodborne illness. The United States Economic Research Service has estimated that the cost to the US economy of outbreaks associated with five major foodborne pathogens was in the region of US\$6.9 billion per year. At the same time the economic burden of foodborne infections in Australia and Sweden were estimated at around AU\$1.2 billion and US\$123 million per year respectively (Hall et al., 2008¹).

Despite apparent improvements in consumer understanding about how to prevent contamination of food products, improved food safety inspection and

testing approaches/methodologies and an overall increase in awareness across the food service about the prevention of cross contamination and hygiene, it is expected that foodborne illness outbreaks will continue to rise. It is thought that this will mainly be as a result of changing lifestyles and eating habits that will favour on-the-go food, and also a result of food supply globalisation as well as constantly changing methods of food production and distribution which increase the potential for widespread outbreaks. Prevention but also control of foodborne illness will remain a significant challenge in the coming years.

FOOD ADULTERATION

According to a recently published report, oils (mainly olive oil) represent 24% of reported food adulteration cases. Milk (14%), fruit juices (12%),

including concentrates, jams, purees and preserves), spices (11%) and sweeteners (8%) complete the top five ingredient categories most commonly associated with fraud (Moore et al., 2012²). Other food product categories affected included natural flavouring complexes, dairy products and milk derivatives, cereals, grains and pulses (each at 4%) while gums, functional food ingredients, flavour chemicals, seafood and wines, spirits and vinegars came at the bottom of the list (each at 2%). In the US, it was reported that 33% of the seafood samples collected from 674 retail outlets in 21 US states were mislabelled (Oceana, 2013³). In India, 64.8% of milk-based and cereal-based sweets and savoury products tested were adulterated (Nieburg, 2013⁴).

Generally, meat has not been widely associated with adulteration. However, an increase in the market for convenience food that mainly involves processed food, as well as food trade globalisation, has made meat an easier adulteration target, as was clearly the case in the recent horsemeat scandal. Rising food prices, long and complex supply chains and high mark-ups on some products will continue to favour fraud, making it easier and more profitable.

CLIMATE CHANGE

Addressing the potential implications of climate change on food safety would require some important steps. First of all, a thorough understanding of the microbiological hazards, factors affecting their occurrence and persistence, as well as the identification of effective

prevention measures is required. Effective risk assessment and the use of available tools to predict the likely occurrence and nature of risks under different environmental factors would form an important part of climate change response strategies. Improved detection methods that would enable a rapid detection of microbiological, chemical and physical hazards would benefit response times and thus affect the efficacy of response efforts. An integrated surveillance and monitoring programme would also be required to get a realistic evaluation of the status of foodborne and animal diseases, microbiological and chemical contaminants and aid the identification of emerging food and water-borne diseases.

Predictions of the impact of climate change on food safety mainly refer to foodborne illness and the persistence of mycotoxins in crops. Diarrheal diseases that cause some 1.9 million deaths per year are mainly caused by foodborne pathogens (e.g. *Campylobacter*, *Salmonella*, etc) transmitted through animal-derived foods (e.g. milk, meat). The wide consensus is that even through the prevalence of individual pathogens could vary the net impact of climate change will involve a large increase in the burden of infectious diseases in the years to come (Costello et al., 2009⁵). Mycotoxins are considered to be the key food safety issues in plant-derived foods considering that almost a quarter of the global annual maize crop can become contaminated with mycotoxins. The effects of climate change on mycotoxins may be difficult to predict as it is expected that these are complex, mould and region-specific. An increase in temperature may eliminate mycotoxin production by some mould species, while in colder parts of the world the incidence of infections may increase.



Apart from the obvious health risks related to mycotoxins, one needs to consider the impact on crop harvest and food security.

STAY ONE STEP AHEAD

Global food supply chains are increasingly complex and the potential risk of disruption by climate change, adulteration or pathogens cannot be wholly eliminated. However, compliance with local, national and international regulations and the implementation of best practices, as well as quality, safety and sustainability management systems underpins their success. Internationally recognised standards (e.g. ISO, IFS) are regularly updated to reflect the reality of today's business environment and its challenges.

PARTNERSHIP FOR SUCCESS

Across the food supply chain businesses can ease the regulatory burden and access broader industry expertise and experience when they choose an independent third party partner for their testing, verification and certification needs. SGS's extensive network of global food industry experts and testing facilities open the door to a better business performance, more profitable relationships and our unrivalled reputation for success.

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¹ Hall, G., Vally, H., and Kirk, M. (2008) Foodborne Illness: Overview, International Encyclopedia of Public Health, 638-653.

² Moore, J.C., Spink, J., and Lipp, M (2012) Development and application of a database of food ingredient fraud and economically motivated adulteration from 1980 to 2010, Journal of Food Science, 77(4), 118-126.

³ Oceana (February 2013) Oceana Study Reveals Seafood Fraud Nationwide.

⁴ Nieburg, O. (April 2013) Majority of colored foods in India illegal. Confectionery News.

⁵ Costello, A., Abbas, M., Allen, A., Ball, S., Bell, S., et al. (2009) Managing the health effects of climate change. Lancet, 373, 1693-1733.