

Foreword – Asia's food safety and quality problems are global problems

The papers in this issue of 'Quality Assurance and Safety of Crops & Foods' focus on food safety problems in Asia. In many ways Asian food safety problems are like those of any other region of the world; primary producers work under sometimes difficult conditions, subject to environmental problems beyond their individual control, to provide raw materials which may move into long and complex supply chains. The consumer awaits the final retail provision of foods, typically at a store or restaurant, which are hopefully safe, affordable, nutritious and tasty.

Food safety management is inherently difficult. Raw materials are variable, microbiological challenges are numerous, competition is fierce, and profit margins can be thin. Many problems may intervene to cause food safety failures. Sometimes a producer, or processor, or food service provider (even in the home kitchen) is careless or mistaken, more rarely there is a possibility of greed or dishonesty resulting in a deliberate flouting of standards. There is much media discussion about cases of food fraud, such as misidentified fish or meat products, or the very serious melamine scandal in China, or recycling of waste oils into products sold for human consumption. Another type of fraud is the production of fake versions of branded products, where lower quality will result in loss of reputation for the brand, and will introduce new risks of direct food poisoning. The sudden appearance of the horse meat adulteration case in Europe, followed by similar cases around the world, show that fraud is a possibility anywhere.

Food safety regulations have various functions, they impose an expectation of quality and safety performance, they provide a framework around which training can take place, and they provide a mechanism to take action where problems occur. Most food processors both buy raw materials and sell products. Much of the development of food safety regulation has been in the direction of harmonisation, so that networks of companies can buy and sell raw materials and finished products under common management systems (based on Codex HACCP principles). It is important in the modern world that these networks of companies should not be constrained by international boundaries, and globally common certification standards help to ensure this. Food safety management, and the HACCP plans developed for it, have to be evidence-based and analytical, starting with clear process understanding, and using hard data on microbial modelling for the process in question to determine critical control points. In this sense there is no room for compromise – there should be no half-measures in a safety plan, no matter the financial resources of the company or country in question.

Food safety is different from most other regulated activities. The law clearly prohibits for example murder, or stealing your neighbour's livestock. The law cannot simply order

you to 'produce safe food' and expect immediate and easy compliance. Regulation has to be supportive, and guidance and training has to be provided particularly for smaller companies. The possibility of failure has to be accepted at some level – not all food will be safe always – and reasonable best efforts to implement and use food safety management systems should be taken into account in assessing any liability for failure.

Special problems in Asia relate to: (1) population – the problems of large and growing populations with insufficient and declining agricultural land; (2) economic development – purchasing power for many people is low, increasing the temptation to cut corners in food processing to provide cheapest possible products; (3) climate – hot, humid climates in much of tropical Asia are inherently problematic; (4) environmental issues – contamination of water supplies, air and soil pose problems for farmers and processors; and (5) infrastructure – safe and secure supply chains need good transportation and storage systems, including temperature control where appropriate.

Asian economies have benefitted greatly from the development of strong export-focused food sectors, such as for shrimp production and value-added processing in Vietnam (Sarter *et al.*, 2015). As in Sri Lanka, such industries drive the development of food regulation and provision of appropriate training, and this must surely have beneficial spinoffs in improving the knowledge base and technical capabilities of companies supplying the domestic market (Munasinghe *et al.*, 2015). The Philippines has worked hard to both develop and implement food safety regulations, but also to rationalise and simplify sometimes overlapping and over-complex administrative structures (Collado *et al.*, 2015). The clenbuterol case in China illustrates the complex development of the use of the drug, and as it was gradually discredited with increasing scientific knowledge, the difficulty of eliminating its use simply by regulatory fiat (Yan *et al.*, 2015). Another paper deals with mycotoxins, also an issue of great importance to China (Woo and El-Nezami, 2015). Unlike clenbuterol, mycotoxins are not a man-made problem, they are part of the natural food ecosystems, but their control imposes immense technical challenges.

I thank the authors for the insightful and interesting articles, which provide a useful reference base for further work and discussion on technical and regulatory solutions to some of the problems indicated. I particularly thank Dr Graham Crosbie for reading all the articles and providing helpful comments for their improvement.

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