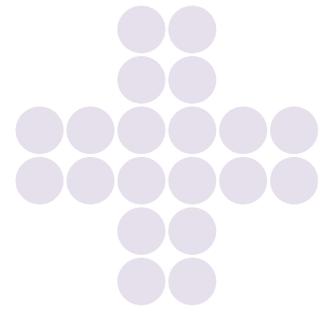


Understanding failure

Costs, lessons, and a new approach to food safety audits



by Chris Anstey

There may be legislation, systems, audits, tests and rules. Even so, things still go wrong.

Sometimes it starts in a field. Sometimes it starts in a factory. It could be contamination of food, whether intentional or not. It could be about packaging or labelling errors. It could be about a broken rule within a factory that results in audit failure and drives expensive corrective actions.

There are many good intentions in the food industry. This paper is about those times when the intended purpose of an action is not achieved. It is about failure and how much it costs.

Food producers, manufacturers and retailers must sell food that is safe and legal. Responsibility for verification is with the governments who set and enforce legislation.

To prevent failure, companies establish management systems that provide a formal structure for compliance both to public legislation and to private regulations. Their starting point is to always deliver safety and legality. Their end point is to achieve both product quality and integrity. To check that their systems are working, they have tests and audits.

Meanwhile, they are looking for margins to pay their costs and to make a profit. When those two parallel efforts for quality and for profit don't work in harmony, the result is cost.

Perhaps you work in a food factory as a part of an operational quality team. Your day is governed by rules. Perhaps you have seen them being broken and experienced the consequences of failure. Perhaps you are still learning about the food industry and you are looking for some new insights.

This paper explores why failure happens and tries to put a cost on it. You will read about different types of failure. You will read about the difficulties of understanding its costs.

This paper will also tell you about what is new. A number of food safety leaders were interviewed for the paper and what they have said is included. You will read about how they are building their understanding of failure and looking at new approaches to help people achieve a food safety culture.

You will read about how true efficiency in food safety for the long-term is rooted in the way people behave.

"There's a new approach. The companies take responsibility, public policy shifts towards prevention and in a public-private partnership everything that can be done must be done. If something works, share it. If it doesn't work, share that too."

Michael R. Taylor, Deputy Commissioner for Foods and Veterinary Medicine, The Food and Drug Administration, USA

Section 1

Market drivers

1.1 Food Disease – the stakes are high

The multiple threats presented by food disease failure include death, illness and inevitably cost. Disease surveillance is inherently the most sensitive means of detecting problems in the food supply. Analysis of national and international food disease reporting networks provides vital data. The use of trace backs during outbreaks has accelerated successful root cause analysis. Testing alone will never deliver food safety. What matters is how people respond to this data.

Unfortunately, test results can mislead. There is a tightrope that's walked between inherent testing variability and the effort to limit both government and corporate liability. The resulting decisions can lead to pre-emptive recalls. Better safe than sorry.

In Germany in 2012, Spanish cucumbers were incorrectly connected with a fatal outbreak of E. coli. Following the reaction of the German authorities, Russia prohibited all imports of Spanish vegetables while Austria, Belgium and France instituted partial bans. Spanish farmers claimed weekly losses of €200 million and tons of unwanted fruit and vegetables rotted. By the time some German fenugreek sprouts were identified as the actual cause, the Spanish growers were facing devastating

losses. Meanwhile, 53 people had died and nearly 4,000 had become seriously ill in the deadliest bacterial foodborne outbreak in Europe.

An outbreak of E. coli O157 in South Wales in 2005 mostly affected school children. 31 were admitted to hospital and tragically, Mason Jones, aged five, died. The outbreak occurred because of food hygiene failures at a small local business with responsibility falling squarely on the shoulders of the proprietor, William Tudor. He failed to ensure that critical procedures, such as cleaning and the separation of raw and cooked meat, were carried out effectively. He falsified certain records. He misled and lied to government inspectors. The publication of the Public Inquiry Report in March 2009 highlighted the issue of cultures and behaviours, both in businesses and enforcement bodies. It linked culture in the workplace with food hygiene compliance.

In occupational health and safety, after years of battle, compliance has become second nature. It is for the food industry to strive to match that achievement where a common understanding of risk, consequence and good practice becomes the norm. There's an evolutionary approach: first focusing on equipment, workplace and procedures; then focusing on management and the organisation's mature safety culture.

The annual cost of foodborne diseases in Europe 2011

High incidence, high burden

- Salmonellosis:
6.2 million cases =
230,000 healthy life years
- Campylobacteriosis:
9.2 million cases =
350,000 healthy life years

High costs

- Salmonellosis:
1.6 billion euro
- Campylobacteriosis:
2.4 billion euro¹

Footnotes:

¹ Selected example. Source: EFSA/BIOHAZ opinions 2011

Section 1

Market drivers

1.2 Retailers and Brand Manufacturers – the drive for better standards

The retailers and the brand manufacturers compete by creating differentiation through quality, price, service and shopping experience. The brand manufacturers need the retailers for their shelves and in turn are needed for their products. The retailers' model was about buying products and putting them on their shelves. Now increasingly they are developing their 'private' label offering the same for less.

Just like the factories, retailers and brands work to rules governed by their own quality management systems. Driven by their risk assessment, they engage in auditing and testing.

In the UK, the legal concept of being able to plead due diligence as a defense has driven retailers to set even higher standards. The more they can show that they at least have done their work properly, the more they can limit their liability. The law is clear that size matters and that a more comprehensive approach is expected of large companies.

Meanwhile, in other European countries, the principle of warranty, an assurance by another that certain facts or conditions are true or will happen, may provide adequate legal defence.

Whatever public regulations may be influencing company liability, their response can only be to reduce financial obligation in whatever way is possible. That means pushing more responsibility to the companies.

1.3 Consumers trust – both valuable and elusive

We are all consumers. We choose where to spend our money. Collectively we make and break businesses. Although most of us are far removed from food production, we develop strong opinions about food that drives our buying decisions. Those decisions, beyond price and the shopping experience, are built on trust. Once that is lost, we may never give it back.

For an individual, trust is only won by behaving in a trustworthy and reliable way. Your trustworthiness is based on both your character and your competence. Companies try to consider things from the perspective

of their consumers, seeking to justify their trust and to exceed their expectations. For a company, you can earn trust by showing respect for product integrity.

The food industry enjoys more trust than many others. According to the Edelman Trust Barometer in 2013², findings from a survey of 20 minute interviews with 26,000 respondents in 26 countries rated the food industry as the 3rd most trusted industry in the world. Incidentally, the respondents rated their trust in academic and company technical experts as high. Government regulators were rated as low.

Footnotes:

² <http://www.scribd.com/doc/121501475/Executive-Summary-2013-Edelman-Trust-Barometer>

Section 1

Market drivers

1.4 Product recalls

The biggest failure of them all is a product recall. Quite apart from the cost, the implications of consumers discovering that something they've been sold wasn't safe or legal will erode trust.

The impact on a retailer involved in a product recall is extensive. Whether the cause is safety or legality, the effect is always unexpected work for thousands of staff in their supermarkets. If the product is their private label then they will also have accountability for resolving the issue and liability for any damages. The impact on the manufacturer is also severe. Their customer may fine them; there is disruption to production and damage to their reputation that will depress sales.

"Capturing recall costs" was a survey in the US done in 2011 by Deloitte with Ernst and Young³ on behalf of the Food Marketing Institute (the retailers) and the Grocery Manufacturers Association (GMA). It identified the average cost of a product recall in the USA to be \$10 million. 81% of their respondents said that the financial risk from

recalls was between significant and catastrophic. 78% manage the risk by buying insurance. The largest costs came from business interruption and product disposal and the highest recoveries came from insurance proceeds.

Those companies that have taken insurance will find their insurers demanding effective recall management systems. In the small print, for the companies to be able to claim, then injury must have happened. No companies involved in the European Sudan 1 spice contamination crisis of 2002 or the horsemeat scandal of 2013 would have been able to claim. The reality is that most recalls are about illegal labelling or theoretical risk.

"If you want to buy insurance against the cost of a recall, you must have an effective recall plan. Our work is mostly with the insured companies who we help both with preventative measures and improving their recall system. Most recalls that I see are avoidable. It is human nature to look for 'workarounds' or short cuts, but this can be overcome by comprehensive and ongoing training"

Vince Shiers, Managing Director, RQA Group

Footnotes:

³ <http://www.ey.com/Publication/>

Section 1

Market drivers

Once the recall has happened, there are many obstacles a company faces in seeking to recover their costs. Apart from the time and effort, it's also their brand protection, their supplier relationships, the nature of their insurance policy and their experience and resources. Business interruption is not only about time to get production back up and running. It is also about the time needed to get the customer to buy the product again.

Recalls can destroy manufacturing companies. In 2007, Topps Meat in the US paid the full cost of failure and went broke after tests revealed the presence of E. coli in their products.

"This is tragic for all concerned" said Anthony D'Urso, Chief Operating Officer. "In one week we have gone from the largest U.S. manufacturer of frozen hamburgers to a company that cannot overcome the economic reality of a recall this large".

Recalls can also devastate farming income. In the USA, the peanut butter recall in 2008 due to salmonella contamination was estimated as costing rural America's peanut producers \$1 billion in lost production and sales.⁴ By February 2009, sales of peanut butter were down 25% for all brands, never mind those involved with the recall.

"Failure can mean many things. Not making 20,000 sandwiches by noon; the fine from the customer would outweigh any profit. An order is dropped for something that's already been made; that would represent a total loss for private label short shelf life foods. Experiencing a recall; the costs are crushing. How many recalls are genuinely risk-based? For example, if there was a proper cost benefit analysis, the allergen risks, controls over which are enforced robustly by industry, may be shown as very low. Meanwhile, something that is really important such as hand hygiene can be enforced poorly."

Kaarin Goodburn, Director and Secretary General, Chilled Food Association, UK.

Footnotes:

⁴ <http://www.nbcnews.com/id/29634279/#.UpizxNJdWoo>

Section 1

Market drivers

1.5 Factory hygiene – a specialist subject

It is one thing to be able to create a clean environment but it is another one to maintain it. To keep a check on cleanliness environmental sampling and testing programs monitor for the presence of pathogens, indicator organisms and plant hygiene. These programs help Hygiene Managers find and either eliminate or control spoilage microorganisms and pathogens as well as chemical and physical hazards before they go on to create a serious and costly problem.

It's known that testing can drive complacency. Reactive systems that don't analyse trends well enough are inefficient. Good practice means that sporadic positive tests need to be dealt with in a proactive manner, using the right tools coupled with validated best practice.

Legislation is starting to require this proactive and preventative approach. There needs to be the right method for the right job. Good practice hygiene is about having the right equipment and materials as well as the knowledge to use it and the systems to measure its efficacy.

Hygiene threats include access to the factory environment for pests and pathogens through doors and windows that are not adequately sealed. They can be carried in by people on their shoes or hands.

The factory layout may be flawed with poor separation of clean and dirty sectors. Equipment for use in high-care and high-risk areas can be used somewhere else. The cleaning equipment or materials may be unsuitable.

Then there are the people. Cleaning is a hazardous job that can have a significant impact on health and safety. Combine that with a lack of time to do the job properly and even a competence gap and there's potential for failure.

Routine deep cleaning means the site engineers need to work with the cleaners to break machinery down enough to be effective. There's also the challenge of 'Cleaning in Place' (CIP). For sectors such as dairy, bakery and brewing, most processing happens in closed systems. Once these would be taken apart and cleaned manually. Now these pipes, filters and vessels are cleaned internally between batches with full automation. This means that human fallibility is reduced and the people are exposed less to the hazards of cleaning.

A root cause of hygiene problems can be seen in the way that a factory delivers 'clean as you go' practices. Keep the food debris to a minimum at all times. Avoid the use of water which can disperse rather than remove a future problem. Engage everyone to keep the workplace clean.

I saw 23 people die on my watch because of a listeria contamination. We were accountable for the biggest recall in Canadian history. At the specific site we had an active environmental monitoring programme. We did 3,000 tests in the year before and we had a 95% score in an audit just one month before. That process made us complacent and we did not have rigour in our analysis. In fact, a problem with listeria was building in the heart of our plant.

Michael McCain: President and CEO, Maple Leaf Foods, Canada, Global Food Safety Conference 2012

Section 2

Problems

2.1 Pathogens – deadly microorganisms

A pathogen is any disease producing agent, especially a virus, bacteria or other microorganism. The young and the elderly are at particular risk.

- Salmonella infections are zoonotic which means that they can be transferred between animals and humans. As it is destroyed by heat, it is associated with raw and contamination of cooked foods. In the European Union, cases in humans are falling⁵ as the prevalence in poultry flocks declines due to improved production practices.
- Campylobacter is Europe's most reported zoonotic disease⁶ with over 220,000 cases in 2011. For the most part, these cases come from poultry. Cases are increasing with the pathogen being identified extensively in raw poultry meat.
- Listeria is relatively rare and is the most deadly pathogen. It is a bacteria found in soil and water and some animals, including poultry and cattle. It can grow in the cold temperature of refrigeration so can live in food processing plants.
- Norovirus, commonly known as the winter vomiting bug, is the most common cause of infectious intestinal disease. The virus is transmitted by contaminated food or water and by person-to-person contact.
- Mycotoxins are a group of naturally occurring chemicals produced by certain moulds which grow on a variety of different crops and foodstuffs including cereals, nuts, spices, dried fruits. They thrive in warm and humid conditions. The most toxic are the aflatoxins which can cause liver cancer and which are particularly associated with nuts.
- E. coli is a bacterium that is commonly found in the lower intestine of humans and animals. It can survive outside of the body. Most strains are harmless but some types can cause serious food poisoning for humans.

Footnotes:

5 Annual report on zoonoses and foodborne outbreaks released by the European Food Safety Authority and the European Centre for Disease Prevention and Control, April 2013.

6 The European Food Safety Authority (EFSA) with the European Centre for Disease Prevention and Control (ECDC) report for 2011. <http://www.efsa.europa.eu/en/press/news/130409.htm>

Section 2

Problems

2.2 Allergens and risk

A report from University College, London in November 2013⁷ found that a person in Europe with a food allergy is twice as likely to be murdered as to die from a severe reaction.

Bearing in mind the actual health risk, the percentage of recalls due to concerns over inadvertent contamination, particularly by nuts, is high. Product labels are now defensive reflecting the impossibility to guarantee safety, positioning theoretical contamination risk on countless products. Undeclared allergens were the single largest cause of food recalls in the US during the second quarter of 2013. In Europe, the EU has required labelling 14 different allergens which contrasts with Japan's list of five. For the manufacturers, there is also a challenge because there are no 'acceptable limits' that have been set.

Driven by complexity of controls and coupled with people in factories getting it wrong, there are many examples of products appearing on supermarket shelves with confusing and conflicting messages relating to their allergen content. At best, they provide some dry humour when a bag of nuts is labelled "this product may contain nuts". At worst, labelling mistakes result in product recalls.

2.3 Contamination

Contaminants are substances that have not been intentionally added to food. They might be introduced because of the various stages of production, packaging, transport and storage. They might also result from environmental contamination.

Some contaminants are formed naturally, carried over to food from water and soil. For example, the chemical compound acrylamide that is sometimes found in potato crisps is the result of poor cooking practices. Another example is mycotoxins, such as the fungi aflatoxin which can be found in nuts.

Maximum levels are set for the contaminants of greatest concern to EU consumers, either due to their toxicity or their potential prevalence in the food chain. These include heavy metals, dioxins and nitrates.

The hazard of accidental contamination is the subject of multiple controls within factories. There are systems to manage potential contaminants such as glass, plastic, metal and wood in raw materials and in production. The EU has put forward codes of practice for the handling of products at risk, such as apples or cereals.

"For any person with a food allergy, the chance of dying from anaphylaxis in one year is 1.81 in a million. For children and young people aged 0-19, the risk is 3.25 in a million. By comparison, in Europe the risk of being murdered is 11 in a million and of dying from accidental causes is 324 in a million over a year"

Clinical and Experimental Allergy, December 2013, Pages 1333-1341

Footnotes:

⁷ Clinical and Experimental Allergy, December 2013, Pages 1333-1341

Section 2

Problems

2.4 Fraud – hidden by criminals

Globally we must grapple with long, complex and inherently difficult supply chains. Up the chain, things happen that are quite invisible to those further down. They are carefully hidden because they are being done by criminals. Food fraud is a collective term used to encompass the deliberate and 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. There is a genuine public health risk because of unconventional and unexpected contaminants. Well-known examples include use of industrial dyes in spices from India (better colour = better price) and melamine in pet foods and infant formula from China (higher protein = better price).

In January 2013, foods advertised as containing beef were found to contain undeclared horsemeat and other undeclared meats such as pork. While not a food safety issue, the scandal revealed a major breakdown in the traceability of the food supply chain. Some regulatory authorities in Europe drove massive recalls. Others recognised that though illegal, this was an emotional not a scientific issue.

The outcomes of the scandal included damaged consumer confidence, lack of trust and transparency between stakeholders, reduced brand value and a rise in testing and auditing. There was a new feeling of supply chain insecurity and vulnerability to fraud. Perhaps the biggest scandal of them all was the destruction of thousands of tonnes of wholesome food.

According to European Commission data⁸, 13.3% of tests carried out by France returned positive. This is well above the EU average, which was under 5%. In Germany, 3.3% of tests returned positive.

There is a price to pay. One Irish supplier, meat processor Silvercrest lost supply contracts with Tesco, Aldi and Co-operative supermarkets after the Food Safety Authority of Ireland (FSAI) found horse and pig DNA in burgers it supplied.

The consumer response to such an abuse of trust was to be expected. By February, sales in the UK of frozen burgers were down by 43% and frozen ready meals down by 13%.⁹

“Since 2008 we have seen a shift in the threat towards food safety with a focus on hazardous and potentially harmful products. Working with Interpol, in 2011 across 10 European countries we seized counterfeit and substandard products. We also made seven arrests and seized 2,500 tonnes of fake organic food.”

Bérengrère Dréno, Criminal Intelligence Officer, Europol, The Netherlands, Global Food Safety Conference 2013

Footnotes:

⁸ European Commission - IP/13/331 16/04/2013

⁹ “Frozen burger sales plunge 43% after horsemeat scandal”. <http://www.theguardian.com/uk/2013/feb/26/frozen-burger-sales-fall-horsemeat-scandal>

Section 2

Problems

2.5 People – judging the cost and benefit of rules

Human behaviour can be a dark area. People know what the consequences of breaking rules are. It's a taboo subject that people don't talk about. The difference between drug cheats in sport and people working in the food supply chain can be smaller than you would expect.

In sport, the cheats make their own rules. Within their group, they see the world differently. They help each other break the rules and they force each other indirectly through the universal social rule: "See no evil, hear no evil and speak no evil." One of their drivers is that people expect them to do better all the time: "Faster, stronger, higher".

At work in the food chain, when people do something that they know is wrong, they are assessing risk. They may ask "If I do this will it be breaking a rule? What are the consequences? Is it possible that people will even die?" For most people their personal experience is that people won't die.

One of their drivers is that the people they work with are all focused on production, sales and profit. Anyone working in a quality department has a unique role because they can actually stop production. It's not easy, especially if you see the group making shortcuts and getting away with it. Just like in sport, it is good people that break rules, not bad people.

People consciously and subconsciously optimise their behaviour by simultaneously minimising expenditure and maximising gain; particularly when under pressure from scarce resources.

"Breaking rules is not just about individuals. It's more likely to be a part of the workplace culture. If you see the group making shortcuts and getting away with it, then you try it as well, just like drug cheats in sport.

To understand rule breaking, cutting corners should be seen as a learned behaviour, a goal oriented choice and not as a moral question. Such activity should be looked at in its physical and social context to see how easy or difficult it is to comply with the

rules. Compliance depends on the cost: the time and effort plus the risk of getting caught. As long as the perceived benefit exceeds the perceived risk then corners will be cut.

Workplace environments are full of pockets of 'moral free spaces'. That's not to say that there are no morals but rather these pockets are filled with informal rules the group members are agreed upon such as acceptable ways of cutting corners.

Because of these points, I don't believe in more enforcement. I believe that a social contract on compliance that is agreed between team members is more effective."

Andrea Petroczi, Professor of Public Health, Kingston University, UK.

Section 3

What happened?

3.1 Private standards – convergence of approach

Convergence can only be driven by a credible approach to benchmarking that major companies will accept and recognise. Within the Consumer Goods Forum (CGF), the world's biggest retailers and brand manufacturers are working together to benchmark good practice on food safety. It is not about everyone doing the same thing. It is about objectively recognising that there is equivalence in different approaches. Companies should be able to work with a formally recognised range of standards.

In 2000 CGF launched the Global Food Safety Initiative (GFSI) with the simple aim: "Once certified accepted everywhere." In 2013, the GFSI Guidance Document¹⁰, which sets out the requirements for food safety schemes and enables comparison and recognition of standards, is now in its sixth version. 77,700 factories around the world are now certified to GFSI recognized schemes.

The International Food Standard (IFS, founded in France and Germany) was one of the original retailer-based standards that went through the GFSI benchmarking process. In 2009 the University of Rostock conducted a study on its benefits. More than 250 companies responded, most of them in

Germany. 67% said it had either contributed positively to their operating process 'much' or 'very much'.

In September 2013 the IFS team held a conference with their certification bodies and shared new data that provided new data about the link between standards and actual business performance. To select just one of their examples, audits failed because senior management had not ensured their employees were aware of their responsibilities and had inadequate mechanisms to monitor what's happening. Their data shows that compliance drives efficiency and saves money. For IFS Managing Director, Stephan Tromp, interviewed for this paper, he released this information "so that quality managers and factories would have real data for a business case about the implications of failure to share with their senior teams and encourage their engagement in quality".

Whilst much has been done on the integrity of certification, there is an ongoing concern for all the standard owners. There are still too many public problems associated with certified facilities and a disparity between the findings of private auditors and regulators. Not all retailers trust a third party and failure in any certified premise reinforces that concern.

"I've been involved with the development of food safety management schemes since 2001. I was Chairman of GFSI and am now Chairman of IFS. At Metro we have seen a 90% reduction in our recalls over the last ten years. The system depends on a neutral and professional auditor that delivers truly comparable results. If people in certified factories aren't matching our expectations, perhaps due to capability or for economic gain, we need to know. The IFS integrity programme helps us analyse the work of the auditors. If there is mistrust then we must act and two CBs were suspended during 2013."

Hans-Juergen Matern,
Chairman IFS, Vice
President Sustainability and
Regulatory Affairs, Metro,
Germany.

Section 3

What happened?

3.2 Food safety training – it's all about the community

An annual global survey started in February 2013 and was delivered by British food and drink research and service provider, Campden BRI working with IT and training service provider Alchemy Systems. Its aim was to provide benchmarking data for Quality Managers. The survey identified dissatisfaction, both with the quality (30% less than satisfied) and quantity (41%). The commissioning partners were the British Retail Consortium's (BRC) Global Standard and the US retailers' Food Marketing Institute's Safe Quality Food standard (SQF), both benchmarked by GFSI. For the 2014 survey they've been joined by Certification Body SGS.

More than 70% of those surveyed reported finding time for food safety training was the greatest challenge. Audit data from the BRC showed that the main deficiency noted by auditors on the subject of training (27% of training non-conformances) was a lack of understanding by the employees. So, there wasn't enough time for training and when it was done people still didn't understand. If you looked at the records though, the people had all been trained.

New approaches are being tried that now consider the all-important issue of culture. The food manufacturers can learn from the food service sector where much progress has been made by global service provider NSF who has launched an online food safety assessment called NSF Insight. This provides an understanding of workforce performance and develops measurable tools for improvement by identifying how the role of managers and supervisors influence food safety practices. The identified three types of people:

- Those who understand
- Those that need help to understand
- Those who are confident but misunderstand

The second group needed mentoring but it was the third group that particularly needed more training.

Meanwhile, it's the leadership that is most influential. People do the right thing because their bosses do it that way. And for the training providers, recognition is needed that they are dealing with a community rather than a list of names. If they can position their training message towards the group of people, then they can be more successful.

"When does food safety training really work? I was thinking back to the Maple Leaf story after they had a major food safety failure for listeriosis that resulted in 23 deaths, they've been implementing a completely new food safety culture and every function is involved. What they do is always linked to behaviour in the home because that is where our personal culture is rooted. It's the same at home as at work. That is changing behaviour and helping people build a new way of thinking."

Bertrand Emond. Head of Membership and Training, Campden BRI, UK

Section 3

What happened?

3.3 Networks — finding shared solutions

It is through collaboration that progress is being driven today. Prevent rather than react. Identify a problem early and reduce cost.

In an age when food hazards can enter at any point in long, complex and often cross-border supply chains, PulseNet run by the World Health Organisation (WHO), is a network of national and regional laboratories around the world that facilitates early detection and effective investigation. Together, they monitor patterns and identify clusters which help to mitigate the impact of a foodborne disease outbreak.

There are other network tools.

- The Global Foodborne Infections Network (GFN), run by WHO, builds capacity to detect, control and prevent foodborne and other enteric infections throughout the supply chain.

- Collaboration between the Food and Agriculture Organisation (FAO), the WHO and the World Organisation for Animal Health (OIE) provides the global early warning system for major zoonotic diseases (GLEWS).

- The International Food Safety Authorities Network (INFOSAN), a joint FAO/WHO network involving 178 countries which is designed to exchange information and strengthen community practices.

- The Rapid Alert System for Food and Feed (RASFF) is a system for reporting food issues within the European Union.

Researchers at Kingston University in London¹¹ are using network analysis on data from RASFF with an open access tool¹² to capture and visually analyse the complexity of alert reports. Understanding how to break up a terrorist network gives an idea of this innovative approach.

The removal of individuals in key network locations may be more important than attacking the traditional leaders of the group. The elimination of weak ties will isolate the network and diminish its reach and power.

The aim is to develop an intuitive understanding of network-based epidemics and the effects of network structure. The goal is a set of robust network statistics that allow us to predict epidemic dynamics. They will demonstrate which countries are both the major transgressors and detectors, monitor change over time and show their impact.

Footnotes:

11 Nepusz, T., Petroczi, A., Naughton, D.P. (2012) Interactive network analytical tool for instantaneous bespoke interrogation of food safety notifications. *PLoS One* 7(4):e35652

12 <http://staffnet.kingston.ac.uk/~ku36087/foodalert/>

Section 4

Solution

The greatest enemy to a positive food safety culture is the overriding desire to cut costs and save money. The irony of such an approach is that the cost of failure can exceed any short term efficiencies.

When things go wrong, it's not about the individual or the systems, it's about management and the organisational culture.

People need to be part of a positive culture where failure is understood and its causes shared. It is about everybody working together and looking after their shared aim.

"If you think training is expensive, try ignorance and stagnation."

Peter Drucker

5 steps to a positive food safety culture

- It starts with leaders. People do the right thing because their leaders do it that way. They must understand the issues and provide a vision for the future.
- Find out who needs what sort of help. Recognise your champions and mentor those that need it. Retrain those who haven't understood.
- Ask the people what they think and show them that you are listening to what they say.
- Be honest with yourselves. If you have a negative or neutral safety culture, then recognise it.
- Once you've decided the steps to take, make sure that you have considered the needs of your workspace community, whether language, literacy or cultural norms. The change that you aspire to must be one that is achievable for them.

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This whitepaper was brought to you by Kimberly Clark Professional, as part of our Efficient Workplace Programme to create safer, healthier workplaces in the food industry.

[Read our eBook to find out about the true cost of audit failure in the food industry](#)



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As an Independent Consultant, with over 30 years in the food and consumer goods business, I believe that business is about successful relationships based on trust and understanding.

Having started in farming, then moved onto retailing, I am now an industry consultant 'helping change'.



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