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Apparent rise in STEC infections in Switzerland investigated

An interesting research article in the journal Euro surveillance has highlighted a common problem associated with microbiological data interpretation.

The paper looked at reported cases of *Shiga Toxin E coli* (STEC) infections reported in Switzerland from 2007 to 2016.

An increase in cases was observed in 2011 following the *E coli 0104:H7* outbreak in Germany, before returning to expected yearly fluctuations, before significantly increasing from 2015 onwards.

It was found however, that the apparent increase coincided with new STEC PCR techniques becoming more widespread and readily available in testing laboratories, which in turn led to an increase in the number of samples submitted for analysis.

The paper concluded that the more sensitive methodology coupled with the greater testing availability contributed to the increase in reported STEC levels, as opposed to the increase being caused by a significantly worsening food safety situation.

We find that clients are increasingly being encouraged to trend their microbiological results and look for trends which may indicate potential problems in the manufacturing process or suggest environmental hygiene issues. Trending however will only offer reliable information if all of the associated sampling procedures and testing methods remain constant.

Like any testing laboratory, at ALS we constantly monitor our methods and check for updates to the ISO standard methodologies. Whenever the ISO methods are updated we amend our in-house methods accordingly. When this happens it is important that we inform our clients, as the method change (however slight) may impact on the sensitivity of the test and therefore make comparison of results with the old methodology unreliable.

Trending is a useful tool and often provides insights into processes which are gradually going out of control, but data interpretation should always consider the effects of any other changes within the general testing process.

Update on the Salmonella contamination on batches of Brazil nuts

In an update on last month's article on the recalls of products containing Brazil nuts because of contamination with *Salmonella typhimurium*, the European Centre for Disease Control and Prevention (ECDC), has revealed that the contamination was not limited to the UK, and a multi-country cluster of infections has been identified, with suspected cases also having been reported in France, Luxembourg, the Netherlands, and Canada. The majority of cases associated with the consumption of products containing the Brazil nuts have been reported in the UK, where there have been 98 cases identified so far. The ECDC report states that the affected batches of Brazil nuts were imported from Bolivia

Salmonella found in mushrooms

I never cease to be amazed at the different food matrices in which Salmonella can survive and use as a vehicle for infection, and last week there was further evidence of this in reports of an outbreak in America caused by *Salmonella stanley* which is associated with the consumption of an edible fungus known as "wood ear mushrooms".

The mushrooms were supplied to the catering trade only and clusters of ill people have been identified in relation to several restaurants. Many of them reported eating wood ear mushrooms in the week before their illnesses started.

Last month I used the *Salmonella newport* outbreak in America and Canada associated with the consumption of raw onions as an example of the robust ability of *Salmonella* to persist in foodstuffs in which other less resilient organisms would not be able to survive, and the latest news on this outbreak is that it now has caused illness in over 1,500 people causing 72 hospitalisations and 2 fatalities.

Causes of foodborne disease in China

Keeping with the mushroom theme, a recently published report looked into the foodborne disease outbreaks in China from 2003-2017. Nearly 20,000 separate outbreaks were investigated and although *Salmonella, Vibrio parahaemolyticus* and *Staphylococcus* were high on the list, the most common cause of food poisoning (causing 32% of all recorded outbreaks) was due to the consumption of poisonous mushrooms.

New wash system using ozone created by a cold plasma stream

A research paper recently published by researchers working at Drexel University in Philadelphia has described a novel way in which delicate fresh produce such as lettuce leaves may be washed to remove potential pathogens.

They have described a cold plasma wash water treatment, where water is injected through the plasma stream which ionizes gas molecules in the water to produce disinfectant compounds, such as ozone. These reactions are very short-lived, and the compounds quickly break down into harmless products, such as water and oxygen, but the researchers claim that the brief phase of active ozone production is sufficient to destroy any potential pathogens which may be present in the water.

Listeria monocytogenes found in hospital supplied sandwiches

This month also saw the publication of an incident report which has illustrated the challenges faced by food manufacturers who supply ready to eat food to vulnerable groups such as hospital patients.

In July 2017, *Listeria monocytogenes* was isolated from blood samples taken from a 53-year-old man with underlying health conditions in a hospital in Yorkshire. The man had eaten sandwiches made by an external provider while in the hospital at least 12 times in the three weeks prior to illness.

Whole gene sequencing revealed that the isolate was genetically indistinguishable to those from sandwiches and salads produced by the company who supplied National Health Service (NHS) hospitals, other institutions and retailers nationwide.

Listeria monocytogenes was detected in the firm's products between December 2016 and August 2017, at the manufacturer's premises and from two hospitals' in-house sampling. The business and local authority had been trying to control the bacterium at the production site since December 2016. The implicated *Listeria monocytogenes* strain was found at the site and in products up to July 2019. The firm continued to supply NHS hospitals but stopped in September 2019 for commercial reasons.

The report stated that factory procedures were generally good but highlighted several factors, such as; issues around the correct sanitisation systems for salad washing machines, wheeled trolleys were not disinfected before moving from low to high risk areas, concerns around the outdoor to indoor shoe changing area bench, and one of the floors was draining from a low to high risk area.

As was reported in Micro bulletins last year, six patients died after eating chicken sandwiches supplied to hospitals by the Good Food Chain. Meat was produced by North Country Cooked Meats and distributed by North Country Quality Foods. Following the outbreak, all three firms went into liquidation and ceased trading.

In a proactive response to last year's outbreak, ALS collaborated with several other industry bodies in assisting the British Sandwich and Food to Go Association in updating their guidance document on controlling Listeria in ready-to-eat (RTE) chilled foods in the supply chain.

Cooked chicken recalled due to possible contamination with Listeria monocytogenes

To further highlight the issues discussed above, the Food Standards Agencies in both the UK and Ireland last week issued recall notices for several batches of cooked chicken due to possible contamination with *Listeria monocytogenes*. This included cooked chicken breast and cooked tikka chicken pieces manufactured by Faughan Foods in Ireland.