



Increase in *Vibrio* infections linked to global trade of shellfish and extreme weather conditions

A report has been published by the Center for Disease Control (CDC) in America which highlights the microbiological consequences of global trade in shellfish, and also suggests that this may be exacerbated by rising sea temperatures as a result of global warming.

A Centers for Disease Control and Prevention study has found that international trade of shellfish might be involved in the dispersal of *Vibrio parahaemolyticus* populations from Peru to the United States and Spain.

The study found that severe weather, such as El Niño conditions in Peru, provide ideal conditions for the proliferation of *Vibrio parahaemolyticus*, *Vibrio alginolyticus* and *Vibrio vulnificus*.

The extreme weather conditions brought on by El Niño along with the disruption of sanitary infrastructure caused by floods and landslides, can help generate the perfect conditions for the explosive emergence of *Vibrio* diseases.

Genomic analysis of over 100 isolates of *Vibrio parahaemolyticus* collected from food poisoning incidents in America and Spain showed a common ancestry and provided a strong link to new (and more virulent) strains of the organism which was shown to have originated in Peru.

The epidemiological distribution of the *Vibrio* closely followed the export trade routes of shellfish from Peru to other areas suggesting that this was the route for the global spread of this strain of *Vibrio*.

The CDC reports that compared to other major foodborne illnesses, *Vibrio parahaemolyticus* infections have been steadily increasing. *Vibrio parahaemolyticus* is the leading cause of seafood-related bacterial infections globally. The CDC estimates that the average annual incidence of all *Vibrio* infections increased 54 percent during 2006-2017.

Vibrio parahaemolyticus is believed to be responsible for about 35,000 human infections each year in the United States and has been the leading cause of foodborne infections in China since the 1990s.

Norovirus outbreak linked to French Oysters

Continuing with the shellfish theme, Denmark and Sweden are the latest countries to report outbreaks of norovirus linked to shellfish from France.

At least 180 people in Denmark have been reported to have been ill since the start of the year and 70 have been affected in Sweden, although some of these are thought to have fallen ill after eating Swedish oysters.

In France, 1,033 people have been affected, and 21 needed hospital treatment. Italy and the Netherlands have also reported outbreaks linked to live oysters from France.

Products have been recalled due to a risk of norovirus contamination in Belgium, Luxembourg, Switzerland, Hong Kong and Singapore.

A total of 23 shellfish growing zones in seven regions have been closed with more than 400 companies affected, according to the French Ministry of Agriculture and Food.

More recalls on Tahini products due to Salmonella contamination

Following on from our report in November's bulletin on the global Salmonella recalls linked to Tahini products, there have been further recalls this month in both Canada and America due to Salmonella contamination of this product.

Danish Salmonella outbreak linked to consumption of raw meat product

A recent study has been published on an outbreak of monophasic *Salmonella typhimurium* which affected at least 49 people in Denmark in 2018.

A traditional form of raw Danish meat sausage called medister sausage was believed to be the source of illnesses. Product samples were negative for Salmonella and investigations at the production site did not reveal the source of contamination, but many of those affected were reported to have consumed the product.

Medister sausage is often served in the late autumn months and Christmas season.

This serves as a good example of a seasonal or traditional item, which is not regularly consumed and therefore can pose an additional risk as it may not be stored, handled or cooked appropriately.

What are the ramifications (in terms of Food Microbiology) of Brexit day?

As the UK officially begins the process of leaving the European Union today, what are the implications for food legislation with respect to Microbiological Food Safety Criteria?

The U.K. and Europe have an agreement in place until the end of this year to keep things as they are now. The plan is to strike a trade deal between the two parties by the end of 2020 and the British Prime Minister Boris Johnson has said this transition period will not be extended.

The government has repeated many times that food safety and standards will not be compromised and the overriding view is that the current EU legislative documents such as EU2073/2005 will simply be replicated and incorporated into UK legislation. However this has not made concerns go away as International trade negotiations with the U.S., Australia, New Zealand and Japan are on the table which it is claimed may lead to pressures to relax current legislative criteria.

The Food Standards Agency (who this year celebrates its 20th birthday) has recently provided an update on its policy for regulation post Brexit. It states that their programme is modernising the way food businesses are regulated, and they are creating a system that is modern, risk-based, proportionate, robust and resilient.

They state that "For the UK to continue to be a strong, credible player in the global food economy, the regulatory regime needs to keep pace with rapid change. Leaving the European Union will change patterns of food production, trade and consumption. This will require a flexible and responsive regulatory system".

I will keep you informed of developments over the coming months.....

Salmonellosis annual report for 2017 published

The European Centre for Disease Prevention and Control has published its latest annual epidemiological report on Salmonellosis. As these things take a while to process, this is for the year 2017.

The report states that "Salmonella was the most common cause of foodborne outbreaks, accounting for 24% (1,241) of all reported foodborne outbreaks. Eggs and egg products continued to be the most commonly identified vehicles in these outbreaks. In the two largest multi-country outbreaks investigated in 2017, eggs were either confirmed or suspected to be the source. In both outbreaks, Whole Gene Sequencing analysis was used to identify cases revealing significant numbers of historical cases dating back one or more years. Such persistent clusters from continuous exposure sources may require other types of control measures and longer periods of follow-up compared to point source outbreaks, as exemplified by the outbreak linked to Polish eggs where the implemented measures seem to have only been partially effective in reducing the number of cases over time".

With an obvious link to the latest Tahini recalls due to Salmonella contamination, the report also stated that "Epidemiological and microbiological evidence linked some outbreak cases to a sesame paste produced by a Greek manufacturer. The sesame seeds used for the production of the sesame paste (tahini) were traced back to a West African country. After the withdrawal of the implicated sesame paste in March and April 2017, no new cases were reported".

More microbiological implications of global warming

We are starting and ending this month's bulletin with stories about the effects of climate change.

The Journal of Clinical Investigation recently published "Viewpoint" articles written by academics at the Johns-Hopkins University School of Medicine, who warn that global climate change is likely to unlock dangerous new microbes.

The article states "there is concern that global warming will select microbes with higher heat tolerance that can defeat our endothermy defenses and bring new infectious diseases."

Endothermy allows humans and other warm-blooded mammals to maintain high temperatures that can protect against infectious diseases by inhibiting many types of microbes which can only actively grow at temperatures below the internal core body temperature.

They propose that global warming will allow many fungal species to adapt to higher temperatures, which will result in the potential for these organisms to infect humans as they will be able to break through the defensive barrier provided by endothermy.

They cite the rise of *Candida auris*, as an example. This was identified in 2009 and called a "catastrophic threat" by the U.S. Centers for Disease Control and Prevention in 2017.

The report concludes "The nearly simultaneous emergence of *Candida auris* on three continents, an event proposed to result from global warming, has raised the specter that increased warmth by itself will trigger adaptations on certain microbes to make them pathogenic for humans."