

newsletter

Bacterial foodborne infections

According to WHO estimates, one in three people in industrialised nations falls ill once a year as the result of a foodborne infection. These are often caused by undesirable contaminants, in many cases of a bacterial nature.

Introduction

The food industry has seen radical changes in the last twenty years: The range of products available has changed by adapting to the eating habits of consumers, such as the increased consumption of ready meals and fast food. The globalisation of raw materials extraction, manufacture and marketing has led to longer transport routes and an increase in process steps. These changes in the basic conditions increase the demands on quality assurance systems and on national and international monitoring programmes.

Pathogens and incidence

Salmonella and Campylobacter are the two most commonly reported bacterial pathogens involved in foodborne infections in the European Union. Other pathogens to be included among the causes of foodborne infections are Shigella, Listeria and certain Escherichia coli (EHEC/STEC).

According to the European Food Safety Authority (EFSA), over 5000 outbreaks of food-related illness affecting about 50,000 people are officially reported from EU Member States every year at present. About 10% of these cases have to be admitted to hospital for treatment. However, the number of unreported cases is likely to be much higher.

Literature: apropos - Food contaminants, AssTech 2008;
EFSA 2006, Zoonoses in the European Union 2005.

Salmonella

Salmonella is a genus of enterobacteria. Carriers include poultry, pigs and cattle, and the bacteria are thus found in many animal products (eggs, milk, meat etc.). They comprise a large number of species; about 2400 different types are currently known to exist. Of these, 20 to 30 are of epidemiological relevance to humans as pathogens of foodborne illness. It is their added ability to multiply in food within a very short space of time and thereby quickly attain critical infectious doses that makes them so significant as bacterial contaminants.

After an incubation period of 6 to 48 hours, the illness often begins with acute vomiting, diarrhoea, abdominal pain and fever. In about 5% of people affected, the illness may run a more severe or even fatal course. Infants, immunocompromised and elderly people are especially at risk. Since it can take 3 to 6 weeks for the pathogen to be excreted from the body after an infection, people with Salmonella enteritis must be regarded as infectious during this period. Long-term excretion lasting more than 6 months is relatively rare. In the EU, the incidence of infection shows seasonal peaks in late summer and autumn.

Campylobacter	More than 20 species of the bacterial genus Campylobacter have been identified to date. Campylobacter is almost ubiquitous in nature and is detectable especially in the intestines of wild animals and pets. But they also occur in farm animals, especially in poultry and also in dairy cattle and pigs. People are infected largely through contaminated food, in particular through inadequately cooked poultry meat. Further possible sources of infection are unpasteurised milk and contaminated water. Unlike Salmonella, Campylobacter species cannot multiply in food. Since the pathogenic infectious dose is very low, direct human-to-human transmission also plays a role. The incubation period is usually 2 to 5 days, and the average excretion period 2 to 4 weeks. Many infections run an asymptomatic course. As with salmonellosis, the symptoms are usually treated in the form of fluid intake and restoring the electrolyte balance.
Rapid Alert System for Food and Feed (RASFF)	At a European level, there is a Rapid Alert System for Food and Feed (RASFF). In this system, warnings about problematical foods and product recalls of food and feed required by the authorities are collected, recorded and forwarded to EU Member States. Weekly reports are issued giving the nature and origin of the product concerned, the reason for the warning and the reporting Member State.
International and national control measures	For a long time, the monitoring of food quality focused on inspection of the end-products. For the last few years, measures have also been taken for the manufacture of pathogen-free base products. For example, the production of pathogen-free food in Europe has been improved by the EU Zoonoses Monitoring Directive (monitoring and registration of data on the occurrence of certain pathogens in animals, foods and also infections in humans). Regulation (EC) No. 2160/2003 on the control of zoonoses also demands that control programmes be developed at national level for Salmonella and other foodborne zoonotic agents.
Legal requirements of the EU on food safety	According to the central principles of EU regulations of 2006 governing food safety, every company bears individual responsibility for the safety of all imported, manufactured, processed or marketed foods. The responsible authorities of the Member States monitor the situation to ensure proper observance of these regulations and compliance with the minimum requirements of hygiene, as well as the introduction of inspections based on the HACCP (Hazard Analysis and Critical Control Point) system.
Examples	The contamination of food may be of relevance to underwriting policy when, for example, a product recall becomes necessary or a factory closure is demanded. Commercial general liability may also be affected. Representative case examples: <ul style="list-style-type: none"> • Product recall, product liability In 2006 a chocolate manufacturer in the UK had to take a million chocolate bars off the market because of suspected Salmonella. According to the company, the cost of the whole incident ran to about 45 million euros.

- **Factory closure**
In April 2005 a total of 120 people fell ill after eating fruit flans and cheesecakes at different events in Germany that fell within the authority of a health department. Investigations revealed that the flans and cheesecakes were produced by the same bakery. The company worked a lot with eggs without appropriate refrigeration, so that eggs contaminated with Salmonella were seen as the most likely cause of the illnesses. After tests proved positive for Salmonella, the bakery was temporarily forbidden to produce and sell cakes and pastries.
- **Commercial general liability**
In the spring of 2007 an outbreak of Salmonella occurred in a German hospital and in an affiliated old people's home. Altogether, 270 of the patients and staff fell ill. The cause was identified to be inadequate cleaning and disinfection in the kitchen following renovation work that was carried out at the time. It took 20 days to stop the epidemic.

Information for the underwriter

The possible occurrence of contaminants and residues must be considered when assessing the risk of product liability, recall and commercial general liability exposure of companies that manufacture, process, prepare or store food. Particular attention should be paid to quality and risk management systems and food hygiene measures. Only if these are matched to prevailing individual circumstances and include all the processes and raw materials used can a high level of food safety and quality be ensured. It must be borne in mind that the rules and regulations laid down in law often establish only the basic conditions for safe food.

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