

## **EHEC: What is the role of BfR in the current EHEC outbreak event?**

BfR Opinion Nr. 020/2011, 6 June 2011

The Federal Institute for Risk Assessment (BfR) is responsible for scientific risk assessment in consumer health protection in Germany. The Institute assesses health risks, prepares recommendations for risk minimisation and communicates these processes transparently to the public. At present, BfR is involved in the investigation to resolve the current EHEC outbreak event. Several pillars serve to support this task: the development of laboratory testing methods, isolate and sample testing, the analysis of the outbreak as well as the health risk assessment of the bacterium EHEC O104:H4. In addition, BfR takes on an important function in risk communication between the authorities and bodies of the federal government, of the federal states and of the European Union.

BfR was established in November 2002 in order to strengthen consumer health protection. It is a scientific body of the Federal Republic of Germany which prepares expert reports and opinions on issues of food and feed safety as well as the safety of chemicals and products. BfR is part of the portfolio of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). It acts independently in its scientific assessment, research and communication.

BfR collaborates among others with the Robert Koch Institute (RKI) to resolve the current outbreak event. RKI is a federal institute within the portfolio of the Federal Ministry of Health (BMG) and responsible for the identification, prevention and control of diseases, especially infectious diseases.

The German act on the prevention and control of infectious diseases (Infektionsschutzgesetz (IfSG)), which came into force on 01.01.2011, lays down the diseases that are notifiable if they are suspected, in cases of illness or death and which pathogens detected through laboratory analysis are notifiable. The law also determines which information must be included by those responsible for the notification and which of these data must be further transmitted by the local health authority. The introduction of the IfSG also introduced case definitions for the routine transmission of notifiable infectious diseases in Germany.

In the current EHEC/HUS outbreak event, the regional control authorities are investigating at maximum capacities to locate the source of the outbreak. BfR is involved in the resolution of the outbreak by providing extensive analyses, data and health risk assessments. BfR provides as much aid as possible to support these. An essential element needed to resolve the outbreak event is to locate and close the contamination source for the affected foods. In order to do so, the outbreak strain must be detected on those vegetables identified as disease cause in the stool samples of patients.

### **BfR carries out laboratory testing and develops a testing system for the identification of the EHEC bacterial strain O104:H4 in foods**

The National Reference Laboratory for *Escherichia coli* at BfR is closely involved in the investigation. It has provided the testing laboratories with a novel testing method in order to identify the outbreak strain in suspected isolates. The method was developed and evaluated in cooperation with experts of the French Food Safety Agency ANSES.

In order to resolve the chain of infection as quickly as possible, the National Reference Laboratory for *Escherichia coli* is currently also testing isolates of the outbreak event that are

sent to BfR by the regional control authorities. As reference laboratory, its function is to verify the test results of the regional control authorities' laboratories.

Furthermore, the National Reference Laboratory is also currently testing various samples provided by the control authorities: environmental samples, soil samples, swabs of drains, water samples from businesses that are under investigation as well households in which people have contracted the EHEC bacterium O104:H4. These samples are systematically analysed through complex analytical procedures in order to detect the pathogen indisputably.

The National Reference Laboratory for *Escherichia coli* also collaborates closely with the European Reference Laboratory for *Escherichia coli*. In order to type isolates indisputably, these are sent on to the European Reference Laboratory after testing at BfR. Thus, it was indisputably determined that suspected foods such as cucumbers do not carry the pathogen.

### **BfR is working to resolve the food outbreak**

Each year, more than 200,000 human disease cases, which are likely to be the result of food-borne infections are reported in Germany. A food-borne disease outbreak is suspected in cases of disease where two or more individuals are connected with the same food.

At present, BfR experts are aiding the competent regional authorities for the official control of foodstuffs during visits to businesses on site and during data collection necessary for the identification of foods that play a causative role. They also conduct interviews that are part of the epidemiological case control studies of the Robert Koch Institute (RKI).

BfR and RKI teams are travelling to cities and communities in which they suspect the presence of the pathogen in order to gain further insight into potential routes of contamination in collaboration with the food control authorities and inspection agencies on site. This includes the taking of samples of raw materials and tools that are sent, among others, to the National Reference Laboratory for *Escherichia coli* at BfR for clarification.

BfR scientists are providing the latest data to a specially for this purpose established "Task Force", which serves to coordinate and systematically manage the transregional investigation in order to further advance the resolution of the outbreak. The Federal Office of Consumer Protection and Food Safety (BVL) is also involved in this "Task Force". The collected data on delivery tables, distribution channels, disease cases, interview information, etc. are screened and weighted here. By clustering the disease cases and suspected food findings, experts hope to retrace the outbreak event in order to infer back to the source of the pathogen.

Causal research is important in outbreak events in order to continually improve food safety in Germany and the European Union and to be able to reduce the number of food infections and poisonings. For this purpose, BfR manages the nation-wide system for the centralised compilation of information on foods involved in disease outbreaks (BELA).

### **BfR carries out health risk assessment on the EHEC pathogen O104:H4**

BfR carries out microbiological risk assessments on foods and pathogens involved in outbreaks.

In the current case, BfR and RKI early on jointly released consumer recommendations for consumption based on available data on the outbreak event. These are based on hypotheses from RKI's epidemiological case studies and are in line with the preventive consumer protection approach because the available data are not yet sufficient for a finalised assessment.

BfR is providing partial risk assessments on individual issues such as the safety of frozen foods, breast feeding, decontamination and disinfection of foods in regard to a disease case involving the EHEC pathogen O104:H4.

Once the source of the current outbreak event has been identified, BfR can provide a risk assessment on the EHEC pathogen O104:H4 based on the epidemiological data of RKI and an exposure assessment.

In order to minimise the risk, BfR has also prepared recommendations for the proper handling of foods and kitchen hygiene.

### **BfR is advised by the BfR Committee for Hygiene and Exposure Assessment**

The complexity of the phenomenon of “foodborne infections” requires successful preventive strategies. Thus the BfR Committee for Hygiene and Exposure Assessment was established in 2008. The committee coordinates a multidisciplinary collaboration of different external experts (epidemiologists, microbiologists, food engineers, physicians and veterinarians).

### **Active risk communication by BfR**

BfR has by law been assigned the task to provide information on possible, identified and assessed risks of foods for consumers. BfR daily updates its website on the results of the current outbreak event.

Yet risk communication does not only address the public. BfR also has an important mediating function for the exchange of data and information on the current EHEC outbreak in national, Europe-wide and international collaboration (in which WHO is also involved) of various committees of federal ministries and authorities as well as regional ministries and authorities. As national Focal Point for the European Food Safety Agency (EFSA), it continually provides the European Member States with the latest information on the state of the outbreak investigation.