

**Activity report**  
**by the**  
**Task Force on Food and Feed Safety**  
**in identifying the food-related sources**  
**of the gastroenteritis outbreak in Germany<sup>1</sup>**

Date: 09 October 2012

**Abstract**

The Task Force on Food and Feed Safety (in short: Task Force) started work on Saturday, 29 September 2012. After sorting all present facts of the outbreak event, it decided on the strategy to be taken in clarifying the food-related side of the outbreak. In order to identify the foods at the source of the outbreak, it was decided to make risk-based establishment controls in catering kitchens and distribution points (canteens), analyse the flow of food products, and analyse food samples in the laboratory. In addition to that, information and data were to be obtained from main office of the Hessian catering company through the representative of the *Land* (state) Hesse. The Task Force developed recommendations for action regarding the information to be obtained through establishment controls and analysis of food samples. Also, the Task Force provided the *Laender* (German Federal States) with data reporting forms for reporting back trace-back data and laboratory results. In this way, the food surveillance authorities of the five *Laender* concerned had been provided with all information necessary for a co-ordinated approach by the morning of Monday, 01 October 2012.

In the framework of outbreak investigations, the *Laender* laboratories analysed 796 food and environmental samples (state of reporting as on 08 October, 2012, 01.00 p. m.). Fifteen kitchens were identified as being linked with the outbreak. These kitchens had delivered meals to a total of 978 canteens (schools and childcare facilities) in calendar week 39. 288 of these institutions were affected by an increased incidence of disease. Thirteen of the 15 kitchens in question belong to the catering company. The trace-back investigations showed that 14 of the 15 kitchens had processed frozen strawberries from one and the same batch. The strawberries were prepared and handed over in different form, for instance, as a stew (compote), or as a desert ingredient. The suspicious strawberry batch (consisting of two sub-batches, only one of which had been distributed to kitchens) originated from the company a

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<sup>1</sup> English translation of the document "Tätigkeitsbericht der Task Force 'Lebensmittel- und Futtermittelsicherheit' bei der lebensmittelseitigen Aufklärung des Gastroenteritis – Ausbruchsgeschehens" published on 18 October 2012

trading company in Saxony. The company had imported 44 tons of frozen strawberries in 10-kg packages directly from China via the port of Hamburg. An official laboratory analysis performed in Saxony-Anhalt upon request by the *Land* Saxony finally produced evidence of a genogroup-II Norovirus in one 10-kg packages of the suspicious frozen strawberries on 08 October 2012. This, together with the epidemiological studies contributed by the Robert Koch Institute, clarified the causes of the outbreak of acute vomiting and diarrhoea.

In order to stop the outbreak, the suspicious strawberry batch was immediately blocked and remaining amounts withdrawn from all customers supplied. The *Land* Saxony sent BVL an RASFF notification which has meanwhile been notified by the European Commission.

The Task Force compiled food epidemiological findings raised by the *Laender* in a database, making them available for further scientific analysis of the event.

## 1. Introduction

On Thursday, 27 September 2012, at 12:28 p. m., the Brandenburg State Office of the Environment, Health and Consumer Protection informed the Robert Koch Institute (RKI) on a widespread, transregional outbreak of gastroenteritic diseases among children and adolescents. Vomiting and diarrhoea as the characteristic clinical symptoms were reported, while there was no information yet on any hospitalisations. The Office also understood that a large catering company headquartered in Rüsselsheim, *Land* Hesse, which supplies many canteens in nurseries, kindergartens, and schools with meals had already knowledge of about incidents of diseases in the states (*Laender*) Berlin, Saxony-Anhalt, Saxony, and Thuringia.

In the course of 27 September, the Robert Koch Institute received more reports about strongly increased numbers of disease with acute vomiting and diarrhoea in Berlin, Brandenburg, Saxony, and Thuringia. There was information about at least 4.000 cases of disease, mostly among children and adolescents, which were obviously related to canteens in day nurseries and schools. The number of cases reported grew to more than 11,000 by 05 October 2012. Complaints in most cases started from the evening of 25 September, and reached a maximum between 25 and 27 September 2012. In the large majority, the course of disease was rather mild and uncomplicated.

All schools and childcare facilities where disease cases were observed had been supplied with meals by regional kitchens of the catering company. The company manages 40 regional kitchens for the purpose of supplying schools and child childcare facilities in East Germany, where it dominates this market segment. The noted link between new cases of disease and canteens of schools and childcare facilities suggested presence of a food-borne source at the very beginning of the outbreak. Because of the extent of the outbreak, the BVL activated its situation centre as early as on 27 September. On 28 September, a telephone conference of the Heads of Departments of the Federal and State Ministries concerned decided to bundle investigative activities on the food side with a coordination group (Task Force) involving Robert Koch Institute (RKI) to be established at the Federal Office of Consumer Protection and Food Safety (BVL). The State Secretaries of the *Laender* Ministries competent for health protection of consumers and the competent State Secretary on federal level of the Crisis Management Group as well as of the Task Force in a decision document which was circulated on 29 September 2012. Later on 29 September, the Task Force was established and started work directly. It included, on the federal level, officials of the Federal Office of Consumer Protection and Food Safety (BVL), the Federal Institute for Risk Assessment (BfR), and the Robert Koch Institute (RKI), and, on the state level, officials of the five *Laender* affected – Berlin, Brandenburg, Saxony, Saxony-Anhalt, and Thuringia – as well as of Hesse, where the catering company is headquartered. At the weekend of 29/30

September, the members of the Task Force deployed in the BVL situation centre compiled the information present, discussed the situation and defined the further strategy in clarifying the food-related aspects of the outbreak. The actual clarifying field work was done on-site by the *Laender* authorities. There was daily coordinative communication by telephone conference. Minutes thereof were stored in the Information System on Consumer Protection and Food Safety (FIS-VL) and additionally circulated to the parties involved.

Competent public health and food surveillance authorities on the federal, state and local levels closely co-operated in identifying the source of the outbreak. Activities were focussed on epidemiological investigations, laboratory analyses of suspicious foodstuffs and research into the origin and distribution channels of foodstuffs. All data surveyed by the competent *Laender* authorities and results of investigations into the food-related aspects of the outbreak were transmitted to the BVL situation centre and fed into the FIS-VL.

The Task Force's priority aim was to stop the outbreak and identify the causal agent of the acute gastroenteritis as fast as possible.

## **2. The Task Force's strategic approach to identifying the source of the outbreak, and chronology of activities**

The competent food surveillance authorities in the five *Laender* concerned by the disease outbreak immediately started investigations and inspected kitchens linked with outbreak events, already before the Task Force was convened. These risk-based controls of establishments served to inspect establishment hygiene, interview staff members, backup menu plans, and analyse food distribution channels. In addition to that, officials collected retain samples, took samples of foods processed in the kitchens and swab tests of the production environment and had them analysed for pathogens by official laboratories. The Hessian food surveillance authority contacted the main office of the catering company linked with the outbreak immediately after learning about the disease outbreak, in order to inspect measures taken by the company in this context, and collect further comprehensive information. The catering company was very cooperative throughout the outbreak investigations and supported the Task Force and the food surveillance authorities in their work sustainably. The data delivered by the company's main office, namely concerning the flow of goods pertaining to certain products, various recipes and dish preparations, or the tour plans by which menus were delivered out, were very helpful identifying the source of the outbreak and clearly eased official investigations.

An inspection of the company's regional kitchens' menu plans of the week 24 – 28 September 2012 conducted by the Task Force together with the catering company showed conspicuous coincidence with two meals: all kitchens implicated in the outbreak at that time offered the menus "Fish with butter lemon sauce and side dishes" and "Semolina pudding with strawberry compote (stewed strawberry)" in that week. In consequence, the company preventively blocked all component products to these two meals, and some other products which had been bought exclusively for distribution in school and childcare facility canteens in East Germany, in all kitchens in the *Laender* concerned. This preventive measure was agreed with the Hessian food surveillance authorities.

On **29 September 2012**, first results of investigation were evaluated when the situation was analysed during the first meeting of the Task Force. At this point of time it was not yet clear at all what agent could have caused the vomiting and diarrhoea. Based on the onset of disease, and considering the symptoms of disease, it was suspected that either a Norovirus infection or a food poisoning were the cause.

The Task Force found that the outbreak event was extensive and complex, and decided to take a differentiated and risk-based strategy towards further investigations. It asked the Federal Institute for Risk Assessment (BfR) for an opinion which toxins could have potentially caused the gastroenteritic symptoms. The BfR provided its opinion as early as on 02 October 2012, which enabled the Task Force to narrow down the range of suspicious toxins. The fact that the outbreak occurred only in the East German region was explained by the catering company, saying that they had different groups of products and different flows of goods for canteens in schools and childcare facilities in East and West Germany.

On Sunday, **30 September 2012**, the Task Force worked out concrete recommendations for action by the *Laender* authorities in order to collect information through establishments controls of regional kitchens and canteens in schools and childcare facilities, and to register certain foodstuffs which were either used or additionally given out there as a basis for tracing back and analysing the flow of goods. One recommendation concerned the parameters to be tested by the laboratories. On the basis on the given results of human epidemiology, the Task Force recommended that all food samples should be tested for Norovirus and for the toxin-producing bacteria *Staphylococcus aureus*, *Bacillus cereus*, *Clostridium perfringens*, and for the toxins formed by these bacteria.

A review of the menus of the week from 24 to 28 September 2012, carried out by the company, showed that only two meals were common to all implicated kitchens: all had prepared "Fish with side dishes" and "Semolina pudding with strawberry compote" in that week.

On the basis of that information, the Task Force decided to follow a risk-based approach and concentrate further investigations in the regional kitchens on the foodstuffs used in these two menus and on the way they had been prepared. All lots of component products and ingredients used in the two suspect dishes were to be traced back in detail along the food chain, going back to the manufacturer or importer.

The aim of the trace-back exercise was to identify the contaminated foodstuff. This detailed analysis of the flow of goods allows finding out which batches of a food have been used in all locations of the outbreak event, and thus identifying the contaminated food at the source of the outbreak, without actually knowing the causal agent.

An extensive questionnaire for canteens was developed in order not to miss other foodstuffs or beverages which might have been given out apart from the menu, and to get information on the preparation and handling of dishes in the canteens, such as warming up or keeping meals warm over several hours.

On Sunday night, food surveillance authorities of the five *Laender* affected were provided with two lists of questions and keywords about the information to be surveyed. One list served to survey data in the regional kitchens implicated in the outbreak, while the other was intended for surveying the canteens in schools and childcare facilities.

The Task Force also distributed one Excel table to compile data to trace back certain foodstuffs used in the regional kitchens, and another Excel table to record food items and beverages sold in canteens apart from the menu (such as chocolate bars). In addition, food surveillance authorities were provided with a reporting form for transmission of laboratory results.

This gave food surveillance authorities in the *Laender* the necessary tools for co-ordinated action on Monday morning.

Also on Sunday, 30 September, authorities and the catering company agreed the conditions under which the catering company should take its own check samples of the remaining, blocked batches of the particularly suspicious foodstuffs (fish dish, durum semolina, and frozen strawberries). The agreement included the analytic parameters to be tested by the company in the framework of their own checks. The company was asked to instruct their regional kitchens not to destroy, until further notice, any retain and counter samples still kept. They also agreed to question their staff to find out the number of clinically ill kitchen workers, and identify possibly related meals.

From Monday, **01 October 2012** on, the *Laender* continuously reported the information surveyed in the course of investigations into the outbreak and the findings of food analyses to the BVL situation centre. The Task Force summarised the information and laboratory

results and analysed findings. It also fed the information surveyed in the course of outbreak investigations into a central database. Two Excel sheets for compiling data obtained in the risk-based inspections of kitchens and canteens were further elaborated and handed out to the *Laender* authorities in the afternoon of 01 October to aide their transmission of findings to the BVL situation centre.

Compared to the human-epidemiological findings as present on Saturday, 29 October 2012, the situation gave a different overview of the situation on 01 October 2012, 10:00 a. m..

Some secondary cases of disease had been reported in the meantime. While reports of secondary disease cases had been sparse by Saturday, and the predominant hypothesis therefore was that a toxin in a food had caused the vomiting and diarrhoea the meantime reports of secondary disease cases now made it seem more probable again that Norovirus might have been the causal agent. This hypothesis was backed by an increasing number of Norovirus findings in patients, mostly from Saxony.

The Task Force kept up its first hypothesis that the disease outbreak was attributable to a contaminated ingredient or component used in either of the two suspicious menus. But it also pursued on its other two theses, saying that the outbreak might have been caused by strong growth of a toxin-forming agent during a kitchen processing step, or by a contaminated food or beverage sold in the canteens apart from the menu.

A number of findings on 01 October indicated that carrot shreds could be suspicious. The Berlin Brandenburg State Laboratory reported a positive Norovirus finding in a package of carrot shreds which had been used in one of the regional kitchens in Brandenburg to prepare a raw vegetable salad. The sample in question was taken because this kitchen had delivered the suspicious menu "Fish with side dishes" to two schools, but only in one school, children fell ill. These children had got an apple-carrot salad with the fish dish, while the others had not. Yet, a check of the carrot batch trace-back data and of the information available on the salads given out by the different canteens showed that the carrot shred suspicion was not to be maintained. The carrot shreds originated from a Brandenburg manufacturer and had not been delivered to all implicated regional kitchens. And the data collected on preparation and distribution of raw vegetables salads showed that not all implicated kitchens had used carrot shreds in the questioned week.

Investigations in Saxony brought out that the suspicious batch of fish was produced in Lower Saxony and delivered to regional kitchens of the catering company by a Saxon trader. The Task Force informed the authority competent for the manufacturer about this on Monday night and requested them to carry out a risk-based control at the manufacturing establishment, during which samples of the suspicious fish batch should be taken and analysed for potential outbreak-causing agents.

The suspicion linking the disease outbreak with consumption of carrot shreds was finally invalidated on **02 October 2012**. Further laboratory analyses did not confirm the first finding of Norovirus. A detailed analysis of the meals delivered to schools also showed that the canteen at the school where children had not fallen ill had also given out the apple-carrot salad.

Lower Saxony informed the Task Force on 02 October that the competent district food surveillance authority and experts of the Institute of Fish and Fishery Products of the Lower Saxony State Office of Consumer Protection (LAVES) had inspected the manufacturer of the fish dish. During the inspection, they took samples of present and stored production batches and sent them to laboratory. The inspection did not produce any evidence that butterfish or butter mackerel had been part of the catch (by catch) which was processed to the suspicious batch of fish sticks, nor any evidence of fish species being a source of biogenic amines in the production chain. This invalidated the suspicion that indigestible waxes of butterfish could have caused the disease outbreak, a hypothesis which was put forward by the Federal Institute for Risk Assessment (BfR) in the context of an assessment of potential chemical parameters of the outbreak.

Upon request by Hessian authorities, the catering company sent the Task Force comprehensive information about the canteens which had been supplied by the company's 42 regional kitchens in East Germany. They also delivered first tour plans of various kitchen sites, which allowed the Task Force to find out delivery dates and detailed information on the menus delivered to the various canteens.

The Task Force also asked the catering company for batch-related delivery data of the preventively detained foodstuffs. It was agreed that these data, in particular for the kitchens not implicated in the outbreak, should be produced by the catering company main office, because it would have been too time-consuming for food control officers to collect these data during on-site inspections. As a result of a risk analysis, it was also agreed with the company that these data should be collected with highest priority for the products "frozen strawberries" and "durum semolina". Frozen strawberries were particularly suspicious at that point of time, because all implicated kitchens had received the strawberries from one and the same supplier, a Saxon trade company. The catering company had also got knowledge by this time, as a result of staff questioning, of some cases of disease among kitchen staff which indicated a link with consumption of strawberries. The fact that the kitchens had prepared the strawberries in different ways (with/without re-heating after unfreezing) could explain that some kitchens were implicated in the outbreak, while others were not. The semolina, too, came from one supplier to all implicated kitchens, and was therefore conspicuous. The product delivery data requested were to include the following: name of the kitchen where product had been delivered to, supplier of the product, origin of the product, batch number,



date of delivery, amount delivered, date when the product batch was used for preparing meals, and information on the way of preparation (with or without heat) by that kitchen. Also on Tuesday, 02 October, the Robert Koch Institute briefed the Task Force, by telephone and later in writing, on the findings of a first case control study carried out on Monday among students of a high school in Chemnitz, Saxony, which showed that the students who fell ill had eaten the strawberry compote significantly more frequently than the students who did not fall ill. Proceeding from that, the Task Force checked the question whether all regional kitchens had processed the same batch of frozen strawberries with priority. The check could not be finished at that point of time, as food surveillance authorities had not yet raised sufficient amount of batch-related trace-back information.

Task Force members were also working on **03 October 2012**, a national holiday, compiling and assessing present information. The Robert Koch Institute briefed the Task Force about preliminary findings of a telephone questioning of child childcare facilities in Berlin. There was a slight signal of a link between the disease incidence among children and consumption of carrot salad. The Task Force discussed possible explanations of this phenomenon. Either, outbreaks could have developed independently in Saxony and in the other *Laender* concerned, with diseases in Berlin and Brandenburg having been caused by the contaminated carrot shreds used there, or the different food sources causing the illness might be explained by cross-contamination happening in the kitchens. The Task Force considered that raw vegetables salads might have been cross-contaminated while the frozen strawberries were being thawed.

On the morning of **04 October 2012**, the Robert Koch Institute held another telephone conference with public health authorities and the Task Force. The RKI said that there would be another questioning of high school students, this time in Saalfeld, Thuringia, on that day. The Task Force briefed the other participants of the telephone conference about the state of information from the catering company regarding batch-related delivery data of suspicious products. One information was that all implicated regional kitchens had been delivered with one single batch of frozen strawberries. A Hessian officials briefed the conference about the present information on how the strawberries had been prepared in the kitchens (with or without heating), and the fact that some had processed the strawberries without heating as part of desserts.

At a telephone conference afterwards held by the Task Force, it was recommended that the own check findings brought forward by the catering company about that particular batch of frozen strawberries used in the week of the outbreak and about the various ways of

preparation of the strawberry stew should be officially confirmed, where this had not been the case before, anyhow.

In the afternoon, the catering company presented information compiled on the various ways the kitchens had prepared the strawberry compote. A first comparison with the disease incidence in the various places showed that differences in preparation and use of the suspicious strawberries could indeed explain that some kitchen places were affected by the disease outbreak, while others were not. The preparation of the strawberry compote without sufficiently heating it was obviously indeed associated with disease cases in the schools and childcare facilities where the food was delivered to. In contrast to that, those places receiving meals from kitchens where the strawberry compote was stewed (thoroughly cooked) and no other use of strawberries was made, were not affected by outbreak event, as a rule. The flow of goods as it was analysed by the Task Force showed that all strawberries processed originated from one and the same delivery batch of frozen strawberries. For other foods, apart from the durum semolina, no coincidences could be found.

Still later in the afternoon, the RKI informed the Task Force that the questioning of school students in Thuringia had also shown a significant correlation between consumption of strawberry compote and disease. Given the growing suspicion against the strawberry compote, the Task Force asked the Federal Institute for Risk Assessment for an opinion about the tenacity of Norovirus in strawberry compote.

At the same time, there was a laboratory finding of potentially toxin-forming *Bacillus cereus* in cinnamon. But cinnamon was excluded as a source of the outbreak, because the regional kitchens had processed completely different batches of cinnamon received from different suppliers.

In summary, the present findings of epidemiological studies and the analysis of the product flow substantiated the suspicion that the frozen strawberries were the matrix for the pathogens causing the disease outbreak. The suspicious batch of frozen strawberries had been imported from China by a specialised trading company resident in Saxony, via the port of Hamburg.

At the telephone conference on **05 October 2012**, the Robert Koch Institute reported that several case control studies had now established a definite link between consumption of strawberry compote or other food containing strawberries, and occurrence of disease. Also, human epidemiological findings and laboratory findings (including by state laboratories) in samples taken from patients provided increasing evidence that Norovirus was the disease-causing agent. The *Laender* Saxony-Anhalt and Saxony reported about two more outbreaks of disease in canteens in Saxony-Anhalt on 27 September 2012 and in Saxony on 03 and 04 October 2012. These had not been supplied by the catering company, but by two other

caterers, but the diseases could also be correlated with consumption of strawberry desserts. The overwhelming number of findings and circumstantial evidence with regard to frozen strawberries prompted food surveillance authorities to take corresponding preventive measures of consumer protection.

In consequence, the competent Saxon food surveillance authorities carried out another risk-based establishment control at the company, during which they checked the company's measures taken to block and withdraw the incriminated strawberry lot. The company tabled all documents relating to the import of nearly 44 tons of the implicated frozen strawberries from China. The investigation also showed that parts of the implicated batch had been delivered to many more canteens in institutions in ten *Laender*. Saxony therefore prepared a notification to the Rapid Alert System for Food and Feed to inform the European Commission and EU Member States.

The Task Force's telephone conference of that day summarised the findings of investigations into the food-related side of the outbreak event and the measures taken as per 01 October 2012, 03:30 p. m.

At the weekend of **06/07 October 2012**, Task Force continued to feed new data into the database developed for the purpose of investigating the outbreak, analysed information, and compiled surveys of present investigation findings. The Federal Institute for Risk Assessment (BfR) submitted its opinion on the presence of Norovirus in strawberries and assessment of the tenacity of Norovirus in stewed strawberry compote and in compote prepared cold in the afternoon of 06 October 2012. The BfR concluded that heating the fruit to core temperatures higher than 90 °C or persistent temperature above 70 °C seem suitable to completely inactivate the virus. In contrast, it must be assumed that just stirring frozen strawberries in boiling water, or boiling a large amount of stew only shortly, will not efficiently inactivate Norovirus present on the fruit. As it was suspected before, the different ways of preparing the strawberry compote might be the cause of the unequal incidence of disease, as not all kitchens which used the implicated batch of frozen strawberries were linked to disease cases later, but only a few regional kitchens in East Germany.

Investigations into the separate outbreaks in canteens in Saxony-Anhalt on 27 September 2012 and in Saxony on 03 and 04 October 2012 confirmed that the canteens, which had been supplied by other caterers, had also used frozen strawberries of the implicated batch. Accordingly, the Task Force recommended on 07 October that the competent *Laender* authorities carry out risk-based establishment controls and investigations in these two regional kitchens.

In the morning of Monday, **08 October 2012**, Saxony's State Laboratory for Health and Veterinary Investigations reported that the Consumer Protection Authority of Saxony-Anhalt, which had analysed samples of the suspicious lot of frozen strawberries for Saxony under a cooperation agreement, had found Norovirus in an original 10-kg package. Three samples of the lot were tested, but Norovirus was found only in one of them. This indicates unequal contamination of the strawberry batch, which again explains to some extent the heterogenic situation of the outbreak (i.e., the fact that strawberries were in some places handed out and consumed without disease occurring). By means of the official laboratory evidence of Norovirus in frozen strawberries, together with the epidemiological studies conducted by RKI and the Task Force's analysis of the product flow, the outbreak of acute gastroenteritis among children and adolescents in Germany could be clarified.

### **3. Task Force investigation results**

#### **3.1. Analysis of food and environmental samples**

Authorities of the affected *Laender* analysed a total of 487 food samples and 297 environmental samples in the context of outbreak investigations by 08 October 2012, 01.00 p. m. Table 1 shows a detailed survey of analytic results. One of the samples of the suspicious lot of frozen strawberries was found positive with Norovirus. As test methods for Norovirus in foodstuffs are not sufficiently sensitive enough, false negative results may be possible.

#### **3.2. Epidemiological findings on the food side of outbreak investigations, and compilation and analysis of data**

Cases of disease occurred in canteens (child childcare facilities and schools) in five German Federal States namely, in Berlin, Brandenburg, Saxony, Saxony-Anhalt and Thuringia. According to the present knowledge schools and childcare facilities with disease cases had been supplied with food by 13 regional kitchens of the Hessian catering company. The company runs about 40 regional kitchens in East Germany, that means, only some of the kitchens were linked to the outbreak. It also showed that diseases occurred only in some of the schools and childcare facilities supplied with food by the 13 implicated kitchens in the period in question. Two more outbreak events, which were considered in this context only later, were linked with kitchens of two other caterers. Information on these two events of outbreak was not yet complete when this report was written.

The extent of the outbreak alone made it necessary to consider and process large amounts of data and information while investigating the food-related side of the outbreak event. All data about the regional kitchens implicated in the outbreak, data serving to trace back the

foodstuff lots used by the kitchens to prepare the two suspicious meals, about the schools and childcare facilities supplied with meals in the period of the outbreak, and human epidemiological information about the disease cases were processed and fed into one database.

For the purpose of food-related epidemiological investigations in the schools and childcare facilities, data sets of various sources had to be linked to each other. Specifically, the matter was to link up information from public health authorities about disease cases at schools and childcare facilities with information present at the food surveillance authorities.

In a first step, information from the RKI (a so-called line list) listing 500 schools and childcare facilities with cases of disease was used as a basis to link to food-related parameters.

Linking the schools and childcare facilities to regional supplier kitchens was possible through lists provided by the catering company.

The next step was to add data on menu plans and food portions delivered during calendar week 39. Attention focussed on menus and menu components with strawberries of the suspicious batch. The data were supplied by the *Laender* authorities and the catering company, and covered a variety of aspects: menu tables, delivery tour plans, order lists, and trace-back data for strawberries and other foodstuffs used in the regional kitchens and information collected during the official kitchen inspections.

This approach was very successful with one of the regional kitchens in Berlin, for example.

This kitchen processed strawberries of the suspicious batch to strawberry compote which was offered with two menus on 25 September 2012. 86 canteens in schools and childcare facilities could be linked to this kitchen. Menu plans could still be obtained for 72 of them. In 44 of the 72 canteens, there were cases of disease as defined by the RKI, and 34 of these 44 canteens, with a total number of 1,275 disease cases, had been supplied with menus or menu components including strawberries. Four canteens with a total of 30 cases had not received any strawberries. For six canteens, with a total of 195 diseases, no menu plans were available. None of the canteens which had received meals with strawberries could not be linked cases of disease. Despite of the statistical uncertainty as there is no data about the individual consumption of strawberries, a correlation can be concluded from a food epidemiological point of view.

Table 2 gives a survey of information compiled by the Task Force about 15 regional kitchens, regarding the canteens supplied by them, the occurrence of diseases in these canteens, and the way of preparation of strawberry compote and distribution of deserts with raw strawberries.

#### **4. Measures taken with regard to the implicated batch of frozen strawberries**

After the increased disease incidence became obvious, the Hessian catering company had immediately induced the comprehensive blocking of products in all East German regional kitchens as a precaution in agreement with the competent food surveillance authorities. Apart from blocking product, the company also started cleaning and disinfection measures in their establishments, compared menu plans, traced back product, questioned staff, and initiated their own laboratory analyses of samples of blocked product.

The Saxon trading company followed the advice of the local competent authority and immediately blocked the suspicious strawberry batch internally (ca. 30.7 tons). On 05 October 2012, the company began the withdrawal of the remaining product of the suspicious batch from all customers (a total of 13.3 tons had been delivered out to customers). The measures were immediately controlled by the competent Saxon food surveillance authority. An inquiry directed by the Task Force on 07 October 2012 to the food surveillance authorities of the *Laender* where the trading company had delivered the frozen strawberries also showed that the blocking and withdrawal of the implicated product was officially controlled. In case there was stock left, authorities also took samples of remaining product of other lots and had them analysed by a laboratory. Implicated kitchens in Thuringia are currently operating under official control, and persons who carry the virus have been banned from working.

On 05 October 2012, Saxony transmitted the draft of an RASFF notification to the BVL, who passed it on to the European Commission's RASFF contact point on the same day. The commission then notified it

The public was informed about the state of investigations through joint press statements by the BVL, the BfR and the RKI on 05 and on 08 October 2012.

**Table 1: Sample numbers and laboratory findings as per 08 October 2012 - 13:00 h.**

<i>Land</i> (state)	Number of food samples	Number of Environmental samples	Findings in food samples Norovirus	Findings in food samples Microbiological	Findings in food samples Toxins	Findings in environm. samples Norovirus	Findings in environmental samples Microbiological	Findings in environmental samples Toxins
BE	111 + 6 samples tested by BfR + 10 samples tested by Bavarian State Laboratory (LGL/BY)	169	All Norovirus negative	All without microbiological findings	6 samples tested by BfR for <i>S. aureus</i> – ET negative; 10 samples tested by Bavarian State Lab for <i>C. perfringens</i> (ET negative); <i>B. cereus</i> (4x NHE positive, 3 findings concern food not implicated in the outbreak, 1 finding concerns semolina pudding. The cfu count in all findings is not sufficient to induce disease).	All Norovirus negative	All without microbiological findings	No tests conducted
BB	52; more Samples are being tested.	22	All Norovirus negative	All without microbiological findings	Tests ongoing	All Norovirus negative	All without microbiological findings	No tests conducted
SN	146	24	<b>1 sample of frozen strawberries positive for Norovirus!</b>	Tests for toxins ongoing	Tests ongoing	All Norovirus negative	No information	No information
ST	50	55	20 samples Norovirus negative	14 samples <i>B. cereus</i> , 10 samples <i>S. aureus</i> negative, 8 samples <i>C.</i> <i>perfringens</i> negative	7 samples <i>S. aureus</i> SET negative 3 <i>B. cereus</i> emetic toxin negative	55 samples Norovirus negative	-	-
TH	112 tests completed	39	Not tested for  1 retain sample sent in for analysis	9 <i>B. cereus</i> , 1 <i>C. perfringens</i> positive	3 <i>B. cereus</i> Diarrhoea toxins positive	Not tested	4 <i>B. cereus</i> positive	1 <i>B. cereus</i> Diarrhoea toxin positive
$\Sigma$	<b>487</b>	<b>309</b>						
		<b>796</b>						

**Table 2. Survey of information compiled by the Task Force about 15 regional kitchens, regarding the canteens supplied by them, the occurrence of diseases in these canteens, and the way of preparation of strawberry stew and distribution of desserts with raw strawberries.**

Land (state)	Name of kitchen	Were strawberry lots traced back?	Establishment inspections carried out?	Number of canteens supplied with meals	Number of canteens with reported disease cases	Information on how strawberry stew was prepared		Information on other deserts with strawberries	RKI studies in school canteens supplied with meals
						By caterer	Official		
BE	Caterer Berlin	✓	✓	269	44	Heated	Cooked; some portions cooked only briefly		<i>Gymnasium</i> (higher secondary school) in Steglitz, Berliner Kindertagesstätten
BE	Caterer Berlin 2	✓	✓	36	14	Cold	Cold		
SN	Caterer Sachsen 1	✓	✓	21	14	Cooked briefly	Cooked briefly		
SN	Caterer Sachsen 2	✓	✓	38	1	Cooked	Cooked		
SN	Caterer Sachsen 3	✓	✓	33	4	Cooked briefly	Cooked briefly		Higher secondary school in Chemnitz
SN	Caterer Sachsen 4	✓	✓	38	26	Cold	Cold		
SN	Caterer Sachsen 5	✓	✓	75	47	Stirred in boiling water	Stirred in boiling water	Soft curd desert with few strawberries	
SN	Other Caterer Sachsen 6	✓	✓	At least 12	12	--	Cold	Thawed strawberries in yoghurt	
BB	Caterer Brandenburg 1	✓	✓	150	64	Cold	Cold		
BB	Caterer Brandenburg 2		✓	67	16	Cooked and cold	Cooked and cold	Non-heated strawberries in yoghurt	
TH	Caterer Thüringen 1	✓	✓	61	12	Cooked	Cooked		
TH	Caterer Thüringen 2	✓	✓	38	24	Cold	Cold	Stew only	Higher secondary school in Saalfeld
TH	Caterer Thüringen 2	No sales of strawberries	✓	62	2	No strawberry dish	No strawberry dish	No sales of strawberries	
ST	Caterer Sachsen-Anhalt 1	✓	✓	74	4?	Cooked	No information		
ST	Other Caterer Sachsen-Anhalt 2	✓	--	At least 4	4	--	Cold		