

MANAGING FOOD CRISIS: LESSONS FROM THE E.COLI OUTBREAK IN GERMANY 2011

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SLIDE 2

Thank you very much for this nice introduction.

Thank you also for having me.

Brian asked me to prepare a presentation on the German E.coli outbreak in Spring this year. I accepted gladly as it gave me the opportunity to reflect on what had happened, myself.

I am going to give you a history of the crisis, and as with any good history lesson I will try to distill what we can learn from it. So let's start.

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Like many of these catastrophes the crisis came without warning.

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On May 25th, the Robert-Koch-Institute, a government institution belonging to the federal ministry of health, issued this rather innocuous press release. It informed about 140 incidents of an E.coli infection of a rather serious variety, called EHEC. It also reported 3 deaths.

And it gave a consumption warning on fresh cucumbers, tomatoes and lettuce.

When we were informed about this by BLL, the leading association of the German food sector on that day we couldn't possibly know or expect what would happen next.

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On May 26th, the biggest German newspaper, a tabloid called BILD -- or PICTURE in English -- titled "EHEC: Horror-Germs Kill Three People". And from then on the catastrophe unfolded.

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Immediately the market for fresh cucumbers collapsed.

What you see here is a chart of the number of households buying fresh cucumbers in any given week during the summer months. The blue line depicts the share of households buying fresh cucumbers as an average of the years 2007 through 2009. That's a typical consumption pattern.

The green line shows the corresponding data for 2011. As you can see, demand was in free fall immediately after the press release on May 26th. The first vertical line from the left shows that date.

So, after having been on an upward slope for 3 weeks, the share of households buying fresh cucumbers dropped from 25 % to less than 8 % in only a couple of weeks.

The second vertical lines signifies June, 10th, when the true cause of the E.coli outbreak was finally found and cucumbers were rehabilitated. As you can see demand had already taken up again. But it is only after consumers had a reason not to worry any more that the demand pattern begins to look "normal" again. Even if on a much lower level than in ordinary years.

The third vertical line, on the right, shows July 26th. On that day the E.coli outbreak was officially declared over by the German authorities. In my eyes it is only after this that demand can be said to be back to "normal".

Mind you, in my association, in BOGK, we are not primarily

talking fresh cucumbers. In fact, none of our members deals with fresh cucumbers -- other than transforming them into pickles.

So what really interested us of course was how this crisis affected sales of pickled cucumbers. I have a similar chart for that. But bear with me, I will come to that later.

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In order to understand the impact of the E.coli outbreak in the summer of 2011 you first need some background information on the market. Let's just look at the market for pickles in Europe.

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The total market for pickled cucumbers in Europe is worth 660 m Euro per year. At the current exchange rate that roughly equals 900 mn US-dollars. In volume terms this corresponds to a consumption of 483,000 t.

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However, not all of this is produced in Europe.

There are net imports of 64,000 t per year -- or 13 % -- from sources outside of Europe. I can only take a guess but I would think most of this comes from Turkey and India. Imports are in the form of finished products but also semi-finished products.

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Let's take a closer look at production and trade patterns within Europe. You can make an astonishing observation. Only half of all of European pickle consumption is produced "locally". In other words, every other pickle sold in Europe has crossed a national border, and a sizeable percentage has actually crossed a border to a non-European country.

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Now let's take a closer look. In this chart you can see a breakdown of the top 5 countries ranked by volume of consumption. As you can see, Germany is by far the biggest, followed by Poland, France, the United Kingdom and Austria. The German consumption of 175,000 t is roughly one third of the European consumption. The top 5 together account for 350,000 t or 72 % of the total.

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It gets more interesting when looking at imports and exports, too. You will see, Germany is a net exporter of 55,000 tons -- the yellow and the green bar together are those 230,000 tons of pickle production in my country.

All the other big consumers of pickles in Europe are net importers. France imports almost all of its consumption. And the UK actually imports every little bit. (I have to say I am not too sure about that as I happen to know two companies in the south of England that make delikatessen and pickles. I am going to enquire with them about the validity of these data. In any case, I don't think there's any really big pickle production in the UK.)

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Take a close look at cross-border pickle trade in Europe. And you will see that the total German pickle exports are actually quite big compared to the net export of 55,000 t I just showed you. There's also a lot of import going on.

What this means is that the German pickle market is a very competitive place. In consequence you will find a very low price level for pickles, here. And to counter that there are many varieties on the market, each trying to establish its own niche where competition is somewhat weaker and margins more robust.

In part this is due to a very concentrated retail sector. The five biggest German retailers have a combined market share of 80 %. They can be named quickly: Edeka, REWE, Lidl, Aldi, Metro. Competition is cut-throat.

In 2006, even Wal-Mart had to learn this lesson. After 9 years of unsuccessful operations they retracted from the German market.

In our association there are 24 members doing pickles. There are a few more outside of BOGK, but the total number is not much larger. Most are SMEs, not even the biggest come close in market power to one of the big 5 retailers.

The risk of de-listing, i. e. of losing one of them -- any of them -- as a customer is enormous: It can mean a cut in turnover of 20 to 30 %. No producer is willing to face that easily and so each is in a weak bargaining position.

Take a quick look at the other countries in this chart.

The Netherlands: The port of Europe. Imports equal exports. The country didn't show up among the top five consumers (in fact it's number 10). So basically it's just a place for trans-shipment.

Next, Hungary: It's still quite a rural country, with a big fruit and vegetable production, mostly for further processing. The country produces half of European sweet corn, red peppers, and lots of deciduous fruit. It also produces and exports 16,000 tons of pickles every year. A number of our German members have factories in Hungary.

Last, Poland: You see an export of 11,000 tons per year even though, as you will remember from the previous chart, Poland is a net importer of pickles. Quite astonishing, but so.

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Against this background, let's now start with our actual topic:
The German E.coli crisis 2011.

For the sake of this presentation I have tried to break down the chronology of the crisis into chapters, or phases. I have come to identify five distinct phases.

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As I have said in the beginning the Robert-Koch-Institute issued a health warning on May 26th. The events leading up to this make up phase 1, when a serious, possibly food-related health problem was discovered in Hamburg.

Since early May an outbreak of haemolytic uraemic syndrome (HUS) and bloody diarrhoea had been observed in Germany. These cases could be related to infections with Shigatoxin-producing E.coli -- also called EHEC.

Most of the cases reported were observed in the north of Germany, in and around Hamburg, while patients reported in 15 other countries in Europe and America can be shown to have been traveling to this area in Germany before.

It became clear very quickly that this time the outbreak was far from ordinary.

Each year, on average 1.000 symptomatic EHEC infections and approximately 60 cases of HUS are notified in Germany.

In early May 2011 the number of HUS cases approached the normal annual average within a week.

Also, there was a very atypical age and sex distribution of the cases. Typically young children and the elderly are more prone to the infection, but this time around most cases were reported

for people in their 30s and 40s.

EHEC cases have to be reported to the Robert-Koch-Institute.

Robert Koch, born in 1843 and lived until 1910, was a German physician. He became famous for isolating the anthrax, the tuberculosis and the cholera bacilli and was awarded the nobel prize for medicine for his tuberculosis findings in 1905. In 1891 became Director of the new Prussian Institute for Infectious Diseases, which was eventually renamed as the Robert Koch Institute.

The institute's mandate is to investigate outbreaks of infectious diseases such as the 2009 swine flu. It also plays a role in advising the German government. The Robert-Koch-Institute today is a Federal Institute within the portfolio of the German Ministry of Health.

So it wasn't before long that scientists from the Robert-Koch-Institute went to the hospital in Hamburg where most EHEC cases had been reported in order to start a case study.

On May 23rd the Institute gave a preliminary report. It said one possibility could be a spoilage of vegetables through impure irrigation water. But it also said it was too early to precisely indicate the source of the outbreak and it warned to rush to conclusions about the safety -- or otherwise -- of vegetables.

This immediately prompted the co-operatives of vegetable farmers in Germany to commission lab tests. In the weeks to follow thousands of samples of vegetables were tested, the majority by the government but many by the private sector. The most puzzling thing about the German EHEC crises in 2011 was that almost nothing was actually found.

What was found, though, on May 24th was the precise strand of E.coli involved.

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I don't have to introduce you to E.coli in general.

The particular strand found in Germany is known as O104:H4. It was known before, but it had been rare. So, it had never been reported in Europe before. Importantly, a German study has shown that this kind of strain generally affects adults more than children.

Now, the problem was: How did O104:H4 get into the food chain, and what could be done about this?

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Investigations focused on raw vegetables. A case-control study, with 25 cases and 96 controls, conducted by the Robert-Koch-Institute and the health authorities in Hamburg demonstrated a significant association between the disease and the consumption of raw tomatoes, fresh cucumbers and lettuce.

So on May 25th, the Robert-Koch-Institute decided to issue a consumption warning which recommended to abstain from consuming these products, especially in northern Germany, until further notice.

At this point, the crisis entered phase 2.

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Phase 2 was the time when officials looked in depth at what at first they thought would be the cause -- and it seemed this was found very quickly.

It was just one day after the official consumption warning that the local health office in Hamburg informed the press that there was a strong link between EHEC cases and the consumption of fresh cucumbers originating in Spain.

Mind you, they didn't have any lab findings to actually verify this claim, but nevertheless: The culprit was named.

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As a reaction, consumers, being highly alerted, stopped buying fresh cucumbers, tomatoes and lettuce at once. What is more, they also limited their consumption of other vegetables such as other kinds of salad, peppers and zucchini for fear of unsafe food.

Retailers put out signs declaring their products were definitely not Spanish -- as you can see here. I am ashamed to show you this picture. I thought we we would never see such signs in German shops again.

And although some even tacked lab results to their shelves showing the products had been tested and were free of contamination sales plummeted. Consumers' trust had been upset.

Over night, a market collapsed. But it got worse.

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On May 27th, the Hamburg health office reported that they had actually found EHEC bacteria on Spanish cucumbers. Now they had proof. With this they triggered the alert system in Europe.

Consequently, the European Food Safety Agency, EFSA, issued a health warning on the Rapid Alert System for Food and Feed. This meant the whole of Europe was now informed that there was an problem in Germany and that it could be traced to Spanish cucumbers.

It's now time to look at the setup of European food safety management.

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At the very bottom local food inspection agencies perform regular inspections in food outlets. They report their findings to the ministries of agriculture in the 16 German states, or Länder who in turn report incidents to the Federal Office of Consumer Protection and Food Safety, BVL.

The BVL belongs to the German Federal Ministry of Food, Agriculture and Consumer Protection, BMELV. The BVL's job is to co-ordinate the work in the Länder with that on a federal level and European level. Plus, it is responsible for communication to the outside world. Also it links up with EFSA.

So in this case, the report from the EHEC outbreak in Hamburg was transmitted up to EFSA -- along the way enriched by the findings of the Robert-Koch-Institute, and back from EFSA into all EU member states.

And EFSA didn't underestimate the problem. In fact they rightly spoke of one of the worldwide greatest E.coli outbreak in history, even though it was still restricted to Germany.

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This chart is meant to give you a first visual indication of the problem. We are on the eve of May 30th. The number of new cases has already gone down again. But the sheer count of infections so far is enormous.

(The columns show new infections by day. The different colours simply refer to different batches of studies.)

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So with this European health warning, we enter phase 3, or, a phase of chaos. The worst day is May 30th.

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Because, on May 30th, everyone in Germany starts quick, decisive and utterly unco-ordinated action.

The health office in Hamburg begins with a sweeping inspection at the wholesale market. They find no EHEC on cucumbers from Spain. I say that again: They find no EHEC on cucumbers from Spain. A few days later they will admit: Spanish cucumbers were not the source of the infection.

Still, the German states issue their own consumption warnings and ad-hoc legislation. The state of Northrhine-Westphalia, for instance, mandates that Spanish cucumbers must not be sold unless they carry a test certificate and prove to be free of EHEC. Other states recommend not to use fresh produce in restaurants and canteens. It's a mess.

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Look at Germany. There are 16 states. The dark red ones are those with the most EHEC cases in early June. But almost all rush to action.

Is there help from the Federal Government? Not really. The federal ministries of Agriculture and Health convene without result.

The federal government feels that it must base health and consumption warnings as well as decrees and other types of legislation on sound scientific evidence. But there isn't any. Still all we know at this point is that there is a major outbreak of E.coli infections in and around Hamburg, probably linked to consumption of vegetables. There is no clear evidence as to which vegetables carry the germs and where they might have come from. The incubation period of 4 to 12 days is too long to trace back infections at this point.

Yet, it dawns on people that it's not the Spanish cucumbers. But nobody knows for sure. So the official health warning for fresh tomatoes, cucumbers and lettuce stays in place and nothing else comes from the federal government.

The Parliament in Berlin, in turn, the Bundestag, debates EHEC in an extraordinary session, and, no surprise here, doesn't offer a solution either.

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However, others react. Most notably, Russia bans imports of all vegetables from Germany and Spain.

This is especially painful for farmers as Russia traditionally is a market where surplus production will be exported to. Now there are no domestic sales any more and the one valve for overproduction is closed.

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On May 30th, even the German pickle industry felt the crisis had reached us.

So, BOGK drafted a one-page press release which was released the next day. It was meant to calm the press and reassure the customer. Its core message: "Pickles are safe."

It basically said that in the process of washing, processing, filling in brine and -- especially -- pasteurizing, E.coli doesn't stand a chance of surviving. Customers could safely buy pickles and canned vegetables.

We didn't go so far as to point our finger at the farmers and fresh producers.

But to be in cheek we hoped the message would be understood and customers would shop for pickles and canned vegetables as an

alternative to fresh vegetables. Did it work? Well, I am not giving it away yet.

In any case we stopped there and didn't put out any more press releases on the subject. The press was full with horror stories anyway.

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This is a small compilation of pictures that were run in the BILD tabloid. Pictures that show children in hospital, pictures that show officials in jumpsuits taking probes, pictures showing the police closing farms. The press was full of that. The guy in the bottom right is not actually happy. He is Norbert Meier, coach of Fortuna Düsseldorf who in June forbid his players to eat any fresh vegetables.

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Four weeks after the first reports of EHEC cases there still is no evidence as to the vehicle carrying the disease. Spanish cucumbers had been proven to be out of the equation. (Though still sales didn't catch up.)

At this point, doubts are being voiced on the involvement of vegetables altogether. (Though still Russia extends its import ban to all vegetables from all of the EU.)

Now talks are of the germs originating in biogas production plants. Or being transmitted from human to human only. Or coming from contaminated irrigation water. Officials track the logistics chain up and down. Many mistrust hygiene in restaurants.

There is one big question and no answer.

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It took until June 3rd, one week after the first scare, and one month after the first reported EHEC cases, that the federal government took proper action.

On June 3rd it brought together all the experts on federal and state level to work together when it instituted a Federal Task Force to tackle the crisis.

Luckily, this brought about the solution very quickly, even though in a very unexpected corner.

Taking control of the problem by the federal government also meant that those wild regulations by the states were repealed again.

And this is the beginning of phase 4: finding the source.

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In order to understand the composition of the task force, let's look at this picture once more. In fact it isn't that simple. There isn't just this one straight line of command. Instead there are many more bodies involved.

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In Germany there are two bodies reporting to the Federal Ministry of Food, Agriculture and Consumer Protection, BMELV. Alongside the BVL there is the Federal Office for Risk Assessment, BfR, that advises the Federal Ministry scientifically. I have spoken already about the Robert-Koch-Institute, or RKI, that reports to the Ministry of Health, BMG. Together with EFSA and experts from the States, or Länder, they were all brought together in this task force.

When they finally got together, all of a sudden they were able to work in a very structured and scientific way and arrive at some hard facts astonishingly fast.

First was stock taking. After analyzing 1.500 samples no E.coli 0104:H4 had been found. One had to think along new routes. The task force started again at Hamburg. By that time, a lot of information was available on patients, where they had eaten, what they had eaten, where the food had been bought and so on.

It must be said, the European legislation mandating traceability of food along the food chain really helped. It helped identify the restaurants where the infections must have started, it helped identify the ingredients of the meals served, and it helped trace back the origin of those ingredients.

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With a technique called cluster analysis the task force was able to find out -- within three days -- that the true source of the outbreak must be raw sprouts that were packed in a facility north of Hannover (or south of Hamburg).

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Here is a picture.

On June 6th a consumption warning governing these sprouts was issued. Following the precautionary principle the Federal government still kept the consumption warning on tomatoes, cucumbers and lettuce, but the general public felt a little relief already.

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Politicians, and the farmers' lobbyists, quickly turned to the question of compensation.

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The farming co-operatives made up this calculation:

* In Spain which was hit by a de-facto import ban from Germany but also Italy and other EU members states as well as a proper import ban from Russia, a weekly loss of 200 mn Euro was calculated.

This accounts not only for lost turnover and lost profits but also for the cost of sampling and testing plus destruction of unsold produce.

* Italy made up a similar calculation and arrived at 100 mn Euro.

* The Netherlands reported a loss of 50 mn. Euro per week.

* German farmers calculated 30 mn. Euro loss per week or 5 mn. Euro per (working) day.

And so on.

With regard to this the European Commission made a proposal and settled on compensating 30 % of losses altogether. They allocated 210 mn. Euro for this.

Obviously the Commission didn't want to reimburse all of the losses with taxpayers' money.

I don't want to go into details here. BOGK was involved because a few of our members sell fresh lettuce and salad, and one sells fresh and canned sprouts. We tried to secure European money for them, too. But farmers had a stronger lobby, so we didn't get very far.

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But let's get back on track. The results of the cluster analysis by the task force were confirmed on June 10th. The Robert-Koch-Institute limited the consumption warning to raw sprouts originating from the one suspect facility north of Hannover.

Tomatoes, cucumbers and lettuce were safe again.

We have arrived at phase 5: back to normal.

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The rest of the story can be told quickly.

Just as they had shied away from fresh salad until June 9th, consumers rush back to buy fresh cucumbers, tomatoes and lettuce again now.

During the next days the vehicle of the E.coli outbreak is scientifically verified to have been the sprouts, with the seedlings having come from Egypt. Correspondingly, the EU bans imports of sprouts from Egypt. And Russia opens its borders for European vegetables again.

Finally, on July 26th, the outbreak is officially declared over.

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Now, what can we learn from the crisis and its handling?

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Let's look at the numbers once more, in a slightly different chart. Again, it shows the number of newly infected patients each day from May 1st through July 4th. The dark blue columns indicate the share of HUS patients.

During that time period, in Germany, 3,742 EHEC infections were recorded. 855 patients developed the serious complication HUS. And 53 patients died.

In total, 16 countries in Europe and north America reported 4.075 cases of infection and 50 deaths until July 21st.

We also see that the peak of the outbreak occurred on May 22nd -- one day before any official communication even started. All the political action following, on local level, on Länder level or on federal level, looks -- in hindsight -- as if it didn't actually help very much. Indeed, since the first consumption warning covered products that weren't actually the vehicle of the infection, early government action really did have little effect on the outbreak. Only in so far as people abstained from eating fresh salad -- which sometimes is garnished with fresh sprouts -- did these early warnings possibly save people from contracting the illness.

On the other hand: What should the government have done? Not warn that there was a potential threat on cucumbers? At the time the scarce information available strongly hinted at there being a problem. The precautionary principle enshrined in European law made it necessary to act.

It can be argued, though, that official action ****and**** communication should have been much better co-ordinated between local health authorities (this time in Hamburg), State ministries and federal government. And it should have started much earlier.

Assuming that an earlier co-ordinated search for E.coli would have brought about results faster, also communication to the public could have been clearer. And more importantly it would have come from one single sender. Instead we saw

- * first, the Robert Koch Institute's warning on tomatoes, cucumbers and lettuce in north of Germany
- * second, the Hamburg health authority's blaming of cucumbers from Spain,
- * third, the task force's finding of raw sprouts as the true source of the outbreak.

This created mistrust.

And this general mistrust extended to press statements from farmers and industry, too. Even affixing lab test results to crates in retail stores helped little to keep up demand.

I can assure you though that farmers went out of their way to communicate about the safety of their products. They funded lab tests for more than 7,000 samples. They actively supported the government and its agencies in finding the true cause of the outbreak. It can be said that they played a vital role in ending the scare rather quickly once the task force had been set up.

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I have shown you this chart earlier. The core of the crisis is marked by the two decisive press releases: First, the consumption warning, second its release.

Let's finally turn to the impact of this crisis on sales of pickled cucumbers. Did consumers turn to pickles as an alternative to fresh cucumbers?

Here it is.

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What can we make of this?

First, the share of households buying pickles is on average much lower than the share of households buying fresh cucumbers.

Second, before the crisis, consumption in 2011 was below average of the previous years -- very similar to the chart before.

Third, when the crisis started, we do indeed see an increase in the consumption of pickles that wasn't to be expected just from

historical data. The spike in the graph appears to be shaped opposite to the lump in the chart before.

So we can assume that there was at least some shopping for alternatives going on.

Fourth, though, this effect was quite small. What is puzzling, too, is that there is another spike in the 26th week, after the consumption warning had been lifted. It may perhaps be attributed to the BBQ season, but more analysis will have to be made on this.

Fifth, after the official end of the outbreak, the consumption pattern seems to be entirely back to normal again.

So let's assume pickle producers profited a little. From what our companies tell me, demand for pickles and canned vegetables in general was indeed quite robust and certainly didn't drop during the summer months 2011. However, general consumption patterns were not changed in these few weeks. But it seems that at least some restaurant and canteen chefs remembered what could be done with pickles and canned vegetables and so a mini renaissance for these products may have been induced, if only in the catering business.

However big or small the effects, what can be said though is that consumers, and thus markets, react very quickly.

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I have reached by last chart. Let me sum up:

- * The German E.coli crisis was a shock. It sent thousands of people to hospital, more than 50 died.
- * For the fresh market, it was said to be the biggest catastrophe since Tschernobyl.
- * Officials and the general public felt quite helpless, especially at the start.

So the lessons as I see them are these:

1. Administrative co-operation is key. And it must happen fast.
2. Communication with the public must come from a central sender, its wording must be precise, and it must also be fast.
3. Markets react quickly. And there is hardly any way to control them in the short term.
4. Still action is necessary -- for the government and for trade associations. After all we need to find the causes and end the scare as fast as possible. But for markets and many patients most of this is doomed to be too late.

The one thing we can do, though, is work on hygiene levels and food safety in general -- in order to prevent outbreaks of E.coli (of any magnitude) as best as possible.

I think the regulatory framework for this in Europe is in good shape. In Germany we will have to work on more co-operation but still, procedures are in place, experts are at hand.

Interestingly, a new web-site was put up last Friday, where in the future, all health warnings by the 16 German states are published in a central location.

Industry also is geared up. Especially vegetable canning and pickle production. With produce undergoing pasteurization or sterilization there is hardly any chance for E.coli to crop into our products.

Do we need to do more testing? Maybe. Although I am not sure how realistic it is to test all production and all imports.

After all, despite many good measures we take against such outbreaks, ultimately we are in God's hands.

So, since we are in Las Vegas, the bottom line is "Better luck next time!".

THANK YOU.