



EHEC O104:H4

Outbreak in Germany

Chronology of the outbreak

Structural Approach of the Investigation

The German EHEC Task Force

Final Results

Chronology and Risk Communication of the EHEC outbreak in Germany (Food Safety)

- Begin of the epidemic disease with diarrhoea (HUS) in the second week of may
- Result of the first case study on may 25th: Food could be involved, especially tomatoes, cucumbers and lettuce
- RKI and BfR informed on may 25th not to eat raw tomatoes, cucumbers and lettuce from northern Germany
- Second case study of RKI on may 29th confirms the results of the first case study
- Recipe-based restaurant cohort study of RKI identifies sprout consumption as cause of disease in Lübeck restaurant
- RKI, BfR and BVL informed on June 10th that you can eat raw tomatoes, cucumbers and lettuce from northern Germany, but you should not eat raw sprouts
- RKI, BfR and BVL informed on July 5th about the end of the outbreak in Germany and the management measures taken by the German authorities
- The authorities also retained their recommendation not to eat raw sprouts

More than 10,000 samples
were taken and analyzed by the responsible German authorities

E. Coli O104:H4 could not be
detected and confirmed in any food of plant origin

Probably the method doesn't work for food of plant origin

Probably the detection works,
but the step of enrichment might be the problem



**It is very difficult to detect
low STEC contamination levels in seeds and sprouts and
there is no validated method up to now**

Outbreak investigation – three possible instruments

epidemiological investigation by the medical side 

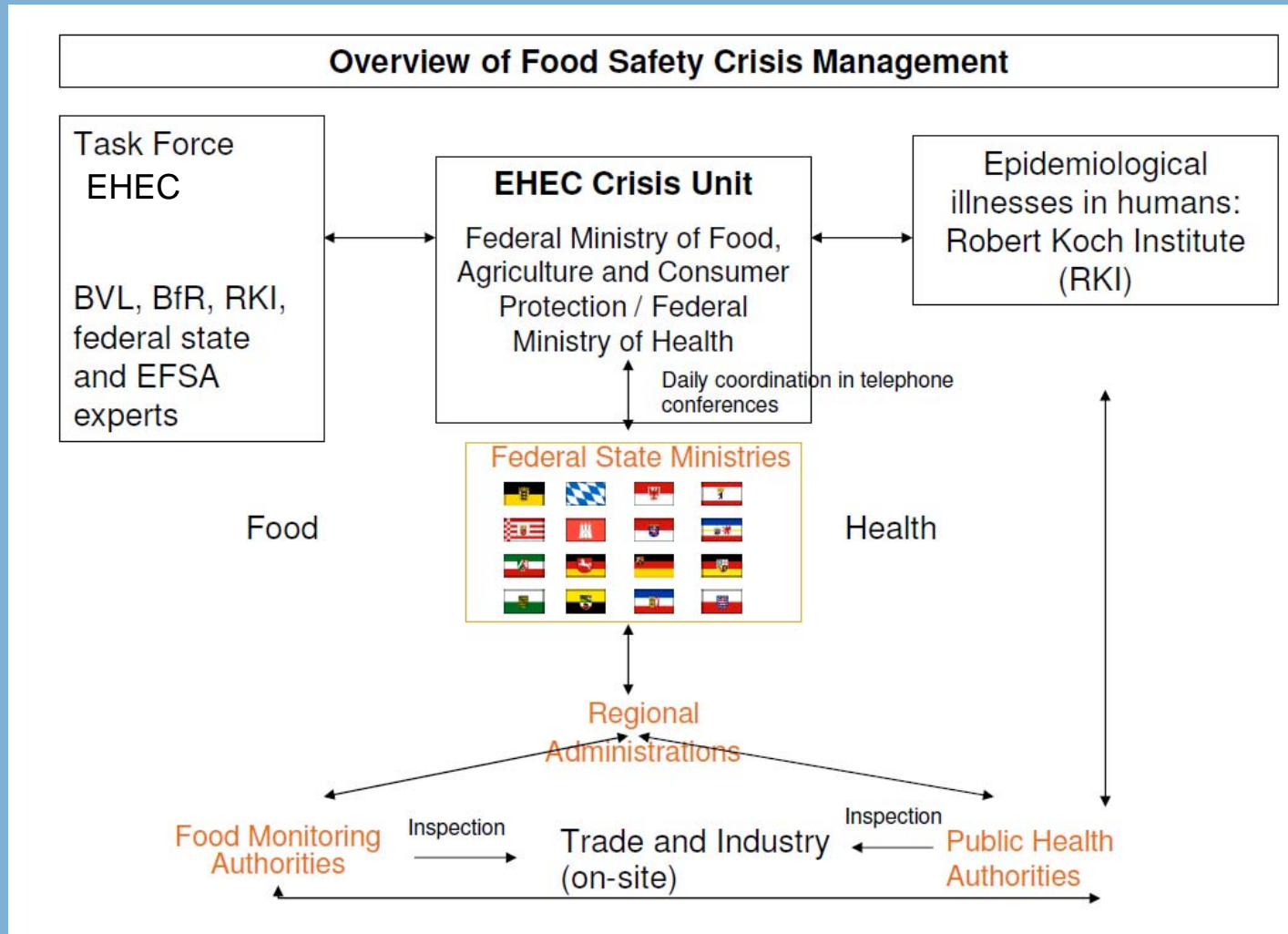
tracing back and tracing forward by the food safety side 

analytical results from the laboratories 



**The only way out:
intensify the investigation on
tracing back and tracing forward**

Structural Approach of the Investigation

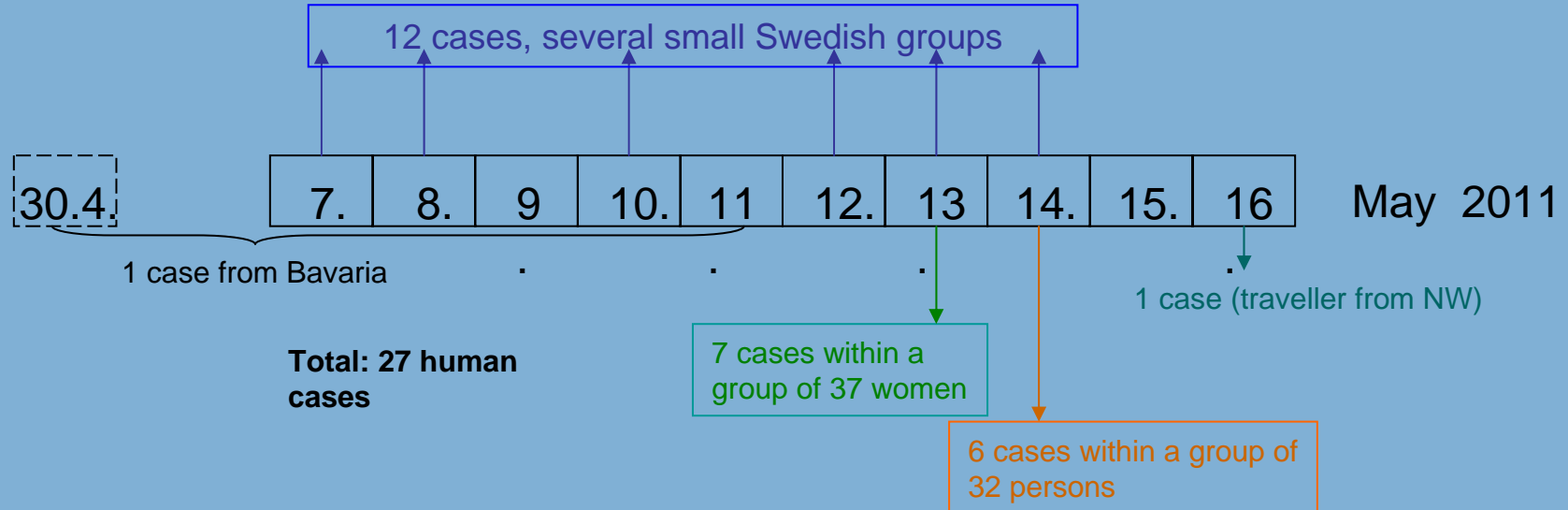


New Strategic Approach of the Task Force I

First Meeting on Friday 3rd of June 2011

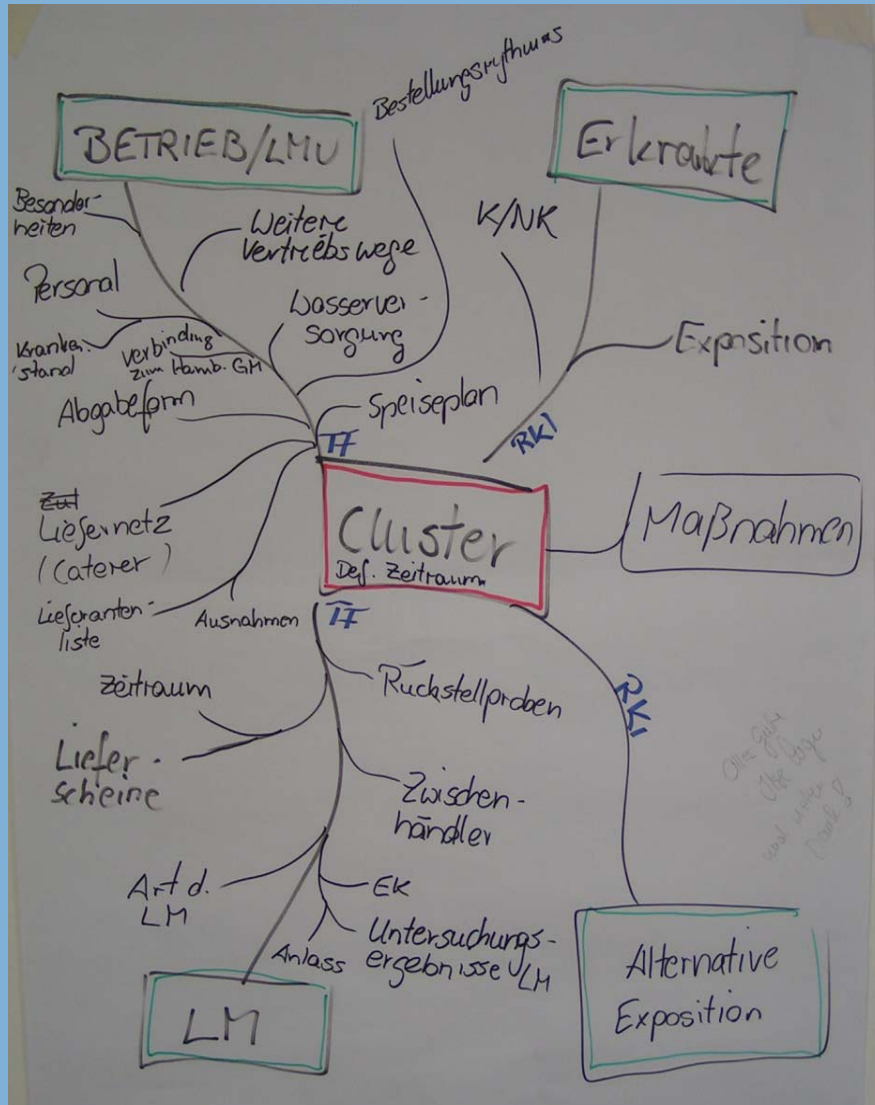
Identification of five outbreak clusters (by RKI)

- each associated with several human EHEC cases
- travellers and groups with exact exposure dates
- information on what was consumed





New Strategic Approach of the Task Force II



**First Meeting on
Friday 3rd of
June 2011**

Mind Map

**What do we want
to know about
each of the five
clusters?**

Two Approaches to Identify the Food

First step: Identification of the EHEC contaminated Food

Detailed **Trace Back** for Five Outbreak Clusters

Detailed information for salad ingredients and toppings
Tracing back each food lot used in the exposure time frame

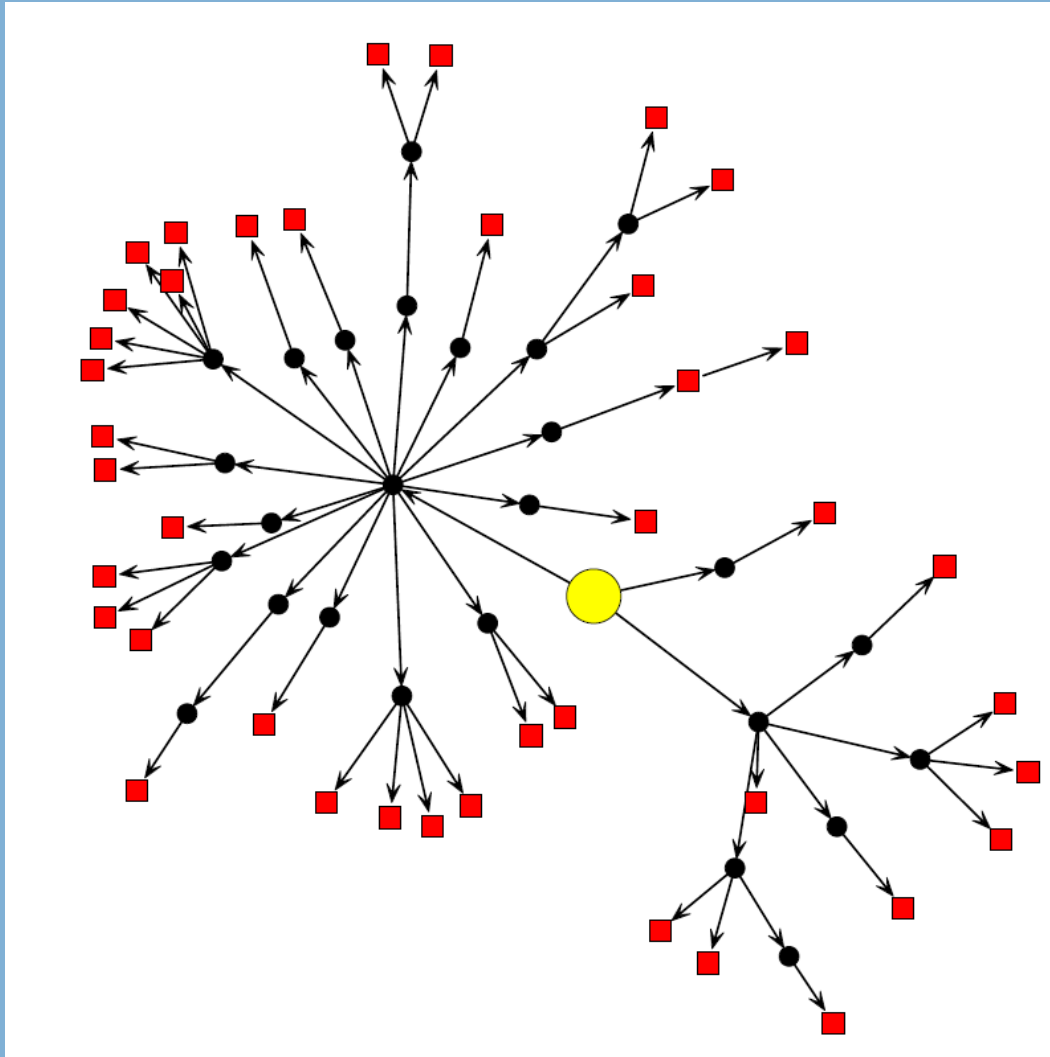
Identify common foods and supply chains

Suspicious Sprout Producer in Lower Saxony

Detailed **Trace Forward** Approach

Identify all clusters being supplied by this producer

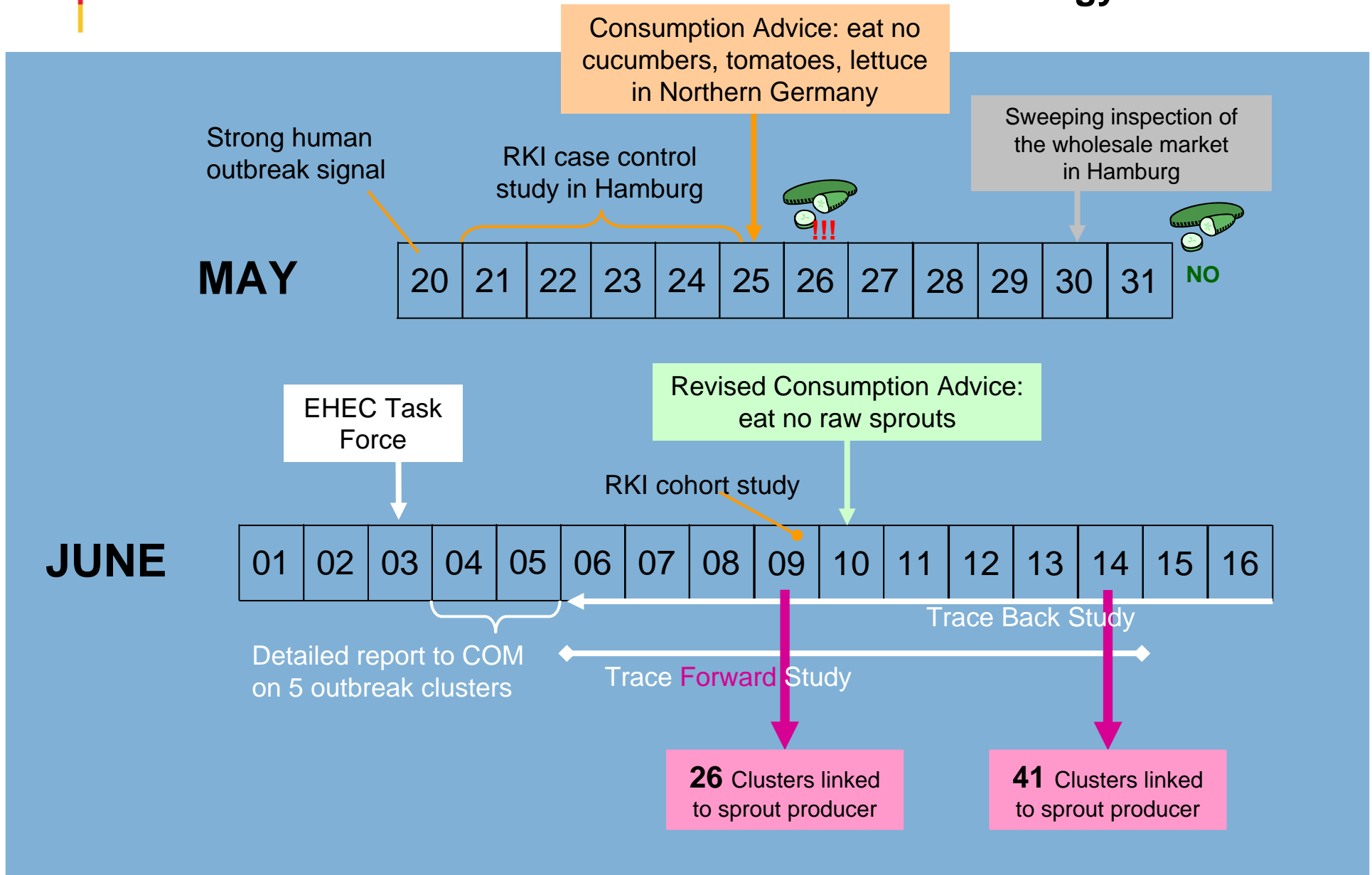
Results of the Trace Back and Forward Approach



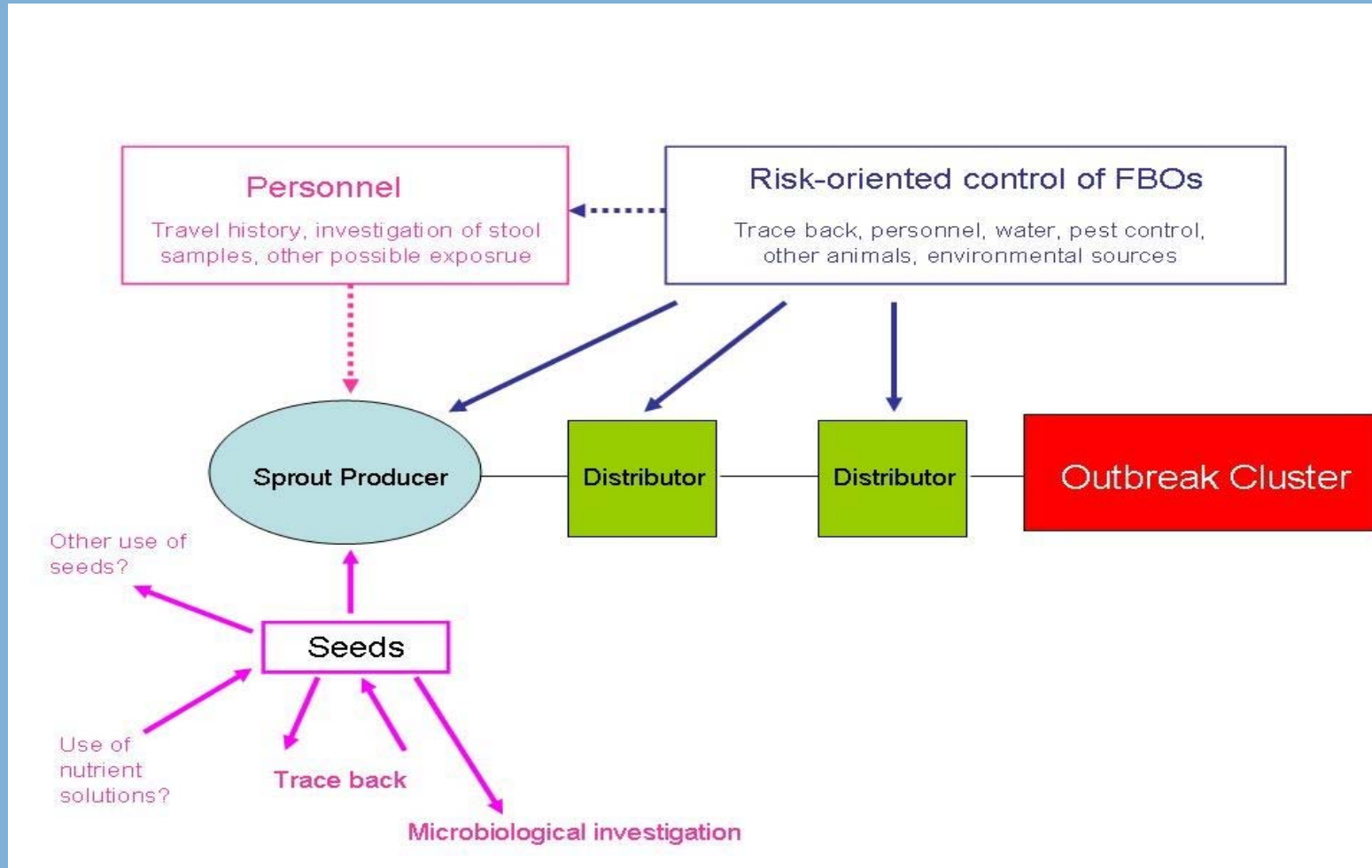
- Sprout Producer
- Distributor
- Outbreak clusters at the end of supply Chains
(restaurants, canteens, supermarkets, groceries)

41 well described outbreak clusters have been delivered with sprouts from the FBO in Lower Saxony

Chronology at a Glance



Second step: Find the source of EHEC O104





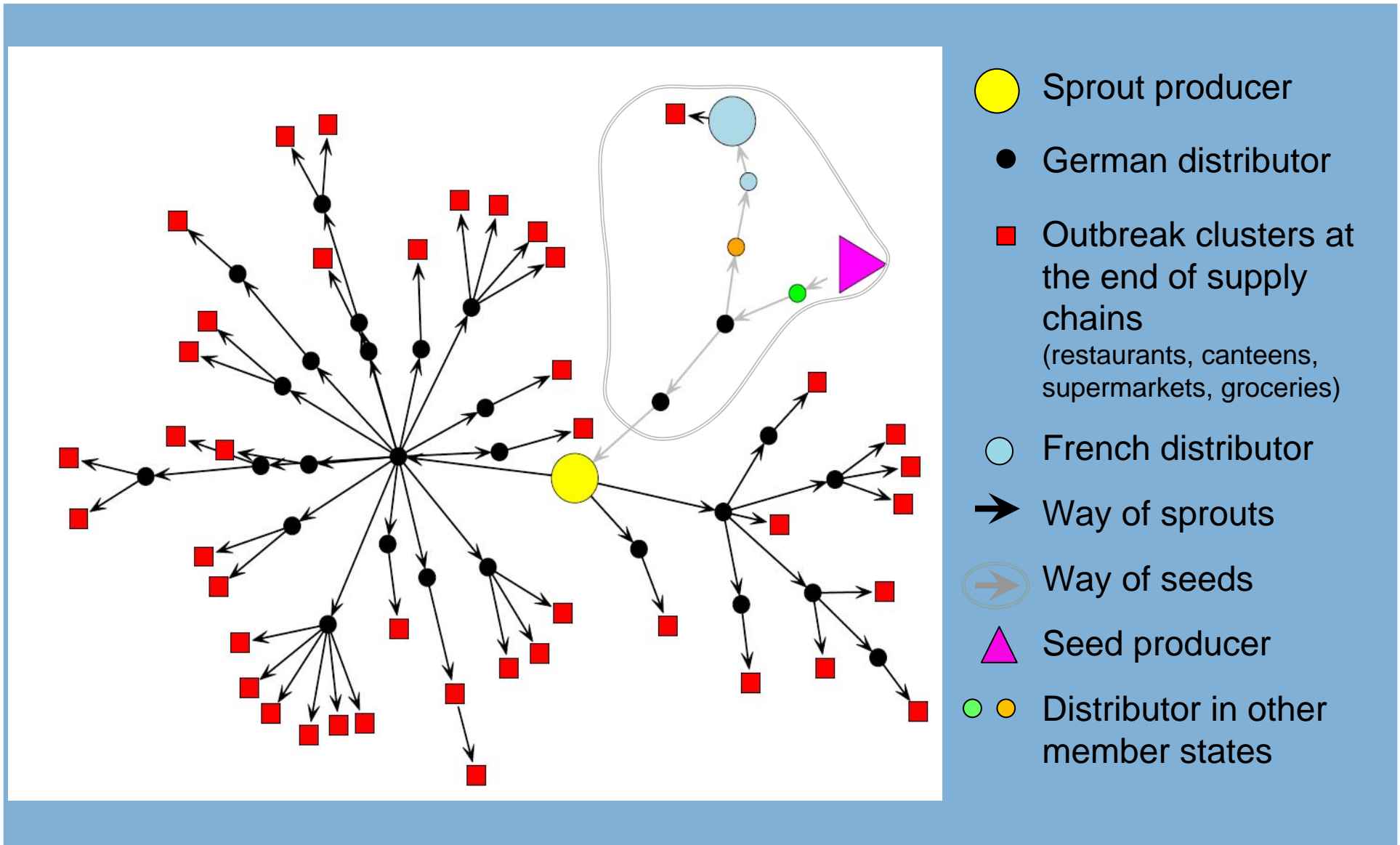
Reflections on the source of contamination:

- The Task Force requested a deeper investigation by the competent authorities of Lower Saxony
- two different sprout mixtures, the “Milde Mischung” or the “Würzige Mischung” caused the outbreak
- only lentil sprouts and fenugreek sprouts are present in both mixtures
- Lentil seeds had been imported from Canada, the fenugreek seeds had been imported from Egypt
- Lentil sprouts were mixed in other sprout mixtures too. Fenugreek sprouts were used in “Milde Mischung” and “Würzige Mischung”, only.
- Fenugreek seeds were sprouted continuously on two days each week. The sprouting process took 3.5 days. The three employees who fell ill with EHEC, worked on the respected week days when fenugreek seeds and sprouts were handled.
- Was the personnel infected by the seeds or did the ill personnel contaminate the sprouts?
- **The main working hypothesis of the German EHEC Task Force: the infection of the people is probably caused by contaminated sprouts**

More evidence:

- Do not wait for positive laboratory results – that might be time wasting
- Intensive tracing back of the fenugreek seeds in Germany leads to a German importer in Northrhine-Westfalia
- The outbreak in France on June 15th was caused by the same strain O104:H4
- Again sprouts are suspected and again fenugreek seeds are involved
- Tracing back of the French fenugreek seeds leads to the same German importer
- Both outbreaks (France and Germany) seem to be linked with respect to the period of time and the lots of fenugreek seeds
- Seeds seem to be the mostly likely vehicle of the contamination
- **The still open question: What is the pathway of contamination of the seeds ?**

The link between the French and the German outbreak





Chronology of the German EHEC Task Force

(start on June 3rd; end on July 5th)

- Up to the beginning of June 2011 there were no satisfying results given to the clarification of the outbreak by the food safety side
- Up to now the pathogen *E.colli* O104:H4 in food of plant origin can not be detected and confirmed by food laboratories
- Establishment of the Task Force at BVL on June 3rd with experts of BVL, BfR, RKI and the Federal States; support of the Task Force by scientists from EFSA on June 5th
- The Task Force presents the first results on June 9th: tracing backward and forward proves the connection between 26 outbreak clusters and the suspicious sprout producer in Lower Saxony; sprouts are probably responsible for the outbreak
- On June 10th the Task Force starts with the second task of identifying the source of infection; working hypothesis are: the contamination is caused either by seeds, by water or by the employees in the sprout producing company
- For more evidence the connection between the suspicious sprout producer and 41 outbreak clusters was confirmed on June 13th
- On June 15th the outbreak in France was known, caused by *E.colli* O104:H4, too
- On June 23th the link between the French and the German outbreak was confirmed. Fenugreek seeds were involved in both cases. Tracing back leads to a German importer in Northrhine-Westfalia
- **On July 5th, the German EHEC Task Force was closed. The group successfully identified the food and the source of infection**

Current situation:

- On July 1st the German food safety authorities started to withdraw the three suspicious lots of fenugreek seed of Egypt from the market
- Intensive tracing forward starting from the German importer in Northrhine-Westfalia shows the very complex trade connections in this special and very open agricultural market in Germany and Europe
- Fenugreek seeds are both: food and drugs
- On July 6th the European Commission decided to ban fenugreek and certain seeds and beans imported from Egypt from the European market (2011/402/EU)
- On July 8th the Federal Institute for Drugs and Medical Devices informs the German Authorities for drug safety to withdraw all drugs and active pharmaceutical ingredients (API) from the German market containing fenugreek seeds imported from Egypt in the period of 2009 – 2011
- **Further measures and lessons learned?**

Thank you for your attention !