European Food Safety Authority

ZOONOSES MONITORING

Germany

TRENDS AND SOURCES OF ZOONOSES AND ZOONOTIC AGENTS IN FOODSTUFFS, ANIMALS AND FEEDINGSTUFFS

including information on foodborne outbreaks, antimicrobial resistance in zoonotic and indicator bacteria and some pathogenic microbiological agents

IN 2016

3 FOODBORNE OUTBREAKS

Foodborne outbreaks are incidences of two or more human cases of the same disease or infection where the cases are linked or are probably linked to the same food source. Situation, in which the observed human cases exceed the expected number of cases and where a same food source is suspected, is also indicative of a foodborne outbreak.

3.1 Outbreaks

3.1.1 Foodborne outbreaks

System in place for identification, epidemological investigations and reporting of foodborne outbreaks

In Germany, information on food-borne outbreaks is reported via two parallel systems. The public health authorities in the German Federal States are reporting to the Robert Koch Institute (RKI), while the food and veterinary authorities of the federal states are reporting to the Federal Office of Consumer Protection and Food Safety (BVL). The surveillance of infectious diseases in humans is regulated by the „Protection against Infection Act" (Infektionsschutzgesetz). It assigns the task to compile, evaluate and analyse notification data on human infections at the national level to the RKI. Laboratories are required to report acute infections caused by notifiable pathogens to the local public health office, and physicians are required to report suspected or verified cases of notifiable communicable diseases. Outbreak reporting is integrated into the notification system. In addition to the infectious disease reporting system of the RKI, a reporting system collecting detailed information on food-borne outbreaks is provided by BVL, which covers food-borne outbreaks caused by bacteria, viruses, parasites and toxins. Through this reporting system information from the local food and veterinary authorities, which cooperate with the local public health offices is forwarded directly or via the federal states authorities to BVL following the outbreak investigation. The information on food-borne outbreaks gathered by the two national systems is combined and reported to EFSA.

Description of the types of outbreaks covered by the reporting:

For infectious disease surveillance, an outbreak is defined as two or more epidemiologically linked cases that meet the reference definition. General and household-related outbreaks are reported. All causative agents listed in the Zoonoses Directive (Directive 2003/99/EC, Annex I) are monitored. Information on place of exposure is routinely collected allowing categorization of the type of outbreak. The system collecting data on food-borne outbreaks, which is provided by BVL also covers outbreaks caused by bacterial toxins and other causative agents (e.g. histamine). Outbreaks are categorized as food-borne with weak evidence, if the local public health office investigating the outbreak provided information on suspected foodstuffs in the electronic outbreak reporting system or indicated that a meal was suspected, but the individual food vehicle was indeterminable. For the purpose of this report, evidence was considered as strong, if the causative agent had been detected in a food vehicle or its component, or in the food chain or its environment, or if a food vehicle had been incriminated by convincing descriptive evidence, or an analytical epidemiological study.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

In 2016, 397 outbreaks were reported, 41 of which were outbreaks with strong evidence (2015: 384 outbreaks; 28 strong evidence). The 41 strong evidence outbreaks involved at least 784 cases (2015: 619 cases). In 2016 at least 1,724 cases were reported in weak evidence outbreaks (2015: 1,453 cases).

Relevance of the different causative agents, food categories and the agent/food category combinations

In 11 of the 41 strong evidence outbreaks Campylobacter was reported as causative agent, seven of which were identified as C. jejuni. The other outbreaks were caused by Salmonella (9) [S.Enteritidis (4), S. Typhimurium (1)], Bacillus cereus (5), Norovirus (5), histamine (3), Staphylococcus aureus (1), Listeria monocytogenes serovar 1/2a (1), Flavivirus (1), Clostridium botulinum (1), Clostridium perfringens (1), VTEC 080 (1) and Cryptosporidium (1). In 12 of the 41 strong evidence outbreaks milk was identified as the food category. In all of these outbreaks the identified food vehicle was raw milk. In the other outbreaks „fish and fish products" (5), „bakery products" (4), „buffet meals" (4), „mixed food" (4), „cereal products including rice and seeds/pulses (nuts, almonds)" (3), „dairy products (other than cheeses)" (2), „meat and meat products" (2), „broiler meat (Gallus gallus) and products thereof" (1), „eggs and egg products" (1), „fruit, berries and juices and other products thereof" (1) and „pig meat and products thereof" (1) were reported as food category. The most frequent combination of causative agent and food vehicle was raw milk and Campylobacter in nine strong evidence outbreaks, i.e. 22.5% of all reported strong evidence outbreaks. Each of the following combinations: „frozen raspberries" as food vehicle and norovirus as causative agent, „tuna" as food vehicle and histamine as causative agent, „potato salad" as food vehicle and Salmonella as causative agent, „rice/rice dishes" as food vehicle and Bacillus cereus as causative agent were identified in two of the 41 strong evidence outbreaks (each 5%).

Relevance of the different type of places of food production and preparation in outbreaks

In the 41 strong evidence outbreaks the following „places of origin of problem" were identified: „restaurant or café or pub or bar or hotel or catering" (10), „household" (7), „farm" (4), „processing plant" (4), „canteen or workplace catering" (2). Each of the following places of origin of the problem were reported once: „camp or picnic", „hospital or medical care facility", „mobile retailer or market/street vendor", „take-away or fast food outlet" and „other". In nine outbreaks „unknown" was reported. For the 12 strong evidence outbreaks related to raw milk (11 to raw cow's milk and one to raw goat's milk/raw goats milk cheese) different „places of origin of problem" were reported: „household" (5) and „camp or picnic" (1) were reported when consumers had consumed raw milk unheated despite a mandatory warning sign placed at the farm, „farm" (4), or „unknown" (2) was reported when no such warning sign was present or information regarding the presence of a warning sign was missing. As „place of exposure" the most frequent entries were „restaurant or café or pub or bar or hotel or catering service" (11), „household" (9), „canteen or workplace catering" (3), „farm" (3), „camp or picnic" (2), „hospital or medical care facility " (2), „multiple places of exposure in more than one country" (2) and „other" (2). Each of the following places of exposure were reported once: „mobile retailer or market/street vendor", „school or kindergarten" and „take-away or fast food outlet". In four outbreaks „unknown" was reported. In case of the nine Campylobacter outbreaks related to raw milk: „farm" (3), „household" (2) and „camp or picnic" (2) and „unknown" (2) were reported as „place of exposure".

Evaluation of the severity and clinical picture of the human cases

In 2016, the number of cases was known for all of 41 strong evidence outbreaks (total: 784 cases). 71 (9.1%) of the cases were hospitalized (2015: 8.6%). The number of cases which were hospitalized was unknown for two of 41 In strong evidence outbreaks. One death in strong evidence outbreaks and three in weak evidence outbreaks were reported. In weak evidence outbreaks 185 (10.6 %) cases were hospitalized. Strong evidence outbreaks, which were caused by Salmonella (9) had nine cases on average, two of which were hospitalized (22.2%). In case of the 11 strong evidence Campylobacter outbreaks, an average of nine cases and one hospitalization per outbreak (11.1%) were reported.

Descriptions of single outbreaks of special interest

In 2016, one outbreak of 41 strong evidence outbreaks with 13 cases of salmonellosis was reported. This outbreak is connected with a multi-country outbreak of a new Salmonella serotype with antigenic formula 11:z41:enz15 in four EU Member States (Greece, Germany, Czech Republic, Luxembourg) and the UK, linked to consumption of sesame-based food products. In Germany and Luxembourg, the pathogen was identified in a sesame spread consumed by at least 6 cases; in the UK in sesame containing sushi. The outbreak investigation regarding the source of contamination is ongoing.

Control measures or other actions taken to improve the situation

In DE food-borne outbreaks should be investigated by the local public health authority in collaboration with the local food safety authority. In case of widespread epidemics, investigations are supported by the state health and state food and veterinary authorities or the federal institutions RKI, BVL and BfR. Additionally, RKI and the state health authorities offer training for local public health officers on epidemiological methods required for the investigation of food-borne outbreaks. Support for outbreak investigations by fellows involved in the two-year Postgraduate Training for Applied Epidemiology (PAE) which is hosted at RKI is also available upon request. Since 2009 several national monitoring programmes on zoonotic agents along the food chain have been implemented. Furthermore, Germany operates risk based national coordinated control programmes included in the Federal control plan. In these programmes standardised collection of data provides a better insight into the situation of food safety.

Foodborne Outbreaks: summarized data

		Outbreak strenght	Strong				Weak			
Causative agent	Food vehicle		N outbreaks	N human cases	N hospitalized	N deaths	N outbreaks	N human cases	N hospitalized	N deaths
B. cereus enterotoxins	Mixed food		1	6	0	0				
Bacillus cereus	Cereal products including rice and seeds/pulses (nuts, almonds)		2	30	0	0				
	Bakery products		1	33	0	0				
	Mixed food		1	4	3	0				
	Unknown						1	3	0	0
Campylobacter	Milk		2	43	8	0				
	Broiler meat (Gallus gallus) and products thereof		1	3	0	0				
	Unknown						198	552	71	0
Campylobacter coli	Pig meat and products thereof		1	16	4	0				
Campylobacter jejuni	Milk		7	51	3	0				
Clostridium	Buffet meals		1	3	0	0				
Clostridium botulinum	Unknown						1	2	2	0
Clostridium botulinum toxins	Fish and fish products		1	4	4	0				
Cryptosporidium	Milk		1	2	0	0				
	Unknown						2	4	0	0
Flavivirus	Milk		1	2	2	0				
Francisella tularensis	Unknown						1	6	2	0
Giardia	Unknown						6	13	0	0
Hepatovirus A	Unknown						10	25	14	0
Histamine	Fish and fish products		3	9	0	0				
Listeria monocytogenes	Unknown						2	4	4	1
Listeria monocytogenes - serovar 1/2a	Meat and meat products		1	11	10	1				
Norovirus	Dairy products (other than cheeses)		1	103	0	0				
	Fruit, berries and juices and other products thereof		1	25	14	0				
	Bakery products		2	236	0	0				
	Mixed food		1	50	0	0				
	Buffet meals		1	48	0	0				
	Unknown						29	627	21	0
Salmonella	Buffet meals		1	14	6	0				
	Unknown						7	38	7	0
Salmonella enterica, subspecies enterica	Cereal products including rice and seeds/pulses (nuts, almonds)		1	13	1	0				
Salmonella Enteritidis	Dairy products (other than cheeses)		1	5	1	0				
	Eggs and egg products		1	7	0	0				
	Fish and fish products		1	9	5	0				
	Bakery products		1	2	0	0				

Causative agent	Food vehicle	Outbreak strenght	Strong				Weak			
			N outbreaks	N human cases	N hospitalized	N deaths	N outbreaks	N human cases	N hospitalized	N deaths
Salmonella Enteritidis	Mixed food		1	12	2	0				
	Buffet meals		1	2	0	0				
	Unknown						53	169	35	0
Salmonella Other serovars	Unknown						11	27	11	2
Salmonella Typhimurium	Unknown						11	36	10	0
Salmonella Typhimurium DT 193	Meat and meat products		1	17	5	0				
Shigella	Unknown						3	8	1	0
Staphylococcus aureus	Mixed food		1	21	0	0				
Unknown	Unknown						16	190	0	0
VTEC O80	Milk		1	3	3	0				
VTEC, unspecified	Unknown						5	20	7	0

Strong Foodborne Outbreaks: detailed data

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
B. cereus enterotoxins	unk	BVL_2016_0030	General	Mixed food	sandwich with boiled egg slices and noodle salad	Detection of causative agent in food chain or its environment - Symptoms and onset of illness pathognomonic to causative agent$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Germany	Unknown	N_A	1	6	0	0
Bacillus cereus	unk	BVL_2016_0003	General	Mixed food	sauce for pasta bolognese	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	School or kindergarten	Unknown	Unknown	Other contributory factor	N_A	1	4	3	0
		BVL_2016_0026	General	Cereal products including rice and seeds/pulses (nuts, almonds)	rice dishes	Descriptive epidemiological evidence$Detection of causative agent in food chain or its environment - Symptoms and onset of illness pathognomonic to causative agent$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent$Descriptive environmental evidence	Others	Processing plant	Unknown	Cross-contamination $Storage time/temperature abuse	N_A	1	26	0	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Bacillus cereus	unk	BVL_2016_0059	General	Bakery products	cheesecake	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Household	Household	Unknown	Unknown	N_A	1	33	0	0
		BVL_2016_0086	Household / domestic kitchen	Cereal products including rice and seeds/pulses (nuts, almonds)	rice	Descriptive epidemiological evidence$Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent$Descriptive environmental evidence	Household	Take-away or fast-food outlet	Germany	Storage time/temperature abuse	N_A	1	4	0	0
Campylobacter	unk	BVL_2016_0018	General	Broiler meat (Gallus gallus) and products thereof	cooked guinea fowl	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Unknown	Cross-contamination $Inadequate heat treatment	N_A	1	3	0	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Campylobacter	unk	BVL_2016_0073	General	Milk	raw milk	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Farm	Household	Germany	Inadequate heat treatment	N_A	1	37	7	0
		BVL_2016_0089	General	Milk	raw milk	Descriptive epidemiological evidence	Farm	Household	Germany	Inadequate heat treatment	N_A	1	6	1	0
Campylobacter coli	unk	BVL_2016_0081	General	Pig meat and products thereof	Hackepeter (seasoned pork minced meat intended for raw consumption)	Analytical epidemiological evidence$Descriptive epidemiological evidence$Product-tracing investigations	Unknown	Unknown	Unknown	Unknown	N_A	1	16	4	0
Campylobacter jejuni	unk	BVL_2016_0007	Unknown	Milk	raw milk	Descriptive epidemiological evidence	Household	Household	Germany	Inadequate heat treatment	N_A	1	8	2	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Campylobacter jejuni	unk	BVL_2016_0020	General	Milk	raw milk	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans$Product-tracing investigations	Camp or picnic	Farm (not specified)	Germany	Unknown	N_A	1	7	0	0
		BVL_2016_0028	General	Milk	raw milk	Descriptive epidemiological evidence	Camp or picnic	Camp or picnic	Germany	Inadequate heat treatment	N_A	1	15	1	0
		BVL_2016_0048	General	Milk	raw milk	Descriptive epidemiological evidence	Household	Household	Germany	Unknown	N_A	1	12	0	0
		BVL_2016_0053	Household / domestic kitchen	Milk	raw milk	Descriptive epidemiological evidence	Unknown	Unknown	Germany	Unknown	N_A	1	3	0	0
		BVL_2016_0056	Household / domestic kitchen	Milk	raw milk	Descriptive epidemiological evidence	Unknown	Unknown	Germany	Unknown	N_A	1	4	0	0
		BVL_2016_0095	Household / domestic kitchen	Milk	raw milk	Descriptive epidemiological evidence	Household	Household	Germany	Inadequate heat treatment	N_A	1	2	0	0
Clostridium	unk	BVL_2016_0011	General	Buffet meals	turkey goulash	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Canteen or workplace catering	Unknown	Germany	Inadequate heat treatment$Other contributory factor$Storage time/temperature abuse	N_A	1	3	0	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Clostridium botulinum toxins	unk	BVL_2016_0042	General	Fish and fish products	salted, dried, gutted/not gutted roach (Rutilus rutilus)	Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Household	Processing plant	European Union	Unprocessed contaminated ingredient	N_A	1	4	4	0
Cryptosporidium	unk	BVL_2016_0043	Household / domestic kitchen	Milk	raw milk	Descriptive epidemiological evidence	Household	Farm (not specified)	Germany	Inadequate heat treatment	N_A	1	2	0	0
Flavivirus	unk	BVL_2016_0049	General	Milk	raw goats milk and goat raw milk cheese	Descriptive epidemiological evidence$Detection of causative agent in food chain or its environment - Symptoms and onset of illness pathognomonic to causative agent	Farm	Farm (not specified)	Germany	Inadequate heat treatment	N_A	1	2	2	0
Histamine	Bacillus - B. cereus	BVL_2016_0076	General	Fish and fish products	tuna	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Unknown	Cross-contamination $Inadequate chilling$Storage time/temperature abuse	N_A	1	5	0	0
	unk	BVL_2016_0045	Household / domestic kitchen	Fish and fish products	smoked butterfish	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Mobile retailer or market/street vendor	Mobile retailer or market/street vendor	Unknown	Inadequate chilling	N_A	1	2	0	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Histamine	unk	BVL_2016_0046	Unknown	Fish and fish products	tuna in oil	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent$Descriptive environmental evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Germany	Inadequate chilling	N_A	1	2	0	0
Listeria monocytogenes - serovar 1/2a	unk	BVL_2016_0038	General	Meat and meat products	cured pork belly with juniper or similar products	Descriptive epidemiological evidence$Detection of causative agent in food chain or its environment - Symptoms and onset of illness pathognomonic to causative agent$Product-tracing investigations	Multiple places of exposure in more than one country	Processing plant	Germany	Cross-contamination	N_A	1	11	10	1
Norovirus	unk	BVL_2016_0002	General	Fruit, berries and juices and other products thereof	frozen raspberries	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Hospital or medical care facility	Unknown	Unknown	Unprocessed contaminated ingredient	N_A	1	25	14	0
		BVL_2016_0025	General	Buffet meals	tomato mozzarella / tomato and mozzarella salad	Analytical epidemiological evidence$Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Unknown	Cross-contamination $Infected food handler	N_A	1	48	0	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Norovirus	unk	BVL_2016_0027	General	Dairy products (other than cheeses)	raspberry fruit quark, made using frozen raspberries	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans$Product-tracing investigations	Hospital or medical care facility	Hospital or medical care facility	Germany	Inadequate heat treatment$Unprocessed contaminated ingredient	N_A	1	103	unk	0
		BVL_2016_0037	General	Bakery products	cake	Descriptive epidemiological evidence$Detection of causative agent in food chain or its environment - Symptoms and onset of illness pathognomonic to causative agent$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Germany	Infected food handler	N_A	1	5	0	0
		BVL_2016_0084	General	Mixed food	white cabbage salad, radishes, peppers and goulash	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Canteen or workplace catering	Canteen or workplace catering	Unknown	Infected food handler	N_A	1	50	0	0
		BVL_2016_0091	General	Bakery products	bread rolls	Analytical epidemiological evidence$Descriptive epidemiological evidence	Canteen or workplace catering	Canteen or workplace catering	Germany	Infected food handler	N_A	1	231	0	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Salmonella	unk	BVL_2016_0085	General	Buffet meals	potato salad	Descriptive epidemiological evidence$Descriptive environmental evidence	Others	Others	Germany	Unknown	N_A	1	14	6	0
Salmonella enterica, subspecies enterica	unk	BVL_2016_0096	General	Cereal products including rice and seeds/pulses (nuts, almonds)	sesame and other sesame products	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Multiple places of exposure in more than one country	Unknown	Greece	Unprocessed contaminated ingredient	N_A	1	13	1	0
Salmonella Enteritidis	unk	BVL_2016_0015	Household / domestic kitchen	Bakery products	raw cake dough (with raw eggs)	Descriptive epidemiological evidence	Household	Household	Germany	Inadequate heat treatment$Unprocessed contaminated ingredient	N_A	1	2	0	0
		BVL_2016_0016	General	Buffet meals	potato salad made with boiled eggs, spice cucumbers, mayonnaise, melted bacon, hunting sausage, onion, apple	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Processing plant	Germany	Cross-contamination	N_A	1	2	0	0
		BVL_2016_0021	General	Fish and fish products	sushi with shrimps, butterfish and raw salmon	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Unknown	Inadequate chilling$Unprocessed contaminated ingredient	N_A	1	9	5	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Salmonella Enteritidis	unk	BVL_2016_0035	General	Dairy products (other than cheeses)	homemade ice cream parfait	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Germany	Unknown	N_A	1	5	1	0
		BVL_2016_0051	General	Mixed food	yoghurt dressing for salad	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans$Descriptive environmental evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Unknown	Cross-contamination $Storage time/temperature abuse	N_A	1	12	2	0
		BVL_2016_0052	General	Eggs and egg products	tiramisu	Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Germany	Unknown	N_A	1	7	0	0
Salmonella Typhimurium DT 193	unk	BVL_2016_0017	General	Meat and meat products	pork liver	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans	Unknown	Unknown	Unknown	Unknown	N_A	1	17	5	0

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Staphylococcus aureus	unk	BVL_2016_0039	General	Mixed food	meat skewer (doner) and sandwich made with the prepared meat from the skewer	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent$Descriptive environmental evidence	Take-away or fast-food outlet	Unknown	Germany	Cross-contamination $Inadequate chilling$Storage time/temperature abuse	N_A	1	21	unk	0
VTEC O80	unk	BVL_2016_0090	General	Milk	raw milk	Descriptive epidemiological evidence$Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans$Product-tracing investigations	Household	Farm (not specified)	Germany	Unknown	N_A	1	3	3	0

Weak Foodborne Outbreaks: detailed data

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Bacillus cereus	unk	BVL_2016_0117	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	1	3	0	0
Campylobacter	unk	BVL_2016_0114	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	198	552	71	0
Clostridium botulinum	unk	BVL_2016_0118	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	1	2	2	0
Cryptosporidium	unk	BVL_2016_0122	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	2	4	0	0
Francisella tularensis	unk	BVL_2016_0119	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	1	6	2	0
Giardia	unk	BVL_2016_0121	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	6	13	0	0
Hepatovirus A	unk	BVL_2016_0125	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	7	18	11	0
		BVL_2016_0126	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	3	7	3	0
Listeria monocytogenes	unk	BVL_2016_0115	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	2	4	4	1
Norovirus	unk	BVL_2016_0123	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	27	627	21	0
		BVL_2016_0124	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	2	unk	unk	0
Salmonella	unk	BVL_2016_0113	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	7	38	7	0
Salmonella Enteritidis	unk	BVL_2016_0111	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	53	169	35	0
Salmonella Other serovars	unk	BVL_2016_0112	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	11	27	11	2

Causative agent	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Salmonella Typhimurium	unk	BVL_2016_0110	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	11	36	10	0
Shigella	unk	BVL_2016_0120	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	3	8	1	0
Unknown	unk	BVL_2016_0127	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	15	190	0	0
		BVL_2016_0128	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	1	unk	unk	0
VTEC, unspecified	unk	BVL_2016_0116	Not Available	Unknown	N_A	Unknown	Not Available	unk	Not Available	NOT AVAILABLE	N_A	5	20	7	0