European Food Safety Authority

ZOONOSES MONITORING

LATVIA

The Report referred to in Article 9 of Directive 2003/99/EC

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

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

IN 2009

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Latvia

Reporting Year:

Laboratory name	Description	Contribution
Food and Veterinary Service (FVS)	The FVS is a state administrative institution subordinated to the Ministry of Agriculture. The FVS ensures unified state surveillance and control over the whole food chain including feed, animals and food.	The FVS coordinates the work of the national working group on zoonoses and provides veterinary and food surveillance data.
Scientific Institute of Food Safety, Animal Health and Environment „BIOR" (former - National Diagnostic centre of FVS)	From 1st of January 2010 the National Diagnostic Centre of Food and Veterinary Service has consolidated with the Latvian Fish Resources Agency and acquired a new status and designation: Institute of Food Safety, Animal Health and Environment „BIOR". The BIOR ensures all required planned and operational laboratory testing in the frame of state food and veterinary surveillance. Additionally, BIOR represents the National Reference Laboratory according to animal health tasks.	All laboratory investigations related to the surveillance of the food chain.
Sanitary Border Inspection (SBI)	The SBI is a structural unit of the FVS. SBI surveys and controls the import of food products, the import, export and and transit of products under veterinary surveillance and other products and goods at all control points of the EU borders, in free zones, free depots and custom depots.	Control of imported products.

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Laboratory name	Description	Contribution
Infectology Centre of Latvia	State agency „Infectology Centre of Latvia" is a state institution under the supervision of the Ministry of Health of Latvia. In the result of implementation of reforms of Ministry of Health, starting with 1 September 2009 Infectology Center of Latvia took over the functions of The Public Health Agency in areas of infectious diseases, including HIV infection and sexual transmissible infections, monitoring, epidemiological surveillance and specific prophylaxis of infectious diseases. And starting with 1 October 2009 as structural unit to Infectology Center of Latvia have been added former State Agency for Tuberculosis and Lung Diseases of Latvia and its branches.	Data on foodborne outbreaks and human cases of zoonotic infections.Data on human cases of tuberculosis as well.

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/ EC*. The information has also been forwarded to the European Food Safety Authority (EFSA).

The report contains information on trends and sources of zoonoses and zoonotic agents in Latvia during the year 2009 .

The information covers the occurrence of these diseases and agents in humans, animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and commensal bacteria as well as information on epidemiological investigations of foodborne outbreaks. Complementary data on susceptible animal populations in the country is also given. The information given covers both zoonoses that are important for the public health in the whole European Community as well as zoonoses, which are relevant on the basis of the national epidemiological situation.

The report describes the monitoring systems in place and the prevention and control strategies applied in the country. For some zoonoses this monitoring is based on legal requirements laid down by the Community Legislation, while for the other zoonoses national approaches are applied.

The report presents the results of the examinations carried out in the reporting year. A national evaluation of the epidemiological situation, with special reference to trends and sources of zoonotic infections, is given. Whenever possible, the relevance of findings in foodstuffs and animals to zoonoses cases in humans is evaluated.

The information covered by this report is used in the annual Community Summary Report on zoonoses that is published each year by EFSA.

---

* Directive 2003/ 99/ EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/ 424/ EEC and repealing Council Directive 92/ 117/ EEC, OJ L 325, 17.11.2003, p. 31

List of Contents

1. ANIMAL POPULATIONS

The relevance of the findings on zoonoses and zoonotic agents has to be related to the size and nature of the animal population in the country.

A. Information on susceptible animal population

Sources of information

Agricultural Data Centre (ADC)
ADC is a state agency under the supervision of the Ministry of Agriculture that performs collection, processing and analysis of zootechnical, veterinary and agricultural data in the Latvia and develop a uniform register of animals and herds (cattle, pigs, sheep, goats etc.) and a pedigree information system according to international standards.

Dates the figures relate to and the content of the figures

Data on commercial poultry - average population during the year

Data on cattle, pigs, horses, goats and sheep: 01.01.2010.

Definitions used for different types of animals, herds, flocks and holdings as well as the types covered by the information

Animals - cattle, pigs, sheep, goats, horses, rabbits, swamp beaver, fur animals, poultry, bee gardens, fishponds, hatcheries of aquatic animals, wild animals and birds, which are kept in a holding.

Herd - an agricultural animal or group of animals belonging to one owner.

Holding - shall mean separate confined area in which animals are kept regularly or temporary.

Poultry - shall mean fowl, turkeys, guinea fowl, ducks, geese, quails, pigeons, pheasants, partridges, ratites and etc. birds reared or kept in captivity for breeding, the production of meat or eggs for consumption, or for re-stocking supplies of game.

Day-old chicks - poultry less than 72 hours old, not yet fed; except muscovy ducks (Cairina moschata) or their crosses may be fed and ratites (Ratitae) less than 5 days old, not yet fed.

Commercial poultry - poultry 72 hours old or more, reared for the production and sale for trade or to companies of meat and/or eggs for consumption, or for restocking supplies of game.

Poultry flock - all poultry of the same health status kept on the same premises or in the same enclosure and constituting a single epidemiological unit. In housed poultry this will include all birds sharing the same airspace.

Geographical distribution and size distribution of the herds, flocks and holdings

Animals and herds are distributed almost evenly over the whole territory of Latvia.
Concerning commercial poultry population, there are two districts, where the holdings with biggest numbers of birds are located: Riga district and Bauska district, both in the centre/southern centre of Latvia.

Table Susceptible animal populations

* Only if different than current reporting year

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	- in total	39994		99903		377725		39994	
Ducks	- in total [1)]	4				398		4	
Gallus gallus (fowl)	broilers	70		9359772		1688339		2	
	laying hens	71				2193073		30	
	parent breeding flocks for meat production line	25				100616		1	
	- in total [2)]	166		9359772		3982028		32	
Goats	- in total [3)]	2800		9329		13247		2800	
Pigs	- in total	2498		323588		329510		2498	
Sheep	- in total	4204				70658		4204	
Solipeds, domestic	horses - in total	6581		400		12616		6581	
Ostriches	farmed	2		60		107		2	
Quails	laying hens [4)]	11				6421		11	

Comments:

[1)] 4 mixed holdings with ducks, geese and laying hens

Table Susceptible animal populations

[2)] 1 integrated (mixed) holding with breeding poultry of Gallus gallus and commercial poultry of Gallus gallus
[3)] Total number of slaughtered small ruminants (sheep and goats) together
[4)] 1 mixed holding with quails, pheasants and partridge

2. INFORMATION ON SPECIFIC ZOONOSES AND ZOONOTIC AGENTS

Zoonoses are diseases or infections, which are naturally transmissible directly or indirectly between animals and humans. Foodstuffs serve often as vehicles of zoonotic infections. Zoonotic agents cover viruses, bacteria, fungi, parasites or other biological entities that are likely to cause zoonoses.

2.1 SALMONELLOSIS

2.1.1 General evaluation of the national situation

A. General evaluation

History of the disease and/or infection in the country

The prevalence of Salmonella in animals and food of animal origin has been monitored over a long period of time. From 1967 until the end of 2003, 51836 Salmonella isolates were obtained from animal samples. Most isolates originated from poultry (57,6%) and from pigs (29,0%). In cattle and fur animals, Salmonella was isolated in lower numbers, 8,6% and 2,7%, respectively. Goats (0,05%), horses (0,01%) and other animals (2,0%) were also investigated.

The main serotypes found in poultry in the same period of time (1967-2003) were S. Gallinarum-pullorum (87,1%), S. Enteritidis (9,6% of isolates) and S. Typhimurium (2,8%). In pigs, besides S. Choleraesuis (94,0%), mainly S. Typhimurium was found (0,8%), while in cattle S. Enteritidis (57,9%) and S. Dublin (35,4%) were the most prominent serotypes. In fur animals, four different serotypes were isolated: S. Choleraesuis (29,9%), S. Dublin (23,5%), S. Enteritidis (22,5%) and S. Typhimurium (20,6%).

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

S. Enteritidis is the most prevalent serotype isolated from poultry and also from poultry meat. Accordingly, also human cases of S. Enteritidis-caused illness prevail during the last years. The increase in the number of human salmonellosis cases is predominantly reported during the summer months.

2.1.2 Salmonella in foodstuffs

A. Salmonella spp. in pig meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

At meat processing plant

Inspectors of the Food and Veterinary Service are taking the samples. One sample consists of 5 units. Every unit is packed and stored
separately, and also laboratory testing is performed on each unit. For laboratory testing, 10 g of each unit are taken for further investigations.

At retail

Inspectors of the Food and Veterinary Service are taking the samples. One sample consists of 5 units. Every unit is packed and stored
separately, and also laboratory testing is performed on each unit. For laboratory testing, 10 g of each unit are taken for further investigations.

Frequency of the sampling

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Surface of carcass

At retail

Minced meat, meat preparations

Methods of sampling (description of sampling techniques)

At meat processing plant

Method according to regulation 2073/2005

At retail

Method according to regulation 2073/2005.

Definition of positive finding

At meat processing plant

None of the units is allowed to contain Salmonella spp. The sample
is considered positive, if one or more of the units are positive.

At retail

None of the units is allowed to contain Salmonella spp. The sample is considered positive, if one or more of the units are positive.

Diagnostic/analytical methods used

At meat processing plant

LVS EN ISO 6579:2003

At retail

LVS EN ISO 6579:2003

Control program/mechanisms

The control program/strategies in place

National control programme on Salmonella, based on the Regulation (EC) No 2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified foodborne zoonotic agents.

Measures in case of the positive findings or single cases

The inspector immediatly has to perform an inspection at the processing plant or at the store. He decides what to do with the rest of the batch, if there are still products left, and collects all necessary documents to clarify the origin of the product. The inspector also decides on the actions that have to be taken in the company, like asking for HACCP system improvements etc. Disinfection has to be carried out at all places where the infected product had contact with.

B. Salmonella spp. in bovine meat and products thereof

Monitoring system

Sampling strategy

At retail

One sample consists of 5 sample units. For laboratory testing 10/25 g of each unit are taken for further investigations.

Frequency of the sampling

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At retail

Other: meat preparations/meat products

Methods of sampling (description of sampling techniques)

At retail

According to regulation 2073/2005.

Definition of positive finding

At retail

None of the units is allowed to contain Salmonell spp. The sample is considered positive, if one or more of the units are positive.

Diagnostic/analytical methods used

At retail

Other: LVS EN ISO 6579 : 2003.

C. Salmonella spp. in broiler meat and products thereof

Monitoring system

Sampling strategy

At meat processing plant

Inspectors of the Food and Veterinary Service are taking the samples. One sample consists of 5 units. Every unit is packed and stored
separately, and also laboratory testing is performed on each unit. For laboratory testing, 10 g of each unit are taken for further investigations.

At retail

Inspectors of the Food and Veterinary Service are taking the samples. One sample consists of 5 units. Every unit is packed and stored
separately, and also laboratory testing is performed on each unit. For laboratory testing, 10 g of each unit are taken for further investigations.

Frequency of the sampling

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Methods of sampling (description of sampling techniques)

At meat processing plant

Method according to regulation 2073/2005.

At retail

Method according to regulation 2073/2005.

Definition of positive finding

At slaughterhouse and cutting plant

At meat processing plant

None of the units is allowed to contain Salmonella spp. The sample is considered positive, if one or more of the units are positive.

At retail

None of the units is allowed to contain Salmonella spp. The sample is considered positive, if one or more of the units are positive.

Diagnostic/analytical methods used

At meat processing plant

LVS EN ISO 6579:2003

At retail

LVS EN ISO 6579:2003

Control program/mechanisms

The control program/strategies in place

National control programme on Salmonella, based on the Regulation (EC) No 2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified foodborne zoonotic agents.

Measures in case of the positive findings or single cases

The inspector immediately has to perform an inspection at the slaughterhouse, processing plant or at the store. He decides what to do with the rest of the batch, if there are still products left, and collects all necessary documents to clarify the origin of the product. The inspector also decides on the actions that have to be taken in the company, like asking for HACCP system improvements etc. Disinfection has to be carried out at all places where the infected product had contact with.

D. Salmonella spp. in eggs and egg products

Additional information

The National control programme does not include eggs and egg products, but there is a laboratory control programme in place to control the companies which are part of the food chain. Samples of eggs and egg products were taken in the scope of this programme.

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney
Meat from broilers (Gallus gallus) - fresh - at processing plant [1)]		Single	25/10g	31	0				
Meat from broilers (Gallus gallus) - fresh - at retail [2)]		Single	25g	6	0				
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail [3)]		Single	25g	4	0				
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant [4)]		Single	25g	64	0				
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail [5)]		Single	25g	2	0				
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant [6)]		Single	25g	104	0				
Meat from broilers (Gallus gallus) - mechanically separated meat (MSM) [7)]		Single	25g	114	0				
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at processing plant [8)]		Single	10g	26	0				
Meat from geese - at slaughterhouse [9)]		Single	10g	1	0				
Meat from turkey - fresh - at processing plant [10)]		Single	25g	5	1	1			
Meat from broilers (Gallus gallus) - carcass - at processing plant - domestic production - Surveillance [11)]		Single	10g	6	1				1
Meat from rabbit - fresh - at processing plant [12)]		Single	25g	2	0				

Table Salmonella in poultry meat and products thereof

Comments:

1) HACCP
2) official control
3) official control
4) HACCP
5) official control
6) HACCP
7) HACCP
8) HACCP
9) HACCP
10) HACCP
11) HACCP
12) HACCP

Footnote:

Differences between food prevalence tables and antimicrobial tables are due to fact, that one official food sample consists of 5 units, but sample is positive if one or more units are positives. It means that from one official food sample can be isolated several salmonella cultures depending on how much units are positive or how many serovars are in one unit.

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney	S. Chartres	S. Virchow
Meat from bovine animals - fresh - at processing plant [1)]		Single	25g	101	0						
Meat from bovine animals - meat preparation - intended to be eaten raw - at processing plant [2)]		Single	25g	5	0						
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant [3)]		Single	25g	16	0						
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail [4)]		Single	25g	12	0						
Meat from bovine animals - mechanically separated meat (MSM) - at processing plant [5)]		Single	25g	62	0						
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant [6)]		Single	25g	35	0						
Meat from pig - fresh - at processing plant [7)]		Single	25g	104	2		2				
Meat from pig - fresh - at retail [8)]		Single	25g	3	0						
Meat from pig - meat preparation - intended to be eaten raw - at processing plant [9)]		Single	10g	229	0						
Meat from pig - meat preparation - intended to be eaten cooked - at retail [10)]		Single	10g	17	1		1				
Meat from pig - meat products - cooked, ready-to-eat - at processing plant [11)]		Single	25g	158	0						
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant [12)]		Single	25g	15	0						
Meat from pig - mechanically separated meat (MSM) [13)]		Single	10g	373	0						

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney	S. Chartres	S. Virchow
Meat from pig - minced meat - intended to be eaten cooked - at processing plant [14)]		Single	10g	222	3				3		
Meat from pig - minced meat - intended to be eaten cooked - at retail [15)]		Single	10g	4	0						
Meat from sheep - fresh - at processing plant [16)]		Single	25g	2	0						
Meat, mixed meat - meat preparation [17)]		Single	25g	5	3					1	2
Meat, mixed meat - meat preparation - intended to be eaten cooked - at retail - domestic production - Surveillance - official controls [18)]		Single	25g	30	2	1	1				

Comments:

[1)] HACCP
[2)] HACCP
[3)] HACCP
[4)] official control
[5)] HACCP
[6)] HACCP
[7)] HACCP
[8)] official control
[9)] HACCP
[10)] official control
[11)] HACCP
[12)] HACCP
[13)] HACCP
[14)] HACCP
[15)] official control
[16)] HACCP

Table Salmonella in red meat and products thereof

[17] HACCP
[18] official control

Footnote:

Differences between food prevalence tables and antimicrobial tables are due to fact, that one official food sample consists of 5 units, but sample is positive if one or more units are positives. It means that from one official food sample can be isolated several salmonella cultures depending on how much units are positive or how many serovars are in one unit.

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Derby
Egg products - at processing plant [1)]		Single	25g	32	2	2			
Eggs - raw material (liquid egg) for egg products [2)]		Single	25g	15	0				
Eggs - table eggs - at packing centre [3)]		Single	25g	32	0				
Fishery products, unspecified - at retail [4)]		Single	25g	46	0				
Fruits and vegetables - precut - ready-to-eat [5)]		Single	25g	65	0				
Molluscan shellfish - raw - at processing plant [6)]		Single	25g	5	0				
Cocoa and cocoa preparations, coffee and tea [7)]		Single	25g	12	0				
Eggs - raw material (liquid egg) for egg products - Surveillance - official controls - objective sampling [8)]		Single	25g	8	0				
Fish - cooked [9)]		Single	25g	33	0				
Fish - raw - at processing plant [10)]		Single	25g	47	0				
Honey [11)]		Single	25g	3	0				
Meat, mixed meat - meat products - fermented sausages [12)]		Single	25g	61	0				
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - carcass [13)]		Single		751	2				2
Other food [14)]		Single	25g	360	1		1		
Other food of non-animal origin [15)]		Single	25g	1	1	1			
Spices and herbs [16)]		Single	25g	25	0				
Water [17)]		Single	50ml	1	0				

Table Salmonella in other food

Comments:

1) HACCP
2) HACCP
3) HACCP
4) official control
5) HACCP
6) HACCP
7) HACCP
8) official control
9) HACCP
10) HACCP
11) HACCP
12) HACCP
13) HACCP; sponge and swabs
14) HACCP
15) Epidemiologycal control
16) HACCP
17) HACCP

Footnote:

Differences between food prevalence tables and antimicrobial tables are due to fact, that one official food sample consists of 5 units, but sample is positive if one or more units are positives. It means that from one official food sample can be isolated several salmonella cultures depending on how much units are positive or how many serovars are in one unit.

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cheeses made from cows' milk - soft and semi-soft - at processing plant [1)]		Single	25g	55	0			
Cheeses made from cows' milk - soft and semi-soft - at retail [2)]		Single	25g	7	0			
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail		Single	25g	7	0			
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant [3)]		Single	25g	8	0			
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at processing plant [4)]		Single	25g	5	0			
Dairy products (excluding cheeses) - butter - made from raw or low heat-treated milk - at processing plant [5)]		Single	25g	32	0			
Dairy products (excluding cheeses) - cream - made from raw or low heat-treated milk - at processing plant [6)]		Single	25g	12	0			
Dairy products (excluding cheeses) - ice-cream - at processing plant [7)]		Single	25g	10	0			
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant [8)]		Single	25g	80	0			
Milk, cows' - pasteurised milk - at processing plant [9)]		Single	25ml	46	0			
Milk, cows' - raw - intended for direct human consumption [10)]		Single	25ml	48	0			

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows' - raw milk for manufacture - intended for manufacture of pasteurised/UHT products [11)]		Single	25ml	3	0			
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products [12)]		Single	25ml	4	0			
Cheeses made from cows' milk - hard - made from pasteurised milk - Surveillance [13)]		Single	25g	40	0			
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at retail [14)]		Single	25g	8	0			
Dairy products (excluding cheeses) - dairy products, not specified - made from pasteurised milk [15)]		Single	25g	11	0			
Dairy products (excluding cheeses) - fermented dairy products [16)]		Single	25g	157	0			
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - Surveillance - official controls [17)]		Single	25g	2	0			
Dairy products (excluding cheeses) - sour milk - at processing plant [18)]		Single	25g	5	0			
Dairy products (excluding cheeses) - yoghurt [19)]		Single	25g	11	0			

Comments:

1) HACCP
2) official control
3) HACCP
4) HACCP
5) HACCP
6) HACCP

Table Salmonella in milk and dairy products

[7] HACCP
[8] HACCP
[9] HACCP
[10] HACCP
[11] HACCP
[12] HACCP
[13] HACCP
[14] official control
[15] official control
[16] HACCP
[17] official control
[18] HACCP
[19] official control

Footnote:

Differences between food prevalence tables and antimicrobial tables are due to fact, that one official food sample consists of 5 units, but sample is positive if one or more units are positives. It means that from one official food sample can be isolated several salmonella cultures depending on how much units are positive or how many serovars are in one unit.

2.1.3 Salmonella in animals

A. Salmonella spp. in Gallus Gallus - breeding flocks

Monitoring system

Sampling strategy

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

Testing is carried out according to the sampling requirements of the:
1)Regulation (EC) 2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified food-borne zoonotic agents;
2)Commission Regulation (EC) No 1003/2005/EC of 30 June 2005 implementing regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in breeding flocks of Gallus gallus and amending Regulation (EC) no 2160/2003.

1. Samples in breeding flocks of Gallus gallus are taken:
1.1. for day-old chicks:
-rinses from the internal surfaces of the container in which the chicks have been transported to the establishment;
-materials from chicks that have died during transportation;
1.2. four-week old birds: pooled faecal samples;
1.3. birds two weeks before starting of the laying cycle: pooled faecal samples.
2. Samples in adult breeding flocks of Gallus gallus are taken every third week:
2.1. in free-access flocks:
-two pooled faecal samples from each building where birds are kept;
or
-five pairs of boots/"socks".
2.2. in cage breeding flocks, depending on how faeces are collected:
-two pooled faecal samples from dropping belts;
or
-twp pooled faecal samples from scrapers;
or
-two pooled faecal samples from deep pits.
2.3. These samples are also taken from breeding flocks of Gallus gallus with less than 250 birds.
2.4. The official samples mentioned in 2. are taken three times from adult breeding flocks of Gallus gallus by a FVS veterinary inspector:
2.4.1. within four weeks following the start of laying cycle;
2.4.2. eight weeks before the end of the laying cycle;
2.4.3. at any time during the laying cycle, but not close to the samples mentioned in 2.4.1. and 2.4.2.
3. Sampling at the hatchery:
3.1. composite sample of visibly soiled hatcher basket liners taken at random from five separate hatcher baskets or locations in the hatcher to reach a total of at least 1 m2;
3.2. composite sample of 10 g broken eggshells taken from 25 separate hatcher baskets;
3.3. every 16 weeks, the sampling provided in 3.1. and 3.2. must be replaced by official sampling.

Frequency of the sampling

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Every flock is sampled

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

Other: four-week old birds and young birds two weeks before the start of the laying cycle

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

Every third week

Type of specimen taken

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Other: rinses from the internal surfaces of the container and dead chickens

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

Other: pooled faecal samples

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

Other:pooled faecal samples or boots/"socks"

Case definition

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Diagnostic/analytical methods used

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Vaccination policy

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

Preventive vaccination against zoonotic salmonellosis agents is permitted using inactivated vaccines or live marked vaccines.

Other preventive measures than vaccination in place

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

-Bio-security measures are applied at the holdings.
-Antibiotics are not used as a specific method to control Salmonella except under clearly defined exceptional circumstances as laid down in Commission Regulation (EC) No 1177/2006 of 1 August 2006

implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards requirements for the use of specific control methods in the framework of national programmes for the control of Salmonella in poultry.

Measures in case of the positive findings or single cases

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

-Official trade restrictions on the animals and the products thereof are applied to the infected flock.
-Live animals from the infected flock are not allowed to leave the holding except for slaughter.
-The positive flock is slaughtered at the end of the working day or on a separate line. The slaughterhouse is thoroughly cleaned and disinfected afterwards.
- Meat of the positive flock is heat treated according to the Community legislation on food hygiene.
-Hatching eggs are not allowed to leave the holding except for destruction or further processing at an establishment producing egg products.
-The premises of the infected flock are cleaned and disinfected. Restocking is allowed after an official enviromental sampling.
-If Salmonella spp. are detected in a breeding flock, all other flocks in the same holding are officially sampled at the earliest convenience.
-Official epidemiological investigations are carried out to clarify the origin of the Salmonella infection.

B. Salmonella spp. in Gallus Gallus - broiler flocks

Monitoring system

Sampling strategy

Broiler flocks

Testing is carried out according to the sampling requirements of the:
1)Regulation (EC)2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified food-borne zoonotic agents;
2)Commission Regulation (EC) No 646/2007 of 12 June 2007 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards a Community target for the reduction of the prevalence of Salmonella enteritidis and Salmonella typhimurium in broilers and repealing Regulation (EC) No 1091/2005
3)Regulation of Cabinet of Ministers No 741, 6 November, 2007 “Order of eradication of salmonella and other food-borne zoonotic agents in poultry flocks which are direct suppliers of small quantities to final consumer”.

Every flock is sampled three weeks prior to slaughter.

Frequency of the sampling

Broiler flocks: Before slaughter at farm

Every flock is sampled

Type of specimen taken

Broiler flocks: Before slaughter at farm

Socks/ boot swabs

Case definition

Broiler flocks: Before slaughter at farm

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Diagnostic/analytical methods used

Broiler flocks: Before slaughter at farm

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Other preventive measures than vaccination in place

Broiler flocks

Bio-security measures are applied at the holdings.

Measures in case of the positive findings or single cases

Broiler flocks: At slaughter (flock based approach)

-Live animals from infected flock are not allowed to leave the holding except for slaughter.
-The positive flock is slaughtered at the end of the working day or on a separate line. The slaughterhouse is thoroughly cleaned and disinfected afterwards.
-The premises of the infected flock are cleaned and disinfected.

Notification system in place

All Salmonella serotypes are notifiable in animals, foodstuffs, feed and humans.

C. Salmonella spp. in Gallus Gallus - flocks of laying hens

Monitoring system

Sampling strategy

Laying hens flocks

Testing is carried out according to the sampling requirements of the:
1)Regulation (EC) No 2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified food-borne zoonotic agents;
2)Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005.
3)Regulation of Cabinet of Ministers No 741, 6 November, 2007 “Order of eradication of salmonella and other food-borne zoonotic agents in poultry flocks which are direct suppliers of small quantities to final consumer”.

1.Samples of laying hen flocks are taken:
1.1. for day-old chicks:
-rinses from the internal surfaces of the container in which the chicks have been transported to the establishment;
-materials from chicks that have died during transportation;
1.2. pullets two weeks before the start of the laying cycle: pooled faecal samples.
2. Samples from adult laying hens are taken every fifteen weeks and four weeks prior to slaughter.
2.1.in cage flocks - two pooled faecal samples from each house where birds are kept;
2.2.in barn or free range flocks - two pairs of boot swabs or socks.
3. The official samples mentioned in 2 and dust samples are taken from adult laying hen flocks by FVS veterinary inspector:
3.1.in one flock per year per holding;
3.2.in cases where the Food and veterinary service considers it appropriate;
3.3.a sampling carried out by Food and veterinary service replaces one sampling at the initiative of the operator.

Frequency of the sampling

Laying hens: Day-old chicks

Every flock is sampled

Laying hens: Rearing period

Other: pullets two weeks before the start of the laying cycle

Laying hens: Production period

Every 15 weeks

Laying hens: Before slaughter at farm

4 weeks prior to slaughter

Type of specimen taken

Laying hens: Day-old chicks

Other: rinses from the internal surfaces of the container and dead chickens

Laying hens: Rearing period

Other: pooled faecal samples

Laying hens: Production period

Other: pooled faecal samples or boots/"socks"

Laying hens: Before slaughter at farm

Other: pooled faecal samples or boots/"socks"

Case definition

Laying hens: Day-old chicks

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Laying hens: Rearing period

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Laying hens: Production period

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Laying hens: Before slaughter at farm

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Diagnostic/analytical methods used

Laying hens: Day-old chicks

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Laying hens: Rearing period

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Laying hens: Production period

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Laying hens: Before slaughter at farm

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Vaccination policy

Laying hens flocks

Preventive vaccination against zoonotic salmonellosis agents is permitted using inactivated vaccines or live marked vaccines according to Commission Regulation (EC) No 1177/2006 of 1 August 2006 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards for the use of specific control methods in the framework of national programmes for the control of Salmonella in poultry.

Other preventive measures than vaccination in place

Laying hens flocks

Bio-security measures are applied at the holdings.

Measures in case of the positive findings or single cases

Laying hens flocks

-Trade restrictions on the animals and products thereof are applied to the infected flocks.
-Live animals from the infected flock are not allowed to leave the holding except for slaughter.
-Meat of the positive flock is heat treated according to the Community legislation on food hygiene.
-Table eggs are not allowed to leave the holding except for further processing at an establishment producing egg products.
-The premises of the infected flock are cleaned and disinfected. Restocking is allowed after an official environmental sampling.
- If Salmonella spp. are detected in a laying hen flock, all other flocks in the same holding are officialy sampled at the earliest convenience.
-Epidemiological investigations are carried out to clarify the origin of the Salmonella infection.

Notification system in place

All Salmonella serotypes are notifiable in animals, foodstuffs, feed and humans.

D. Salmonella spp. in bovine animals

Additional information

Salmonellosis in other animals than poultry is not surveyed. Table shows results of investigations on request of the owner or veterinarian in case of clinical symptoms.

E. Salmonella spp. in ducks - breeding flocks and meat production flocks

Additional information

Look at Salmonella spp. in animal

F. Salmonella spp. in geese - breeding flocks and meat production flocks

Additional information

Look at Salmonella spp. in animal

G. Salmonella spp. in pigs

Additional information

Salmonellosis in other animals than poultry is not surveyed. Table shows results of investigations on request of the owner or veterinarian in case of clinical symptoms.

H. Salmonella spp. in turkey - breeding flocks and meat production flocks

Additional information

There is no registered commercial turkey flocks in Latvia.

I. Salmonella spp. in animal

Monitoring system

Sampling strategy

Testing is carried out according to the sampling requirements of the
Regulation of Cabinet of Ministers No 741, 6 November, 2007 “Order of eradication of salmonella and other food-borne zoonotic agents in poultry flocks which are direct suppliers of small quantities to final consumer”.

1.Samples are taken in poultry flocks others than Gallus gallus(quail etc.) for egg production:
1.1. day-old birds:
- rinses from the internal surfaces of boxes in which the chicks are delivered to the holding;
- samples from the carcasses of chicks found to be dead on arrival.
1.2.pullets two weeks prior to entering the laying phase - pooled faeces samples;
1.3.poultry once during laying phase and 4 weeks prior to slaughter - pooled faeces samples.

2. Samples are taken in duck and geese flocks for meat production - semi-annually one flock per holding prior to slaughter - pooled faecal samples.

Case definition

Animals at farm

A positive case is a unit (flock, herd or individual animal) confirmed positive for Salmonella. In general, the flock is the epidemiological unit.

Diagnostic/analytical methods used

Animals at farm

Bacteriological method: Amendment 1 of EN/ISO 6579-2002/Amd1:2007

Measures in case of the positive findings or single cases

-Trade restrictions on poultry and products thereof are applied to the infected flock.
-Live poultry from the infected flock is not allowed to leave the holding except for slaughter.
-Meat of the positive flock has to be heat treated according to the Community legislation on food hygiene.
-Table eggs are not allowed to leave the holding except for further processing in an establishment producing egg products.
-The premises of the infected flock are cleaned and disinfected.
-Epidemiological investigations are carried out to clarify the origin of the Salmonella infection.

Notification system in place

Salmonella spp. is notifiable in animals, foodstuffs, feed and humans.

Table Salmonella in breeding flocks of Gallus gallus

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	Salmonella spp., unspecified
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks	18	control programme	Flock	18	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period	20	control programme	Flock	20	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult	25	control programme	Flock	25	0						

Footnote:

There was only one establishment which kept parent breeding flocks (Gallus gallus) - in broiler production sectot - in the Latvia in 2009.

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	Other serotypes	S. Menden	S. Montevideo
Gallus gallus (fowl) - laying hens - day-old chicks [1)]			Animal	10	1	1					
Gallus gallus (fowl) - laying hens - during rearing period [2)]			Animal	157	2	1					
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling [3)]	71	control programme	Flock	71	7	7					
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry	71	control programme	Flock	71	8	8					
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	71	control programme	Flock	41	7	7					
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling	71	control programme	Flock	1	0						
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	566	control programme	Flock	566	40	30				5	5
Geese - breeding flocks, unspecified [4)]			Animal	10	1		1				
Gallus gallus (fowl) - laying hens - day-old chicks - at farm - environmental sample - Control and eradication programmes - industry sampling - objective sampling		control programme	Flock	27	0						
Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - environmental sample - Control and eradication programmes - official and industry sampling - objective sampling		control programme	Flock	30	1				1		

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	Other serotypes	S. Menden	S. Montevideo
Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - environmental sample - Control and eradication programmes - official sampling		control programme	Flock	6	1				1		

	S. Newport
Gallus gallus (fowl) - laying hens - day-old chicks [1)]	
Gallus gallus (fowl) - laying hens - during rearing period [2)]	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling [3)]	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling	
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	
Geese - breeding flocks, unspecified [4)]	

Table Salmonella in other poultry

	S. Newport
Gallus gallus (fowl) - laying hens - day-old chicks - at farm - environmental sample - Control and eradication programmes - industry sampling - objective sampling	
Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - environmental sample - Control and eradication programmes - official and industry sampling - objective sampling	
Gallus gallus (fowl) - laying hens - during rearing period - flocks under control programme - at farm - environmental sample - Control and eradication programmes - official sampling	

Comments:

[1)] HACCP

[2)] HACCP

[3)] In 2009 - 4 positive layer flocks out of total 7 positive laying hen flocks were flocks which are direct suppliers of small quantities to final consumer (with no more 50 birds in one flock)

[4)] HACCP

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Derby	S. Tennessee
Pigs - fattening pigs [1)]		Animal	64	7		4		2	1
Cats - pet animals - Clinical investigations		Animal	18	0					
Dogs - pet animals - Clinical investigations		Animal	23	0					
Zoo animals, all - Surveillance - HACCP and own checks		Animal	17	0					

Comments:

[1)] Clinical investigation

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bloomsbury
Ostriches [1)]		Animal	3	0				
Partridges [2)]		Animal	1	1			1	
Pheasants [3)]		Animal	2	0				
Quails [4)]	control programme	Flock	11	1				1

Comments:

[1)] HACCP and official control
[2)] HACCP
[3)] HACCP and official control
[4)] official control

2.1.4 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Compound feedingstuffs for cattle - final product [1)]		Single	25g	7	0			
Compound feedingstuffs for pigs - final product [2)]		Single	25g	39	0			
Compound feedingstuffs for poultry (non specified) - final product	Official control	Batch	25g	5	0			
Compound feedingstuffs for poultry - laying hens - final product [3)]		Single	25g	56	0			
Compound feedingstuffs for poultry - laying hens - process control	Official control	Batch	25g	3	0			
Compound feedingstuffs for poultry -breeders - final product	Official control	Batch	25g	10	0			
Compound feedingstuffs for poultry - broilers - final product [4)]		Single	25g	28	0			
Pet food - dog snacks (pig ears, chewing bones) [5)]		Single	25g	30	0			
Compound feedingstuffs for cattle - final product - Surveillance - official controls	Official control	Batch	25g	3	0			
Compound feedingstuffs for fish - final product - Surveillance - HACCP and own checks		Single	25g	2	0			
Compound feedingstuffs for pigs - final product - Surveillance - official controls	Official control	Batch	25g	8	0			
Compound feedingstuffs for poultry - broilers - final product - Surveillance - official controls	Official control	Batch	25g	5	0			

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Compound feedingstuffs for poultry - laying hens - final product - Surveillance - official controls	Official control	Batch	25g	29	0			
Compound feedingstuffs, not specified - final product - Surveillance - HACCP and own checks		Single	25g	54	2			2
Compound feedingstuffs, not specified - final product - Surveillance - official controls [6)]	Official control	Batch	25g	1	0			
Compound feedingstuffs, not specified - final product - Surveillance - official controls - objective sampling [7)]	Official control	Batch	25g	5	0			

Comments:

[1)] HACCP
[2)] HACCP
[3)] HACCP
[4)] HACCP
[5)] HACCP
[6)] Complete feed for dog
[7)] Compound feed (80% fish meel)

Footnote:

The specimen used for analysis in the laboratory is 25g, but initial weight of official feed sample is 500g.

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Senftenberg
Feed material of cereal grain origin - barley derived [1)]		Single	25g	5	0				
Feed material of cereal grain origin - maize - derived [2)]		Single	25g	9	0				
Feed material of cereal grain origin - other cereal grain derived [3)]		Single	25g	3	0				
Feed material of cereal grain origin - wheat derived [4)]		Single	25g	11	0				
Feed material of oil seed or fruit origin - other oil seeds derived [5)]		Single	25g	1	0				
Feed material of oil seed or fruit origin - rape seed derived [6)]		Single	25g	6	0				
Feed material of oil seed or fruit origin - soya (bean) derived [7)]		Single	25g	36	3			1	2
Feed material of oil seed or fruit origin - sunflower seed derived [8)]		Single	25g	14	0				
Other feed material - tubers, roots and similar products [9)]		Single	25g	2	0				
Feed material of oil seed or fruit origin - soya (bean) derived - Surveillance - official controls	Official control	Batch	25g	1	0				

Comments:

[1)] HACCP
[2)] HACCP
[3)] HACCP
[4)] HACCP

Table Salmonella in other feed matter

[5)] HACCP
[6)] HACCP
[7)] HACCP
[8)] HACCP
[9)] HACCP

Footnote:

The specimen used for analysis in the laboratory is 25g, but initial weight of official feed sample is 500g.

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney
Feed material of land animal origin - blood meal [1)]		Single	25g	1	0				
Feed material of land animal origin - feather meal [2)]		Single	25g	42	1			1	
Feed material of land animal origin - meat and bone meal [3)]		Single	25g	44	0				
Feed material of land animal origin - meat meal [4)]		Single	25g	23	0				
Feed material of land animal origin - poultry offal meal [5)]		Single	25g	5	0				
Feed material of marine animal origin - fish meal [6)]		Single	25g	203	0				
Feed material of marine animal origin - fish oil [7)]		Single	25ml	3	0				
Feed material of marine animal origin - other fish products [8)]		Single	25g	7	0				
Compound feedingstuffs for fur animal - process control - at farm - feed sample - Surveillance - HACCP and own checks		Single	25g	27	2	1			1
Feed material of marine animal origin - fish meal - Surveillance - official controls	Official control	Batch	25g	2	0				
Other feed material - yeast - Surveillance - HACCP and own checks		Single	25g	93	0				

Comments:

[1)] HACCP
[2)] HACCP
[3)] HACCP
[4)] HACCP
[5)] HACCP

Table Salmonella in feed material of animal origin

[6] HACCP
[7] HACCP
[8] HACCP

Footnote:

The specimen used for analysis in the laboratory is 25g, but initial weight of official feed sample is 500g.

2.1.5 Salmonella serovars and phagetype distribution

The methods of collecting, isolating and testing of the Salmonella isolates are described in the chapters above respectively for each animal species, foodstuffs and humans. The serotype and phagetype distributions can be used to investigate the sources of the Salmonella infections in humans. Findings of same serovars and phagetypes in human cases and in foodstuffs or animals may indicate that the food category or animal species in question serves as a source of human infections. However as information is not available from all potential sources of infections, conclusions have to be drawn with caution.

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Geese - breeding flocks, unspecified		Partridges		Quails
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring
Number of isolates in the laboratory				7	66				1		1		1
Number of isolates serotyped	0	0	0	7	66	0	0	0	1	0	1	0	1
Number of isolates per serovar													
Other serotypes					1								
S. Bloomsbury													1
S. Derby				2									
S. Enteritidis					54								
S. Menden					5								
S. Montevideo					5								

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Geese - breeding flocks, unspecified		Partridges		Quails
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring
Number of isolates in the laboratory				7	66				1		1		1
Number of isolates serotyped	0	0	0	7	66	0	0	0	1	0	1	0	1
Number of isolates per serovar													
S. Newport					1								
S. Tennessee				1									
S. Typhimurium				4					1				
Salmonella spp., unspecified											1		

Serovar	Quails
Sources of isolates	Clinical
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
Other serotypes	
S. Bloomsbury	
S. Derby	

Table Salmonella serovars in animals

Serovar	Quails
Sources of isolates	Clinical
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
S. Enteritidis	
S. Menden	
S. Montevideo	
S. Newport	
S. Tennessee	
S. Typhimurium	
Salmonella spp., unspecified	

Footnote:

Monitoring = HACCP + control programme

Table Salmonella serovars in food

Serovar	Meat from bovine animals	Meat from pig	Meat from broilers (Gallus gallus)	Meat from other poultry species	Other products of animal origin	Egg products	Meat from turkey	Meat, mixed meat	Other food
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory		6	1		2	2	1	5	2
Number of isolates serotyped	0	6	1	0	2	2	1	5	2
Number of isolates per serovar									
S. Bredeney		3	1						
S. Chartres								1	
S. Derby					2				
S. Enteritidis						2	1	1	1
S. Typhimurium		3						1	1
S. Virchow								2	

Table Salmonella serovars in feed

Serovar	Compound feedingstuffs for pigs		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks		Compound feedingstuffs, not specified - Surveillance - HACCP and own checks		Feed material of land animal origin - feather meal - Surveillance - HACCP and own checks		Feed material of oil seed or fruit origin - soya (bean) derived - Surveillance - HACCP and own checks	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory			2		2		1		3	
Number of isolates serotyped	0	0	2	0	2	0	1	0	3	0
Number of isolates per serovar										
Salmonella spp., unspecified					2		1		1	
S. Bredeney			1							
S. Enteritidis			1							
S. Senftenberg									2	

Table Salmonella Enteritidis phagetypes in animals

Phagetype	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
					13			
	0	0	0	0	13	0	0	0
Not typeable					1			
PT 1					1			
PT 14b					6			
PT 21					2			
PT 4					1			
PT 59					1			
PT 7					1			

Table Salmonella Typhimurium phagetypes in animals

Phagetype	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Geese - unspecified - during rearing period - at farm - environmental sample - boot swabs - Surveillance - HACCP and own checks	
	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
									1	
	0	0	0	0	0	0	0	0	1	0
DT 193									1	

2.1.6 Antimicrobial resistance in Salmonella isolates

A. Antimicrobial resistance in Salmonella in poultry

Additional information

Differences between prevalence tables and antimicrobial resistance tables are due to fact, that for instance positive poultry flock is counted only once irrespective of number of samples taken and isolated salmonella cultures from flock.
Also antimicrobial resistance is detected for salmonella cultures from official samples and self - control samples, which are investigated in Nacional reference laboratory BIOR, there no shown data on antimicrobial resistance from self-control samples investigated in private (company) laboratories. In the prevalence tables shown all data from official control and self-control as well.

Table Antimicrobial susceptibility testing of S. Enteritidis in Egg products - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Egg products																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	2																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0										1	1										2	64
Tetracyclines - Tetracycline	8	2	0									2												1	64
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.008	8
Quinolones - Nalidixic acid	16	2	2													2								4	64
Trimethoprim	2	2	0							2														0.5	32
Aminoglycosides - Streptomycin	32	2	0									1	1											2	128
Aminoglycosides - Gentamicin	2	2	0						1	1														0.25	32
Penicillins - Ampicillin	4	2	0								1	1												0.5	32
Cephalosporins - Cefotaxim	0.5	2	0					2																0.006	4
Sulfonamides		2	0													2								8	1024

Table Antimicrobial susceptibility testing of S. Bloomsbury in Quails - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Bloomsbury	Quails																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0											1									2	64
Amphenicols - Florfenicol	16	1	1										1										2	64
Tetracyclines - Tetracycline		1	0									1											1	64
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																	0.008	8
Quinolones - Nalidixic acid	16	1	0										1										4	64
Trimethoprim	2	1	0							1													0.5	32
Aminoglycosides - Streptomycin	32	1	0											1									2	128
Aminoglycosides - Gentamicin	2	1	0							1													0.25	32
Penicillins - Ampicillin	4	1	0								1												0.5	32
Cephalosporins - Cefotaxim		1	0					1															0.06	4
Sulfonamides	256	1	0													1							8	1024

Table Antimicrobial susceptibility testing of S. Derby in Pigs - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Derby	Pigs																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	2																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0											1	1								2	64
Amphenicols - Florfenicol	2	2	2											2									2	64
Tetracyclines - Tetracycline	8	2	0									2											1	64
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																	0.008	8
Quinolones - Nalidixic acid	16	2	0											2									4	64
Trimethoprim		2	0							2													0.5	32
Aminoglycosides - Streptomycin	32	2	0												2								2	128
Aminoglycosides - Gentamicin	2	2	0							2													0.25	32
Penicillins - Ampicillin	4	2	0									1	1										0.5	32
Cephalosporins - Cefotaxim	0.5	2	0					2															0.06	4
Sulfonamides	256	2	0													1		1					8	1024

Table Antimicrobial susceptibility testing of S. Tennessee in Pigs - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Tennessee	Pigs																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0												1									2	64
Amphenicols - Florfenicol	2	1	1												1									2	64
Tetracyclines - Tetracycline	8	1	0										1											1	64
Fluoroquinolones - Ciprofloxacin		1	0			1																		0.008	8
Quinolones - Nalidixic acid		1	0											1										4	64
Trimethoprim		1	0								1													0.5	32
Aminoglycosides - Streptomycin	32	1	0											1										2	128
Aminoglycosides - Gentamicin	2	1	0							1														0.25	32
Penicillins - Ampicillin	4	1	0										1											0.5	32
Cephalosporins - Cefotaxim	0.5	1	0						1															0.06	4
Sulfonamides	256	1	0														1							8	1024

Table Antimicrobial susceptibility testing of S. Newport in Gallus gallus (fowl) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Newport	Gallus gallus (fowl)																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0										1											2	64
Amphenicols - Florfenicol	2	1	1									1												2	64
Tetracyclines - Tetracycline	8	1	0								1													1	64
Fluoroquinolones - Ciprofloxacin	0.06	1	0		1																			0.008	8
Quinolones - Nalidixic acid	16	1	0										1											4	64
Trimethoprim	2	1	0							1														0.5	32
Aminoglycosides - Streptomycin	32	1	0											1										2	128
Aminoglycosides - Gentamicin	2	1	0							1														0.25	32
Penicillins - Ampicillin	4	1	0								1													0.5	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	4
Sulfonamides	256	1	0															1						8	1024

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Pigs																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	4																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	4	2											2			2							2	64
Amphenicols - Florfenicol	2	4	4												4									2	64
Tetracyclines - Tetracycline	8	4	0								2	2												1	64
Fluoroquinolones - Ciprofloxacin	0.06	4	0		4																			0.008	8
Quinolones - Nalidixic acid	16	4	0										4											4	64
Trimethoprim		4	2							2						2								0.5	32
Aminoglycosides - Streptomycin	32	4	0											2	2									2	128
Aminoglycosides - Gentamicin	2	4	0						2	2														0.25	32
Penicillins - Ampicillin	4	4	2									2				2								0.5	32
Cephalosporins - Cefotaxim	0.5	4	0				2	2																0.06	4
Sulfonamides	256	4	2											2							2			8	1024

Table Antimicrobial susceptibility testing of S. Typhimurium in Geese - breeding flocks, unspecified - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Geese - breeding flocks, unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0										1										2	64
Amphenicols - Florfenicol	2	1	1									1											2	64
Tetracyclines - Tetracycline	8	1	0									1											1	64
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																	0.008	8
Quinolones - Nalidixic acid	16	1	0										1										4	64
Trimethoprim		1	0							1													0.5	32
Aminoglycosides - Streptomycin	32	1	0												1								2	128
Aminoglycosides - Gentamicin	2	1	0							1													0.25	32
Penicillins - Ampicillin	4	1	0								1												0.5	32
Cephalosporins - Cefotaxim	0.5	1	0				1																0.25	16
Sulfonamides	256	1	0													1							8	1024

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Gallus gallus (fowl)																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	25																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	25	0									1	16	8										2	64
Amphenicols - Florfenicol	16	25	25									1	24											2	64
Tetracyclines - Tetracycline	8	25	0								5	20												1	64
Fluoroquinolones - Ciprofloxacin		25	0		3	21	1																	0.008	8
Quinolones - Nalidixic acid	16	25	0										24	1										4	64
Trimethoprim	2	25	0							20		5												0.5	32
Aminoglycosides - Streptomycin	32	25	0									18	7											2	128
Aminoglycosides - Gentamicin	2	25	0						15	7	2	1												0.25	32
Penicillins - Ampicillin	4	25	0								2	23												0.5	32
Cephalosporins - Cefotaxim	0.5	25	0				9	15	1															0.06	4
Sulfonamides		25	0											1	3	16	4	1						8	1024

Table Antimicrobial susceptibility testing of S. Enteritidis in Other food - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Other food																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0										1											2	64
Tetracyclines - Tetracycline	8	1	0									1												1	64
Fluoroquinolones - Ciprofloxacin	0.06	1	0		1																			0.008	8
Quinolones - Nalidixic acid	16	1	0										1											4	64
Trimethoprim	2	1	0							1														0.5	32
Aminoglycosides - Streptomycin		1	0									1												2	128
Aminoglycosides - Gentamicin	2	1	0						1															0.25	32
Penicillins - Ampicillin	4	1	0									1												0.5	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	4
Sulfonamides		1	0													1								8	1024

Table Antimicrobial susceptibility testing of S. Chartres in Meat, mixed meat - minced meat - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Chartres	Meat, mixed meat - minced meat																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0												1									2	64
Tetracyclines - Tetracycline	8	1	0										1											1	64
Fluoroquinolones - Ciprofloxacin	0.06	1	1								1													0.008	8
Quinolones - Nalidixic acid	16	1	1														1							4	64
Trimethoprim	2	1	0								1													0.5	32
Aminoglycosides - Streptomycin	32	1	1														1							2	128
Aminoglycosides - Gentamicin	2	1	1												1									0.25	32
Penicillins - Ampicillin	4	1	1													1								0.5	32
Cephalosporins - Cefotaxim	0.5	1	0						1															0.06	4
Sulfonamides		1	1																		1			8	1024

Table Antimicrobial susceptibility testing of S. Derby in Meat from pig - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Derby	Meat from pig																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	6																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	6	0											6										2	64
Tetracyclines - Tetracycline	8	6	5									1					5							1	64
Fluoroquinolones - Ciprofloxacin	0.06	6	0			6																		0.008	8
Quinolones - Nalidixic acid	16	6	0										6											4	64
Trimethoprim	2	6	0							1	5													0.5	32
Aminoglycosides - Streptomycin	16	6	0											1	5									2	128
Aminoglycosides - Gentamicin	2	6	0						1		5													0.25	32
Penicillins - Ampicillin	4	6	0								5	1												0.5	32
Cephalosporins - Cefotaxim	0.5	6	0					6																0.06	4
Sulfonamides		6	0														1	5						8	1024

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from pig - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Meat from pig																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	6																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	6	1											5			1							2	64
Tetracyclines - Tetracycline	8	6	6													1	5							1	64
Fluoroquinolones - Ciprofloxacin	0.06	6	0		1	5																		0.008	8
Quinolones - Nalidixic acid	16	6	0										6											4	64
Trimethoprim	2	6	2							4						2								0.5	32
Aminoglycosides - Streptomycin	32	6	6														1	5						2	128
Aminoglycosides - Gentamicin		6	0						2	4														0.25	32
Penicillins - Ampicillin	4	6	6													6								0.5	32
Cephalosporins - Cefotaxim	0.5	6	0				3	2	1															0.06	4
Sulfonamides		6	6																		6			8	1024

Table Antimicrobial susceptibility testing of S. Enteritidis in Meat from turkey - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Meat from turkey																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0											1									2	64
Tetracyclines - Tetracycline	8	1	0										1										1	64
Fluoroquinolones - Ciprofloxacin	0.06	1	1							1													0.008	8
Quinolones - Nalidixic acid	16	1	1														1						4	64
Trimethoprim	2	1	1													1							0.5	32
Aminoglycosides - Streptomycin	32	1	0													1							2	128
Aminoglycosides - Gentamicin		1	0						1														0.25	32
Penicillins - Ampicillin	4	1	0									1											0.5	32
Cephalosporins - Cefotaxim	0.5	1	0						1														0.25	16
Sulfonamides		1	0												1								8	1024

Table Antimicrobial susceptibility testing of S. Virchow in Other food - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Virchow	Other food																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	2																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0											2										2	64
Tetracyclines - Tetracycline	8	2	0									2												1	64
Fluoroquinolones - Ciprofloxacin	0.06	2	2						2															0.008	8
Quinolones - Nalidixic acid	16	2	2														2							4	64
Trimethoprim	2	2	0							2														0.5	32
Aminoglycosides - Streptomycin	32	2	0											2										2	128
Aminoglycosides - Gentamicin	2	2	0							1	1													0.25	32
Penicillins - Ampicillin	4	2	0								2													0.5	32
Cephalosporins - Cefotaxim	0.5	2	0				2																	0.06	4
Sulfonamides		2	0													2								8	1024

Table Antimicrobial susceptibility testing of S. Typhimurium in Other food - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Other food																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0											1										2	64
Tetracyclines - Tetracycline	8	1	0							1														1	64
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.008	8
Quinolones - Nalidixic acid	16	1	0										1											4	64
Trimethoprim	2	1	0							1														0.5	32
Aminoglycosides - Streptomycin	32	1	0											1										2	128
Aminoglycosides - Gentamicin	2	1	0						1															0.25	32
Penicillins - Ampicillin	4	1	0									1												0.5	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	4
Sulfonamides		1	0																1					8	1024

Table Cut-off values for antibiotic resistance testing of Salmonella in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.06	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.5	
Penicillins	Ampicillin		4	

Table Cut-off values for antibiotic resistance testing of Salmonella in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.06	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.5	
Penicillins	Ampicillin		4	

Table Cut-off values for antibiotic resistance testing of Salmonella in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.06	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.5	
Penicillins	Ampicillin		4	

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

History of the disease and/or infection in the country

Campylobacter in food has been monitored for the first time in 2004.

In 2004 and 2005, there was no control programme in place for thermophilic Campylobacter in feed or animals.
Campylobacter in broiler flocks has been monitored for the first time in 2006 and following in 2007. In 2008 monitoring of Campylobacter in broiler flocks was carried out in the framework of the Baseline Survey on Campylobacter spp. in broiler flocks and Campylobacter spp. and Salmonella spp. in broiler carcasses (Commission Decision 2007/516/EC of 19 July 2007).

In 2009, there was no control programme in place for the thermophilic Campylobacter in food and animals.

Campylobacteriosis is a notifiable disease in humans and animals.

National evaluation of the recent situation, the trends and sources of infection

Because of the short time that Campylobacter is controlled in food and monitored in broiler flocks, it is not possible to evaluate trends.
The number of human cases is very low and presumably does not reflect the real situation.

2.2.2 Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cats		Animal	18	0					
Cattle (bovine animals) - calves (under 1 year)		Animal	5	1		1			
Dogs		Animal	23	1		1			
Pigs		Animal	7	4	3	1			
Minks - farmed - at farm - animal sample - faeces - Clinical investigations		Animal	6	2		2			
Zoo animals, all - Surveillance - HACCP and own checks		Animal	15	0					

2.2.3 Antimicrobial resistance in Campylobacter isolates

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Macrolides	Erythromycin		4	

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Macrolides	Erythromycin		4	

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Macrolides	Erythromycin		4	

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

A. Listeriosis general evaluation

History of the disease and/or infection in the country

Monitoring of Listeria monocytogenes in food has been started in 2003 in the frame of a national surveillance programme. It was the first targeted control programme that has been set up additionally to the laboratory control programme, because Listeria is considered to be one of the most important microorgansims to cause human disease that may have fatal outcome. Especially the risk groups like pregnant women, newborns and small children and older people are very sensitive to Listeria infections, and there have been fatal cases in humans in the past.
In 2009, the national control programme on Listeria monocytogenes was based on the Regulation (EC) No 2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of Salmonella and other specified foodborne zoonotic agents.

National evaluation of the recent situation, the trends and sources of infection

Due to a short time of controlling foodstuffs and risk products it is hardly possible to evaluate trends.

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

Human cases are occuring sporadically.

2.3.2 Listeria in foodstuffs

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Crustaceans - unspecified - cooked - at processing plant		Single	25g	3	0	3	0			
Fish - smoked - at processing plant		Single	25/10g	21	1	20	1	1	0	0
Infant formula		Single	25g	5	0	5	0			
Meat from bovine animals - fresh		Single	25g	21	0	21	0			
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant		Single	25g	11	0			11	0	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail [1)]		Single	25g	8	0			8	0	0
Meat from broilers (Gallus gallus) - fresh		Single	25g	50	0	50	0			
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant		Single	25/10g	15	0	11	0	4	0	0
Meat from pig - fresh		Single	25g	58	0	58	0			
Meat from pig - meat products - cooked, ready-to-eat - at processing plant		Single	25/10g	71	0	31	0	40	0	0
Confectionery products and pastes - Surveillance - HACCP and own checks		Single	25/10g	10	0	5	0	5	0	0
Fish - cooked - Surveillance - HACCP and own checks		Single	25g	30	1	30	1			
Fish - raw - Surveillance - HACCP and own checks		Single	25/10g	106	25	104	25	2	0	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Fish - raw - frozen - Surveillance - official controls [2)]		Single	25g	3	0			3	0	0
Fish - smoked - cold-smoked - Surveillance - official controls [3)]		Single	25g	30	0			30	0	0
Fishery products, unspecified - ready-to-eat - Surveillance - official controls [4)]		Single	25g	13	0			13	0	0
Fruits - Surveillance - HACCP and own checks		Single	25/10g	21	0	19	0	2	0	0
Meat from pig - meat products - cooked, ready-to-eat - Surveillance - official controls [5)]		Single	25g	21	0			21	0	0
Meat from pig - meat products - fermented sausages [6)]		Single	25g	17	0			17	0	0
Meat, mixed meat - meat preparation - Surveillance - HACCP and own checks		Single	25/10g	91	0	75	0	16	0	0
Meat, mixed meat - meat products - fermented sausages		Single	25g	119	0	98	0	21	0	0
Water - Surveillance - HACCP and own checks		Single	25ml	1	0	1	0			

Comments:

[1)] official control
[2)] official control
[3)] official control
[4)] official control
[5)] official control
[6)] official control

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from cows' milk - hard - made from pasteurised milk - at processing plant		Single	25/10g	110	0	100	0	10	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant		Single	25g	21	0	21	0			
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail [1)]		Single	25g	15	0			15	0	0
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant		Single	25g	5	0	5	0			
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at processing plant		Single	25g	5	0	5	0			
Dairy products (excluding cheeses) - butter - at processing plant		Single	25	44	0	44	0			
Dairy products (excluding cheeses) - cream - at processing plant		Single	25	15	0	15	0			
Dairy products (excluding cheeses) - cream - at retail [2)]		Single	25g	6	0			6	0	0
Milk, cows' - pasteurised milk - at processing plant		Single	25ml	47	0	42	0	5	0	0
Milk, cows' - raw - intended for direct human consumption		Single	25ml	5	0	5	0			
Milk, goats' - pasteurised - at processing plant		Single	25ml	5	0	5	0			
Dairy products (excluding cheeses) - dairy products, not specified - made from pasteurised milk [3)]		Single	25g	12	0			12	0	0

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Dairy products (excluding cheeses) - fermented dairy products		Single	25/10g	277	0	258	0	19	0	0
Dairy products (excluding cheeses) - ice-cream - Surveillance - HACCP and own checks		Single	25g	66	0	66	0			
Dairy products (excluding cheeses) - milk powder and whey powder - Surveillance - HACCP and own checks		Single	25/10g	9	0	4	0	5	0	0
Dairy products (excluding cheeses) - yoghurt [4)]		Single	25g	8	0			8	0	0

Comments:

[1)] official control
[2)] official control
[3)] official control
[4)] official control

2.3.3 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals) - dairy cows		Animal	9	0		
Goats		Animal	4	0		
Pigs		Animal	2	0		
Minks - farmed		Animal	8	1	1	

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

History of the disease and/or infection in the country

In 2009, no control programme was existing in Latvia regarding VTEC infections in animals and food. Samples are sent by private veterinarians.

Additional information

The method used for detection of VTEC in animals is classical bacteriological method according to OIE Manual 2008 Chapter 2.9.11. Serogroups of E.coli are detected with antisera. It is possible to detect 20 different serogroups.

2.4.2 Escherichia coli, pathogenic in animals

Table VT E. coli in animals

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified	Verotoxigenic E. coli (VTEC) - VTEC O103	Verotoxigenic E. coli (VTEC) - VTEC O145	Verotoxigenic E. coli (VTEC) - VTEC O26
Cats		Animal		18	5		5		2	1	1
Dogs		Animal		23	7		7		5		2
Pigs		Animal		65	7		7		4		
Sheep - at farm		Animal		2	1		1		1		
Solipeds, domestic		Animal		2	1		1			1	
Minks - farmed		Animal		18	2		2		2		
Zoo animals, all		Animal		28	4		4		1		1

	Verotoxigenic E. coli (VTEC) - VTEC O91
Cats	
Dogs	
Pigs	2
Sheep - at farm	
Solipeds, domestic	
Minks - farmed	
Zoo animals, all	

Table VT E. coli in animals

Footnote:

The method used for detection of VTEC in animals is classical bacteriological method according to OIE Manual 2008 Chapter 2.9.11. Serogroups of E.coli are detected with antisera. It is possible to detect 20 different serogroups. Here is used only E.coli serotyping, but not detection of VT1, VT2 and eae gene.

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

A. Tuberculosis general evaluation

History of the disease and/or infection in the country

The use of intradermal tuberculin tests for diagnosis of bovine tuberculosis in Latvia was started in 1927. In the prewar period, intradermal tuberculin tests were not compulsory and were done on a voluntary basis. In 1937, 10,4% of the tested cows were positive.

After the Second World War private farms were eliminated. The majority of animals were moved to collective farms, where infected and non-infected animals were kept together, and tuberculosis continued to spread.

Since tuberculosis preventive measures were introduced after 1960, the number of newly infected farms decreased. The tuberculosis eradication programme for domestic animals was introduced in 1968. Also testing of pigs, sheep, cats, birds and shepherd dogs was started with the aim to identify sources of infection.

National evaluation of the recent situation, the trends and sources of infection

Bovine tuberculosis in Latvia was almost eradicated by 1975. In the following years, bovine tuberculosis was diagnosed only on 7 farms in 4 regions:

- 1 farm in 1977
- 1 farm in 1978
- 2 farms in 1980
- 2 farms in 1981
- 1 farm in 1989

Latvia is free from bovine tuberculosis since 1990.

The last time that tuberculosis in birds was diagnosed in Latvia was in 1993.

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

In 2009, no human infection with M. bovis was detected.

2.5.2 Mycobacterium in animals

A. Mycobacterium bovis in bovine animals

Monitoring system

Sampling strategy

Latvia has a national control programme in place to control tuberculosis in bovines. The programme is based on the Regulation of Cabinet of Ministers Nr. 298, 21 April 2006 "Procedures for prevention and combatting of such infectious diseases as to which both animals and humans are susceptible".

Frequency of the sampling

Cattle are tested on farm by using intradermal tuberculin test. 100% of stock bulls are tested annually. Also according to the national control programme, all cattle herds must be tested once per five years.

Type of specimen taken

Intradermal tuberculin test

Case definition

A single animal from wich M. bovis has been isolated.

Diagnostic/analytical methods used

For bacteriological examination of tissue from animals positive in the intradermal test:Classical bacteriology - OIE Manual, 2004, chapter 2.3.3.B.1.a),b)

Vaccination policy

Vaccination is prohibited.

Measures in case of the positive findings or single cases

If the result of the intradermal test is positive, the test has to be repeated. In case the second test also has a positive result, the animal has to be slaughtered within 30 days, and the diagnosis is confirmed by isolating Mycobacteria from the tissues. The herd is placed under restriction and has to be tested repeatedly.

Notification system in place

The Veterinary Surveillance Department of the Food and Veterinary Service is responsible for organization of the control of infectious animal diseases including zoonoses.
Surveillance and control of zoonotic diseases in animals is regulated by a number of special EU acts and national legislation. The general and basic national acts are the following:

- Law on Food Surveillance Circulation,

- Law on Veterinary Medicine,

- Regulation of the Cabinet of Ministers Nr. 298, 21 April 2006 "Procedures for prevention and combat of such infectious diseases as to which both animals and humans are susceptible" determines how to carry out prophylaxis and control of certain zoonoses.

Also the Directive 2003/99/EK is implemented into national law by Regulation issued by the Cabinet of

Ministers: Regulation of the Cabinet of Ministers Nr. 744, 5 September 2006 "Procedures for surveillance and exchange of information of such infectious diseases as to which both animals and humans are susceptible, and of the antimicrobial resistance of agents".

If an infection with a zoonotic agent is suspected, this shall be notified to regional office of the Food and Veterinary Service. The regional office then informs the Veterinary Surveillance Department. State veterinary inspectors carry out further epidemiological investigation, sampling and take appropriate measures to prevent spread of the disease or entering of the food chain by a zoonotic agent.

Relevance of the findings in animals to findings in foodstuffs and to human cases (as a source of infection)

B. Mycobacterium bovis in farmed deer

Additional information

In 2009, there was no program in place for control of Mycobacterium bovis in farmed deer in Latvia.

C. Mycobacterium spp., unspecified in animal - Pigs - at farm

Monitoring system

Sampling strategy

Intradermal tuberculin test is carried out on farm. Sows, breeding boars which are used for breeding on the own farm exclusively, and young sows are tested annually as follows: 10% of the herd, but not less than 10 animals. If the herd consists of 1-10 animals, all animals are tested.

Type of specimen taken

Intradermal tuberculin test

Case definition

A single animal from which M.bovis or M.avium has been isolated.

Vaccination policy

Vaccination is prohibited.

Notification system in place

The Veterinary Surveillance Department of the Food and Veterinary Service is responsible for the organization of the control of infectious animal diseases including zoonoses.
Surveillance and control of zoonotic diseases in animals is regulated by a number of special EU acts and national legislation. The general and basic national acts are the following:

- Law on Food Surveillance Circulation,

- Law on Veterinary Medicine,

- Also the Directive 2003/99/EK is implemented into national law by Regulation issued by the Cabinet of Ministers: Regulation of the Cabinet of Ministers Nr. 744, 5 September 2006 "Procedures for surveillance and exchange of information of such infectious diseases as to which both animals and humans are susceptible, and of the antimicrobial resistance of agents".

If an infection with a zoonotic agent is suspected, this shall be notified to regional office of the Food and Veterinary Service. The regional office then informs the Veterinary Surveillance Department. State veterinary inspectors carry out further epidemiological investigation, sampling and take appropriate measures to prevent spread of the disease or entering of the food chain by a zoonotic agent.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. avium complex
Pigs	control programme	Animal	19223	0	0		0	0
Gallus gallus (fowl)	control programme	Animal	1188	0				0

Table Bovine tuberculosis in countries and regions that do not receive Community co-financing for eradication programmes

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/432/EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Latvija	39994	377725	39994	100	0	0	once per five years	7978	7321	0	0
Total : [1)]	39994	377725	39994	100	0	0	N.A.	7978	7321	0	0

Comments:

[1)] N.A.

2.6 BRUCELLOSIS

2.6.1 General evaluation of the national situation

A. Brucellosis general evaluation

History of the disease and/or infection in the country

The last time that bovine brucellosis was diagnosed in Latvia was in 1963 and the last case of brucellosis in pigs was diagnosed in 1994. Vaccination has never been used as an instrument in brucellosis eradication and control. Brucella melitensis has never been detected in Latvia at all. Preventive vaccination of animals and usage of hyper - immune serum against brucellosis is prohibited. An animal is considered to be infected when the individual blood sample is positive.
Abortions have to be reported. They are investigated bacteriologically.

National evaluation of the recent situation, the trends and sources of infection

As Latvia has been free of bovine brucellosis since 1963, and the status of freedom from brucellosis is controlled by the responsible authority, brucellosis is not considered to pose a risk on animal or human health.

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

Since 1988, no cases of human brucellosis have been registered.

2.6.2 Brucella in animals

A. Brucella abortus in bovine animals

Status as officially free of bovine brucellosis during the reporting year

The entire country free

Latvia has been free, but not officially free of bovine brucellosis since 1963.

Monitoring system

Sampling strategy

Sampling is part of a national control programme and takes place on farm. The programme is based on the Council Directive No 64/432/EEC of 26 June 1964 on health problems affecting intra-Community trade in bovine animals and swine, on the Annex A Part II.

Frequency of the sampling

100% of the stock bulls are tested on brucellosis annually. Also according to the national control programme all cattle herds must be tested once per five years.

Type of specimen taken

Milk/blood

Methods of sampling (description of sampling techniques)

Samples are taken on the farm.

Case definition

An animal is considered to be infected when the individual blood sample is positive in the complement fixation test or in the agglutination. In that case, the whole herd is considered to be infected.

Diagnostic/analytical methods used

Serological tests are carried out by using the Rose-Bengal-Test (RBT) on blood serum samples for a first screening in cases that no milk is available or the number of animals is very low. In bigger dairy herds, bulk tank milk samples are tested by using ELISA. If blood samples turn out positive in the RBT or bulk milk samples after the ELISA, individual serological testing has to be carried out on each animal.

Vaccination policy

Vaccination is prohibited.

Measures in case of the positive findings or single cases

Regulation of Cabinet of Ministers Nr. 298, 21 April 2006 "Procedures for Prevention and Combating of Such Infectious Diseases as to Which Both Animals and Humans are Susceptible" determine the list of zoonotic diseases, which are under control and eradication, procedures of sampling for laboratory investigation and eradication measures.
If brucellosis is serologically confirmed in a herd of cattle, in a holding affected by the infection:
- an investigation shall be commenced and up to the ascertainment of results, the supervision of the herd shall be ensured;
- serologically positive animals or animals suspected of the illness shall be isolated;
- susceptible animals may be sent to a slaughterhouse with the permission of a state veterinary inspector

for immediate slaughter;
- samples for laboratory examinations shall be taken repeatedly;
- serologically positive animals shall be slaughtered within 30 days of diagnosis confirmation;
- the premises of the holding, equipment, materials, tools, vehicles and the equipment thereof, ramps and passages which have been in contact with infected animals shall be cleaned, washed and disinfected under supervision of a veterinarian with agents destroying the brucellosis bacteria.

Notification system in place

- Regulation of Cabinet of Ministers Nr. 298, 21 April 2006 "Procedures for Prevention and Combatting of Such Infectious Diseases as to Which Both Animals and Humans are Susceptible" determines how to carry out prophylaxis and eradication of zoonoses. If an owner of an undertaking (company), owner of animals, hunter or head of laboratory detects a zoonosis or has suspicions regarding the illness of animals, one shall notify this to an authorised veterinarian or a territorial unit of the Food and Veterinary Service.

Also the Directive 2003/99/EC is implemented into national law by Regulation of the Cabinet of Ministers Nr. 744, 5 September 2006 "Procedures for surveillance and exchange of information of such infectiuos diseases as to which both animals and humans are susceptible, and of the antimicrobial resistance of agents"

National evaluation of the recent situation, the trends and sources of infection

As Latvia has been free of bovine brucellosis since 1963, and the status of freedom from brucellosis is controlled by the responsible authority, brucellosis is not considered to pose a risk on animal or human health.

B. Brucella melitensis in goats

Status as officially free of caprine brucellosis during the reporting year

The entire country free

Latvia has been free, but not officially free.

Additional information

Brucella melitensis has never been detected in Latvia at all.

Monitoring system

Sampling strategy

In 2009, according to the national control programme, 5% of the total number of goats older than 6 month were tested on brucellosis.

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Blood samples are taken at farm.

Case definition

An animal is considered to be infected when the individual blood sample is positive in the RBT. In that case, the whole herd is considered to be infected.

Diagnostic/analytical methods used

Blood serum samples are tested by RBT.

Vaccination policy

Vaccination is prohibited.

Measures in case of the positive findings or single cases

See B. abortus in bovines.

Notification system in place

See B. abortus in bovines.

National evaluation of the recent situation, the trends and sources of infection

See B. melitensis in sheep.

C. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

The entire country free

Latvia has been free, but not officially free.

Additional information

B. melitensis has never been detected in Latvia at all.

Monitoring system

Sampling strategy

In 2009, according to the national control programme, 5% of the total number of sheep older than 6 month were tested on brucellosis.

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Blood samples are taken at farm.

Case definition

An animal is considered to be infected when the individual blood sample is positive in the Rose Bengal Test (RBT). In that case, the whole herd is considered to be infected.

Diagnostic/analytical methods used

Blood serum samples are tested by RBT.

Vaccination policy

Vaccination is prohibited.

Measures in case of the positive findings or single cases

See B. abortus in bovines

Notification system in place

See B. abortus in bovines.

National evaluation of the recent situation, the trends and sources of infection

As no case of B. melitensis has ever been detected in Latvia, it does not pose a risk on animal and human health.

D. B. suis in animal - Pigs - at farm

Monitoring system

Sampling strategy

All breeding boars that are used for artificial insemination are tested annually. Sows, young sows and breeding boars that are used for breeding in the own herd are tested as follows: 10% of the animals annually, but not less than 10 animals. If the herd consists of 1-10 animals, all animals are tested.

Type of specimen taken

Blood

Case definition

If the RBT is positive, the animal is tested serologically again. If the second testing also reveals positive results, the animal is slaughtered and tissues are submitted for bacteriological examination. If B. suis can be isolated, the animal and the herd, respectively, is considered positive.

Diagnostic/analytical methods used

Rose Bengal Test
Complement Fixation Test
Classical bacteriology (OIE Manual)

Vaccination policy

Vaccination is prohibited.

Measures in case of the positive findings or single cases

See bovine brucellosis

Notification system in place

See bovine brucellosis

National evaluation of the recent situation, the trends and sources of infection

Brucellosis in pigs was first detected in Latvia in 1981, and the last case was registered in 1994. Since then, no case of brucellosis in pigs has been detected.

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Pigs	Control programme	Animal	15723	0				

Table Ovine or Caprine Brucellosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Total number of existing		Officially free herds		Infected herds		Surveillance			Investigations of suspect cases				
	Herds	Animals	Number of herds	%	Number of herds	%	Number of herds tested	Number of animals tested	Number of infected herds	Number of animals tested with serological blood tests	Number of animals positive serologically	Number of animals examined microbio logically	Number of animals positive microbio logically	Number of suspended herds
Latvija	7004	83905	0	0	0	0	893	4021	0	0	0	0	0	0
Total : [1)]	7004	83905	0	0	0	0	893	4021	0	0	0	0	0	0

Comments:

[1)] N.A.

Footnote:

In 2009, according to the national control programme, 5% of the total number of sheep and 5% of total number of goats older than 6 month were tested on brucellosis. In the table shown results of control programme both for sheep and goats.

Table Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Total number of existing bovine		Officially free herds		Infected herds		Surveillance						Investigations of suspect cases								
							Serological tests			Examination of bulk milk			Information about			Epidemiological investigation					
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of suspended herds	Number of positive animals		Number of animals examined microbio logically	Number of animals positive microbio logically
																		Sero logically	BST		
Latvija	39994	377725	39994	100	0	0	579	2864	0	240	10975	0	69	0	0	0	0	0	0	0	0
Total : [1)]	39994	377725	39994	100	0	0	579	2864	0	240	10975	0	69	0	0	0	0	0	0	0	0

Comments:

[1)] N.A.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

History of the disease and/or infection in the country

There is no program in place to control or monitor Yersinia enterocolitica in animals or food.

2.7.2 Yersinia in animals

Table Yersinia in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Cats		Animal	18	0						
Cattle (bovine animals)		Animal	1	0						
Dogs		Animal	23	1	1					1
Pigs		Animal	9	0						
Minks - farmed - at farm - animal sample - faeces - Surveillance - HACCP and own checks		Animal	4	0						

Footnote:

Bacteriological investigations

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

A. Trichinellosis general evaluation

History of the disease and/or infection in the country

In 2004, the Food and Veterinary Service has elaborated methodological guidelines for the veterinary expertise of pigs, cows, sheep, goats, horses and farmed and wild game at slaughterhouses determining the order and methods for detection and identification of trichinellosis agents. Guidelines are based on the requirements of Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption and Commission Regulation (EC) No 2075/2005 of 5 December 2005 laying down specific rules on official controls for Trichinella in meat.

All the carcasses of pigs, horses, wild and farmed game are tested for Trichinella at slaughter. In cases when animals are slaughtered at home or hunted for personal consumption, it is the duty of the owner of the animals or the hunter, respectively, to ensure that meat samples are sent for laboratory testing.

2.8.2 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Foxes		Animal	21	12		12
Pigs		Animal	323588	0		
Solipeds, domestic		Animal	400	0		
Wild boars - wild		Animal	2214	31		31
Beavers - wild		Animal	1	1		1
Hedgehogs - wild		Animal	1	1		1
Lynx - wild		Animal	2	2		2
Raccoon dogs - wild		Animal	5	5		5

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

A. Echinococcus spp. general evaluation

History of the disease and/or infection in the country

Surveillance in productive animals is achieved trough the official meat inspection, where macroscopic investigation on hydatid cysts at the abattoir is part of the meat inspection procedure. Inspection is conducted according to the methodological guidelines of the Food and Veterinary Service for veterinary expertise of pigs, cows, sheep, goats, horses and farmed and wild game at slaughterhouses. These guidelines are based on requirements of Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption.

There are no official monitoring programmes for echinococcosis in the final hosts - dogs and cats. Treatment with anti-helmintic drugs is advised.

2.9.2 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)		Animal	99903	0	0	0	0
Goats [1)]		Animal	9329	0	0	0	0
Pigs		Animal	323588	0	0	0	0
Solipeds, domestic		Animal	400	0	0	0	0

Comments:

[1)] Number of slaughtered small ruminants (sheep and goats) together

2.10 TOXOPLASMOSIS

2.10.1 General evaluation of the national situation

A. Toxoplasmosis general evaluation

History of the disease and/or infection in the country

In 2009, Latvia had no monitoring programme in place to control Toxoplasma spp. in animals. Samples are sent by private veterinarians.

2.10.2 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Cats		Animal	68	12	12
Dogs		Animal	48	4	4
Pigs		Animal	5	0	
Sheep		Animal	11	4	4
Minks - farmed - at farm - animal sample - blood - Surveillance - HACCP and own checks		Animal	852	0	

Footnote:

Serological investigations AR.

2.11 RABIES

2.11.1 General evaluation of the national situation

A. Rabies general evaluation

History of the disease and/or infection in the country

The main reservoir for rabies in Latvia are red foxes and racoon dogs. During the last years, the density of red foxes and racoon dogs in Latvia has been increasing from 1,16 per square kilometre in 1998 up to 1,7 per square kilometre in 2003.
The rabies cases in red foxes varied between 71 and 144 in the years from 1993 until 1999, in racoon dogs there were between 20 and 39 cases of rabies. Since the year 2000, these numbers increased and had a peak in 2003 (471 cases in red foxes, 285 cases in racoon dogs). From the year 2004 until 2006, rabies cases in red foxes varied between 165 and 187, in racoon dogs there were between 126 and 153 cases of rabies. As a result of oral vaccination of wild animals (foxes and racoon dogs) rabies cases decreased about two times in 2007 - 95 rabies cases in red foxes and 33 rabies cases in racoon dogs were diagnosed. Also in 2008 and 2009 the number of cases continued to decrease - 44 cases and 24 rabies cases respectively in red foxes and 41 cases and 24 rabies cases accordingly in racoon dogs were detected.

Other animals infected with rabies in the last years were for example minks, roes, martens, badgers, polecats, dogs, cats and cattle.

National evaluation of the recent situation, the trends and sources of infection

Infection generally occurs through a bite from infected animals. Wild animals (foxes and racoon dogs) are the most common source of infection in Latvia.

Additional information

In Latvia, the oral vaccination of foxes and racoon dogs against rabies has been started in 1998. Vaccination campaigns have been carried out twice per year: during spring and autumn. From 1998 - 2004, vaccine baits were distributed by hands (manual distribution), but since 2005, aerial distribution is used.

2.11.2 Lyssavirus (rabies) in animals

A. Rabies in dogs

Additional information

All dogs must be vaccinated against rabies once per year.

B. Rabies virus in animal

Monitoring system

Sampling strategy

In 2009, there were active and passive surveillance programmes in place regarding rabies.
In case of suspicion of rabies in a wild animal, pet or productive animal, the owner or finder, respectively, has to report immediately to an authorised veterinarian or the FVS. In dead animals, a partial post mortem inspection is performed and brain material is taken for further investigations. For pets or productive animals under suspicion - see measures.
Sampling is also performed in red foxes and racoon dogs to control the uptake of vaccine baits and to determine the antibody titer. These foxes and racoon dogs are hunted and submitted to the BIOR (former - National Diagnostic Centre).

Frequency of the sampling

Foxes and racoon dogs - during hunting season
Animals found dead, suspicions - throughout the year

Methods of sampling (description of sampling techniques)

Detection of viral antigens by an immunofluorescence test in neurological tissue (brain) in connection to partial post-mortem examination.

Case definition

A case that is laboratory confirmed.

Diagnostic/analytical methods used

Detection of viral antigens by an immunofluorescence test in neurological tissue (brain) in connection to partial post-mortem examination.
If the immunofluorescence test in neurological tissue (brain) is negative, flourescent antibody test in cell culture is used for further investigations. Exceptionally, the mouse inoculation test is performed.

Vaccination policy

All cats, dogs and ferrets must be vaccinated against rabies once per year.

Foxes - see general evaluation

Control program/mechanisms

The control program/strategies in place

Vaccination of foxes and racoon dogs by aerial distribution of vaccine baits twice a year in the whole territory of Latvia will be continued in order to eradicate rabies.

Measures in case of the positive findings or single cases

Suspected animals will be put under observation for 10 days. If the animal is vaccinated and no symptoms occur, the animal is re-vaccinated. In case the animal is not vaccinated, it has to be euthanised. Brain tissue is submitted to the BIOR for further investigations.
If the animal has not been vaccinated and the owner refuses to euthanise it, vaccination is performed and serum titer is determined.

Notification system in place

Regulation of Cabinet of Ministers Nr. 298, 21 April 2006 "Procedures for prevention and combating of such infectious diseases as to which both animals and humans are susceptible" determines how to carry out prophylaxis and eradication of such infectious diseases (zoonoses) as to which both animals and humans are susceptible.

If an owner of an undertaking (company), owner of animals, hunter or head of laboratory detetects a zoonotic agent or has suspicions regarding zoonotic infections of animals, one shall notify an authorised veterinarian or a territorial unit of the Food and Veterinary Service of this.

If an infection of animals or humans with a zoonotic disease has been confirmed, a branch of the Infectology Centre and a regional office of the Food and Veterinary Service provide information regarding the location of the zoonosis outbreak and measures taken to contain the disease.

Relevance of the findings in animals to findings in foodstuffs and to human cases (as a source of infection)

In accordance with the epidemiological surveillance data, since 1974 rabies cases in humans have been registered as follows:

- 1982: 1 case in Kraslava district, source of infection: dog;
- 1986: 1 case in Kraslava district, source of infection: fox;
- 1993: 1 case in Saldus district, source of infection: fox;
- 2003: 1 case in Daugavpils district, source of infection: dog.

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Lyssavirus, unspecified	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Badgers - wild		Animal	11	8	8		
Cats		Animal	56	1	1		
Cats - stray cats		Animal	32	3	3		
Cattle (bovine animals)		Animal	19	0			
Deer - wild - roe deer		Animal	26	1	1		
Dogs		Animal	56	5	5		
Dogs - stray dogs		Animal	17	2	2		
Foxes - wild		Animal	304	24	18	6	
Marten - wild		Animal	15	0			
Raccoon dogs - wild		Animal	138	24	16	8	
Sheep		Animal	1	0			
Wild boars - wild		Animal	4	0			
Beavers - wild		Animal	3	0			
Chipmunk		Animal	1	0			
Ferrets - pet animals		Animal	2	0			
Hamsters - pet animals		Animal	1	0			
Hares - wild		Animal	2	0			
Hedgehogs - wild		Animal	3	0			
Lynx - wild		Animal	2	0			

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Lyssavirus, unspecified	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Minks - wild		Animal	5	0			
Moose - wild		Animal	3	0			
Other animals - wild [1)]		Animal	3	0			
Other animals - wild - in total [2)]		Animal	1	0			
Polecats - wild - in total		Animal	11	1	1		
Rats - wild		Animal	2	0			

Comments:

[1)] Elk

[2)] Ermine

2.12 Q-FEVER

2.12.1 General evaluation of the national situation

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

3.1.2 Antimicrobial resistance in Escherichia coli, non-pathogenic

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.03	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		16	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.25	

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Animals

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Penicillins	Ampicillin		8	

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.03	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		16	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.25	
Penicillins	Ampicillin		8	

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.03	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		16	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.25	
Penicillins	Ampicillin		8	

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
Penicillins	Ampicillin		4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		32	
Tetracyclines	Tetracycline		2	
Oxazolidines	Linezolid		4	

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic in Food

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
Penicillins	Ampicillin		4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		32	
Tetracyclines	Tetracycline		2	
Oxazolidines	Linezolid		4	

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
Penicillins	Ampicillin		4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		32	
Tetracyclines	Tetracycline		2	
Oxazolidines	Linezolid		4	

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

5. FOODBORNE

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.

A. Foodborne outbreaks

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

Clinicians are legally responsible for notifying of infectious diseases, including food-borne diseases. Notification is required for cases of suspected infectious disease, a change or discharge of diagnosis of an infectious disease, the final diagnosis and outcome of infectious disease and laboratory confirmation of the diagnosis.

Epidemiologists of 5 local branches of the State Public Health Agency (PHA) receive information from clinicians and perform investigation of the cases (outbreaks), take environmental samples for laboratory investigation, collect, store and analyse the epidemiological data, organise preventive and control measures.

Description of the types of outbreaks covered by the reporting:

In 2009, there were 742 outbreaks with 2-4 cases, and 63 outbreaks with 5 and more cases. 36% of all outbreaks (5< cases)were household, others general.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

742 outbreaks with 2-4 cases included altogether 1670 cases, and 63 outbreaks with 5 and more cases included 731 case. To compare with previous year the percentage of outbreaks (5< cases) related to public catering were decreased (from 26% to 5%), however number of outbreaks related to households increased.

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

Among foodborne outbreaks with 5 or more cases, 16% of outbreaks (5< cases) were caused by Salmonella spp., however include 43% of cases. 68% of outbreaks (5< cases) caused by Hepatitis A, and include 47% of individual cases. Most frequently improperly prepared broiler/egg products caused salmonelosis.

Table Foodborne Outbreaks: summarised data

	Total number of outbreaks	Outbreaks	Human cases	Hospitalized	Deaths	Number of verified outbreaks
Bacillus	0	0	unknown	unknown	unknown	0
Campylobacter	0	0	unknown	unknown	unknown	0
Clostridium	0	0	unknown	unknown	unknown	0
Escherichia coli, pathogenic	0	0	unknown	unknown	unknown	0
Foodborne viruses	576	0	unknown	unknown	unknown	576
Listeria	0	0	unknown	unknown	unknown	0
Other agents	65	0	unknown	unknown	unknown	65
Parasites	0	0	unknown	unknown	unknown	0
Salmonella	48	0	unknown	unknown	unknown	48
Staphylococcus	5	0	unknown	unknown	unknown	5
Unknown	108	0	unknown	unknown	unknown	108
Yersinia	3	0	unknown	unknown	unknown	3

Table Verified Foodborne Outbreaks: detailed data for Foodborne viruses

Please use CTRL for multiple selection fields

unspecified

	Value
Code	Viral enteric infections
Outbreaks	3
Human cases	6
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Analytical epidemiological evidence
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	2-4 cases in outbreak

Rotavirus

	Value
Code	Rotavirus infection
Outbreaks	1
Human cases	5
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	School, kindergarten
Place of origin of problem	unknown
Origin of foodstuff	Not relevant
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission

Hepatitis virus - Hepatitis A virus

	Value
Code	Acute hepatitis A infection
Outbreaks	38
Human cases	296
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission; general and household outbreaks

Rotavirus

	Value
Code	Rotavirus infection
Outbreaks	1
Human cases	6
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	School, kindergarten
Place of origin of problem	unknown
Origin of foodstuff	Not relevant
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission

Rotavirus

	Value
Code	Rotavirus infection
Outbreaks	1
Human cases	5
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	School, kindergarten
Place of origin of problem	unknown
Origin of foodstuff	Not relevant
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission

Rotavirus

	Value
Code	Rotavirus infection
Outbreaks	197
Human cases	427
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	2-4 cases in outbreak, contact transmission

Adenovirus

	Value
Code	Adenovirus infection
Outbreaks	4
Human cases	8
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	2-4 cases in outbreak

Rotavirus

	Value
Code	Rotavirus infection
Outbreaks	1
Human cases	11
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	School, kindergarten
Place of origin of problem	unknown
Origin of foodstuff	Not relevant
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission

Rotavirus

	Value
Code	Rotavirus infection
Outbreaks	1
Human cases	6
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	School, kindergarten
Place of origin of problem	unknown
Origin of foodstuff	Not relevant
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission

Hepatitis virus - Hepatitis A virus

	Value
Code	Acute hepatitis A infection
Outbreaks	329
Human cases	779
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Initial spread among drug users and low-income persons, also several outbreaks in school and restaurant resulted in a community-wide increase of infection.

Table Verified Foodborne Outbreaks: detailed data for Other agents

Please use CTRL for multiple selection fields

Other

	Value
Code	Leptospirosis
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Other

	Value
Code	Norovirus infections
Outbreaks	7
Human cases	100
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission; 5< cases in outbreak

Shigella - Shigella spp., unspecified

	Value
Code	Shigellosis
Outbreaks	3
Human cases	7
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	2-4 cases in outbreak

Other

	Value
Code	Norovirus infections
Outbreaks	54
Human cases	115
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contact transmission; 2-4 cases in outbreak

Table Verified Foodborne Outbreaks: detailed data for Salmonella

Please use CTRL for multiple selection fields

Not typeable

	Value
Code	Salmonella spp.
Outbreaks	1
Human cases	14
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Eggs and egg products
More Foodstuff information	Cakes
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	Temporary mass catering (fairs, festivals)
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Storage time/temperature abuse
Other Agent (Mixed Outbreaks)	
Comment	

Not typeable

	Value
Code	Salmonella spp.
Outbreaks	1
Human cases	12
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Same as setting
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Not typeable

	Value
Code	Salmonella spp.
Outbreaks	1
Human cases	17
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Milk
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	unknown
Origin of foodstuff	Domestic
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

S. Enteritidis

	Value
Code	Salmonella Enteritidis
Outbreaks	1
Human cases	6
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Eggs and egg products
More Foodstuff information	Cakes
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	Other setting
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Not typeable

	Value
Code	Salmonella spp.
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Broiler meat (Gallus gallus) and products thereof
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	Household
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	unknown
Contributory factors	Inadequate heat treatment
Other Agent (Mixed Outbreaks)	
Comment	

S. Enteritidis

	Value
Code	Salmonella Enteritidis
Outbreaks	1
Human cases	8
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	unknown
Origin of foodstuff	Unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Salmonella spp.

	Value
Code	Salmonella spp.
Outbreaks	38
Human cases	82
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

S. Typhimurium

	Value
Code	Salmonella Typhimurium
Outbreaks	1
Human cases	5
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Broiler meat (Gallus gallus) and products thereof
More Foodstuff information	Broiler liver
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	Aircraft, ship, train
Place of origin of problem	Same as setting
Origin of foodstuff	unknown
Contributory factors	Inadequate heat treatment
Other Agent (Mixed Outbreaks)	
Comment	

S. Enteritidis

	Value
Code	Salmonella Enteritidis
Outbreaks	1
Human cases	10
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	Hospital or medical care facility
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Not typeable

	Value
Code	Salmonella spp.
Outbreaks	1
Human cases	73
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Broiler meat (Gallus gallus) and products thereof
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Same as setting
Origin of foodstuff	Unknown
Contributory factors	Inadequate heat treatment
Other Agent (Mixed Outbreaks)	
Comment	

S. Enteritidis

	Value
Code	Salmonella Enteritidis
Outbreaks	1
Human cases	6
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Pig meat and products thereof
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	Household
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Inadequate heat treatment
Other Agent (Mixed Outbreaks)	
Comment	

Table Verified Foodborne Outbreaks: detailed data for Staphylococcus

Please use CTRL for multiple selection fields

Staphylococcus spp., unspecified

	Value
Code	Staphylococcus spp.
Outbreaks	4
Human cases	10
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Staphylococcus spp., unspecified

	Value
Code	Staphylococcus spp.
Outbreaks	1
Human cases	15
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Other or unspecified poultry meat and products thereof
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	General
Setting	Temporary mass catering (fairs, festivals)
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Storage time/temperature abuse
Other Agent (Mixed Outbreaks)	
Comment	

Table Verified Foodborne Outbreaks: detailed data for Unknown

Please use CTRL for multiple selection fields

Unknown

	Value
Code	Enterocolitis and food toxicoinfections
Outbreaks	2
Human cases	17
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Analytical epidemiological evidence
Outbreak type	Household
Setting	Household
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Unknown

	Value
Code	Erocolitis and food toxicoinfections
Outbreaks	106
Human cases	228
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Analytical epidemiological evidence
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Table Verified Foodborne Outbreaks: detailed data for Yersinia

Please use CTRL for multiple selection fields

Y. enterocolitica

	Value
Code	Yersinia enterocolitica infekcija
Outbreaks	3
Human cases	6
Hospitalized	unknown
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Laboratory detection in human cases
Outbreak type	unknown
Setting	unknown
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	
Other Agent (Mixed Outbreaks)	
Comment	