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 2008

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.
National Diagnostic Centre (NDC)	The NDC is a structural unit of the FVS and ensures all required planned and operational laboratory testing in the frame of state food and veterinary surveillance. Additionally, NDC 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
Public Health Agency (PHA)	The PHA is a state agency supervised by the Ministry of Health. Main objectives of the PHA are to ensure surveillance, investigation and assessment of public health issues and health risk factors, prevalence of communicable and other diseases and human health risk factors. Epidemiological investigation of communicable diseases and monitoring of drinking water quility are also tasks of PHA.	Data on foodborne outbreaks and human cases of zoonotic infections.
State Agency of Tuberculosis and Lung Diseases (SATLD)	The SALTD is a hospital subordinated to the Ministry of Health. It collects data on human tuberculosis and maintains the tuberculosis register of Latvia according to WHO guidlines.	Data on human cases of tuberculosis.

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 2008 .

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.

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* 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

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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 Republic of Latvia to develop a uniform register of animals and herds (cattle, pigs, sheep, goats etc.) and a pedigree information system according to international standarts.

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. 2009.

Definitions used for different types of animals, herds, flocks and holdings as well as

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

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	**Category of animals**		**Year**		**Year**		**Year**		**Year**
Cattle (bovine animals)	**in total**	43199		114440		380363		43199	
Ducks	**in total** [1)]	2				306		2	
Gallus gallus (fowl)	**broilers**	67		13906030		1617412		2	
	in total [2)]	162		13906030		3651685		27	
	laying hens	69				1854561		25	
	parent breeding flocks for egg production line	8				67974		1	
	parent breeding flocks for meat production line	18				111738		1	
Goats	**in total** [3)]	2743		9338		12973		2743	
Ostriches	**farmed**	2				179		2	
Pigs	**in total**	2200		405460		310431		2200	
Quails	**in total** [4)]	6				10300		6	
Sheep	**in total**	4152				66801		4152	
Solipeds, domestic	**horses - in total**	7061		430		13138		7061	

Comments:

Table Susceptible animal populations

[1)] 2 mixed holdings with ducks, geese and laying hens
[2)] 2 integrated (mixed) holdings 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 and pheasants

Footnote:

Data on commercial poultry population

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

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 Salmonellosis in humans

2.1.3 Salmonella in foodstuffs

A. 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.

B. Salmonella spp. in broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

Inspectors of the Food and Veterinary Service are taking the neck skin samples. One sample consists of 50 units. For laboratory
testing, 25 g of each unit are taken for further investigations.

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 slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

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

Fresh meat

At meat processing plant

Meat products: fresh meat and meat products

At retail

Meat preparations: meat products, fresh meat

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

Method according to regulation 2073/2005.

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

The neck skin sample is considered positive, if sample units more than 7 are positive.

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 slaughterhouse and cutting plant

Bacteriological method: LVS EN ISO 6579:2003

At meat processing plant

Bacteriological method: LVS EN ISO 6579:2003

At retail

Bacteriological method: 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.

C. Salmonella spp. in pig meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

Pig meat and products thereof are not sampled at slaughterhouses and cutting plants. The carcass swab samples are sampled inslaughterhouse. One swab sample consists of 50 sample units.

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 slaughterhouse and cutting plant

Other: 10 weeks

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 meat processing plant

Other: Minced meat, meat preparations

At retail

Other: Minced meat, meat preparations

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

ISO 17604 annex A

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

The swab sample is considered positive, if sample units more than 5 are positive.

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 slaughterhouse and cutting plant

Other: LVS EN ISO 6579 : 2003

At meat processing plant

Bacteriological method: LVS EN ISO 6579:2003

At retail

Bacteriological method: 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.

D. Salmonella spp. in bovine meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

The carcass swab samples are sampled at slaughterhouses.

At meat processing plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Surface of carcass

At meat processing plant

Minced meat

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

ISO 17604 annex A

At meat processing plant

According to regulation 2073/2005.

Definition of positive finding

At slaughterhouse and cutting plant

The swab sample is considered positive, if sample units more than 2 are positive.

At meat processing plant

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 slaughterhouse and cutting plant

Other: LVS EN ISO 6579 : 2003.

At meat processing plant

Other: LVS EN ISO 6579 : 2003.

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Bredeney	S. Enteritidis	S. Kimuenza	S. Typhimurium	Salmonella spp., unspecified
Meat from broilers (Gallus gallus) - at processing plant - Surveillance - HACCP and own checks		single	25g	31	2		2			
Meat from broilers (Gallus gallus) - carcass - at processing plant - Surveillance - HACCP and own checks		single	25g	25	0					
Meat from broilers (Gallus gallus) - carcass - at retail - Surveillance - HACCP and own checks		single	25g	29	0					
Meat from broilers (Gallus gallus) - carcass - at slaughterhouse - Survey - EU baseline survey		single	27g	122	6		6			
Meat from broilers (Gallus gallus) - carcass - chilled - at slaughterhouse - Surveillance - official controls - objective sampling (Neck skin)		single	10g	50	11		11			
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance - official controls		single	10g	85	7	2	4	1		
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail - Surveillance - official controls		single	10g	80	0					
Meat from broilers (Gallus gallus) - meat products - at processing plant - Surveillance - HACCP and own checks		single	25g	11	0					
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at processing plant - Surveillance - official controls		single	10g	50	0					

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cheeses made from cows' milk - at processing plant - Surveillance - official controls		single	25g	55	0			
Cheeses made from cows' milk - at retail - Surveillance - official controls		single	25g	60	0			
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance - HACCP and own checks		single	25g	32	0			
Dairy products (excluding cheeses) - cream - made from raw or low heat-treated milk - at processing plant - Surveillance - HACCP and own checks		single	25g	10	0			
Dairy products (excluding cheeses) - dairy products, not specified - at processing plant - Surveillance - HACCP and own checks		single	25g	1	0			
Dairy products (excluding cheeses) - dairy products, not specified - at retail - Surveillance - HACCP and own checks		single	25g	40	0			
Dairy products (excluding cheeses) - ice-cream - at processing plant - Surveillance - HACCP and own checks		single	25g	41	0			
Dairy products (excluding cheeses) - ice-cream - at retail - Surveillance - official controls		single	25g	40	0			
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance - official controls		single	25g	70	0			
Dairy products (excluding cheeses) - yoghurt - at processing plant - Surveillance - official controls - objective sampling		single	25g	120	0			
Milk, cows' - pasteurised milk - at retail - Surveillance - official controls		single	25g	55	0			

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows' - raw - intended for direct human consumption - Surveillance - HACCP and own checks		single	25ml	6	0			

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Bovismorbificans	S. Bredeney	S. Chincol	S. Derby	S. Edinburg	S. Enteritidis
Meat from bovine animals - carcass - chilled - at slaughterhouse - Surveillance (Carcass swabs)		single		2350	2						
Meat from bovine animals - fresh - at retail - Surveillance - HACCP and own checks		single	25g	2	0						
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance - HACCP and own checks		single	25g	1	0						
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance - official controls		single	25g	95	0						
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance - official controls		single	10g	85	0						
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance - HACCP and own checks		single	10g	3	0						
Meat from pig - carcass - chilled - - carcass swabs - Surveillance - official controls - objective sampling		single		2150	15	1			1	2	2
Meat from pig - meat preparation - at retail - Surveillance - HACCP and own checks		single	25g	1	0						
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance - HACCP and own checks		single	10g	11	0						
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance - official controls		single	10g	225	2		1				1
Meat from pig - meat products - cooked, ready-to -eat - at retail - Surveillance - HACCP and own checks		single	25g	17	0						

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Bovismorbificans	S. Bredeney	S. Chincol	S. Derby	S. Edinburg	S. Enteritidis
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance - official controls		single	25g	115	0						
Meat from pig - minced meat - intended to be eaten cooked - at retail - Surveillance - official controls		single	10g	90	0						
Meat from sheep - carcass - chilled - - carcass swabs - Surveillance - official controls - objective sampling		single		150	0						
Meat, mixed meat - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance - HACCP and own checks		single	25g	24	6		1	1			1
Meat, mixed meat - meat products - raw but intended to be eaten cooked - at retail - Surveillance - HACCP and own checks		single	25g	54	0						
Meat, mixed meat - minced meat - at retail - Surveillance - HACCP and own checks		single	10g	13	0						
Other products of animal origin - gelatin and collagen - Surveillance - HACCP and own checks		single	25g	1	0						

	S. Hadar	S. Kimuenza	S. Ohio	S. Typhimurium	S. Virchow	Other serotypes	Salmonella spp., unspecified
Meat from bovine animals - carcass - chilled - at slaughterhouse - Surveillance (Carcass swabs)						2	
Meat from bovine animals - fresh - at retail - Surveillance - HACCP and own checks							
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance - HACCP and own checks							

Table Salmonella in red meat and products thereof

	S. Hadar	S. Kimuenza	S. Ohio	S. Typhimurium	S. Virchow	Other serotypes	Salmonella spp., unspecified
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance - official controls							
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance - official controls							
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance - HACCP and own checks							
Meat from pig - carcass - chilled - - carcass swabs - Surveillance - official controls - objective sampling	3	3	1	1		1	
Meat from pig - meat preparation - at retail - Surveillance - HACCP and own checks							
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance - HACCP and own checks							
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance - official controls							
Meat from pig - meat products - cooked, ready-to -eat - at retail - Surveillance - HACCP and own checks							
Meat from pig - meat products - cooked, ready-to -eat - at retail - Surveillance - official controls							
Meat from pig - minced meat - intended to be eaten cooked - at retail - Surveillance - official controls							
Meat from sheep - carcass - chilled - - carcass swabs - Surveillance - official controls - objective sampling							

Table Salmonella in red meat and products thereof

	S. Hadar	S. Kimuenza	S. Ohio	S. Typhimurium	S. Virchow	Other serotypes	Salmonella spp., unspecified
Meat, mixed meat - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance - HACCP and own checks					2	1	
Meat, mixed meat - meat products - raw but intended to be eaten cooked - at retail - Surveillance - HACCP and own checks							
Meat, mixed meat - minced meat - at retail - Surveillance - HACCP and own checks							
Other products of animal origin - gelatin and collagen - Surveillance - HACCP and own checks							

Footnote:

Column "Other serotypes":
2 strains of S. Langeveld were isolated from bovine carcass swab samples;
1 strain of S. Langeveld was isolated from pig carcass sample;
1 strain of S.Langeveld was isolated from mixed meat product sample.

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Egg products - at processing plant - Surveillance - HACCP and own checks		single	25g	5	0			
Egg products - at retail - Surveillance - HACCP and own checks		single	25g	6	0			
Eggs - table eggs - at packing centre - Surveillance - official controls		single	25g	8	0			
Eggs - table eggs - at retail - Surveillance - official controls		single	25g	128	3	3		
Fishery products, unspecified - raw - Surveillance - HACCP and own checks		single	25g	10	0			
Fishery products, unspecified - ready-to-eat - Surveillance - HACCP and own checks		single	25g	26	0			
Fishery products, unspecified - ready-to-eat - chilled - at processing plant - Surveillance - official controls - objective sampling		single	25g	140	0			
Fishery products, unspecified - ready-to-eat - chilled - at retail - Surveillance - official controls - objective sampling		single	25g	210	0			
Seeds, sprouted - ready-to-eat - Surveillance - HACCP and own checks		single	25g	7	0			

2.1.4 Salmonella in animals

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

Additional information

Look at Salmonella spp. in animal

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

Additional information

Look at Salmonella spp. in animal

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

Additional information

Look at Salmonella spp. in animal

D. Salmonella spp. in pigs

Additional information

Salmonellosis in other animals than poultry is not surveyed. Table 1.2 shows results of investigations on request of the owner or veterinarian in case of clinical symptoms.

E. Salmonella spp. in bovine animals

Additional information

Salmonellosis in other animals than poultry is not surveyed. Table 1.2 shows results of investigations on request of the owner or veterinarian in case of clinical symptoms.

F. Salmonella spp. in animal

Monitoring system

Sampling strategy

1.Samples are taken in poultry flocks others than Gallus gallus(ducks, turkeys, geese, quail etc.) for egg production with less than 1000 birds per flock:
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 poultry flocks others than Gallus gallus(ducks, turkeys, geese, quail etc.) for egg production with more than 1000 birds per flock:
2.1.day-old birds:
- rinses from the internal surfaces of boxes in which the chicks are delivered to a holding;
- samples from the carcasses of chicks found to be dead on arrival.
2.2.pullets two weeks prior to entering the laying phase - pooled faeces samples;
2.3.poultry every 15 weeks during the laying phase and 4 weeks prior to slaughter - pooled faeces samples.

3.Samples are taken in turkey flocks for meat production - every flock one week prior to slaughter - pooled faecal samples.

4. 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

method of draft Annex D of ISO 6579 (2002)

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 rpocessing 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.

G. 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 andof 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 two weeks:
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 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 two weeks

Type of specimen taken

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

Other: rinses from the internal surfaces 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: method of draft Annex D of ISO 6579 (2002)

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

Bacteriological method:method of draft Annex D of ISO 6579 (2002)

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

Bacteriological method:method of draft Annex D of ISO 6579 (2002)

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 notallowed 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.

H. 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.

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 an 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 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: method of draft Annex D of ISO 6579 (2002)

Laying hens: Rearing period

Bacteriological method: method of draft Annex D of ISO 6579 (2002)

Laying hens: Production period

Bacteriological method: method of draft Annex D of ISO 6579 (2002)

Laying hens: Before slaughter at farm

Bacteriological method: method of draft Annex D of ISO 6579 (2002)

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.
-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.

I. Salmonella spp. in Gallus Gallus - broiler flocks

Monitoring system

Sampling strategy

Broiler flocks

Samples are taken one week 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: method of draft Annex D of ISO 6579 (2002)

Other preventive measures than vaccination in place

Broiler flocks

Bio-security measures are applied at the holdings.

Notification system in place

All Salmonella serotypes are 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 spp.	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	Salmonella spp., unspecified
Gallus gallus (fowl) - parent breeding flocks for egg production line - during production period - at farm - Surveillance	8		flock	8	0	0	0	0	0	0	0
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - at farm - Surveillance	6		flock	6	0	0	0	0	0	0	0
Gallus gallus (fowl) - parent breeding flocks for meat production line - during production period - at farm - environmental sample - boot swabs - Surveillance	18		flock	18	0	0	0	0	0	0	0
Gallus gallus (fowl) - parent breeding flocks for meat production line - during rearing period - at farm - environmental sample - boot swabs - Surveillance	18		flock	18	0	0	0	0	0	0	0

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Kimuenza	S. Menden	S. Senftenberg	S. Typhimurium	S. Virchow
Ducks - Surveillance - HACCP and own checks			single	1	0						
Gallus gallus (fowl) - laying hens - day-old chicks - Surveillance - HACCP and own checks			single	3	0						
Gallus gallus (fowl) - laying hens - day-old chicks - Surveillance - official controls			batch	3	0						
Gallus gallus (fowl) - laying hens - during production period - Surveillance - HACCP and own checks			single	50	0						
Gallus gallus (fowl) - laying hens - during production period - at farm - Surveillance - official controls - objective sampling	69	control	flock	69	14	9	1	1	1	1	1
Gallus gallus (fowl) - laying hens - during rearing period - Surveillance - HACCP and own checks			single	42	4	3				1	
Geese - at farm - Surveillance - official controls			flock	1	0						
Ostriches - at farm - Surveillance - official controls			flock	1	0						
Ostriches - farmed - at farm - Surveillance - HACCP and own checks			flock	2	0						
Pheasants - at farm - Surveillance - official controls			flock	2	1	1					
Quails - at farm - Surveillance - official controls			flock	6	1			1			

	Salmonella spp., unspecified
Ducks - Surveillance - HACCP and own checks	

Table Salmonella in other poultry

	Salmonella spp., unspecified
Gallus gallus (fowl) - laying hens - day-old chicks - Surveillance - HACCP and own checks	
Gallus gallus (fowl) - laying hens - day-old chicks - Surveillance - official controls	
Gallus gallus (fowl) - laying hens - during production period - Surveillance - HACCP and own checks	
Gallus gallus (fowl) - laying hens - during production period - at farm - Surveillance - official controls - objective sampling	
Gallus gallus (fowl) - laying hens - during rearing period - Surveillance - HACCP and own checks	
Geese - at farm - Surveillance - official controls	
Ostriches - at farm - Surveillance - official controls	
Ostriches - farmed - at farm - Surveillance - HACCP and own checks	
Pheasants - at farm - Surveillance - official controls	
Quails - at farm - Surveillance - official controls	

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Gulls - Clinical investigations		single	1	0			
Pheasants - Surveillance - HACCP and own checks [1)]		single	1	0			
Pigeons - Surveillance - HACCP and own checks		single	2	0			
Swans - wild - Clinical investigations		single	4	0			
Zoo animals, all - Surveillance - HACCP and own checks		single	10	0			

Comments:

[1)] from zoo

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Agona	S. Altona	S. Blockley	S. Bovismorbificans	S. Bredeney	S. Derby	S. Enteritidis
Cattle (bovine animals) - adult cattle over 2 years - Clinical investigations		animal	2	1							
Cattle (bovine animals) - calves (under 1 year) - Clinical investigations		animal	1	0							
Pigs - Clinical investigations		animal	37	6			1				
Pigs - breeding animals - Survey - EU baseline survey [1)]		holding	33	9	1	1			3	2	

	S. Kimuenza	S. London	S. Typhimurium	Salmonella spp., unspecified
Cattle (bovine animals) - adult cattle over 2 years - Clinical investigations			1	
Cattle (bovine animals) - calves (under 1 year) - Clinical investigations				
Pigs - Clinical investigations			5	
Pigs - breeding animals - Survey - EU baseline survey [1)]	2	1		

Comments:

[1)] 1 positive breeding pig holding on 2 salmonella serotypes: Salmonella Bredeney and Salmonella Derby

2.1.5 Salmonella in feedingstuffs

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Montevideo	S. Senftenberg	S. Typhimurium	Salmonella spp., unspecified
Feed material of land animal origin - blood meal - Surveillance - HACCP and own checks		single	25g	2	0					
Feed material of land animal origin - feather meal - Surveillance - HACCP and own checks		single	25g	2	0					
Feed material of land animal origin - feather meal - in total - Surveillance - official controls	FVS	batch	25g	1	0					
Feed material of land animal origin - meat and bone meal - Surveillance - HACCP and own checks		single	25g	18	0					
Feed material of land animal origin - meat meal - Surveillance - HACCP and own checks		single	25g	5	1				1	
Feed material of land animal origin - meat meal - at feed mill - imported - Surveillance - official controls	FVS	batch	25g	1	1	0	1		0	0
Feed material of land animal origin - poultry offal meal - Surveillance - HACCP and own checks		single	25g	2	0					
Feed material of marine animal origin - fish meal - Surveillance - HACCP and own checks		single	25g	117	2			2		
Feed material of marine animal origin - fish meal - in total - Surveillance - official controls	FVS	batch	25g	3	0					
Feed material of marine animal origin - fish oil - Surveillance - HACCP and own checks		single	25g	12	0					

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Agona	S. Enteritidis	S. Menden	S. Typhimurium	Salmonella spp., unspecified
Feed material of cereal grain origin - barley derived - Surveillance - HACCP and own checks		single	25g	2	0					
Feed material of cereal grain origin - maize - Surveillance - HACCP and own checks		single	25g	5	0					
Feed material of cereal grain origin - maize - derived - Surveillance - HACCP and own checks		single	25g	8	0					
Feed material of cereal grain origin - other cereal grain derived - Surveillance - HACCP and own checks		single	25g	3	0					
Feed material of cereal grain origin - wheat derived - Surveillance - HACCP and own checks		single	25g	7	0					
Feed material of oil seed or fruit origin - linseed derived - Surveillance - HACCP and own checks		single	25g	1	0					
Feed material of oil seed or fruit origin - other oil seeds derived - Surveillance - HACCP and own checks		single	25g	4	0					
Feed material of oil seed or fruit origin - rape seed derived - Surveillance - HACCP and own checks		single	25g	2	0					
Feed material of oil seed or fruit origin - soya (bean) derived - Surveillance - HACCP and own checks		single	25g	35	0					
Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks		single	25g	17	5	2		3		

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Bredeney	S. Enteritidis	S. Menden	S. Montevideo	S. Typhimurium	S. Virchow
Compound feedingstuffs for cattle - final product - Surveillance - HACCP and own checks		single	25g	2	0						
Compound feedingstuffs for cattle - final product - in total - Surveillance - official controls (Samples are taken at different stages of the feed chain in the frame of the annual control plan on feed.)	FVS	batch	25g	3	0						
Compound feedingstuffs for fish - Surveillance - HACCP and own checks		single	25g	3	0						
Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks		single	25g	44	8	2	2		2	1	1
Compound feedingstuffs for pigs - final product - Surveillance - HACCP and own checks		single	25g	46	0						
Compound feedingstuffs for pigs - final product - in total - Surveillance - official controls (s.a.)	FVS	batch	25g	44	0						
Compound feedingstuffs for poultry (non specified) - final product - Surveillance - HACCP and own checks		single	25g	32	0						
Compound feedingstuffs for poultry (non specified) - final product - in total - Surveillance - official controls (s.a.)	FVS	batch	25g	4	0						
Compound feedingstuffs for poultry (non specified) - process control - Surveillance - HACCP and own checks		single	25g	5	1						1
Compound feedingstuffs for poultry - laying hens - final product - Surveillance - HACCP and own checks		single	25g	38	2			1			
Compound feedingstuffs for poultry - laying hens - final product - in total - Surveillance - official controls (s.a.) [1)]	FVS	batch	25g	38	3	0	1	1		0	

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Bredeney	S. Enteritidis	S. Menden	S. Montevideo	S. Typhimurium	S. Virchow
Compound feedingstuffs for poultry -breeders - final product - in total - Surveillance - official controls (s.a.)	FVS	batch	25g	7	0						
Compund feedingstuffs for poultry - broilers - final product - Surveillance - HACCP and own checks		single	25g	8	0						
Compund feedingstuffs for poultry - broilers - final product - in total - Surveillance - official controls (s.a.)	FVS	batch	25g	6	0						
Other feed material - Surveillance - HACCP and own checks		single	25g	116	1					1	
Pet food - dog snacks (pig ears, chewing bones) - Surveillance - HACCP and own checks		single	25g	77	0						
Pet food - dog snacks (pig ears, chewing bones) - in total - Surveillance - official controls (s.a.) [2)]	FVS	batch	25g	3	1	1					
Pet food - final product - in total - Surveillance - official controls (s.a.) [3)]	FVS	batch	25g	3	0						

	Salmonella spp., unspecified
Compound feedingstuffs for cattle - final product - Surveillance - HACCP and own checks	
Compound feedingstuffs for cattle - final product - in total - Surveillance - official controls (Samples are taken at different stages of the feed chain in the frame of the annual control plan on feed.)	
Compound feedingstuffs for fish - Surveillance - HACCP and own checks	

Table Salmonella in compound feedingstuffs

	Salmonella spp., unspecified
Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks	
Compound feedingstuffs for pigs - final product - Surveillance - HACCP and own checks	
Compound feedingstuffs for pigs - final product - in total - Surveillance - official controls (s.a.)	
Compound feedingstuffs for poultry (non specified) - final product - Surveillance - HACCP and own checks	
Compound feedingstuffs for poultry (non specified) - final product - in total - Surveillance - official controls (s.a.)	
Compound feedingstuffs for poultry (non specified) - process control - Surveillance - HACCP and own checks	
Compound feedingstuffs for poultry - laying hens - final product - Surveillance - HACCP and own checks	1
Compound feedingstuffs for poultry - laying hens - final product - in total - Surveillance - official controls (s.a.) [1)]	1
Compound feedingstuffs for poultry -breeders - final product - in total - Surveillance - official controls (s.a.)	
Compund feedingstuffs for poultry - broilers - final product - Surveillance - HACCP and own checks	
Compund feedingstuffs for poultry - broilers - final product - in total - Surveillance - official controls (s.a.)	
Other feed material - Surveillance - HACCP and own checks	

Table Salmonella in compound feedingstuffs

	Salmonella spp., unspecified
Pet food - dog snacks (pig ears, chewing bones) - Surveillance - HACCP and own checks	
Pet food - dog snacks (pig ears, chewing bones) - in total - Surveillance - official controls (s.a.) [2)]	
Pet food - final product - in total - Surveillance - official controls (s.a.) [3)]	

Comments:

[1)] The three positive samples were collected at farm.
[2)] The positive sample was collected at a domestic feed producing establishment.
[3)] One sample each was collected from cat food, chinchilla food and food for lizards and turtles.

2.1.6 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

Serovars	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Pigs - breeding animals - Survey - EU baseline survey		Gallus gallus (fowl) - laying hens	
Sources of isolates	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**
Number of isolates in the laboratory												
Number of isolates serotyped	**0**	**1**	**0**	**6**	**0**	**0**	**2**	**0**	**10**	**0**	**14**	**4**
Number of isolates per serovar												
S. Agona									1			
S. Altona									1			
S. Blockley				1								
S. Bredeney									3			
S. Derby									2			
S. Enteritidis							1				9	3

Table Salmonella serovars in animals

Serovars	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Pigs - breeding animals - Survey - EU baseline survey		Gallus gallus (fowl) - laying hens	
Sources of isolates	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**
Number of isolates in the laboratory												
Number of isolates serotyped	**0**	**1**	**0**	**6**	**0**	**0**	**2**	**0**	**10**	**0**	**14**	**4**
Number of isolates per serovar												
S. Kimuenza									2		1	
S. London									1			
S. Menden							1				1	
S. Senftenberg											1	
S. Typhimurium		1		5							1	1
S. Virchow											1	

Table Salmonella serovars in food

Serovars	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin		Eggs - table eggs - at retail - Surveillance - official controls		Meat, mixed meat
Sources of isolates	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**
Number of isolates in the laboratory													
Number of isolates serotyped	**2**	**0**	**17**	**0**	**24**	**2**	**0**	**0**	**0**	**0**	**3**	**0**	**0**
Number of isolates per serovar													
S. Bovismorbificans			1										
S. Bredeney			1		2								
S. Chincol													
S. Derby			1										
S. Edinburg			2										
S. Enteritidis			3		21	2					3		
S. Hadar			3										
S. Kimuenza			3		1								
S. Ohio			1										
S. Typhimurium			1										
S. Virchow													
Other serotypes	2		1										

Table Salmonella serovars in food

Serovars	Meat, mixed meat
Sources of isolates	**Clinical**
Number of isolates in the laboratory	
Number of isolates serotyped	**6**
Number of isolates per serovar	
S. Bovismorbificans	
S. Bredeney	1
S. Chincol	1
S. Derby	
S. Edinburg	
S. Enteritidis	1
S. Hadar	
S. Kimuenza	
S. Ohio	
S. Typhimurium	
S. Virchow	2
Other serotypes	1

Table Salmonella serovars in food

Footnote:

Other serotypes - 4 strains S.Langeveld

Table Salmonella serovars in feed

Serovars	Compound feedingstuffs for pigs		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks		Compound feedingstuffs for poultry (non specified)		Compound feedingstuffs for poultry - laying hens		Compound feedingstuffs for poultry - laying hens - final product - Surveillance - official controls		Other feed material		Pet food - Surveillance - official controls
Sources of isolates	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**
Number of isolates in the laboratory													
Number of isolates serotyped	**0**	**0**	**0**	**8**	**0**	**1**	**2**	**1**	**1**	**1**	**0**	**1**	**1**
Number of isolates per serovar													
S. Agona													
S. Bredeney				2									1
S. Enteritidis				2			1						
S. Menden							1	1					
S. Montevideo				2									
S. Senftenberg													
S. Typhimurium				1								1	
S. Virchow				1		1							
Salmonella spp., unspecified									1	1			

Table Salmonella serovars in feed

Serovars	Pet food - Surveillance - official controls	Feed material of land animal origin - meat meal		Feed material of marine animal origin - fish meal		Feed material of oil seed or fruit origin - sunflower seed derived	
Sources of isolates	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**
Number of isolates in the laboratory							
Number of isolates serotyped	**0**	**1**	**1**	**0**	**2**	**0**	**5**
Number of isolates per serovar							
S. Agona							2
S. Bredeney							
S. Enteritidis							
S. Menden							3
S. Montevideo		1					
S. Senftenberg					2		
S. Typhimurium			1				
S. Virchow							
Salmonella spp., unspecified							

Table Salmonella Enteritidis phagetypes in animals

Phagetype	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
Sources of isolates	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**
Number of isolates in the laboratory								
Number of isolates phagetyped	**0**	**0**	**0**	**0**	**32**	**0**	**0**	**0**
Number of isolates per type								
PT 1					10			
PT 4					2			
PT 14b					7			
PT 21					8			
PT 35					3			
PT 7					2			

Table Salmonella Enteritidis phagetypes in food

Phagetype	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin		Eggs - Surveillance - official controls	
Sources of isolates	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**	**Monitoring**	**Clinical**
Number of isolates in the laboratory												
Number of isolates phagetyped	**0**	**0**	**1**	**0**	**15**	**0**	**17**	**0**	**0**	**0**	**4**	**0**
Number of isolates per type												
PT 1					6		9					
PT 6							1					
PT 14b							5				4	
PT 21					9		1					
Not typeable			1				1					

2.1.7 Antimicrobial resistance in Salmonella isolates

Table Antimicrobial susceptibility testing of S. Agona in Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Agona		Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		2																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0								2													0.5	64
	Gentamicin	2	2	0						2															0.25	16
	Kanamycin	64	2	0											2										8	64
	Neomycin		0	0																						
	Streptomycin	32	2	0													2								32	64
Amphenicols	Chloramphenicol	16	2	0										1	1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	2	0										2											0.5	32
	Ceftiofur	2	2	0								2													0.12	8
	Ceftriaxon	64	2	0						2															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	2	0		2																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	2	0								2													1	32
	Ampicillin	4	2	0								2													1	32
Quinolones	Nalidixic acid	16	2	0									1	1											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	2	0												1	1								16	256

Table Antimicrobial susceptibility testing of S. Agona in Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Agona		Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Sulfonamides	**Sulfonamide**		0	0																					
Tetracyclines	**Tetracyclin**	8	2	0										2										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	2	0					2															0.12	4

Table Antimicrobial susceptibility testing of S. Bovismorbificans in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Bovismorbificans		Meat from pig - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0								1													0.5	64
	Gentamicin	2	1	0						1															0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0											1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																					0.06	4
	Cefoxitin	32	1	0									1												0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0		1																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0									1												1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0										1											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0														1							16	256
	Sulfonamide	256	0	0																					8	1024

Table Antimicrobial susceptibility testing of S. Bovismorbificans in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Bovismorbificans		Meat from pig - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	1	0										1										4	32
Trimethoprim	**Trimethoprim**	2	0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	1	0					1															0.12	4

Table Antimicrobial susceptibility testing of S. Bredeney in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Bredeney		Meat from pig - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0								1													0.5	64
	Gentamicin	2	1	0						1															0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0											1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																					0.06	4
	Cefoxitin	32	1	0										1											0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0			1																		0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0										1											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0														1							16	256
	Sulfonamide	256	0	0														0								

Table Antimicrobial susceptibility testing of S. Bredeney in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Bredeney		Meat from pig - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	1	0								1													4	32
Trimethoprim	**Trimethoprim**	2	0	0																						
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	1	0					1																0.12	4

Table Antimicrobial susceptibility testing of S. Bredeney in Pet food - Surveillance - official controls - quantitative data [Dilution method]

S. Bredeney		Pet food - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0									1												0.5	64
	Gentamicin	2	1	0							1														0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0											1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	1	0										1											0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0			1																		0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0									1												0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0														1							16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Bredeney in Pet food - Surveillance - official controls - quantitative data [Dilution method]

S. Bredeney		Pet food - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Tetracyclines	Tetracyclin	8	1	0										1											4	32
Trimethoprim	Trimethoprim		0	0																						
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	2	1	0					1																0.12	4

Table Antimicrobial susceptibility testing of S. Bredeney in Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Bredeney		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		2																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0									2												0.5	64
	Gentamicin	2	2	0							2														0.25	16
	Kanamycin	64	2	0											2										8	64
	Neomycin		0	0																						
	Streptomycin	32	2	0													2								32	64
Amphenicols	Chloramphenicol	16	2	0											2										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	2	0									2												0.5	32
	Ceftiofur	2	2	0								2													0.12	8
	Ceftriaxon	64	2	0						2															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	2	0		2																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	2	0								2													1	32
	Ampicillin	4	2	0								2													1	32
Quinolones	Nalidixic acid	16	2	0											2										0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	2	0														2							16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Bredeney in Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Bredeney		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	2	0										2										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	2	0					2															0.12	4

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

S. Derby		Meat from pig - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0									1												0.5	64
	Gentamicin	2	1	0							1														0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0												1									2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																					0.06	4
	Cefoxitin	32	1	0											1										0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0		1																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0									1												0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0													1								16	256
	Sulfonamide	256	0	0																					8	1024

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

S. Derby		Meat from pig - Surveillance - official controls																						
Isolates out of a monitoring program (yes/no)		yes																						
Number of isolates available in the laboratory		1																						
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	1	0										1										4	32
Trimethoprim	**Trimethoprim**	2	0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	1	0					1															0.12	4

Table Antimicrobial susceptibility testing of S. Enteritidis in Pheasants - at farm - animal sample - faeces - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Pheasants - - faeces - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0							1														0.5	64
	Gentamicin	2	1	0						1															0.25	16
	Kanamycin	64	0	0																						
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0											1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																						
	Cefoxitin	32	1	0									1												0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0			1																		0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0										1											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0													1								16	256
	Sulfonamide	256	0	0																						

Table Antimicrobial susceptibility testing of S. Enteritidis in Pheasants - at farm - animal sample - faeces - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Pheasants - - faeces - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Tetracyclines	Tetracyclin	8	1	0										1										4	32
Trimethoprim	Trimethoprim	2	0	0																					
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	2	1	0					1															0.12	4

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		69																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	69	0							29	37	3												0.5	64
	Gentamicin	2	69	0						66	3														0.25	16
	Kanamycin	64	0	0																						
	Neomycin		0	0																						
	Streptomycin	32	69	0													69								32	64
Amphenicols	Chloramphenicol	16	69	0										26	43										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																						
	Cefoxitin	32	69	0									54	15											0.5	32
	Ceftiofur	2	69	0							4	65													0.12	8
	Ceftriaxon	64	69	0						69															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	69	4		18	47		3	1															0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	69	0								56	13												1	32
	Ampicillin	4	69	0								61	8												1	32
Quinolones	Nalidixic acid	16	69	4										65			4								0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	69	0												14	44	11							16	256
	Sulfonamide	256	0	0																						

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		69																							
Antimicrobials:		break points	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
Tetracyclines	Tetracyclin	8	69	0										69										4	32
Trimethoprim	Trimethoprim	2	0	0																					
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	2	69	0					69															0.12	4

Table Antimicrobial susceptibility testing of S. Enteritidis in Meat from broilers (Gallus gallus) - carcass - at slaughterhouse - Survey - EU baseline survey - quantitative data [Dilution method]

S. Enteritidis		Meat from broilers (Gallus gallus) - carcass - at slaughterhouse - Survey - EU baseline survey																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		6																								
Antimicrobials:		break points	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
Aminoglycosides	Gentamicin	2	6	0						5	1														0.25	32
	Kanamycin	64	0	0																						
	Neomycin		0	0																						
	Streptomycin	32	6	0									5	1											2	128
Amphenicols	Chloramphenicol	16	6	0										6											2	64
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		6	6						6															0.25	16
	Cefotaxim	0.5	6	0				6																	0.06	4
	Ceftiofur	2	0	0																						
Fluoroquinolones	Ciprofloxacin	0.06	6	6						6															0.008	8
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	0	0																						
	Ampicillin	4	6	0								6													0.5	32
Quinolones	Nalidixic acid	16	6	6														6							4	64
Sulfonamides	Sulfonamide	256	0	0																						
Tetracyclines	Tetracyclin	8	6	0								6													1	64
Trimethoprim	Trimethoprim	2	6	0							5	1													0.5	32
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	2	0	0																						

Table Antimicrobial susceptibility testing of S. Enteritidis in Meat from broilers (Gallus gallus) - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Meat from broilers (Gallus gallus) - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		16																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	16	0							2	13	1												0.5	64
	Gentamicin	2	16	0						14	2														0.25	16
	Kanamycin	64	16	0										16											8	64
	Neomycin		0	0																						
	Streptomycin	32	16	0													16								32	64
Amphenicols	Chloramphenicol	16	16	1										3	12		1								2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																					0.06	4
	Cefoxitin	32	16	0									9	5	1	1									0.5	32
	Ceftiofur	2	16	1								14	1		1										0.12	8
	Ceftriaxon	64	16	0					1	14							1								0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	16	11		2	3			11															0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	16	1								14	1		1										1	32
	Ampicillin	4	16	1								11	3	1			1								1	32
Quinolones	Nalidixic acid	16	16	11									1	4			11								0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	16	0													12	3		1					16	256
	Sulfonamide	256	0	0																					8	1024

Table Antimicrobial susceptibility testing of S. Enteritidis in Meat from broilers (Gallus gallus) - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Meat from broilers (Gallus gallus) - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		16																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	16	1										15			1								4	32
Trimethoprim	**Trimethoprim**	2	0	0																						
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	16	1					14	1				1											0.12	4

Table Antimicrobial susceptibility testing of S. Enteritidis in Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Enteritidis		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		2																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0								2													0.5	64
	Gentamicin	2	2	0						2															0.25	16
	Kanamycin	64	2	0											2										8	64
	Neomycin		0	0																						
	Streptomycin	32	2	0													2								32	64
Amphenicols	Chloramphenicol	16	2	0										2											2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	2	0												2									0.5	32
	Ceftiofur	2	2	0									2												0.12	8
	Ceftriaxon	64	2	0									2												0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	2	0		2																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	2	2												2									1	32
	Ampicillin	4	2	2												2									1	32
Quinolones	Nalidixic acid	16	2	0									2												0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	2	0												2									16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Enteritidis in Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Enteritidis		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	2	0										2										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	2	0					2															0.12	4

Table Antimicrobial susceptibility testing of S. Enteritidis in Compound feedingstuffs for poultry - laying hens - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Compound feedingstuffs for poultry - laying hens - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0								1													0.5	64
	Gentamicin	2	1	0						1															0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0										1											2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	1	0									1												0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0			1																		0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0										1											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0														1							16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Enteritidis in Compound feedingstuffs for poultry - laying hens - Surveillance - official controls - quantitative data [Dilution method]

S. Enteritidis		Compound feedingstuffs for poultry - laying hens - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	1	0										1										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	1	0					1															0.12	4

Table Antimicrobial susceptibility testing of S. Hadar in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Hadar		Meat from pig - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		3																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	3	0								3													0.5	64
	Gentamicin	2	3	0						3															0.25	32
	Kanamycin	64	3	0											3										8	64
	Neomycin		0	0																						
	Streptomycin	32	3	0													3								2	128
Amphenicols	Chloramphenicol	16	3	0										3											2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																					0.06	4
	Cefoxitin	32	3	0									3												0.5	32
	Ceftiofur	2	3	0							3														0.12	8
	Ceftriaxon	64	3	0						3															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	3	0		3																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	3	0								3													1	32
	Ampicillin	4	3	0								3													1	32
Quinolones	Nalidixic acid	16	3	0										3											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	0	0																					16	256
	Sulfonamide	256	3	0														3							8	1024

Table Antimicrobial susceptibility testing of S. Hadar in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Hadar		Meat from pig - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		3																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	3	0										3											4	32
Trimethoprim	**Trimethoprim**	2	0	0																						
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	3	0						3															0.12	4

Table Antimicrobial susceptibility testing of S. Kimuenza in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Kimuenza		Meat from pig - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		3																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	3	0								1	2												0.5	64
	Gentamicin	2	3	1							2					1									0.25	16
	Kanamycin	64	3	0											2			1							8	64
	Neomycin		0	0																						
	Streptomycin	32	3	0													3								32	64
Amphenicols	Chloramphenicol	16	3	0												3									2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																					0.06	4
	Cefoxitin	32	3	0									1		2										0.5	32
	Ceftiofur	2	3	0								1	2												0.12	8
	Ceftriaxon	64	3	0						3															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	3	0			3																		0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	3	0								1	2												1	32
	Ampicillin	4	3	0								1	2												1	32
Quinolones	Nalidixic acid	16	3	0										3											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	0	0																					16	256
	Sulfonamide	256	0	0																					8	1024

Table Antimicrobial susceptibility testing of S. Kimuenza in Meat from pig - Surveillance - official controls - quantitative data [Dilution method]

S. Kimuenza		Meat from pig - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		3																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	3	0										3										4	32
Trimethoprim	**Trimethoprim**	2	0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	3	0					3															0.12	4

Table Antimicrobial susceptibility testing of S. Menden in Compound feedingstuffs for poultry - laying hens - Surveillance - official controls - quantitative data [Dilution method]

S. Menden		Compound feedingstuffs for poultry - laying hens - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0								1													0.5	64
	Gentamicin	2	1	0						1															0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0												1									2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	1	0										1											0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0		1																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0										1											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0														1							16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Menden in Compound feedingstuffs for poultry - laying hens - Surveillance - official controls - quantitative data [Dilution method]

S. Menden		Compound feedingstuffs for poultry - laying hens - Surveillance - official controls																						
Isolates out of a monitoring program (yes/no)		yes																						
Number of isolates available in the laboratory		1																						
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	1	0											1									4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	1	0					1															0.12	4

Table Antimicrobial susceptibility testing of S. Menden in Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Menden		Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		3																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	3	0									3												0.5	64
	Gentamicin	2	3	0						1	2														0.25	16
	Kanamycin	64	3	0											3										8	64
	Neomycin		0	0																						
	Streptomycin	32	3	0													3								32	64
Amphenicols	Chloramphenicol	16	3	0											1	2									2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	3	0										3											0.5	32
	Ceftiofur	2	3	0							2	1													0.12	8
	Ceftriaxon	64	3	0						3															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	3	0		3																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	3	0								3													1	32
	Ampicillin	4	3	0								3													1	32
Quinolones	Nalidixic acid	16	3	0										3											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	3	0													2	1							16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Menden in Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Menden		Feed material of oil seed or fruit origin - sunflower seed derived - Surveillance - HACCP and own checks																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		3																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	3	0										3										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	3	0					3															0.12	4

Table Antimicrobial susceptibility testing of S. Montevideo in Feed material of land animal origin - meat meal - Surveillance - official controls - quantitative data [Dilution method]

S. Montevideo		Feed material of land animal origin - meat meal - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0										1											0.5	64
	Gentamicin	2	1	0							1														0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0											1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	1	0									1												0.5	32
	Ceftiofur	2	1	0							1														0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0		1																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0									1												1	32
Quinolones	Nalidixic acid	16	1	0										1											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0													1								16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Montevideo in Feed material of land animal origin - meat meal - Surveillance - official controls - quantitative data [Dilution method]

S. Montevideo		Feed material of land animal origin - meat meal - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	1	0										1										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	1	0					1															0.12	4

Table Antimicrobial susceptibility testing of S. Montevideo in Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Montevideo		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		2																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0									2												0.5	64
	Gentamicin	2	2	0							2														0.25	16
	Kanamycin	64	2	0											2										8	64
	Neomycin		0	0																						
	Streptomycin	32	2	0													2								32	64
Amphenicols	Chloramphenicol	16	2	0											2										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	2	0									2												0.5	32
	Ceftiofur	2	2	0							2														0.12	8
	Ceftriaxon	64	2	0						2															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	2	0			2																		0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	2	0								2													1	32
	Ampicillin	4	2	0								2													1	32
Quinolones	Nalidixic acid	16	2	0										2											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	2	0													2								16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Montevideo in Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Montevideo		Compound feedingstuffs for fur animal - Surveillance - HACCP and own checks																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	2	0										2										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	2	0					2															0.12	4

Table Antimicrobial susceptibility testing of S. Senftenberg in Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls - quantitative data [Dilution method]

S. Senftenberg		Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		2																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0								2													0.5	64
	Gentamicin	2	2	0							2														0.25	16
	Kanamycin	64	0	0																						
	Neomycin		0	0																						
	Streptomycin	32	2	0													2								32	64
Amphenicols	Chloramphenicol	16	2	0											2										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																						
	Cefoxitin	32	2	0										2											0.5	32
	Ceftiofur	2	2	0								2													0.12	8
	Ceftriaxon	64	2	0						2															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	2	0		2																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	2	0								2													1	32
	Ampicillin	4	2	0								2													1	32
Quinolones	Nalidixic acid	16	2	0										2											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	2	0													2								16	256
	Sulfonamide	256	0	0																						

Table Antimicrobial susceptibility testing of S. Senftenberg in Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls - quantitative data [Dilution method]

S. Senftenberg		Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	2	0										2										4	32
Trimethoprim	**Trimethoprim**	2	0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	2	0					2															0.12	4

Table Antimicrobial susceptibility testing of S. Senftenberg in Feed material of marine animal origin - fish meal - quantitative data [Dilution method]

S. Senftenberg		Feed material of marine animal origin - fish meal																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		2																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0							2														0.5	64
	Gentamicin	2	2	0						2															0.25	16
	Kanamycin	64	2	0											2										8	64
	Neomycin		0	0																						
	Streptomycin	32	2	0													2								32	64
Amphenicols	Chloramphenicol	16	2	0											2										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	2	0											2										0.5	32
	Ceftiofur	2	2	0								2													0.12	8
	Ceftriaxon	64	2	0						2															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	2	0		2																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	2	0								2													1	32
	Ampicillin	4	2	0								2													1	32
Quinolones	Nalidixic acid	16	2	0										2											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	2	0														2							16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Senftenberg in Feed material of marine animal origin - fish meal - quantitative data [Dilution method]

S. Senftenberg		Feed material of marine animal origin - fish meal																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	2	0									2												4	32
Trimethoprim	**Trimethoprim**		0	0																						
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	2	0					2																0.12	4

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls - quantitative data [Dilution method]

S. Typhimurium		Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		2																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0									2												0.5	64
	Gentamicin	2	2	0								2													0.25	16
	Kanamycin	64	0	0																						
	Neomycin		0	0																						
	Streptomycin	32	2	0													2								32	64
Amphenicols	Chloramphenicol	16	2	0											2										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																						
	Cefoxitin	32	2	0									2												0.5	32
	Ceftiofur	2	2	0								2													0.12	8
	Ceftriaxon	64	2	0						2															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	2	0		2																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	2	0								2													1	32
	Ampicillin	4	2	0								2													1	32
Quinolones	Nalidixic acid	16	2	0										2											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	2	0													2								16	256
	Sulfonamide	256	0	0																						

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls - quantitative data [Dilution method]

S. Typhimurium		Gallus gallus (fowl) - laying hens - at farm - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Tetracyclines	Tetracyclin	8	2	0										2										4	32
Trimethoprim	Trimethoprim	2	0	0																					
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	2	2	0					2															0.12	4

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - at slaughterhouse - animal sample - lymph nodes - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Typhimurium		Pigs - - lymph nodes - Surveillance - HACCP and own checks																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		3																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	3	0								1	2												0.5	64
	Gentamicin	2	3	0							3														0.25	16
	Kanamycin	64	0	0																						
	Neomycin		0	0																						
	Streptomycin	32	3	0													3								32	64
Amphenicols	Chloramphenicol	16	3	3													3								2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim	0.5	0	0																						
	Cefoxitin	32	3	0									2	1											0.5	32
	Ceftiofur	2	3	0								3													0.12	8
	Ceftriaxon	64	3	0						3															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	3	0		3																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	3	3											3										1	32
	Ampicillin	4	3	3													3								1	32
Quinolones	Nalidixic acid	16	3	0										3											0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	3	0																3					16	256
	Sulfonamide	256	0	0																						

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - at slaughterhouse - animal sample - lymph nodes - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Typhimurium		Pigs - - lymph nodes - Surveillance - HACCP and own checks																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		3																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	3	0										3										4	32
Trimethoprim	**Trimethoprim**	2	0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	3	3										3										0.12	4

Table Antimicrobial susceptibility testing of S. Typhimurium in Other feed material - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Typhimurium		Other feed material - Surveillance - HACCP and own checks																								
Isolates out of a monitoring program (yes/no)		no																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0								1													0.5	64
	Gentamicin	2	1	0						1															0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	32	1	0													1								32	64
Amphenicols	Chloramphenicol	16	1	0										1											2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefotaxim		0	0																						
	Cefoxitin	32	1	0										1											0.5	32
	Ceftiofur	2	1	0								1													0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.06	1	0		1																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	0								1													1	32
	Ampicillin	4	1	0								1													1	32
Quinolones	Nalidixic acid	16	1	0									1												0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0													1								16	256
	Sulfonamide		0	0																						

Table Antimicrobial susceptibility testing of S. Typhimurium in Other feed material - Surveillance - HACCP and own checks - quantitative data [Dilution method]

S. Typhimurium		Other feed material - Surveillance - HACCP and own checks																							
Isolates out of a monitoring program (yes/no)		no																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Tetracyclines	**Tetracyclin**	8	1	0										1										4	32
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	2	1	0						1														0.12	4

Table Breakpoints for antibiotic resistance testing

Test Method Used	
Disc diffusion	○
Agar dilution	○
Broth dilution	◉
E-test	○

Standards used for testing
NCCLS

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Aminoglycosides	**Amikacin**	CLSI			64	0.5	64				
	Gentamicin	EUCAST			2	0.25	16				
	Kanamycin	CLSI			64	8	64				
	Streptomycin	EUCAST			32	32	64				
Amphenicols	**Chloramphenicol**	EUCAST			16	2	32				
Cephalosporins	**Cefotaxim**	EUCAST			0.5	0.06	4				
	Cefoxitin	CLSI			32	0.5	32				
	Ceftiofur	EUCAST			2	0.12	8				
	Ceftriaxon	CLSI			64	0.25	64				
Fluoroquinolones	**Ciprofloxacin**	EUCAST			0.06	0.015	4				
Penicillins	**Amoxicillin / Clavulanic acid**	EUCOST			4	1	32				
	Ampicillin	EUCAST			4	1	32				
Quinolones	**Nalidixic acid**	EUCAST			16	0.5	32				
Sulfonamides	**Sulfisoxazol (sulfafurazol)**	CLSI			512	16	256				

Table Breakpoints for antibiotic resistance testing

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Sulfonamides	**Sulfonamide**	EUCAST			256	8	1024				
Tetracyclines	**Tetracyclin**	EUCAST			8	4	32				
Trimethoprim	**Trimethoprim**	EUCAST			2	0.5	32				
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	EUCAST			2	0.12	4				

Footnote:

Range tested concentracion:
Amoxicillin/Clavulanic acid - 1/0.5-32/16;
Trimethoprim+Sulfonamides - 0.12/2.38-4/76.

Table Breakpoints for antibiotic resistance testing

Test Method Used	
Disc diffusion	○
Agar dilution	○
Broth dilution	◉
E-test	○

Standards used for testing
NCCLS

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Aminoglycosides	**Amikacin**	CLSI			64	0.5	64				
	Gentamicin	EUCAST			2	0.25	16				
	Kanamycin	CLSI			64	8	64				
	Streptomycin	EUCAST			32	32	64				
Amphenicols	**Chloramphenicol**	EUCAST			16	2	32				
Cephalosporins	**Cefotaxim**	EUCAST			0.5	0.06	4				
	Cefoxitin	CLSI			32	0.5	32				
	Ceftiofur	EUCAST			2	0.12	8				
	Ceftriaxon	CLSI			64	0.25	64				
Fluoroquinolones	**Ciprofloxacin**	EUCAST			0.06	0.015	4				
Penicillins	**Amoxicillin / Clavulanic acid**	EUCAST			4	1	32				
	Ampicillin	EUCAST			4	1	32				
Quinolones	**Nalidixic acid**	EUCAST			16	0.5	32				
Sulfonamides	**Sulfisoxazol (sulfafurazol)**	CLSI			512	16	256				

Table Breakpoints for antibiotic resistance testing

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Sulfonamides	**Sulfonamide**	EUCAST			256	8	1024				
Tetracyclines	**Tetracyclin**	EUCAST			8	4	32				
Trimethoprim	**Trimethoprim**	EUCAST			2	0.5	32				
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	EUCAST			2	0.12	4				

Footnote:

Range tested concentracion:
Amoxicillin/Clavulanic acid - 1/0.5-32/16;
Trimethoprim+Sulfonamides - 0.12/2.38-4/76.

Table Breakpoints for antibiotic resistance testing

Test Method Used	
Disc diffusion	○
Agar dilution	○
Broth dilution	◉
E-test	○

Standards used for testing
NCCLS

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Aminoglycosides	**Amikacin**	CLSI			64	0.5	64				
	Gentamicin	EUCAST			2	0.25	16				
	Kanamycin	CLSI			64	8	64				
	Streptomycin	EUCAST			32	32	64				
Amphenicols	**Chloramphenicol**	EUCAST			16	2	32				
Cephalosporins	**Cefoxitin**	CLSI			32	0.5	32				
	Ceftiofur	EUCAST			2	0.12	8				
	Ceftriaxon	CLSI			64	0.25	64				
Fluoroquinolones	**Ciprofloxacin**	EUCAST			0.06	0.015	4				
Penicillins	**Amoxicillin / Clavulanic acid**	EUCOST			4	1	32				
	Ampicillin	EUCAST			4	1	32				
Quinolones	**Nalidixic acid**	EUCAST			16	0.5	32				
Sulfonamides	**Sulfisoxazol (sulfafurazol)**	CLSI			512	16	256				
Tetracyclines	**Tetracyclin**	EUCAST			8	4	32				

Table Breakpoints for antibiotic resistance testing

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	EUCAST			2	0.12	4				

Footnote:

Range tested concentracion:
Amoxicillin/Clavulanic acid - 1/0.5-32/16;
Trimethoprim+Sulfonamides - 0.12/2.38-4/76.

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).

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 Campylobacteriosis in humans

2.2.3 Campylobacter in foodstuffs

A. Thermophilic Campylobacter in Broiler meat and products thereof

Monitoring system

Sampling strategy

At retail

Inspectors of the Food and Veterinary Service are taking the samples. One sample consists of 5 units. For laboratory
testing, 1 g of sample are taken for further investigations - colony count forming units.

Frequency of the sampling

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At retail

Meat products: fresh meat and meat products

Definition of positive finding

At retail

The sample is not allowed to contain Campylobacter spp. above 100 cfu/g

Diagnostic/analytical methods used

At retail

Other: Bacteriological method ISO 10272 - 2:2006

Control program/mechanisms

The control program/strategies in place

In 2004, a coordinated programme of the European Commission according to the recommendations of 19 December 2003 regarding the bacteriological safety of fresh poultry meat was implemented as the first targeted control programme on Campylobacter. In 2005,2006 and 2007 surveillance of Campylobacter in fresh poultry meat was continued as a national control programme.

Measures in case of the positive findings or single cases

The inspector immediatly has to perform an inspection. He
decides what to do with the rest of the batch, if there are still products left. The inspector also
decides on the actions that have to be taken in the company, like asking for

HACCP system
improvements etc. Desinfection has to be carried out.

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - at slaughterhouse - Survey - EU baseline survey [1)]		single	27g	122	41	3	38			
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance - official controls		single	1g	205	20		20			
Meat from pig - fresh - chilled - at retail - Surveillance - official controls - objective sampling		single	1g	440	0					

Comments:

[1)] broiler carcasses

Footnote:

12 results were under 100 CFU/g:
6; 4; 3; 5; 7; 3; 5; 8; 8,5; 7; 5; 7 x 10 CFU/g;
8 results were above 100 CFU/g/:
1,1; 1,4; 1,4; 1,3; 1,2; 1,5; 1,2; 1,1 x 100 CFU/g

2.2.4 Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for thermophilic Campylobacter spp.	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cattle (bovine animals) - calves (under 1 year) - - faeces - Clinical investigations		animal	5	3		3			
Dogs - Clinical investigations		animal	26	1		1			
Gallus gallus (fowl) - broilers - at slaughterhouse - Survey - EU baseline survey (pooled caecal sample)		batch	122	50	8	42	0	0	0
Pigs - - faeces - Clinical investigations		animal	11	11		1			10

2.2.5 Antimicrobial resistance in Campylobacter isolates

A. Antimicrobial resistance in Campylobacter jejuni and coli in poultry

Laboratory used for detection for resistance

Breakpoints used in testing

National diagnostic centre started to use minimum inhibitory concentration (MIC) for detection of resistance in 2007.

B. Antimicrobial resistance in Campylobacter jejuni and coli in foodstuff derived from poultry

Laboratory used for detection for resistance

Breakpoints used in testing

National diagnostic centre started to use minimum inhibitory concentration (MIC) for detection of resistance in 2007.

Table Antimicrobial susceptibility testing of C. coli in Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring - official sampling - quantitative data [Dilution method]

C. coli		Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring - official sampling																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		8																							
Antimicrobials:		break points	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
Aminoglycosides	Gentamicin	1	8	2							1	5	1	1											
	Streptomycin	2	8	7									1	5	1	1									
Fluoroquinolones	Ciprofloxacin	1	8	8										8											
Macrolides	Erythromycin	4	8	1							7					1									
Penicillins	Ampicillin		0	0																					
Quinolones	Nalidixic acid	16	8	8														8							
Tetracyclines	Tetracyclin	2	8	1						7						1									

Footnote:

Isolates from EU baseline survey.

Table Antimicrobial susceptibility testing of C. jejuni in Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring - official sampling - quantitative data [Dilution method]

C. jejuni		Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring - official sampling																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		57																								
Antimicrobials:		break points	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
Aminoglycosides	Gentamicin	1	57	11					13	11	20	2	1	4	2	4										
	Streptomycin	2	57	8								47	2	1		7										
Fluoroquinolones	Ciprofloxacin	1	57	57										57												
Macrolides	Erythromycin	4	57	2							55				1	1										
Penicillins	Ampicillin		0	0																						
Quinolones	Nalidixic acid	16	57	57													22	35								
Tetracyclines	Tetracyclin	2	57	8						33	15	1			1	7										

Footnote:

Isolates from EU baseline survey.

Table Antimicrobial susceptibility testing of C. jejuni in Meat from broilers (Gallus gallus) - Monitoring - official sampling - quantitative data [Dilution method]

C. jejuni		Meat from broilers (Gallus gallus) - Monitoring - official sampling																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		23																								
Antimicrobials:		break points	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
Aminoglycosides	Gentamicin	1	23	0					1	14	8															
	Streptomycin	2	23	0								23														
Fluoroquinolones	Ciprofloxacin	1	23	23										23												
Macrolides	Erythromycin	4	23	0							23															
Penicillins	Ampicillin		0	0																						
Quinolones	Nalidixic acid	16	23	23													11	12								
Tetracyclines	Tetracyclin	2	23	7						13	3					7										

Table Breakpoints used for antimicrobial susceptibility testing

Test Method Used	
Disc diffusion	○
Agar dilution	○
Broth dilution	◉
E-test	○

Standards used for testing
NCCLS EUCAST

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Aminoglycosides	**Gentamicin**	EUCAST			1	0.12	16				
	Streptomycin	EUCAST			2	1	16				
Fluoroquinolones	**Ciprofloxacin**	EUCAST			1	0.06	4				
Macrolides	**Erythromycin**	EUCAST			4	0.5	32				
Quinolones	**Nalidixic acid**	EUCAST			16	2	64				
Tetracyclines	**Tetracyclin**	EUCAST			2	0.25	16				

Footnote:

Breakpoint concentration for C.coli:
Nalidixic acid 32,
Gentamicin 2,
Erythromycin 16,
Streptomycin 4.

Table Breakpoints used for antimicrobial susceptibility testing

Test Method Used	
Disc diffusion	○
Agar dilution	○
Broth dilution	◉
E-test	○

Standards used for testing
NCCLS EUCAST

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Aminoglycosides	**Gentamicin**	EUCAST			1	0.12	16				
	Streptomycin	EUCAST			2	1	16				
Fluoroquinolones	**Ciprofloxacin**	EUCAST			1	0.06	4				
Macrolides	**Erythromycin**	EUCAST			4	0.5	32				
Quinolones	**Nalidixic acid**	EUCAST			16	2	64				
Tetracyclines	**Tetracyclin**	EUCAST			2	0.25	16				

Footnote:

Breakpoint concentration for C.coli:
Nalidixic acid 32,
Gentamicin 2,
Erythromycin 16,
Streptomycin 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 2007, 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

Listeria monocytogenes is detected at a low percentage in foodstuffs, especially in risk products. Human cases are occuring sporadically.

2.3.2 Listeriosis in humans

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	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 - Surveillance - HACCP and own checks		single	25g	70	0	49	0	21	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance - HACCP and own checks		single	25g	10	0	5	0	5	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance - official controls		single	1g	35	0			35	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance - official controls		single	1g	60	0			60	0	0
Cheeses made from cows' milk - unspecified - at processing plant - Surveillance - HACCP and own checks		single	25g	59	0	59	0			
Dairy products (excluding cheeses) - butter - at processing plant - Surveillance - HACCP and own checks		single	25g	17	0	12	0	5	0	0
Dairy products (excluding cheeses) - cream - at processing plant - Surveillance - HACCP and own checks		single	25g	30	0	30	0			
Dairy products (excluding cheeses) - dairy products, not specified - made from pasteurised milk - at processing plant - Surveillance - official controls - objective sampling		single	1g	45	0			45	0	0

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	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) - dairy products, not specified - made from pasteurised milk - at retail - Surveillance - official controls - objective sampling		single	1g	70	0			70	0	0
Milk, cows' - raw - intended for direct human consumption - at retail - Surveillance - official controls		single	1g	64				64	0	0
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - Surveillance - HACCP and own checks		single	25g	10	0	10	0			
Milk, goats' - raw - intended for direct human consumption - Surveillance - HACCP and own checks		single	25g	20	0	20	0			

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	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 - smoked - at processing plant - Surveillance - HACCP and own checks		single	25g	10	0	10	0			
Fish - smoked - at processing plant - Surveillance - official controls		single	1g	250	0			250	0	0
Fish - smoked - at retail - Surveillance - official controls		single	1g	295	2			295	2	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant - Surveillance - HACCP and own checks		single	25g	7	0	7	0			
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant - Surveillance - HACCP and own checks		single	25g	2	0	2	0			
Meat from pig - fresh - Surveillance - HACCP and own checks		single	25g	1	0	1	0			
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance - HACCP and own checks		single	25g	18	0	11	0	7	0	0
Meat, mixed meat - meat products - cooked, ready-to-eat - chilled - at processing plant - Surveillance - official controls - objective sampling		single	1g	350	0			350	0	0
Meat, mixed meat - meat products - cooked, ready-to-eat - chilled - at retail - Surveillance - official controls - objective sampling		single	1g	420	5			420	0	5

Footnote:

Column "> detection limit but <= 100 CFU":

Column "L. monocytogenes > 100 CFU/g":
5 results - 2,6; 4,8; 3,0; 1,5; 4,5 x 100 CFU/g

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria spp.	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals) - dairy cows - Surveillance - official controls		animal	17	4	4	
Cattle (bovine animals) - dairy cows and heifers - - organ/tissue - Clinical investigations		animal	7	0		
Deer		animal	1	0		
Deer - wild - roe deer		animal	1	1	1	
Goats - Clinical investigations		animal	1	0		
Sheep - Clinical investigations		animal	4	2	2	

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 2008, VTEC in food was controlled by a national control programme, but no control programme was existing in Latvia regarding VTEC infections in animals.

2.4.2 E. coli infections in humans

2.4.3 Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	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
Meat from bovine animals - fresh - at retail - Surveillance - official controls		single	1g	95	0			
Meat from bovine animals - minced meat - intended to be eaten cooked - chilled - at retail - Surveillance - official controls - objective sampling		single	1g	36	0			
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance - official controls		single	1g	185	0			
Meat, mixed meat - meat products - cooked, ready-to-eat - chilled - at retail - Surveillance - official controls - objective sampling		single	1g	365	0			
Milk, cows' - raw - intended for direct human consumption - at retail - Surveillance - official controls		single	1g	79	0			

2.4.4 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 O26	Verotoxigenic E. coli (VTEC)-VTEC O103	Verotoxigenic E. coli (VTEC)-VTEC O111	Verotoxigenic E. coli (VTEC)-VTEC O145	Verotoxigenic E. coli (VTEC)-VTEC O157	Verotoxigenic E. coli (VTEC)-VTEC non-O157
Cattle (bovine animals) - dairy cows - at farm		animal		71	8	4	3		1	0	
Dogs		animal		338	4	3		1			
Pigs		animal		81	5	3	1	1			
Poultry, unspecified		animal		28	0						
Sheep - at farm		animal		1	0						

	Verotoxigenic E. coli (VTEC)-VTEC, unspecified
Cattle (bovine animals) - dairy cows - at farm	
Dogs	
Pigs	
Poultry, unspecified	
Sheep - at farm	

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

In 2008, no human infection with M. bovis was detected.

2.5.2 Tuberculosis, mycobacterial diseases in humans

2.5.3 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. In 2008, according to the national control programme, all other cattle older than 6 months in 20% of the holdings are tested on tuberculosis.

Type of specimen taken

Other: 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, 8 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

B. Mycobacterium bovis in farmed deer

Additional information

In 2008, 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

Other: 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, 8 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 spp.	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified
Goats - at farm - Surveillance		animal	75	0	0		0
Pigs - at farm - Surveillance		animal	9813	0	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 examinations	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	43199	380363	0	0	0	0	5	90025	6630	0	0
Total	43199	380363	0	0.0	0	0.0	5	90025	6630	0	0
Total - 1											

Footnote:

In 2008, according to the national control programme, in 20% of the herds all cattle older than 6 months are tested on tuberculosis. This means that all cattle herds must be tested once per five years.

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.
All 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

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

2.6.2 Brucellosis in humans

2.6.3 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. In 2008, according to the national control programme, in 20% of the herds all other cattle older than 24 months are tested on brucellosis.

Type of specimen taken

Other: milk/blood

Methods of sampling (description of sampling techniques)

Samples are taken on 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, eradication measures, registration and eradication of zoonotic diseases.
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.

- Regulation of Cabinet of Ministers Nr. 301, 13 April 2004 "Veterinary requirements for circulation of cattle and pigs" determines veterinary requirements for circulation of cattle and
pigs (excepting wild boars) among member states of the EU.

- Food and Veterinary Service (FVS) Order Nr. 241, 21.09.2001 determines the list of zoonoses immediately notifiable to the Head Offices of the FVS.

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 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 2008, 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.

C. 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 2008, 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.

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 spp.	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Dogs - pet animals [1)]		animal	10	0				
Pigs [2)]		animal	9652	0				
Pigs - breeding animals - - organ/tissue - Surveillance - HACCP and own checks [3)]		animal	1	0				
Pigs - breeding animals - unspecified - - organ/tissue - Monitoring - official sampling [4)]		animal	4	0				
Solipeds, domestic - horses [5)]		animal	3	0				
Zoo animals, all [6)]		animal	22	0				

Comments:

[1)] AR
[2)] RBT
[3)] bacteriological investigations
[4)] bacteriological investigations
[5)] RBT
[6)] RBT

Footnote:

RBT - Rose Bengal Test; AR - Agglutination Test;

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 microbiologically	Number of animals positive microbiologically
																		Sero logically	BST		
Latvija	43199	380363	0	0	0	0	10152	29264	0	1063	19949	0	102	0	0	0	0	0	0	0	0
Total	43199	380363	0	0.0	0	0.0	10152	29264	0	1063	19949	0	102	0	0	0	0	0	0	0	0
Total - 1																					

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	6895	79774	0	0	0	0	841	3752	0	0	0	0	0	0
Total	6895	79774	0	0.0	0	0.0	841	3752	0	0	0	0	0	0
Total - 1														

Footnote:

Information given in the table refers to both sheep and goats together .

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 Yersiniosis in humans

2.7.3 Yersinia in animals

Table Yersinia in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia spp.	Y. enterocolitica	Yersinia spp., unspecified	Y. enterocolitica-O:3	Y. enterocolitica-O:9	Y. enterocolitica-unspecified
Dogs [1)]		animal	23	1	1				

Comments:

[1)] clinical 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 2006, the Food and Veterinary Service has elaborated methodological guidelines for the veterinary expertise of cows, sheep, goats and horses 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 and horses 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 Trichinellosis in humans

2.8.3 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella spp.	T. spiralis	Trichinella spp., unspecified
Beavers - wild - from hunting		animal	2	0	0	0
Foxes		animal	45	35	0	35
Lynx - wild - from hunting		animal	1	1	0	1
Pigs - at slaughterhouse - Surveillance		animal	405460	0	0	0
Raccoon dogs - wild - from hunting		animal	56	40	0	40
Solipeds, domestic - horses - at slaughterhouse - Surveillance		animal	430	0	0	0
Wild boars - wild		animal	2040	17	0	17

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 cows, sheep, goats and horses 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 Echinococcosis in humans

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus spp.	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals) - at slaughterhouse		animal	114440	0	0	0	0
Goats - at slaughterhouse [1)]		animal	9338	0	0	0	0
Pigs - at slaughterhouse		animal	405460	0	0	0	0
Solipeds, domestic - at slaughterhouse		animal	430	0	0	0	0

Comments:

[1)] Number of 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 2008, Latvia had no monitoring programme in place to control Toxoplasma spp. in animals. Samples are sent by private veterinarians.

2.10.2 Toxoplasmosis in humans

2.10.3 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Cats [1)]		animal	121	17	17
Dogs [2)]		animal	54	19	19
Polecats [3)]		animal	1	0	
Solipeds, domestic [4)]		animal	2	0	

Comments:

[1)] AR
[2)] AR
[3)] AR
[4)] AR

Footnote:

AR - agglutination test

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). In 2004, 170 rabies cases in red foxes and 130 rabies cases in racoon dogs were diagnosed. In 2005, it was 165 rabies cases in red foxes and 126 rabies cases in racoon dogs. In 2006, 187 rabies cases in red foxes and 153 rabies cases in racoon dogs were registered. 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 the number of cases continued to decrease - 44 rabies cases in red foxes and 41 rabies cases in racoon dogs were detected.

Other animals infected with rabies in the last three 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 Rabies in humans

2.11.3 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 2008, 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 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 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

National Diagnostic Centre 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 Public Health Agency and a regional office of the Food and Veterinary Service provide written information regarding the location of the zoonosis outbreak and measures taken to contain the disease.

Food and Veterinary Service (FVS) Order Nr. 241 of 21.09.2001 determines the list of zoonoses that have to be notified immediately to the Central OPffice of the FVS.

Relevance of the findings in animals to findings in foodstuffs and to human cases

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)	Unspecified Lyssavirus	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
All animals - wild [1)]		animal	2	0			
Badgers - wild		animal	14	1		1	
Beavers - wild		animal	6	1		1	
Cats		animal	116	5		5	
Cats - stray cats		animal	35	1		1	
Cattle (bovine animals)		animal	28	6		6	
Deer		animal	8	0			
Deer - wild - roe deer		animal	35	0			
Dogs		animal	92	6		6	
Dogs - stray dogs		animal	30	2		2	
Foxes - wild		animal	397	44		44	
Hamsters - pet animals		animal	2	0			
Hares - wild		animal	3	0			
Hedgehogs - wild		animal	2	0			
Marten - wild		animal	14	1		1	
Minks - wild		animal	7	0			
Moose - wild		animal	2	0			
Otter		animal	3	1		1	
Polecats - wild		animal	10	0			
Raccoon dogs - wild		animal	159	41		41	
Rats - pet animal		animal	3	0			

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Unspecified Lyssavirus	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Rats - wild		animal	1	0			
Sheep		animal	2	0			
Solipeds, domestic		animal	4	0			
Squirrels - wild		animal	2	0			
Wild boars - wild		animal	1	0			
Wolves - wild		animal	2	1		1	

Comments:

[1)] mouse

2.12 Q-FEVER

2.12.1 General evaluation of the national situation

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ENTEROCOCCUS, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

3.2 ESCHERICHIA COLI, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Escherichia coli, non-pathogenic

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Meat from bovine animals - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	2	0								1	1												0.5	64
	Gentamicin	2	2	0							2														0.25	16
	Kanamycin	64	2	0											2										8	64
	Neomycin		0	0																						
	Streptomycin	16	2	2													2								32	64
Amphenicols	Chloramphenicol	16	2	0										1	1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefoxitin	32	2	0										1	1										0.5	32
	Ceftiofur	1	2	0							2														0.12	8

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Meat from bovine animals - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		2																							
Antimicrobials:		break points	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
Cephalosporins	**Ceftriaxon**	64	2	0						2															0.25	64
Fluoroquinolones	**Ciprofloxacin**	0.032	2	2		1	1																		0.015	4
	Enrofloxacin		0	0																						
Penicillins	**Amoxicillin / Clavulanic acid**	4	2	0										2											1	32
	Ampicillin	4	2	0									1	1											1	32
Quinolones	**Nalidixic acid**	16	2	0									1	1											0.5	32
Sulfonamides	**Sulfisoxazol (sulfafurazol)**	512	2	0												2									16	256
	Sulfonamide		0	0																						
Tetracyclines	**Tetracyclin**	8	2	0										2											4	32
Trimethoprim	**Trimethoprim**		0	0																						
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	0.5	2	0					2																0.12	4

Table Antimicrobial susceptibility testing of E. coli in Meat, mixed meat - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Meat, mixed meat - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		4																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	4	0									4												0.5	64
	Gentamicin	2	4	0							2	2													0.25	16
	Kanamycin	64	4	0											2			2							8	64
	Neomycin		0	0																						
	Streptomycin	16	4	4													2	2							32	64
Amphenicols	Chloramphenicol	16	4	2											2		2								2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefoxitin	32	4	0										1	2		1								0.5	32
	Ceftiofur	1	4	0						2	2														0.12	8
	Ceftriaxon	64	4	0						4															0.25	64
Fluoroquinolones	Ciprofloxacin	0.032	4	4		4																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	4	2									1	1	2										1	32
	Ampicillin	4	4	2									2				2								1	32
Quinolones	Nalidixic acid	16	4	0									3		1										0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	4	0																4					16	256
	Sulfonamide		0	0																						
Tetracyclines	Tetracyclin	8	4	4													4								4	32

Table Antimicrobial susceptibility testing of E. coli in Meat, mixed meat - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Meat, mixed meat - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		4																							
Antimicrobials:		break points	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
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	0.5	4	4										4										0.12	4

Table Antimicrobial susceptibility testing of E. coli in Cheeses, made from unspecified milk or other animal milk - unspecified - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Cheeses, made from unspecified milk or other animal milk - unspecified - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		1																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	1	0									1												0.5	64
	Gentamicin	2	1	0							1														0.25	16
	Kanamycin	64	1	0											1										8	64
	Neomycin		0	0																						
	Streptomycin	16	1	1														1							32	64
Amphenicols	Chloramphenicol	16	1	0											1										2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefoxitin	32	1	0										1											0.5	32
	Ceftiofur	1	1	0						1															0.12	8
	Ceftriaxon	64	1	0						1															0.25	64
Fluoroquinolones	Ciprofloxacin	0.032	1	1		1																			0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	1	1											1										1	32
	Ampicillin	4	1	1													1								1	32
Quinolones	Nalidixic acid	16	1	0									1												0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	1	0																1					16	256
	Sulfonamide		0	0																						
Tetracyclines	Tetracyclin	8	1	0										1											4	32

Table Antimicrobial susceptibility testing of E. coli in Cheeses, made from unspecified milk or other animal milk - unspecified - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Cheeses, made from unspecified milk or other animal milk - unspecified - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		1																							
Antimicrobials:		break points	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
Trimethoprim	**Trimethoprim**		0	0																					
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	0.5	1	1										1										0.12	4

Table Antimicrobial susceptibility testing of E. coli in Meat from broilers (Gallus gallus) - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Meat from broilers (Gallus gallus) - Surveillance - official controls																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		22																								
Antimicrobials:		break points	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
Aminoglycosides	Amikacin	64	22	0								4	17	1											0.5	64
	Gentamicin	2	22	2						1	16	2	1			2									0.25	16
	Kanamycin	64	22	0											16			6							8	64
	Neomycin		0	0																						
	Streptomycin	16	22	22													13	9							32	64
Amphenicols	Chloramphenicol	16	22	5										7	10		5								2	32
	Florfenicol		0	0																						
Cephalosporins	3rd generation cephalosporins		0	0																						
	Cefoxitin	32	22	0									1	17			4								0.5	32
	Ceftiofur	1	22	5						10	7				5										0.12	8
	Ceftriaxon	64	22	0						17					4			1							0.25	64
Fluoroquinolones	Ciprofloxacin	0.032	22	17		5			1	2	1	6		7											0.015	4
	Enrofloxacin		0	0																						
Penicillins	Amoxicillin / Clavulanic acid	4	22	15									2	5	7		8								1	32
	Ampicillin	4	22	15								1	2	4			15								1	32
Quinolones	Nalidixic acid	16	22	16									3	2	1		16								0.5	32
Sulfonamides	Sulfisoxazol (sulfafurazol)	512	22	0												6				16					16	256
	Sulfonamide		0	0																						
Tetracyclines	Tetracyclin	8	22	16										6			16								4	32

Table Antimicrobial susceptibility testing of E. coli in Meat from broilers (Gallus gallus) - Surveillance - official controls - quantitative data [Dilution method]

E. coli		Meat from broilers (Gallus gallus) - Surveillance - official controls																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		22																							
Antimicrobials:		break points	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
Trimethoprim	Trimethoprim		0	0																					
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	0.5	22	12					6	3	1	1		11											0.12	4

Table Breakpoints used for antimicrobial susceptibility testing

Test Method Used	
Disc diffusion	○
Agar dilution	○
Broth dilution	◉
E-test	○

Standards used for testing

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Aminoglycosides	**Amikacin**	CLSI			64	0.5	64				
	Gentamicin	EUCAST			2	0.25	16				
	Kanamycin	CLSI			64	8	64				
	Streptomycin	EUCAST			16	32	64				
Amphenicols	**Chloramphenicol**	EUCAST			16	2	32				
Cephalosporins	**Cefoxitin**	CLSI			32	0.5	32				
	Ceftiofur	EUCAST			1	0.12	8				
	Ceftriaxon	CLSI			64	0.25	64				
Fluoroquinolones	**Ciprofloxacin**	EUCAST			0.032	0.015	4				
Penicillins	**Amoxicillin / Clavulanic acid**	EUCAST			4	1	32				
	Ampicillin	EUCAST			4	1	32				
Quinolones	**Nalidixic acid**	EUCAST			16	0.5	32				
Sulfonamides	**Sulfisoxazol (sulfafurazol)**	CLSI			512	16	256				
Tetracyclines	**Tetracyclin**	EUCAST			8	4	32				

Table Breakpoints used for antimicrobial susceptibility testing

			Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		Disk content	Breakpoint Zone diameter (mm)		
		Standard for breakpoint	Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Trimethoprim + sulfonamides	**Trimethoprim + sulfonamides**	EUCAST			0.5	0.12	4				

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 HISTAMINE

4.1.1 General evaluation of the national situation

4.1.2 Histamine in foodstuffs

4.2 ENTEROBACTER SAKAZAKII

4.2.1 General evaluation of the national situation

4.2.2 Enterobacter sakazakii in foodstuffs

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

4.3.2 Staphylococcal enterotoxins in foodstuffs

Table Staphylococcal enterotoxins in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from cows' milk - Surveillance - HACCP and own checks		single	25g	55	0

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

Clinicians are legally responsible for notifying of the 99 infectious diseases, including food-borne diseases (they have to be notified within 12 hours). 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 2008, there were 481 family outbreaks (2 and 4 cases), 45 general outbreaks (5 and more cases), and no international outbreak. 33% of the general outbreaks were caused by Salmonella Enteritidis, but 40% by Hepatitis A.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

In 2008, 526 outbreaks were reported affecting all together 1552 people (with possible or evident relationship with food source, with food as possible infection transmission vehicle, and by direct contact with the diseased person or contaminated household objects).

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

Among all foodborne outbreaks, 72 (14%) were caused by Salmonella Enteritidis, 86 (16%) by Rotavirus, and 38 (7%) by Norovirus. For 56 outbreaks the aetiological agent remained unknown, and in one outbreak two aetiological agents were detected: Norovirus and Rotavirus. 243 (45%) was caused by hepatitis A.
For salmonellosis outbreaks, the main implicated food source was chicken meat

and eggs (egg-containing products), also potato mash and cream cakes.

Descriptions of single outbreaks of special interest

In 2008, there was an outbreak of gastroenteritis due to Salmonella Enteritidis associated with a cafe in a supermarket. 35 persons fulfilled the criteria of an outbreak case. Stool specimens from 20 patients, including kitchen workers, were tested microbiologically, and no specimens were positive for Salmonella Enteritidis. Laboratory testing made for four food samples (pork salad with ananas, salad of beetroot and potato mash - 2 samples). Salmonella Enteritidis was detected in all samples. Data of epidemiological investigations show that these cases were connected with a salmonella contaminated product that was used in preparing food.

Foodborne Outbreaks: summarized 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	25	25	295	168	0	0
Listeria	0	0	unknown	unknown	unknown	0
Other agents	3	3	26	26	0	0
Parasites	0	0	unknown	unknown	unknown	0
Salmonella	15	5	33	20	0	10
Staphylococcus	0	0	unknown	unknown	unknown	0
Unknown	2	2	21	15	0	0
Yersinia	0	0	unknown	unknown	unknown	0

Verified Foodborne Outbreaks: detailed data

S. Enteritidis

	Value
Code	004
Subagent Choice	
Outbreak type	Household
Human cases	5
Hospitalized	5
Deaths	0
Foodstuff implicated	Eggs and egg products
More Foodstuff	
Type of evidence	Laboratory detection in implicated food
Setting	Unknown
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Inadequate heat treatment
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	005
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	General
Human cases	6
Hospitalized	4
Deaths	0
Foodstuff implicated	Eggs and egg products
More Foodstuff	
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Infected food handler, Inadequate heat treatment
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	006
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	General
Human cases	7
Hospitalized	7
Deaths	0
Foodstuff implicated	Eggs and egg products
More Foodstuff	
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Infected food handler, Inadequate heat treatment
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	008
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	General
Human cases	18
Hospitalized	9
Deaths	0
Foodstuff implicated	Sweets and chocolate
More Foodstuff	Salmonellla Enteritidis detect in cream of rice
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Other contributory factor, Infected food handler
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	009
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	General
Human cases	21
Hospitalized	11
Deaths	0
Foodstuff implicated	Pig meat and products thereof
More Foodstuff	
Type of evidence	Laboratory detection in implicated food
Setting	Take-away or fast-food outlet
Place of origin of problem	Take-away
Origin of foodstuff	Domestic
Contributory factors	Cross-contamination
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	010
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	Household
Human cases	24
Hospitalized	16
Deaths	0
Foodstuff implicated	Bakery products
More Foodstuff	Salmonella Enteritidis find in cake and in barbecued pork
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Cross-contamination
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	011
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	Unknown
Human cases	35
Hospitalized	21
Deaths	0
Foodstuff implicated	Vegetables and juices and other products thereof
More Foodstuff	potato mash
Type of evidence	Laboratory detection in human cases, Analytical epidemiological evidence
Setting	School, kindergarten
Place of origin of problem	Unknown
Origin of foodstuff	Domestic
Contributory factors	Infected food handler, Cross-contamination
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	012
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	General
Human cases	35
Hospitalized	28
Deaths	0
Foodstuff implicated	Vegetables and juices and other products thereof
More Foodstuff	potato mash
Type of evidence	Laboratory detection in implicated food, Analytical epidemiological evidence
Setting	Mobile retailer, market/street vendor
Place of origin of problem	Processing plant
Origin of foodstuff	Domestic
Contributory factors	Inadequate heat treatment, Cross-contamination
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	013
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	General
Human cases	40
Hospitalized	29
Deaths	0
Foodstuff implicated	Bakery products
More Foodstuff	a cake with cream - made byself at home
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	School, kindergarten
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Storage time/temperature abuse, Infected food handler, Inadequate heat treatment, Cross-contamination
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	014
Subagent Choice	Salmonella; S. Enteritidis
Outbreak type	General
Human cases	119
Hospitalized	79
Deaths	0
Foodstuff implicated	Unknown
More Foodstuff	
Type of evidence	Analytical epidemiological evidence, Laboratory detection in human cases
Setting	School, kindergarten
Place of origin of problem	Transport
Origin of foodstuff	Domestic
Contributory factors	Cross-contamination
Outbreaks	1
Comment	