

## SLOVENIA

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

### TRENDS AND SOURCES OF ZOONOSSES AND ZOOTIC AGENTS IN HUMANS, FOODSTUFFS, ANIMALS AND FEEDSTUFFS

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

## IN 2011

## INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Slovenia

Reporting Year: 2011

Laboratory name	Description	Contribution
Veterinary Administration of the Republic of Slovenia - VARS	Competent authority	Monitoring program-preparing, Collecting data in animals, food of animal origin and feed, National report-preparing, Contact point with EC.
Inspectorate of the Republic of Slovenia for Agriculture, Forestry and Food - IRSAFF	Competent authority	Monitoring program-preparing, Collecting data in food of non-animal origin.
Health Inspectorate of the Republic of Slovenia - HIRS	Competent authority	Monitoring program-preparing, Collecting data in foodstuffs intended for particular nutritional uses and catering.
National Veterinary Institute - NVI	Researches Laboratory	Scientific advice and support, Analysis and testing.
Institute of Public Health of the Republic of Slovenia - IPHRS	Researches Laboratory	Monitoring program-preparing, Collecting data in humans, Epidemiological investigation, Scientific advice and support, Analysis and testing

## 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 Slovenia during the year 2011 .

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

Source:

Livestock numbers and number of holdings: Statistical Office of the Republic of Slovenia

Number of slaughtered animals: Ministry for Agriculture and the Environment (Veterinary Administration of the Republic of Slovenia)

Number of flocks (Gallus gallus, Turkeys): Ministry for Agriculture and the Environment (Veterinary Administration of the Republic of Slovenia)

Number of holdings (breeding flocks, flocks of laying hens, broiler flocks and turkey flocks): Ministry for Agriculture and the Environment (Veterinary Administration of the Republic of Slovenia)

Number of holdings (cattle, pigs): Ministry for Agriculture and the Environment (Animal Identification and Registration Sector).

### Dates the figures relate to and the content of the figures

Number of holdings: Reference day for year 2011 is 1 June 2011.

Livestock numbers: Reference day for year 2011 is 1 December 2011.

Livestock numbers and number of holdings: Reference date is the date the obtained data refer to.

Number of slaughtered animals: The number of slaughtered animals in 2011.

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

Definitions and other explanations

Agricultural holding is a single unit, both organisational and operating, of agricultural area utilised, forests, buildings, equipment and labour force, which has a single management and which is engaged in agricultural production.

### Additional information

#### METHODOLOGICAL EXPLANATIONS

The purpose of the survey

The Farm Structure Survey (FSS) is one of the basic statistical surveys in the field of agriculture. In accordance with EU regulation it is conducted as a census every 10 years. Between censuses it can be conducted as a sample survey.

Observation units

Observation units are agricultural holdings satisfying the criteria of EU comparable threshold and all agricultural enterprises and co-operatives.

Data on agricultural enterprises and co-operatives were collected by questionnaire by post.

Table Susceptible animal populations

\* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
		Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	calves (under 1 year)			24495		146203			
	mixed herds			97879					
	- in total			122374		462300		35225	
	breeding bulls					2336			
	heifers					21197			
	others					61671			
	young cattle (1-2 years)					119055			
	dairy cows - adult					109068			
	meat production animals - fattening steers					2770			
Deer	farmed - in total					7341	2010	352	2010
	farmed - at slaughterhouse			9					
Ducks	- in total					12229			
Gallus gallus (fowl)	parent breeding flocks for egg production line <sup>1)</sup>	7						2	2012



Table Susceptible animal populations

Animal species	Category of animals	Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
		Data	Year*	Data	Year*	Data	Year*	Data	Year*
Gallus gallus (fowl)	parent breeding flocks for meat production line <sup>2)</sup>	153						9	2012
	laying hens <sup>3)</sup>	185		1183000				77	2012
	broilers <sup>4)</sup>	2226	2012	31629786		2154755		384	2012
	mixed flocks/holdings			417950		349003			
	- in total			32047736		3686756			
Geese	- in total					1922			
Goats	animals under 1 year					4923			
	animals over 1 year					21722			
	- in total			535		26645		4214	2010
	animals over 1 year - at slaughterhouse			247					
	animals under 1 year - at slaughterhouse			292					
Pigs	breeding animals					29844			
	fattening pigs			256259		317466			

Table Susceptible animal populations

Animal species	Category of animals	Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
		Data	Year*	Data	Year*	Data	Year*	Data	Year*
Pigs	breeding animals - unspecified - sows and gilts			2970					
	- in total			280266		347310		19522	
	- at farm <sup>5)</sup>			568					
	fattening pigs - unspecified - piglets			20649					
Sheep	animals under 1 year (lambs)					32380			
	animals over 1 year					87596			
	- in total			9537		119976		6181	2010
	- at farm <sup>6)</sup>			30					
	animals over 1 year - at slaughterhouse			248					
	animals under 1 year (lambs) - at slaughterhouse			9567					
Solipeds, domestic	horses - in total			1773		22673	2010	5948	2010
Turkeys	- in total <sup>7)</sup>	122	2012	500382		95848		46	2012

## Comments:

<sup>1)</sup> Number of flocks represents the number of adult parent breeding flocks

## Table Susceptible animal populations

### Comments:

- 2) Number of flocks represents the number of adult parent breeding flocks
- 3) Number of flocks represents the number of adult laying hens flocks
- 4) Number of flocks represents the number of flocks under National Control Programme for reduction of salmonela.
- 5) at tourist farm
- 6) at tourist farm
- 7) The number of flocks represents the number of turkey flocks under the National Control Programme for reducing of salmonela.

## 2. INFORMATION ON SPECIFIC ZONOSSES 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

After the second World War only Salmonella Typhi and Paratyphi were notified. In 1950-s Salmonella Typhi and Paratyphi infections were more and more rare, other Salmonella serotypes were more and more frequent.

From 1946 to 1953 3414 cases of Salmonella Typhi and 3415 cases of Salmonella Paratyphi were notified. Among them 180 patients with Salmonella Typhi and 41 patients with Salmonella Paratyphi died. After year 1953 epidemiological situation changed. More other Salmonella serotypes (Salmonella Typhimurium, Choleraesuis, Enteritidis etc.) were identified and less Salmonella Typhi and Paratyphi. From the year 1954 to 2000 188 serotypes of Salmonella were identified and 82742 notifications of Salmonella gastroenteritis in Slovenia.

In last years Salmonella Enteritidis encounters most of Salmonella isolates in Slovenia.

Salmonella Typhi, S.Paratyphi are notified only as imported infections.

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

The number of notified human Salmonella cases declined from 3307 notifications in 2004 to 1519 in 2005 and 2006. In 2009 the number of notifications further dropped to 627 in 2011 to 403. The incidence of notified Salmonella cases dropped to 20 per 100 000 inhabitants. Until 2009 salmonella was most frequent bacterial agent, after Campylobacter spp, from 2009 to 2011 campylobacter was most frequent.

Most frequent serotypes are: Salmonella Enteritidis ( most of isolates), Salmonella Typhimurium, Salmonella Coeln, Salmonella Stanleyville, Salmonella Infantis.

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

Poultry and eggs of slovenian origin are not important source of infection any more due to improved epizootic situation.

Salmonella Enteritidis remains most common serotype in humans, but not in slovene animal population.

##### Recent actions taken to control the zoonoses

Action plan to improve intersectoral collaboration between human- and veterinary medicine. A three years research project for comparison of Salmonella Enteritidis strains of human, food and animal origin ended in 2010.

##### Suggestions to the Community for the actions to be taken

Improvement of the intersectoral collaboration between veterinary and human medicine.



## 2.1.2 Salmonellosis in humans

### A. Salmonellosis in humans

#### Reporting system in place for the human cases

Human cases are notifiable by national Law on Infectious Diseases (Official Gazette number 69/95, revised 33/2006).

Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health.

Local institutes of public health notify disease to National Institute of Public Health of R. Slovenia.

Notification is in place since the second World War.

#### Case definition

According to standard case definitions definitions of EC/ECDC from 2008.

#### Diagnostic/analytical methods used

Serologic and biochemical identification: isolation on SS agar and selen medium, serotyping O and H according to Kauffman White scheme.

Laboratory of Institute of Public Health of Celje developed PFGE method for Salmonella isolates from whole Slovenia.

#### Notification system in place

Human cases are notifiable by national Law on Infectious Diseases. Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification after second World War.

#### History of the disease and/or infection in the country

After the second World War only Salmonella Typhi and Paratyphi were notified. In 1950-s Salmonella Typhi and Paratyphi infections were more and more rare, other Salmonella serotypes were more and more frequent.

From 1946 to 1953 3414 cases of Salmonella Typhi and 3415 cases of Salmonella Paratyphi were notified. Among them 180 patients with Salmonella Typhi and 41 patients with Salmonella Paratyphi died.

After year 1953 epidemiological situation changed. More other Salmonella serotypes (Salmonella Typhimurium, Choleraesuis, Enteritidis etc.) were identified and less Salmonella Typhi and Paratyphi.

From the year 1954 to 2000 188 serotypes of Salmonella were identified and 82 742 notifications of Salmonella gastroenteritis in Slovenia.

In last years Salmonella Enteritidis encounters most of human Salmonella isolates in Slovenia.

Salmonella Typhi, S.Paratyphi are notified only as imported infections.

#### Results of the investigation

The number of notified human Salmonella cases declined from 3307 notifications in 2004 to 1519 in 2005 and 2006 and to 627 in 2009, 347 in 2010, 403 in 2011. The incidence of notified Salmonella cases

dropped to 20 per 100 000 inhabitants.

Most frequent serotypes are: *Salmonella* Enteritidis, *Salmonella* Typhimurium, *Salmonella* Coeln, *Salmonella* Mbandaka.

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

The incidence of human *Salmonella* infections has recently decreased according to notified number of *Salmonella* human cases. Poultry and eggs of slovene origin are less important as a vehicle due to improved epizootiological situation in Slovenia.

### Relevance as zoonotic disease

*Salmonella* human infections are still important as zoonotic disease. According to notification, *Salmonella* was the second most frequent bacterial enteropathogen, *Campylobacter* was the first one in last three years ( from 2009 to 2011).



Table Salmonella in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.	Unknown status
Salmonella	266	12.96	266	12.96	0	0	0
S. Enteritidis	210	10.23	210	10.23	0	0	0
S. Typhimurium	56	2.73	56	2.73	0	0	0

Table Salmonella in humans - Age distribution

Age distribution	S. Enteritidis			S. Typhimurium			Salmonella spp.		
	All	M	F	All	M	F	All	M	F
<1 year	5	1	4	1	1	0	0	0	0
1 to 4 years	21	8	13	7	6	1	0	0	0
5 to 14 years	23	10	13	7	3	4	0	0	0
15 to 24 years	20	7	13	2	0	2	0	0	0
25 to 44 years	25	12	13	4	1	3	0	0	0
45 to 64 years	29	14	15	6	4	2	0	0	0
65 years and older	20	6	14	4	1	3	0	0	0
Age unknown	0	0	0	0	0	0	0	0	0
Total :	143	58	85	31	16	15	0	0	0

Footnote:

We could not define gender of all salmonella cases as our laboratory data base does not include names. There are 210 S. enteritidis cases and 56 S. Typhimurium cases.

Table Salmonella in humans - Seasonal distribution

Seasonal Distribution Months	S. Enteritidis	S. Typhimuri um	Salmonell a spp.
	Cases	Cases	Cases
January	8	3	0
February	4	1	0
March	8	5	0
April	10	1	0
May	19	4	0
June	22	4	0
July	16	7	0
August	19	5	0
September	54	7	0
October	19	4	0
November	23	12	0
December	8	3	0
not known	0	0	0
Total :	210	56	0

## 2.1.3 Salmonella in foodstuffs

### A. Salmonella spp. in food

#### Monitoring system

##### Sampling strategy

###### VARs

Monitoring at processing and at retail.

Sampling of RTE meat products, raw cows milk, smoked fish, crustaceans and RTE fish products for *Salmonella* spp. was conducted in the registered establishments and at retail.

Sampling of crustaceans (cooked) was conducted at processing plants.

###### HIRS

Monitoring (foodstuffs intended for particular nutritional uses and catering)

Annual monitoring programme was prepared with respect to the risk analysis, legislative criteria and results of programme/controls carried out in the previous year.

Samples were taken at retail level, at wholesalers (foodstuffs intended for particular nutritional uses) and catering. Sampling was carried out by the health inspectors.

Programme:

- dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age: 10 samples/year;
- dried follow-on formulae: 10 samples/year;
- ready-to-eat foods intended for infants: 10 samples/year;
- ready-to-eat foods for special medical purposes: 5 samples/year;
- ice cream: 100 samples/year;
- ready-to-eat filled cakes, deserts and pastry: 100 samples/year;
- ready-to-eat deli dishes (salads, sauces, spreads etc.): 180 samples/year.

###### IRSAFF

Monitoring (foodstuff of non-animal origin except intended for particular nutritional uses and catering)

Annual monitoring programme was prepared with respect to the risk analysis, legislative criteria, results of programme/controls carried out in the previous year.

Samples were taken at producer, wholesalers and at retail level and it was carried out by the inspectors for quality control

Programme:

- sprouting seeds: 10 samples/year
- tea: 20 samples/year
- spices: 40 samples/year
- pre-cut RTE fruits and vegetables: 30 samples/year;
- frozen fruits and vegetables (RTE): 30 samples/year
- RTE deli dishes with long shelf life: 50 samples/year.
- edible seeds: 10 samples/year
- chocolate/cocoa: 10 samples/year
- ready-to-eat filled cakes, deserts and pastry: 100 Samples/year

##### Frequency of the sampling

###### VARs

Sampling was distributed evenly throughout the months: May - December.

The number of samples to be taken had been defined in advance and for every particular VARS Regional Office separately.

#### HIRS

Sampling was distributed evenly throughout the months: January - September.

#### IRSAFF

Sampling was distributed evenly throughout the months: February -December.

#### Type of specimen taken

##### VARS:

- meat products, RTE,
- raw milk,
- smoked fish,
- crustaceans (cooked),
- fish products, RTE.

##### HIRS:

- dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age,
- dried follow-on formulae,
- ready-to-eat foods intended for infants,
- ready-to-eat foods for special medical purposes,
- ice cream,
- ready-to-eat filled cakes, deserts and pastry,
- ready-to-eat deli dishes (salads, sauces, spreads etc.).

##### IRSAFF:

- sprouting seeds,
- tea,
- spices,
- precut RTE fruits and vegetables;
- frozen fruits and vegetables (RTE)
- RTE deli dishes with long shelf life
- edible seeds
- chocolate/cocoa
- ready-to-eat filled cakes, deserts and pastry

#### Methods of sampling (description of sampling techniques)

##### VARS

A single sample of a meat product, smoked fish, crustaceans, fish product and raw milk shall be composed of one (1) unit (n=1), and every unit shall weigh at least 200 g (raw milk - at least 300ml). Samples were delivered to the laboratory in the shortest time possible, as a rule, immediately after sampling (in 24 hours after sampling at the latest). In time between sampling and delivery to the laboratory, samples shall be kept at 4°C(+/-2°C).

##### HIRS

Sampling plan (n = number of units comprising the sample):

- dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age: n=5;
- dried follow-on formulae: n=5;

- ready-to-eat foods intended for infants: n=10;
- ready-to-eat foods for special medical purposes: n=5;
- ice cream: n=1;
- ready-to-eat filled cakes, deserts and pastry: n=1;
- ready-to-eat deli dishes (salads, sauces, spreads etc.): n=1.

Every unit of the sample weighed at least 100 g. If a sample was analysed in one unit and was not prepacked, a sample weighing 300-500 g was taken by sterile instrument and stored in a sterile bag or other sterile container. Samples had to be delivered to the laboratory in the shortest time possible. The period of time elapsing from sampling to analysis shall by no means exceed 24 hours. The temperature during storage and transport should not exceed + 4°C for samples of chilled products and -18°C for samples of ice cream.

#### IRSAFF

Sampling plan (n = number of units comprising the sample):

- sprouting seeds, n=5
- tea, n=1
- spices, n=1
- precut RTE fruits and vegetables, n=5
- frozen fruits and vegetables (RTE), n=5
- RTE deli dishes with long shelf life, n=5
- edible seeds: n=5
- chocolate/cocoa, n=1
- ready-to-eat filled cakes, deserts and pastry, n=1

Every unit of the sample weighed at least 100 g. If a sample was analysed in one unit and was not prepacked, a sample weighing 300-500 g was taken by sterile instrument and stored in a sterile bag or other sterile container. Samples had to be delivered to the laboratory in the shortest time possible. The period of time elapsing from sampling to analysis shall by no means exceed 24 hours. The temperature during storage and transport should not exceed + 4°C for samples of chilled products and -18°C for frozen samples.

#### Definition of positive finding

Positive sample is a sample in which *Salmonella* spp. has been isolated in 25g.

#### Diagnostic/analytical methods used

Bacteriological method: EN/ISO 6579:2002/A1:2007

#### Preventive measures in place

GMP, GHP, HACCP

#### Control program/mechanisms

The control program/strategies in place

##### VARS

- Registration and/or approval of establishments subjected to veterinary controls
- Identification of animal products and their traceability
- Veterinary controls in establishments

##### HIRS

Registration of establishments and official control.

IRSAFF

Registration of establishments and official control.

Registration of establishments and official control.

### Measures in case of the positive findings or single cases

Informing the owner of the sample and necessary enforcement action in accordance with Commission Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs and Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

### Notification system in place

VARs

The laboratory sends the investigation reports to the VARs Main Office and to the official veterinarian who has conducted the sampling.

HIRS

Whenever zoonotic agent-Salmonella is detected in sample taken, relevant authority must be informed.

IRSAFF

Whenever zoonotic agent-Salmonella is detected in sample taken, relevant authority must be informed.

### Results of the investigation

VARs

In 2011:

364 samples of RTE meat products, 128 raw milk samples, 10 samples of smoked fish, 10 samples of crustaceans and 20 samples of RTE fish products were taken.

Salmonella was not detected in any sample.

HIRS

Monitoring (foodstuffs intended for particular nutritional uses and catering)

In 2011, 415 samples of above described food groups were taken. Salmonella spp. was not detected in any sample.

IRSAFF

Monitoring (foodstuffs intended for particular nutritional uses and catering)

In 2010, 197 samples of above described food groups were taken. Salmonella spp. was not detected in any sample.

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

Situation concerning Salmonella spp. in concerned food product groups is favourable.

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Milk, cows' - raw milk	VARs	Census	Official sampling	animal sample > milk		Single	300ml	128	0		
	Salmonella spp., unspecified										
Milk, cows' - raw milk											



Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Seeds, sprouted - ready-to-eat - at retail - Surveillance	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	10	0		
Fruits - pre-cut - ready-to-eat - at retail - Surveillance	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	2	0		
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	28	0		
Foodstuffs intended for special nutritional uses - dried dietary foods for special medical purposes intended for infants below 6 months - at retail - Surveillance <sup>1)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	2	0		
Infant formula - dried - intended for infants below 6 months - at retail - Surveillance <sup>2)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	8	0		
Bakery products - cakes - at catering - domestic production - Surveillance (filled cakes, deserts and pastry, ready-to-eat) <sup>3)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	100	0		
Chocolate - at processing plant - domestic production - Surveillance	IRSAFF	Objective sampling	Official sampling	food sample		Single	25g	3	0		
Cocoa and cocoa preparations, coffee and tea - at retail - Surveillance	IRSAFF	Objective sampling	Official sampling	food sample		Single	25g	27	1		
Crustaceans - unspecified - cooked - Surveillance <sup>4)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	25g	10	0		
Fish - smoked - Surveillance <sup>5)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	25g	10	0		
Fishery products, unspecified - ready-to-eat - chilled - Surveillance <sup>6)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	25g	20	0		

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Foodstuffs intended for special nutritional uses - dietary foods for special medical purposes - Surveillance (ready-to-eat) <sup>7)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	5	0		
Foodstuffs intended for special nutritional uses - non-ready-to-eat - at retail - Surveillance (Dried follow-on formulae) <sup>8)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	10	0		
Foodstuffs intended for special nutritional uses - ready-to-eat - Surveillance (intended for infants) <sup>9)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	10	0		
Fruits and vegetables - pre-cut - at retail - Surveillance <sup>10)</sup>	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	30	0		
Meat from bovine animals and pig - meat products - Surveillance <sup>11)</sup>	VARs	Objective sampling	Official sampling	food sample		Single	25g	364	0		
Other food of non-animal origin - at retail - Surveillance <sup>12)</sup>	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	50	0		
Other processed food products and prepared dishes - ices and similar frozen desserts - at catering - domestic production - Surveillance (including ice-cream with dairy ingredients) <sup>13)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	100	0		
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled - at retail - Surveillance <sup>14)</sup>	IRSAFF	Objective sampling	Official sampling	food sample		Single	25g	100	0		
Ready-to-eat salads - at catering - domestic production - Surveillance <sup>15)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	143	0		
Sauce and dressings - at catering - domestic production - Surveillance ((including spreads)) <sup>16)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	37	0		
Seeds, dried - at retail - Surveillance	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	10	0		

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Spices and herbs - dried - at retail - Surveillance	IRSAFF	Objective sampling	Official sampling	food sample		Single	25g	40	0		
	Salmonella spp., unspecified										
Seeds, sprouted - ready-to-eat - at retail - Surveillance											
Fruits - pre-cut - ready-to-eat - at retail - Surveillance											
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance											
Foodstuffs intended for special nutritional uses - dried dietary foods for special medical purposes intended for infants below 6 months - at retail - Surveillance <sup>1)</sup>											
Infant formula - dried - intended for infants below 6 months - at retail - Surveillance <sup>2)</sup>											
Bakery products - cakes - at catering - domestic production - Surveillance (filled cakes, deserts and pastry, ready-to-eat) <sup>3)</sup>											
Chocolate - at processing plant - domestic production - Surveillance											
Cocoa and cocoa preparations, coffee and tea - at retail - Surveillance									1		

Table Salmonella in other food

	Salmonella spp., unspecified
Crustaceans - unspecified - cooked - Surveillance <sup>4)</sup>	
Fish - smoked - Surveillance <sup>5)</sup>	
Fishery products, unspecified - ready-to-eat - chilled - Surveillance <sup>6)</sup>	
Foodstuffs intended for special nutritional uses - dietary foods for special medical purposes - Surveillance (ready-to-eat) <sup>7)</sup>	
Foodstuffs intended for special nutritional uses - non-ready-to-eat - at retail - Surveillance (Dried follow-on formulae) <sup>8)</sup>	
Foodstuffs intended for special nutritional uses - ready-to-eat - Surveillance (intended for infants) <sup>9)</sup>	
Fruits and vegetables - pre-cut - at retail - Surveillance <sup>10)</sup>	
Meat from bovine animals and pig - meat products - Surveillance <sup>11)</sup>	
Other food of non-animal origin - at retail - Surveillance <sup>12)</sup>	
Other processed food products and prepared dishes - ices and similar frozen desserts - at catering - domestic production - Surveillance (including ice-cream with dairy ingredients) <sup>13)</sup>	
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled - at retail - Surveillance <sup>14)</sup>	

Table Salmonella in other food

	Salmonella spp., unspecified
Ready-to-eat salads - at catering - domestic production - Surveillance <sup>15)</sup>	
Sauce and dressings - at catering - domestic production - Surveillance ((including spreads)) <sup>16)</sup>	
Seeds, dried - at retail - Surveillance	
Spices and herbs - dried - at retail - Surveillance	

## Comments:

<sup>1)</sup> n=5<sup>2)</sup> n=5<sup>3)</sup> n=1<sup>4)</sup> n=1<sup>5)</sup> n=1<sup>6)</sup> n=1<sup>7)</sup> n=5<sup>8)</sup> n=5<sup>9)</sup> n=10<sup>10)</sup> frozen food<sup>11)</sup> n=1<sup>12)</sup> deli dishes with long shelf life

Table Salmonella in other food

## Comments:

<sup>13)</sup> n=1<sup>14)</sup> sweet dishes<sup>15)</sup> ready-to-eat deli dishes, n=1<sup>16)</sup> ready-to-eat deli dishes, n=1

## 2.1.4 Salmonella in animals

### A. Salmonella spp. in Gallus Gallus - breeding flocks

#### Monitoring system

##### Sampling strategy

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

National Salmonella spp. control programme in breeding flocks covers all parent breeding flocks in the territory of the Republic of Slovenia. There are no grandparent and elite breeding flocks in Slovenia.

Official sampling is conducted by official veterinarians in accordance with Commission Regulation (EC) No 200/2010, at the hatcheries and at the holdings rearing the breeding flocks.

Once a year, official inspection is conducted at all the holdings keeping the breeding flocks, and at the hatcheries.

Sampling at the initiative of business operators is conducted at least:

- when the chicks are one day old (day-old chicks),
- when hens are four weeks old, and
- two weeks prior to transfer into the unit for adult animals, or two weeks prior the onset of the laying phase of the pullets.

##### Frequency of the sampling

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

For every consignment of animals arriving to the holding in the same means of transport and from the same hatchery, at least one pooled sample shall be taken.

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

Every flock is sampled. Firstly at four week of age and secondly two weeks prior to entering the laying phase or moving into laying unit.

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

Sampling at the initiative of business operators is conducted every 2 weeks at the hatchery.

Official routine sampling of adult breeding flocks is conducted:

- (i) every 16 weeks at the hatchery.
- (ii) twice during the production cycle; official sampling in every adult breeding flock is conducted within four weeks after the onset of the laying phase or after transfer to the laying unit, and the other mentioned sampling is conducted towards the end of the production phase, but not earlier than 8 weeks prior to the end of production cycle.

Official confirmatory sampling of adult breeding flocks is conducted in the following cases:

- (i) where the Salmonella Enteritidis, Salmonella Typhimurium, Salmonella Infantis, Salmonella Hadar and/or Salmonella Virchow is identified in samples of eggshells taken at the hatchery on the initiative of

business operator or during the official routine sampling at the hatchery.

ii) where the presence of *Salmonella* spp. was identified in samples taken at the holding during the official sampling in accordance with point 2.1.2.1(b) or point 2.1.2.1(c) of Annex to Commission Regulation (EC) No 200/2010, the re-testing of the flock is conducted in exceptional cases only, where the VARS official veterinarian has substantiated grounds for suspecting false results, i.e. false positive or false negative results.

#### Type of specimen taken

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

Internal linings of transport boxes and/or of the carcasses of the chicks found dead on arrival.

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

Boot swabs.

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

Eggshell. In case of trade in hatching eggs, the flock sampling is conducted at the holding by the method referred to in point 2.2.2.1. of Annex to Regulation 200/2010/EC.

#### Methods of sampling (description of sampling techniques)

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

At least one pooled sample shall be taken of the internal linings of transport boxes in which the animals have arrived to the holding, or carcasses of the chicks found dead on arrival; one pooled sample of internal linings of transport boxes shall be composed so as to take at random per ever 500 day-old chicks 1 visibly soiled lining, but not more than 10 linings.

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

Sampling at the initiative of the operator and confirmatory sampling by official veterinarian is carried out as specified in Annex of Commission Regulation (EC) No.200/2010, point 2.2.2.2.(a)

At four weeks of age, and two weeks prior the onset of the laying phase or prior to transfer into the unit for adult laying hens, boot swab samples are taken by the method referred to in point 2.2.2. of Annex to Regulation 200/2010/EC. For the investigation, the samples may be pooled into two pooled samples.

Official confirmatory sampling is carried out as specified in Annex of Commission Regulation (EC) No.200/2010, point 2.2.2.1.(b). The investigation of samples is conducted separately for every individual sample.

#### Breeding flocks: Production period

Sampling at the initiative of business operators and official sampling at the hatchery is conducted by the method referred to in point 2.2.1 (c) of Annex to Regulation 200/2010/EC. For every flock, a pooled sample of the eggshells, weighing 250 g from 25 hatching separate hatching baskets is taken.

In case of trade in hatching eggs, the flock sampling shall be conducted at the holding by the method referred to in point 2.2.2.1.(b) of Annex to Regulation 200/2010/EC.

Routine official sampling at the holdings is carried out as specified in Annex of Commission Regulation (EC) No.200/2010, point 2.2.2.1.(b)

Official confirmatory sampling is carried out as specified in Annex of Commission Regulation (EC) No.200/2010, point 2.2.2.2.(b)



In case of official confirmatory sampling at the holding following detection of *Salmonella* Enteritidis, *Salmonella* Typhimurium, *Salmonella* Infantis, *Salmonella* Hadar and/or *Salmonella* Virchow serotypes at the hatchery additional samples shall be collected for antimicrobial testing. To this end, at least 5 animals per house or 12 eggs per flock shall be taken.

#### Case definition

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

Flock is considered positive where the presence of:

- *Salmonella* Enteritidis or *Salmonella* Typhimurium (other than vaccine strains) is detected in samples of internal linings of delivery boxes or in dead chicks taken by business operator or during official sampling; or
- *Salmonella* Enteritidis, *Salmonella* Typhimurium, *Salmonella* Infantis, *Salmonella* Hadar and/or *Salmonella* Virchow (other than vaccine strains) is detected in samples taken at the holding during official sampling.

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

Flock is considered positive where the presence of *Salmonella* Enteritidis, *Salmonella* Typhimurium, *Salmonella* Infantis, *Salmonella* Hadar and/or *Salmonella* Virchow (other than vaccine strains) is detected in samples taken at the holding during official sampling.

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

In case of adult breeding flocks, a flock is positive in cases referred to in point 4 of Annex to Regulation 200/2010/EC;

For the purposes of verification of compliance with the EU target, a flock is reported as positive also if the presence of *S. Enteritidis* or *S. Typhimurium* has not been detected, but in which the presence of antimicrobials or bacterial growth retardant effects have been detected.

#### Diagnostic/analytical methods used

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

Bacteriological method:

Method in accordance with the OIE Manual, 5th ed., 2004;

Amendment 1 of EN/ISO 6579-2002/Amd 1:2007

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

Bacteriological method:

Amendment 1 of EN/ISO 6579-2002/Amd 1:2007

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

Bacteriological method:

Amendment 1 of EN/ISO 6579-2002/Amd 1:2007

#### Vaccination policy

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

Vaccination programme in breeding flocks is not applied in the Republic of Slovenia.

As vaccination against *Salmonella* is not prohibited under national legislation, business operators may decide on performing voluntary vaccination, where the full expenses in conjunction with vaccination are charged to animal owners' accounts. Vaccination by business operators is conducted on the basis of

recommendations obtained from veterinary clinic veterinarians.

Currently, breeding flocks are vaccinated against S. Enteritidis only in the Republic of Slovenia.

Use of vaccines against Salmonella is allowed under the observation of requirements of Regulation (EC) No 1177/2006:

- Live salmonella vaccines may be used only if the manufacturer provides an appropriate method to distinguish bacteriologically wild-type strains of Salmonella from vaccine strains;
- Live salmonella vaccines may be used in laying hens during production if the safety of the use has been demonstrated and they are authorised for such purpose in accordance with Directive 2001/82/EC;
- Authorised is the use of vaccines only, which have had the marketing authorisation for circulation in the Republic of Slovenia;
- Vaccination of animals may be prescribed and/or conducted by veterinary practitioners of veterinary clinics. However, the veterinary practitioner may dispense vaccines, along with instructions in writing on their use, to animal owner, who then administers or continues administering the vaccines to the animal. Animal owner shall be required to follow the veterinarian's instructions.

Voluntary vaccination against Salmonella is conducted in all breeding flocks. Business operators conduct the vaccination exclusively during the rearing period (rearing flocks only are vaccinated). In most breeding flocks, vaccination is conducted three times, where the vaccination with live vaccine administered through water for watering is conducted twice, and inactivated vaccine is used (once) as booster vaccination and administered i/m to every individual animal. At a single business operator, flocks are vaccinated three times, where the inactivated vaccine is used in all the three vaccinations. The last (third) vaccination is conducted at the age of 16-18 weeks. Vaccination is carried out against S. Enteritidis and S. Typhimurium.

## Other preventive measures than vaccination in place

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

Person, who is carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases.

Business operators, who are rearing the breeding flocks, have in place their internal instructions covering the hygiene issues and biosecurity conditions at farms, including the procedures of transporting animals between farms.

Slovenian Feed Manufacturers' Association adopted the FEFAC guidelines (FEFAC = The European Feed Manufacturers' Federation). Food Safety Directorate has prepared and made available to public the "Guidelines on the Use of Feed Additives". Chamber of Agriculture and Forestry of Slovenia prepared the "Guidelines on Good Practice in Primary Production of Food and Feed", intended for farmers as guides in primary production of food and feed in compliance with national and EU legislation.

In slaughterhouses: GMP, GHP, HACCP.

## Control program/mechanisms

### The control program/strategies in place

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

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

National control programme for breeding flocks is carried out in accordance with the national Rules on monitoring and control of Salmonella in poultry of Gallus Gallus and relevant Community legislation.

The control mechanisms envisages inter alia as follows:

- Registration or approval of holdings who are subjected to veterinary control,
- Regular official veterinary checks on holdings,

- Movements of animals accompanied by prescribed documents,
- Veterinary referral form to accompany flocks infected with salmonella,
- Regular sampling in each breeding flock ,
- Compulsory notification in case salmonella is detected by FBO and laboratory,
- Measures in the suspect holdings and in case the flocks is considered as positive due to detection of S.Enteritidis, S.Typhimurium, S.Hadar, S.Virchow and/or S.Infantis.

## Measures in case of the positive findings or single cases

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

Where Salmonella Enteritidis, Salmonella Typhimurium, Salmonella Infantis, Salmonella Hadar and/or Salmonella Virchow (hereinafter referred to as relevant Salmonella serovars) is detected in eggshell samples taken at the hatchery on the initiative of the business operator, or during the official routine sampling at the hatchery, there shall be conducted at the holding:

- official confirmatory sampling of relevant breeding flock in compliance with point 2.1.2.1 (c) of Annex to Regulation (EU) No 200/2010. Samples shall be taken by the method detailed in point 2.2.2.2 (b) of the same Regulation. In official confirmatory sampling of adult breeding flocks there shall additionally be taken the samples (5 animals or 12 eggs) for detecting the presence of antimicrobials;
- epizootiological investigation with the objective of establishing the source of infection;
- feed sampling for tests for the presence of Salmonella spp., where applicable for establishing the source of infection.

In addition to official confirmatory sampling that is conducted by VARS official veterinarian, there shall apply the following measures for the “suspect flock”:

- ban on animal movements from the suspect flock, unless for slaughter or destruction of the flock;
- ban on circulation of, trade in and export of eggs from the suspect flock, unless handled as defined in point 3 of Part C of Annex II to Regulation (EC) No 2160/2003;
- ban on placing eggs from suspect flock into the hatcher in case of detected Salmonella Enteritidis or Salmonella Typhimurium;
- where eggs from a suspect flock in which the Salmonella Hadar, Salmonella Virchow or Salmonella Infantis serovars have been detected are placed into the hatcher, the business operator shall ensure that hatching is carried out in segregated hatchers and provide for the traceability of such hatching eggs.

Measures instituted in “suspect” breeding flocks shall apply pending the results of official confirmatory sampling.

Where Salmonella Enteritidis and/or Salmonella Typhimurium is detected in the samples taken at the holding during official routine sampling at the holding in compliance with point 2.1.2.1(b) or during official confirmatory sampling in compliance with point 2.1.2.1 (c) of Annex to Regulation (EU) No 200/201, measures laid down in Annex II, Part C, to Regulation (EC) No 2160/2003 shall be carried out

1) Non-incubated eggs from the flock must be destroyed. However, such eggs may be used for human consumption under the following conditions:

- Eggs must be marked as defined in point 2(b) Part D Annex II of Regulation (EC) No 2160/2003;

- Eggs may be delivered only to approved egg processing establishment and must be treated in a manner that guarantees the elimination of Salmonella;

2) Incubated eggs, still present in a hatchery, must be destroyed or treated in accordance with Regulation (EC) No 1774/2002.

3) All birds, including day-old chicks, in the flock must be slaughtered or destroyed so as to reduce as much as possible the risk of spreading salmonella. At slaughter or destruction of a flock, business operator shall carry out the following measures:

a. Slaughtering must be carried out in accordance with Community legislation on food hygiene, where the business operator of food business activity of slaughter shall ensure that the slaughter of animals originating from the positive flock is conducted as the last series in the slaughter process of that production day. Products derived from such birds may be placed on the market for human consumption if they are treated in a manner that guarantees the elimination of Salmonella.

If not destined for human consumption, such products must be used or disposed of in accordance with Regulation (EC) No 1774/2002;

b. At killing or destruction of the flock, the business operator shall ensure that the killing and destruction are conducted in compliance with the regulations governing animal welfare in accordance with Regulation (EC) No 1774/2002.

4) Upon removal or dispatch of the flock in which Salmonella spp. has been identified, the manure and/or bedding shall be removed in accordance with regulations governing the handling of animal by-products and thorough cleaning and disinfection must be carried out; before restocking, the bacteriological control shall be carried out as to the effectiveness of cleaning and disinfection, with negative results.

II) In case of detection of Salmonella Infantis, Salmonella Hadar and/or Salmonella Virchow during sampling at the holding, the business operator shall prepare for the positive breeding flock a sanitisation programme, and provide for the implementation of all the flock sanitisation measures. The flock sanitisation programme shall be submitted to the relevant VARS Regional Office by the business operator via mail, fax or e-mail.

By conclusion of the sanitisation measures, the following measures shall apply for the relevant breeding flock:

(i) business operator shall provide for the hatching of eggs in the separate hatchers and for the traceability of eggs and of the day-old chicks;

(ii) movements of hatched day-old chicks shall be authorised to the laying-hen rearing holdings only, from which the animals are moved to holdings with the registered houses, or to the broiler rearing holdings, from which the broilers are intended for slaughter and transported to the approved slaughterhouses.

On conclusion of sanitisation of the particular flock, the VARS official veterinarian shall conduct the official sampling by the method referred to in point 2.2.2.1 of Annex to Regulation (EC) No 200/2010. In case that Salmonella was not isolated from the official samples, and that the presence of antimicrobials has not been established, the measures referred to in point (i) and (ii) shall be lifted.

## Notification system in place

Notification:

In the case of detection of Salmonella Enteritidis, Salmonella Typhimurium Salmonella Infantis, Salmonella Hadar and/or Salmonella Virchow during sampling at the initiative of business operator, operator must inform VARS regional office within two working days after receipt of the laboratory results, by email, telephone or by fax.

Laboratory must inform VARS regional office in the case of detection of Salmonella Enteritidis,

Salmonella Typhimurium Salmonella Infantis, Salmonella Hadar and/or Salmonella Virchow in the samples taken by business operator or in the official samples the next working day after the analysis is completed.

In case of detection of other serovars laboratory must inform VARS regional office within five working days after the analysis is completed.

#### Reporting:

Upon the receipt of the sample, the laboratory issues a confirmation of the receipt of the sample and keeps the original form - sampling minutes. The laboratory sends a copy of the form, together with the copy of the investigation report, to the main office of the VARS and the original to the business operator and, in the event of official sampling, also to the official veterinarian.

### Results of the investigation

There were 160 adult parent breeding flocks, and 116 rearing breeding flocks included in the Salmonella control programme of 2011.

#### Adult breeding flocks

Of a total of 160 adult parent flocks tested, S.Typhimurium was identified in 2 adult breeding flocks (broiler production line) during the first official routine sampling at the holding.

Both flocks with S.Typhimurium detected were housed at the same holding, where 4 adult breeding flocks were kept at the same time. Official routine sampling was conducted in all the 4 adult breeding flocks simultaneously, and in each flock, 5 pairs of boot swabs were taken, which were for testing pooled into 2 pool samples. In 2 flocks, Salmonella spp. was not identified, and in 2 other flocks, S.Typhimurium was identified.

#### Rearing breeding flocks

Salmonella spp. was identified in 5 rearing breeding flocks. In all five (5) flocks S.Ohio was identified. Salmonella spp. was detected at sampling of a single consignment of day-old chicks on arrival at the holding. The day-old chicks arrived in the same means of transport from the same hatchery. S.Ohio was identified in samples of box internal linings and in day-old chick carcasses.

As the consignment of day-old chicks was housed in 5 different houses, 5 flocks were reported as positive flocks.

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

In the period from 2007 by the end of 2010, the Republic of Slovenia achieved the Union target for breeding flocks, as the maximum percentage of adult breeding flocks remaining positive for S.Enteritidis, S.Typhimurium, S.Hadar, S.Virchow and S.Infantis was below 1 % in all the four years. In the same period, also the percentage of adult breeding flocks remaining positive for Salmonella spp. in the adult breeding flocks was below 1 %.

In 2011, S.Typhimurium was detected in 2 adult breeding flocks during the official routine sampling at the end of production cycle. Considering the total number of adult breeding flocks included in the national Salmonella control programme, in 2011, the percentage of adult breeding flocks which may remain positive for S.Enteritidis, S.Typhimurium, S.Hadar, S.Virchow and S.Infantis, was higher than 1 %.

As the Union target has been exceeded by less than 0.5 %, and as the infection with S.Typhimurium was linked to a single holding, where the production of breeding flocks will conclude in 2012, we envisage that in the following year, the Republic of Slovenia will again achieve the Union target of decreasing

### Salmonella prevalence in adult breeding flocks.

Since 2004, the number of reported salmonellosis cases has been decreasing and decreasing trend of reported cases of salmonellosis in humans continues also in 2011. Final data for 2011 on infectious diseases in humans are not known as yet, as the Institute of Public Health of the Republic of Slovenia (IVZ RS), which collects data on infectious diseases in humans, has not published the Report on the epidemiological monitoring of communicable diseases of 2011. According to data collected and not finalised, 385 Salmonella enteritis cases were reported in 2011 (source: monthly eNBOZ news of 2011, publishing the data on the number of notified communicable diseases per particular months).

The number of Salmonella outbreaks has gradually been decreasing ever since 2005. In 2009, 4 Salmonella outbreaks were reported, and eggs were the supposed source of infection in all these cases. Considering the data in the eNBOZ news of 2011, including the framework data on the number of outbreaks of communicable diseases reported, there were 71 communicable disease outbreaks reported in 2011. According to the preliminary data collected, in 6 of the 69 outbreaks, Salmonella was found as the cause of disease (S.Enteritidis – 4x, S.Java – 1x). In five outbreaks caused by S.Enteritidis, 4 outbreaks were foodborne, and one outbreak was caused by contact. In 2 outbreaks, a final report has not been issued to date.

### Additional information

Use of antimicrobials and vaccines in laying hen flocks is authorised in accordance with Commission Regulation (EC) No 1177/2006 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 the national programmes for the control of Salmonella in poultry.

- Antimicrobials are not used as a specific method for the control of Salmonella in poultry;
- Authorised is the use of antimicrobials only, which have had the marketing authorisation for circulation in the Republic of Slovenia;
- Antimicrobials may be used in exceptional circumstances only, specified in Article 2(2), points (a), (b) and (c) of Regulation (EC) No 1177/2006. Use of antimicrobials in exceptional circumstances shall be authorised on the basis of a specific authorisation granted by VARS. However, treatment without prior authorisation by VARS may be allowed in cases, where animals are in excessive pain by the clinical signs of disease, or where the omission of treatment would cause the animal disease to spread, or major economic loss;
- Use of antimicrobials shall be based wherever possible on the results of bacteriological sampling and of susceptibility testing;
- On conclusion of treatment, the veterinary organisation with concession that had conducted the treatment under exceptional circumstances, shall submit a report in writing to the relevant VARS Regional office, which shall include the data of the flock under treatment, data of the use of antimicrobials, results of resistance testing if it had been carried out, and reasons for use of antimicrobials.

## B. Salmonella spp. in Gallus Gallus - broiler flocks

### Monitoring system

#### Sampling strategy

##### Broiler flocks

##### VARS

##### SAMPLING ON HOLDING

Sampling was carried out at the holdings within three weeks before broilers are leaving for slaughter in approved slaughterhouses. The results of the analysis of the samples must be known before animals leave for slaughterhouse.

Animal owner or holder of activity of the holding keeping broilers shall at his own expence take samples for analysis in order to detect the presence of Salmonella.

Official sampling was carried out in at least one flock of broilers at 10% of holdings with more than 5000 birds.

#### Frequency of the sampling

Broiler flocks: Before slaughter at farm

Every flock is sampled

Official sampling: at least one flock on 10% of holdings with more than 5000 birds.

#### Type of specimen taken

Broiler flocks: Before slaughter at farm

Faeces or boot swabs.

#### Methods of sampling (description of sampling techniques)

Broiler flocks: Before slaughter at farm

In every broiler flock at the holding, at least two pairs of boot/sock swabs shall be taken. All boot/sock swabs may be pooled into one sample.

#### Case definition

Broiler flocks: Before slaughter at farm

Flock shall be considered positive where the *S. Enteritidis* or/and *S. Typhimurium* has been identified in the sample.

#### Diagnostic/analytical methods used

Broiler flocks: Before slaughter at farm

Bacteriological method:

Amendment 1 of EN/ISO 6579-2002/Amd 1:2007

#### Other preventive measures than vaccination in place

##### Broiler flocks

Person, who is carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases.

In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP, and record keeping.

#### Control program/mechanisms

## The control program/strategies in place

### Broiler flocks

National control programme for broilers is carried out in accordance with the national Rules on monitoring and control of salmonella in poultry of Gallus Gallus.

The control mechanisms envisages inter alia as follows:

- Registration of holdings, who are subjected to veterinary checks
- Regular official veterinary checks on holdings
- Movements of animals accompanied by prescribed documents
- Veterinary referral form must accompany flocks infected with salmonella
- Sampling of every flocks before leave for slaughter
- Compulsory notification in case salmonella is detected
- Measures if S.Enteritidis and/or S.Typhimurium was detected

## Measures in case of the positive findings or single cases

### Broiler flocks: Before slaughter at farm

#### SAMPLING ON HOLDING

On having identified the presence of serovars Salmonella Enteritidis and/or Salmonella Typhimurium, the business operator shall, based on the internal monitoring and control plan, provide for the implementation of the following measures shall apply:

1. no bird from the flock, in which Salmonella has been detected, shall be moved from the holding, unless for

slaughter to the slaughterhouse or for killing and destruction under official veterinary control, where:

- slaughter shall be carried out at the slaughterhouse as the last batch in the slaughtering process of that particular production day, by a method minimising the possibility of spreading Salmonella, and in accordance with the food hygiene law;

- products obtained from such poultry may be placed on the market or put into circulation if they have been subjected to processing guaranteeing the elimination of Salmonella, or they shall be removed and

used in accordance with the regulations governing the handling of animal by-products; the entire procedure shall be carried out under the control of official veterinarian;

2. on removal and/or dispatch of the flock, in which Salmonella has been detected, the manure and bedding shall be removed in accordance with the regulations governing the handling of animal by-products, followed by thorough cleaning and disinfection;
3. prior to repopulation, bacteriological control of the efficiency of cleaning and disinfection shall be carried out, with negative results.

In case of confirmed presence of other Salmonella serovars, the business operator shall conduct measures laid down in the internal monitoring and control plan.

## Notification system in place

Notification and reporting must be carried out in accordance with the provisions of the Rules on monitoring and control of salmonella in poultry of Gallus Gallus.

#### Notification:

In the case of detection of Salmonella Enteritidis or Salmonella Typhimurium during sampling at the initiative of business operator, operator must inform VARS regional office within two working days after receipt of the laboratory results, by email, telephone or by fax.

Laboratory must inform VARS regional office in the case of detection of Salmonella Enteritidis or Salmonella Typhimurium in the samples taken by business operator or in the official samples the next working day after the analysis is completed.



In case of detection of other serovars laboratory must inform VARS regional office within five working days after the analysis is completed.

Reporting:

The laboratory sends a copy of the form, together with the copy of the investigation report, to the main office of the VARS (once per month) and the original sampling report to the business operator and, in the event of official sampling, also to the official veterinarian.

VARS Regional Offices must report to VARS Main Office on a monthly basis regarding the monitoring programme implementation and control results.

## Results of the investigation

### SAMPLING ON HOLDING

In 2011, 2226 broiler flocks were sampled. Salmonella was detected in 27 flocks on 19 holdings. Following serovars were identified: S. Infantis (22), S. Typhimurium (3) and S. Coeln (2).

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

### SAMPLING ON HOLDING

In 2011, Community target for broilers was achieved as Salmonella spp. was identified in less than 1% of broiler flocks.

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

### Monitoring system

#### Sampling strategy

##### Laying hens flocks

The National Salmonella spp. Control Programme in Laying-Hen Flocks includes all the adult laying-hen flocks, which are reared for the purpose of production of eggs intended for the placing on the market for public consumption, excluding the laying-hen flocks producing eggs for private domestic consumption, laying hen flocks with 50 or less birds, if eggs are intended for sale at local market and laying hen flocks at holdings producing minor quantities of table eggs.

A minor quantity of table eggs is considered to be the quantity of eggs intended for delivery to end consumers at the place of production if the food business operator rears less than 350 laying hens.

OFFICIAL SAMPLING in adult laying hen flocks:

- a) routine sampling in at least one flock annually at holdings keeping at least 1000 hens.
- b) at the age of 24 +/- 2 weeks, in laying-hen flocks in houses, where Salmonella had been detected in the preceding flock,
- c) in every case of suspected infection with Salmonella Enteritidis or Salmonella Typhimurium as a result of epidemiological investigation of a food-borne disease outbreak,
- d) in all the other laying-hen flocks at the holding if the presence of Salmonella Enteritidis or Salmonella Typhimurium has been established in one laying-hen flock at the holding,
- e) in all the other cases, where the official veterinarian deems that to be appropriate.

In order to exclude false-positive initial results if S. Enteritidis and/or S. Typhimurium is detected in samples taken by business operators, VARS official veterinarian shall carry out official sampling, using the sampling protocol defined in point 4(b)(i, ii or iii) of Part D of Annex II to Regulation (EC) No 2160/2003. In addition to sampling in point 4(b), samples to verify the absence of use of antimicrobials, potentially affecting the results of analyses of sampling, shall be taken.

Official sampling may substitute the sampling conducted by business operator.

#### BUSINESS OPERATOR

Animal owner or holder of activity of the holding keeping laying hens, shall at his own expense take samples for analysis in order to detect the presence of salmonella.

Sampling at the initiative of operators is carried out at day old chicks, at rearing flocks and at adult laying hens flocks.

Physical checks of the laying hen holdings are carried out on the basis of risk analysis. Each holding is assessed according to harmonised criteria. Based on the results of assessment holdings are checked every 6 months, once per year or every 2 years.

#### Frequency of the sampling

##### Laying hens: Day-old chicks

For every consignment of animals arriving to the holding in the same means of transport and from the same hatchery, at least one pooled sample shall be taken.

##### Laying hens: Rearing period

Two weeks prior to entering the laying phase or two weeks before moving into laying unit.

Laying hens: Production period

Every 15 weeks. The first sampling is conducted at the age of 24+/-2 weeks.

Type of specimen taken

Laying hens: Day-old chicks

Internal linings of transport boxes and/or of the carcasses of the chicks found dead on arrival.

Laying hens: Rearing period

Faeces or boot swabs.

Laying hens: Production period

Faeces or boot swabs.

Methods of sampling (description of sampling techniques)

Laying hens: Day-old chicks

At least one pooled sample shall be taken of the internal linings of transport boxes in which the animals have arrived to the holding, or carcasses of the chicks found dead on arrival; one pooled sample of internal linings of transport boxes shall be composed so as to take at random per ever 500 day-old chicks 1 visibly soiled lining, but not more than 10 linings.

Laying hens: Rearing period

In cage flocks, 2 × 150 grams of naturally pooled faeces shall be taken from all belts or scrapers in the house after running the manure removal system; however, in the case of step cage houses without scrapers or belts 2 × 150 grams of mixed fresh faeces must be collected from 60 different places beneath the cages in the dropping pits.

In barn or free-range houses, two pairs of boot swabs or socks be taken, without changing overboots between boot swabs.

Two samples of faeces or two pairs of bootswabs may be pooled for analysis at the laboratory.

Laying hens: Production period

In cage flocks, 2 × 150 grams of naturally pooled faeces shall be taken from all belts or scrapers in the house after running the manure removal system; however, in the case of step cage houses without scrapers or belts 2 × 150 grams of mixed fresh faeces must be collected from 60 different places beneath the cages in the dropping pits.

In barn or free-range houses, two pairs of boot swabs or socks be taken, without changing overboots between boot swabs.

Official sampling referred to in point 2.1.(a), (b), (d) and (e) of Annex to Regulation 517/2011/EC shall be conducted by the method as laid down in point 2.2.2. of the same Annex. Sampling as referred to in point 2.1.(c) shall be conducted by the method as laid down in point 4(b) of Part D to Annex II to Regulation (EC) No 2160/2003.

During the official sampling of the adult laying hen flocks referred to in point 2.1 (a) of Annex to Regulation 517/2011/EC, for the laboratory investigation the faeces samples are pooled into a single pooled sample, and the investigation of the additional faeces sample is conducted separately. During the official sampling as referred to in point 2.1 (b), (d) and (e) of Annex to Regulation 517/2011/EC, and in point 4(b) of Part D to Annex II to Regulation (EC) No 2160/2003, the investigation of samples shall be conducted separately

for every individual sample.

During the official sampling of the adult laying hen flocks referred to in point 2.1.(b), (c), (d) and (e) of Annex to Regulation 517/2011/EC, for the detection of presence of antimicrobials also a random sample shall be taken of at least five hens in every house, where the hens had been kept, or at least 12 eggs.

#### Case definition

##### Laying hens: Day-old chicks

Flock is considered positive where the presence of *Salmonella* Enteritidis and *Salmonella* Typhimurium (other than vaccine strains) is detected in samples of internal linings of delivery boxes or in dead chicks.

##### Laying hens: Rearing period

Flock is considered positive where the presence of *Salmonella* Enteritidis and *Salmonella* Typhimurium (other than vaccine strains) is detected in one or more sample taken by official veterinarian at the holding.

##### Laying hens: Production period

A laying flock is considered positive where the presence of *Salmonella* Enteritidis and *Salmonella* Typhimurium (other than vaccine strains) is detected in one or more samples in the laying flock.

For the purposes of verification of compliance with the EU target, a flock is reported as positive also if the presence of *S.Enteritidis* or *S.Typhimurium* has not been detected, but in which the presence of antimicrobials or bacterial growth retardant effects have been detected.

The adult laying hen flock is not considered positive if *S.Enteritidis* and/or *S.Typhimurium* is detected in samples taken by business operators, and initial results has not been confirmed by official sampling, using the sampling protocol defined in point 4 of Part D of Annex II to Regulation (EC) No 2160/2003.

#### Diagnostic/analytical methods used

##### Laying hens: Day-old chicks

Bacteriological method:

Method in accordance with the OIE Manual, 5th ed., 2004;  
Amendment 1 of EN/ISO 6579-2001/Amd 1:2007

##### Laying hens: Rearing period

Bacteriological method:

Amendment 1 of EN/ISO 6579-2001/Amd 1:2007

##### Laying hens: Production period

Bacteriological method:

Amendment 1 of EN/ISO 6579-2001/Amd 1:2007

#### Vaccination policy

##### Laying hens flocks

Vaccination programme referred to in Article 3(3) is not applied as the prevalence of *S.Enteritidis*/*S.Typhimurium* in laying hen flocks is below 10 %. Vaccination against *Salmonella* is not prohibited under national legislation, and thus, business operators may decide on performing voluntary vaccination. Vaccination by business operators is conducted on the basis of recommendations obtained from veterinary clinic veterinarians.

Based on data obtained through inspection of laying-hen holdings in 2010 and 2011, approximately on 71 % of the holdings, flocks are vaccinated against *Salmonella*, and on 17,5% of the holdings, flocks are not vaccinated, and for 11,5% of holdings, data on vaccination were not available. Vaccination is carried out against *S.Enteritidis* only. Live vaccine only is used in the vaccination of laying hen flocks, which is conducted during the rearing phase (rearing flocks). In most laying hen flocks, vaccination is conducted

three times.

Use of vaccines in laying hen flocks is authorised in accordance with Commission Regulation (EC) No 1177/2006:

- Live salmonella vaccines may be used only if the manufacturer provides an appropriate method to distinguish bacteriologically wild-type strains of salmonella from vaccine strains;
- Live salmonella vaccines may be used in laying hens during production if the safety of the use has been demonstrated and they are authorised for such purpose in accordance with Directive 2001/82/EC;
- Authorised shall be the use of vaccines only, which have marketing authorisation for circulation in the Republic of Slovenia;
- Vaccination of animals may be prescribed or conducted by a veterinary clinic veterinarian. However, the veterinarian may dispense the vaccines accompanied by written use instructions to the animal owner, who may himself administer or continue administering vaccines to the animals. Animal owner shall follow the veterinarian's instructions.

## Other preventive measures than vaccination in place

### Laying hens flocks

Person, who is carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases.

Business operators carrying out primary production shall comply with the general hygiene provisions as laid down in Part A of Annex I to Regulation (EC) No 853/2004 on the hygiene of foodstuffs.

Chamber of Agriculture and Forestry of Slovenia prepared the "Guidelines on Good Practice in Primary Production of Food and Feed", intended for farmers as guides in primary production of food and feed in compliance with national and EU legislation.

## Control program/mechanisms

### The control program/strategies in place

#### Laying hens flocks

National control programme for laying hens is carried out in accordance with the national legislation, on the basis of the Rules for monitoring and control of salmonella.

The control mechanisms envisages inter alia as follows:

- Registration or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary control
- Regular official veterinary checks on holdings
- Movements of animals accompanied by prescribed documents
- Veterinary referral form must accompany flocks infected with salmonella
- Regular sampling of flocks
- Compulsory notification in case salmonella is detected
- Measures in the suspect holdings and in case the flocks is considered as positive due to detection of S.Enteritidis and/or S.Typhimurium

## Measures in case of the positive findings or single cases

### Laying hens flocks

National control programme for laying hens is carried out in accordance with EU legislation and national legislation

The control mechanisms envisages inter alia as follows:

- Registration or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary control
- Regular official veterinary checks on holdings
- Movements of animals accompanied by prescribed documents
- Veterinary referral form must accompany flocks infected with salmonella
- Regular sampling of flocks
- Compulsory notification in case salmonella is detected
- Measures in the suspect holdings and in case the flocks is considered as positive due to detection of S.Enteritidis and/or S.Typhimurium

### Measures in case of the positive findings or single cases

Where S.Enteritidis or S.Typhimurium is detected, the the following measures to be implemented:

1) ban on animal movements from the positive flock, unless for slaughter or destruction of the flock. All birds in the flock must be slaughtered or destroyed so as to reduce as much as possible the risk of spreading Salmonella. If the flock is slaughtered or destroyed, the business operator shall provide for the following measures:

a. Slaughtering must be carried out in accordance with Community legislation on food hygiene, where the business operator of food business activity of slaughter shall ensure that the slaughter of animals originating from the positive flock is conducted as the last series in the slaughter process of that production day. Products derived from such birds may be placed on the market for human consumption if they are treated in a manner that guarantees the elimination of Salmonella. If not destined for human consumption, such products must be used or disposed of in accordance with Regulation (EC) No 1774/2002;

b. At killing or destruction of the flock, the business operator shall ensure that the killing and destruction are conducted in compliance with the regulations governing animal welfare in accordance with Regulation (EC) No 1774/2002.

2) eggs must not be placed on the market for human consumption. However eggs may be used for human consumption under the following conditions:

- eggs are considered as Class B eggs as defined in Article 2(4) of Commission Regulation (EC) No 557/2007 laying down detailed rules for implementing Council Regulation (EC) No 1028/2006 on marketing standards for eggs;
- eggs must be marked with the indication referred to in Article 10 of Commission Regulation (EC) No 557/2007 which clearly distinguishes them from Class A eggs prior to being placed on the market;
- eggs must not be delivered to packaging centres unless the VARS is satisfied with the measures to prevent possible cross-contamination of eggs from other flocks;
- eggs may be delivered only to approved egg processing establishment and must be treated in a manner that guarantees the elimination of Salmonella;

3) at the holding, epizootiological investigation shall be conducted and feed samples taken for testing for the presence of Salmonellae, where applicable for establishing the source of infection.

4) In order to exclude false-positive initial results if S.Enteritidis and/or S.Typhimurium is detected in samples taken by business operators, official veterinarian shall carry out official sampling, using the

sampling protocol defined in point 4(b)(i, ii or iii) of Part D of Annex II to Regulation (EC) No 2160/2003. In addition to sampling in point 4(b), samples to verify the absence of use of antimicrobials, potentially affecting the results of analyses of sampling, shall be taken by official veterinarian.

Since the detection of *Salmonellae* in samples taken by business operators, and until the results of official sampling are obtained, the protective measures shall apply to the flocks

5) In case that *Salmonella enteritidis* or *Salmonella typhimurium* is detected in a single laying flock at the holding, official sampling is carried out in all the other laying hen flocks at the holding. Official sampling shall be carried out according to point 2.2.2. of Annex 1 of Regulation (EC) No. 517/2011/ES. In addition to sampling in point 2.2.2, samples to verify the absence of use of antimicrobials, potentially affecting the results of analyses of sampling, shall be taken by official veterinarian.

6) upon removal or dispatch of the flock in which *Salmonella* spp. has been identified, the manure and/or bedding shall be removed in accordance with regulations governing the handling of animal by-products and thorough cleaning and disinfection must be carried out; before restocking, the bacteriological control shall be carried out as to the effectiveness of cleaning and disinfection, with negative results.

In case of presence of other *Salmonella* serovars, the business operator shall conduct measures laid down in the internal monitoring and control plan.

## Notification system in place

Notification and reporting must be carried out in accordance with the provisions of the Rules on monitoring and control of salmonella in poultry of *Gallus Gallus*.

### Notification:

In the case of detection of *Salmonella Enteritidis* or *Salmonella Typhimurium* during sampling at the initiative of business operator, operator must inform VARS regional office within two working days after receipt of the laboratory results, by email, telephone or by fax.

Laboratory must inform VARS regional office in the case of detection of *Salmonella Enteritidis* or *Salmonella Typhimurium* in the samples taken by business operator or in the official samples the next working day after the analysis is completed.

In case of detection of other serovars laboratory must inform VARS regional office within five working days after the analysis is completed.

### Reporting:

The laboratory sends a copy of the form, together with the copy of the investigation report, to the main office of the VARS (once a month) and the original sampling report to the business operator and, in the event of official sampling, also to the official veterinarian.

## Results of the investigation

### Adult flocks

In 2011, the presence of *Salmonella* in adult laying-hen flocks was detected in 2 adult laying hen flocks.

In 1 flock (House Registration No. 3SI05-08), *Salmonella* was detected during official routine sampling.

*Salmonella* Ohio was detected in a single pooled faeces sample; however, *Salmonella* was not detected in the dust samples.

In the other adult flock (House Registration No. 3SI01-08), in samples taken by business operator, S.

Enteritidis was identified. Business operator conducted sampling in the flock on 5.9.2011 (2 faeces samples). On 12.9.2011, the laboratory notified by phone the business operator that Group D Salmonella had been identified in the sample, and that the isolate had been submitted for serotyping to the NRL. Based on laboratory notification, the business operator re-sampled the same flock on 16.9.2011 (2 faeces samples). In the pooled faeces sample taken by business operator on 5.9.2011, Salmonella Enteritidis was identified, and the investigation result (Outcome No. 11/001516) was received by the Veterinary Administration of the Republic of Slovenia on 20.9.2011.

On account of identification of S. Enteritidis in a sample taken by the business operator, the official veterinarian on 22.9.2011 instituted the measures laid down in paragraph 2 of Part D of Annex II to Regulation (EC) No 2160/2003 to the business operator.

During official control at the holding (on 22.9.2011), the official veterinarian found that:

- business operator was housing exclusively the pullets from his own rearing; in 2011, in the rearing flocks, sampling of the day-old chicks had been conducted, and the sampling at 2 weeks before the onset of laying phase, or prior to installation into the unit for adult animals, and all the investigation results were negative for Salmonella spp.;
- all the flocks were vaccinated three times against Salmonella during the rearing period;
- on 15.6.2011, the official routine inspection was conducted at the holding, and that no non-compliances as to the provision of biosafety measures and Salmonella sampling had been found;
- feed was used for the feeding of laying-hen flocks, which had not been thermally treated, but that the feed had regularly been added premixes or additives on the basis of organic acids (milk acid in particular); that feed had been produced by the business operator himself (business operator is registered for the production of compound feeds, and of compound feeds containing additives and premixes); that the feed was stored in silos in such a manner as to prevent the access of pests.
- in a pooled faeces sample taken by business operator in the same flock on 16.9.2011, the presence of Salmonella was not detected (Outcome No. 11/001584).

In the light of the above findings, the official veterinarian on 22.9.2011, in order to exclude the false-positive initial results, carried out official sampling, using the sampling protocol defined in point 4(b)(i, ii or iii) of Part D of Annex II to Regulation (EC) No 2160/2003. In addition, samples to verify the absence of use of antimicrobials, potentially affecting the results of analyses of sampling and samples of feed, were taken by the official veterinarian. In the official samples of faeces (5 samples) and of dust (2 samples) the presence of Salmonella spp. was not identified, and neither was identified the presence of antimicrobials or Salmonella spp. in feed.

As the Veterinary Administration of the Republic of Slovenia had not been notified by the competent public health authorities of any Salmonella-linked outbreak, on account of consumption of eggs or egg products, and as in the samples taken by the official veterinarian in accordance with the sampling protocol defined in point 4(b)(i, ii or iii) of Part D to Annex II to Regulation (EC) No 2160/2003, the presence of Salmonella was not detected, and as the presence of antimicrobials was not detected either, the Veterinary Administration of the Republic of Slovenia withdrew the measures that had been instituted in accordance with paragraph 2 of Part D of Annex II to Regulation (EC) No 2160/2003.

According to paragraph 3 of point 4.1. of Annex to Regulation (EU) No. 517/2011, the flock was thus not reported as positive.

#### Rearing flocks:

In the sampling of rearing flocks, Salmonella spp. was identified in 1 flock in samples taken at the initiative of business operators during sampling conducted on arrival of day-old chicks to the holding. In day-old chick carcasses, S. Saintpaul was identified, whilst Salmonella was not detected in the internal linings of



transport boxes. In the same flock, the sampling at 2 weeks prior to transferring the flock to the adult laying-hen unit was conducted, and Salmonella was not detected in the samples.

In one flock Salmonella Enteritidis was identified in samples taken by business operator during sampling of a consignment of day-old chicks on arrival to the holding. Due to detection of S. Enteritidis official sampling was conducted and the official inspection of the holding, instituting a ban on movements of the flock in question, pending the results of official sampling. It was established during the official inspection that the day-old chicks had been vaccinated against Salmonella, using the Gallivac SE vaccine. Of this finding was informed the NRL, which confirmed that the isolate of S. Enteritidis, identified in the internal linings taken by business operator, belonged to the Gallivac SE vaccine vaccination strain.

The presence of Salmonella was identified also in both the boot swab samples taken during official sampling. One sample was subjected to serotyping (S. Enteritidis identified), and the other sample was tested up to the serological group (O:9) only. It was confirmed for both the isolates that they belonged to the Gallivac SE vaccine vaccination strain.

As the vaccination strain was confirmed in the rearing flock, the flock was not reported as positive.

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

In 2010, Salmonella Enteritidis was identified in 1 adult laying hen flocks, and in 2011, Salmonella Enteritidis was not identified in adult laying hen flocks. S. Typhimurium has not been detected in laying hen flocks ever since 2004.

As compared to 2008, where the Republic of Slovenia did not fully achieve the EU targets, the Union target were fully met in the period 2009 – 2011, as the number of adult laying hen flocks with identified Salmonella Enteritidis or Salmonella Typhimurium decreased by more than 10 % in each year.

Since 2004, the number of reported salmonellosis cases has been decreasing and decreasing trend of reported cases of salmonellosis in humans continues also in 2011. Final data for 2011 on infectious diseases in humans are not known as yet, as the Institute of Public Health of the Republic of Slovenia (IVZ RS), which collects data on infectious diseases in humans, has not published the Report on the epidemiological monitoring of communicable diseases of 2011. According to data collected and not finalised, 385 Salmonella enteritis cases were reported in 2011 (source: monthly eNBOZ news of 2011, publishing the data on the number of notified communicable diseases per particular months).

The number of Salmonella outbreaks has gradually been decreasing ever since 2005. In 2009, 4 Salmonella outbreaks were reported, and eggs were the supposed source of infection in all these cases. Considering the data in the eNBOZ news of 2011, including the framework data on the number of outbreaks of communicable diseases reported, there were 71 communicable disease outbreaks reported in 2011. According to the preliminary data collected, in 6 of the 69 outbreaks, Salmonella was found as the cause of disease (S. Enteritidis – 4x, S. Java – 1x). In five outbreaks caused by S. Enteritidis, 4 outbreaks were foodborne, and one outbreak was caused by contact. In 2 outbreaks, a final report has not been issued to date.

### Additional information

Use of antimicrobials and vaccines in laying hen flocks is authorised in accordance with Commission Regulation (EC) No 1177/2006 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 the national programmes for the control of Salmonella in poultry.

- Antimicrobials are not used as a specific method for the control of Salmonella in poultry;
- Authorised is the use of antimicrobials only, which have had the marketing authorisation for circulation in

the Republic of Slovenia;

- Antimicrobials may be used in exceptional circumstances only, specified in Article 2(2), points (a), (b) and (c) of Regulation (EC) No 1177/2006. Use of antimicrobials in exceptional circumstances shall be authorised on the basis of a specific authorisation granted by VARS. However, treatment without prior authorisation by VARS may be allowed in cases, where animals are in excessive pain by the clinical signs of disease, or where the omission of treatment would cause the animal disease to spread, or major economic loss;

- Use of antimicrobials shall be based wherever possible on the results of bacteriological sampling and of susceptibility testing;

- On conclusion of treatment, the veterinary organisation with concession that had conducted the treatment under exceptional circumstances, shall submit a report in writing to the relevant VARS Regional office, which shall include the data of the flock under treatment, data of the use of antimicrobials, results of resistance testing if it had been carried out, and reasons for use of antimicrobials;

## D. Salmonella spp. in bovine animals

### Monitoring system

#### Sampling strategy

Disease is monitored on the basis of clinical signs and/or detection of salmonellosis in other animals at the same holding in accordance with national legislation on the basis of the Instructions on measures for the detection, prevention and suppression of salmonellosis.

#### Type of specimen taken

##### Animals at farm

Carcasses, rectal swabs, litter, feed.

#### Methods of sampling (description of sampling techniques)

##### Animals at farm

Immediately upon suspicion of disease on the basis of clinical signs and/or detection of salmonellosis in other animals in the same holding, the authorised veterinary organisation must submit for investigation the dead animal carcasses, rectal swabs of suspect animals, samples of litter and feed.

#### Case definition

##### Animals at farm

The disease shall be considered officially confirmed on the basis of the clinical signs and/or positive bacteriological test results; in the opposite case it shall be considered that the disease has been ruled out.

#### Diagnostic/analytical methods used

##### Animals at farm

Bacteriological method: ISO/FDIS 6579, Annex D:2007, Serotyping: Kauffmann-White scheme

### Other preventive measures than vaccination in place

Persons, who in carrying out a registered activity of breeding or production come into direct contact with animals, feedstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases. In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP, and record keeping.

### Control program/mechanisms

#### The control program/strategies in place

National control programme is carried out in accordance with the national legislation, on the basis of the Instructions on measures for the detection, prevention and suppression of salmonellosis. The control programme envisages inter alia as follows:

- Immediate confirmation of the disease in case of suspected presence by taking samples for the diagnostic purposes, epizootiological investigation, and instituting appropriate measures immediately upon suspecting the presence of disease at the suspect holding. Measures shall be instituted as long as the suspicion of disease has not officially been ruled out.
- Instituting of supplementary measures in the infected holding.
- Registration and/or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary checks
- Identified and registered animals
- Regular official veterinary checks on holdings
- Movements of animals accompanied by prescribed documents

- Veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation.

### Measures in case of the positive findings or single cases

Measures in case of the positive findings or single cases:

On the official confirmation of disease, the following measures shall be instituted at the holding in addition to those instituted at the suspected presence of disease:

- disinfection of incoming raw materials to constitute animal feed;
- treatment of infected animals with an appropriate antibiotic or chemotherapeutic agent on the basis of antibiogram;
- DDD measures;
- other measures for sanitising the infected holding

### Notification system in place

In case of presence of salmonellosis, or signs by which it may be suspected that an animal has become sick with or died of Salmonella infection, the animal keeper shall immediately notify thereof the veterinary organisation, and the latter shall notify thereof the relevant VARS Regional Office, submitting also monthly reports on the developments concerning the disease.

### Results of the investigation

In 2011, no case of salmonellosis in bovine animals was confirmed.

## E. Salmonella spp. in pigs

### Monitoring system

#### Sampling strategy

##### Breeding herds

Passive monitoring - at holding

Disease is monitored on the basis of clinical signs and/or detection of salmonellosis in other animals at the same holding in accordance with national legislation on the basis of the Instructions on measures for the detection, prevention and suppression of salmonellosis.

##### Multiplying herds

See breeding herds

##### Fattening herds

See breeding herds.

#### Type of specimen taken

##### Breeding herds

At holding:

Carcasses, rectal swabs, litter, feed

##### Multiplying herds

See Breeding herds.

##### Fattening herds at farm

See Breeding herds.

#### Methods of sampling (description of sampling techniques)

##### Breeding herds

At holding:

Immediately upon suspicion of disease on the basis of clinical signs and/or detection of salmonellosis in other animals in the same holding, the authorised veterinary organisation must submit for investigation the dead animal carcasses, rectal swabs of suspect animals, samples of litter and feed.

Samples must be delivered to the laboratory in the shortest possible time, as a rule, immediately after sampling (on the same day) or within 24 hours after sampling. In the period from the sampling to the beginning of the analysis the sample material must be stored in a cold place, at the temperature of 4°C (+/- 2°C).

##### Multiplying herds

See Breeding herds

##### Fattening herds at farm

See Breeding herds

### Case definition

#### Breeding herds

At holding:

The disease shall be considered officially confirmed on the basis of the clinical signs and/or positive

bacteriological test results; in the opposite case it shall be considered that the disease has been ruled out.

#### Multiplying herds

See Breeding herds

#### Fattening herds at farm

See Breeding herds

### Diagnostic/analytical methods used

#### Breeding herds

Bacteriological method: ISO 6579, Anex D:2007,

Serotyping: Kauffman-White-Le Minor

Serological method: ELISA

#### Multiplying herds

See Breeding herds

#### Fattening herds at farm

See Breeding herds

### Other preventive measures than vaccination in place

#### Breeding herds

Persons, who are carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases. In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP, and record keeping.

#### Multiplying herds

See Breeding herds

#### Fattening herds

See Breeding herds

### Control program/mechanisms

#### The control program/strategies in place

##### Breeding herds

National control programme is carried out in accordance with the national legislation, on the basis of the Instructions on measures for the detection, prevention and suppression of salmonellosis.

The control programme envisages inter alia as follows:

- Immediate confirmation of the disease in case of suspected presence by taking samples for the diagnostic

- purposes, epizootiological investigation, and instituting appropriate measures immediately upon suspecting the

- presence of disease at the suspect holding. Measures shall be instituted as long as the suspicion of disease has not

- officially been ruled out,

- Instituting of supplementary measures in the infected holding,
- Registration of holdings who are subjected to veterinary checks,
- Identified and registered animals,
- Regular official veterinary checks on holdings,
- Movements of animals accompanied by prescribed documents,

- Veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation.

#### Multiplying herds

See Breeding herds

#### Fattening herds

See Breeding herds

### Measures in case of the positive findings or single cases

#### At holding

On the official confirmation of disease carried out in accordance with the national legislation, on the basis of the Instructions on measures for the detection, prevention and suppression of salmonellosis, the following measures shall be instituted at the holding in addition to those instituted at the suspected presence of disease:

- disinfection of incoming raw materials to constitute animal feed;
- treatment of infected animals with an appropriate antibiotic or chemotherapeutic agent on the basis of antibiogram;
- DDD measures;
- other measures for sanitising the infected holding.

### Notification system in place

In case of presence of salmonellosis, or signs by which it may be suspected that an animal has become sick with or died of Salmonella infection, the animal keeper shall immediately notify thereof the veterinary organisation, and the latter shall notify thereof the relevant VARS Regional Office, submitting also monthly reports on the developments concerning the disease.

### Results of the investigation

#### At holding

In 2011, two (2) cases of salmonellosis in porcine animals were confirmed. In one serovar Choleraesuis and in the other serovar Derby were isolated from faeces.

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

As compared to the results of Baseline survey in slaughter pigs which was conducted in 2006/2007 and where the salmonella was isolated from 6,09% of lymph node samples, the results from 2011 monitoring are quite favourable as to the fact that percentage of salmonella positive lymph node samples decreased to 4,7%.

The serological investigation results of meat juice samples indicate slight increase in the percentage of positive samples (13,6%) as to compared with results in 2006/2007 Baseline survey (10,9%).

## F. Salmonella spp. in turkey - breeding flocks and meat production flocks

### Monitoring system

#### Sampling strategy

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

VARs

There are no breeding flocks in the Republic of Slovenia.

Meat production flocks

#### SAMPLING ON HOLDING

Sampling was carried out on holdings within three weeks before birds are moved to the slaughterhouse.

Results of the analysis of the sampling must be known before animals leave for slaughter.

The results remain valid until maximum six weeks after sampling and therefore repeated sampling of the same flock might be required.

Animal owner shall at his own expenses take samples for analysis in order to detect the presence of Salmonella.

Official routine sampling is carried out in all flocks on 10 % of the holdings with at least 500 fattening turkeys once a year.

In addition, official sampling is carried out in:

- all flocks on the holding when one flock tested positive for Salmonella enteritidis or Salmonella typhimurium in samples taken by the food business operator, unless the meat of the turkeys in the flocks is destined for industrial heat treatment or another treatment to eliminate salmonella, and
- all flocks on the holding when one flock tested positive for Salmonella enteritidis or Salmonella typhimurium during the previous round in samples taken by the food business operator

### Frequency of the sampling

Meat production flocks: Before slaughter at farm

Within three weeks prior to slaughter.

### Type of specimen taken

Meat production flocks: Before slaughter at farm

Two pairs of boot swabs.

Meat production flocks: At slaughter (flock based approach)

Neck skin

### Methods of sampling (description of sampling techniques)

Meat production flocks: Before slaughter at farm

At least two pairs of boot/sock swabs shall be taken. For free range flocks of turkeys, samples shall only be collected in the area inside the house. All boot/sock swabs may be pooled into one sample.

### Case definition

#### SAMPLING ON HOLDING

A flock of fattening turkeys is considered positive where the presence of Salmonella Enteritidis and/or Salmonella Typhimurium (other than vaccine strains) was detected in the flock at any occasion.

### Monitoring system

#### Case definition



Meat production flocks: Before slaughter at farm

A flock of fattening turkeys is considered positive where the presence of *Salmonella* Enteritidis and/or *Salmonella* Typhimurium (other than vaccine strains) was detected in the flock at any occasion.

Diagnostic/analytical methods used

Meat production flocks: Before slaughter at farm

Bacteriological method:

Amendment 1 of EN/ISO 6579-2002/Amd 1:2007

Other preventive measures than vaccination in place

Meat production flocks

Person, who is carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases.

In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP, and record keeping.

Control program/mechanisms

The control program/strategies in place

Meat production flocks

National control programme for turkeys is carried out in accordance with the national Rules on monitoring and control of salmonella in turkeys.

The control mechanisms envisages inter alia as follows:

- Registration of holdings, who are subjected to veterinary checks
- Regular official veterinary checks on holdings
- Movements of animals accompanied by prescribed documents
- Veterinary referral form must accompany flocks infected with salmonella
- Sampling of every flocks before leave for slaughter
- Compulsory notification in case salmonella is detected
- Measures if *S. Enteritidis* and/or *S. Typhimurium* was detected

Measures in case of the positive findings or single cases

SAMPLING ON HOLDING

On having identified the presence of serovars *Salmonella* Enteritidis and/or *Salmonella* Typhimurium, the business operator shall, based on the internal monitoring and control plan, provide for the implementation of the following measures shall apply:

1. no bird from the flock, in which *Salmonella* has been detected, shall be moved from the holding, unless for

slaughter to the slaughterhouse or for killing and destruction under official veterinary control, where:

- slaughter shall be carried out at the slaughterhouse as the last batch in the slaughtering process of that particular production day, by a method minimising the possibility of spreading *Salmonella*, and in accordance with the food hygiene law;
- products obtained from such poultry may be placed on the market or put into circulation if they have been subjected to processing guaranteeing the elimination of *Salmonella*, or they shall be removed and

used in accordance with the regulations governing the handling of animal by-products; the entire procedure shall be carried out under the control of official veterinarian;

2. on removal and/or dispatch of the flock, in which *Salmonella* has been detected, the manure and bedding shall be removed in accordance with the regulations governing the handling of animal

- by-products, followed by thorough cleaning and disinfection;
3. prior to repopulation, bacteriological control of the efficiency of cleaning and disinfection shall be carried out, with negative results.

In case of confirmed presence of other *Salmonella* serovars, the business operator shall conduct measures laid down in the internal monitoring and control plan.

### Notification system in place

Notification and reporting must be carried out in accordance with the provisions of the Rules on monitoring and control of salmonella in turkeys.

#### Notification:

In the case of detection of *Salmonella* Enteritidis or *Salmonella* Typhimurium during sampling at the initiative of business operator, operator must inform VARS regional office within two working days after receipt of the laboratory results, by email, telephone or by fax.

Laboratory must inform VARS regional office in the case of detection of *Salmonella* Enteritidis or *Salmonella* Typhimurium in the samples taken by business operator or in the official samples the next working day after the analysis is completed.

In case of detection of other serovars laboratory must inform VARS regional office within five working days after the analysis is completed.

#### Reporting:

The laboratory sends a copy of the form, together with the copy of the investigation report, to the main office of the VARS (once per month) and the original sampling report to the business operator and, in the event of official sampling, also to the official veterinarian.

VARS Regional Offices must report to VARS Main Office on a monthly basis regarding the monitoring programme implementation and control results.

### Results of the investigation

#### SAMPLING ON HOLDING

In 2011, 122 fattening turkey flocks were tested before slaughter. *Salmonella* spp. was identified in four (4) flocks. Following serovars were identified: *S. Chartres* (2), *S. Saintpaul* (1), *S. Stanley* (1).

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

#### SAMPLING ON HOLDING

The Community target for turkeys was achieved during the first year of implementation of the National control programmes as *Salmonella* was detected in less than 1% of turkey flocks and *S. Enteritidis* and/or *S. Typhimurium* was not identified in any of the turkey flocks.

Table Salmonella in breeding flocks of Gallus gallus

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - Control and eradication programmes	3	VARs	Objective sampling	Industry sampling	environmental sample > delivery box liner		no	Flock	3	0	
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - Control and eradication programmes	3	VARs	Objective sampling	Industry sampling	environmental sample > boot swabs		no	Flock	3	0	
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - Control and eradication programmes	7	VARs	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	7	0	
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - Control and eradication programmes	68	VARs	Objective sampling	Industry sampling	environmental sample > delivery box liner		no	Flock	68	5	0
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - Control and eradication programmes	105	VARs	Objective sampling	Industry sampling	environmental sample > boot swabs		no	Flock	105	0	
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - Control and eradication programmes	153	VARs	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	153	2	0
	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Ohio				
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - Control and eradication programmes											

Table Salmonella in breeding flocks of Gallus gallus

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Ohio
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - Control and eradication programmes							
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - Control and eradication programmes							
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - Control and eradication programmes	0	0	0	0	0	0	5
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - Control and eradication programmes							
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - Control and eradication programmes	0	0	2	0	0	0	0

## Footnote:

In parent breeding flocks for egg production line, all together 3 flocks were sampled (as DOC and during rearing period).

In parent breeding flocks for broiler production line, all together 113 flocks were sampled (as DOC and during rearing period).

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes	91	VARs	Objective sampling	Industry sampling	environmental sample > delivery box liner		no	Flock			
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes	106	VARs	Objective sampling	Industry sampling	environmental sample > boot swabs		no	Flock	140	1	0
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes <sup>1)</sup>	185	VARs	Census	Official and industry sampling	environmental sample		yes	Flock	185	1	0
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes <sup>2)</sup>	2226	VARs	Census	Official and industry sampling	animal sample > faeces		yes	Flock	2226	27	0
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes <sup>3)</sup>	122	VARs	Census	Official and industry sampling	animal sample > faeces		yes	Flock	122	4	0

  

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Chartres	S. Coeln	S. Infantis	S. Ohio	S. Saintpaul	S. Stanley
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes									
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes	0	0	0	0	0	0	0	1	0
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes <sup>1)</sup>	0	0	0	0	0	0	1	0	0
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes <sup>2)</sup>	3	0	0	0	2	22	0	0	0

Table Salmonella in other poultry

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Chartres	S. Coeln	S. Infantis	S. Ohio	S. Saintpaul	S. Stanley
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes <sup>3)</sup>	0	0	0	2	0	0	0	1	1

**Comments:**

- <sup>1)</sup> Sample type: faeces, boot swabs, dust
- <sup>2)</sup> 27 flocks on 19 holdings were found positive on salmonela
- <sup>3)</sup> in one flock two serovars were identified (Chartres and Saintpaul)

**Footnote:**

All together, 140 laying hens flock during rearing period were sampled (only as DOC, as DSP and during rearing period or only during rearing period).

## 2.1.5 Salmonella in feedingstuffs

### A. Salmonella spp. in feed

#### History of the disease and/or infection in the country

In Slovenia feed was surveilled for the presence of Salmonella for decades.

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

The recent situation reflects the efforts of controlling Salmonella in feed and is considered good.

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

In 2011, out of 95 official feed samples tested, no positive samples were detected.

#### Recent actions taken to control the zoonoses

##### Feedingstuffs

##### Monitoring system:

- sampling strategy: target sampling (in accordance with the Programme of feed control in 2011);
- in approved and registered FBOs (including agricultural holdings, import);
- preventive measures: own controls by holders of activity (HACCP);
- control programme: Program of feed control in 2011 in accordance with Article 7(2) and Article 78(4) of the Veterinary Compliance Criteria Act (VCCA; UL RS 93/05), and Articles 41, 43, and 45(2a) of the Regulation (EC) No 882/2004 (OJ L 165/04);
- measures in case of positive findings: in accordance with Article 4(2) and Article 8(6) of the Rules on feed safety criteria (UL RS 58/11) and in accordance with Chapter I Annex X and Chapter I Annex XIII of the Commission Regulation 142/2011/EU;
- notification system in place: RASFF system and mutual notification between the CA in the sector of food safety, in accordance with the Decree coordinating the operation of ministries and agencies within ministries, which are competent for food and feed safety, animal health and welfare, and plant health (UL RS 82/10).

#### Additional information

##### Feedingstuffs

- frequency of the sampling - phases: approved feed manufacturers (60 samples), agricultural holdings (20 samples);
- description of sampling techniques: in accordance with Annex I of the Commission Regulation (EC) No 152/2009 laying down the methods of sampling and analysis for the official control of feed (UL L 54/2009);
- definition of positive finding: analysis result (1= positive, 0= negative);
- analytical methods used: ISO/FDIS 6579:2002 SOP 221.





Table Salmonella in compound feedingstuffs

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Compound feedingstuffs for cattle - final product	VARs		Official sampling	feed sample		Batch	25g	11	0		
Compound feedingstuffs for fish - final product	VARs		Official sampling	feed sample		Batch	25g	2	0		
Compound feedingstuffs for pigs - final product	VARs		Official sampling	feed sample		Batch	25g	16	0		
Compound feedingstuffs for poultry - broilers - final product	VARs		Official sampling	feed sample		Batch	25g	11	0		
Compound feedingstuffs for poultry - laying hens - final product	VARs		Official sampling	feed sample		Batch	25g	15	0		
Compound feedingstuffs for rabbits - final product	VARs		Official sampling	feed sample		Batch	25g	1	0		
Compound feedingstuffs for sheep - final product	VARs		Official sampling	feed sample		Batch	25g	1	0		
Compound feedingstuffs for turkeys - final product	VARs		Official sampling	feed sample		Batch	25g	6	0		
Pet food - final product	VARs		Official sampling	feed sample		Batch	25g	5	0		

	Salmonella spp., unspecified
Compound feedingstuffs for cattle - final product	
Compound feedingstuffs for fish - final product	
Compound feedingstuffs for pigs - final product	

Table Salmonella in compound feedingstuffs

	Salmonella spp., unspecified
Compound feedingstuffs for poultry - broilers - final product	
Compound feedingstuffs for poultry - laying hens - final product	
Compound feedingstuffs for rabbits - final product	
Compound feedingstuffs for sheep - final product	
Compound feedingstuffs for turkeys - final product	
Pet food - final product	

Table Salmonella in feed material of animal origin

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of land animal origin - dairy products	VARs		Official sampling	feed sample		Batch	25g	13	0		
Feed material of marine animal origin - fish meal	VARs		Official sampling	feed sample		Batch	25g	2	0		
Pet food - dog snacks (pig ears, chewing bones)	VARs		Official sampling	feed sample		Batch	25g	1	0		

	Salmonella spp., unspecified
Feed material of land animal origin - dairy products	
Feed material of marine animal origin - fish meal	
Pet food - dog snacks (pig ears, chewing bones)	

Table Salmonella in other feed matter

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of cereal grain origin - wheat derived <sup>1)</sup>	VARs		Official sampling	feed sample		Batch	25g	1	0		
Feed material of oil seed or fruit origin - soya (bean) derived	VARs		Official sampling	feed sample		Batch	25g	6	0		
Other feed material <sup>2)</sup>	VARs		Official sampling	feed sample		Batch	25g	2	0		
Other feed material - beet <sup>3)</sup>	VARs		Official sampling	feed sample		Batch	25g	1	0		
Premixtures	VARs		Official sampling	feed sample		Batch	25g	1	0		

	Salmonella spp., unspecified
Feed material of cereal grain origin - wheat derived <sup>1)</sup>	
Feed material of oil seed or fruit origin - soya (bean) derived	
Other feed material <sup>2)</sup>	
Other feed material - beet <sup>3)</sup>	
Premixtures	

## Comments:

<sup>1)</sup> wheat middlings

Table Salmonella in other feed matter

## Comments:

<sup>2)</sup> feed additive<sup>3)</sup> beet pulp

## 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

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory							2		20			7	10
Number of isolates serotyped	0	0	0	0	0	0	2	0	20	0	0	7	10
Number of isolates per serovar													
S. Chartres													4
S. Choleraesuis							1						
S. Coeln									2				
S. Derby							1						
S. Enteritidis									1				
S. Infantis									13			2	

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory							2		20			7	10
Number of isolates serotyped	0	0	0	0	0	0	2	0	20	0	0	7	10
Number of isolates per serovar													
S. Muenchen													
S. Ohio									2			1	3
S. Saintpaul									1				1
S. Stanley													2
S. Typhimurium									1			4	
S. enterica subsp. enterica													
S. group O:8													

Table Salmonella serovars in animals

Serovar	Other poultry			Pet animals, all			
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Sources of isolates							
Number of isolates in the laboratory			3		4	1	
Number of isolates serotyped	0	0	3	0	4	1	0
Number of isolates per serovar							
S. Chartres			2				
S. Choleraesuis							
S. Coeln							
S. Derby							
S. Enteritidis							
S. Infantis						1	
S. Muenchen					1		
S. Ohio							
S. Saintpaul							
S. Stanley			1				
S. Typhimurium					1		



Table Salmonella serovars in animals

Serovar	Other poultry			Pet animals, all			
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Sources of isolates							
Number of isolates in the laboratory			3		4	1	
Number of isolates serotyped	0	0	3	0	4	1	0
Number of isolates per serovar							
S. enterica subsp. enterica					1		
S. group O:8					1		

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin	
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Sources of isolates										
Number of isolates in the laboratory	1		5		21	1	2		6	1
Number of isolates serotyped	1	0	5	0	21	1	2	0	6	1
Number of isolates per serovar										
S. Bareilly			1							
S. Chartres					1					
S. Derby			3						1	
S. Enteritidis	1									
S. Infantis			1		17	1			2	
S. Kentucky							1			
S. Ohio									2	
S. Saintpaul							1			
S. Typhimurium					3					1
S. Typhimurium, monophasic									1	

Table Salmonella serovars in food

## 2.1.7 Antimicrobial resistance in Salmonella isolates

### A. Antimicrobial resistance in Salmonella in foodstuff derived from cattle

#### Sampling strategy used in monitoring

##### Type of specimen taken

See the monitoring for Salmonella in bovine meat - at processing plants.

##### Methods of sampling (description of sampling techniques)

See the monitoring for Salmonella in bovine meat - at processing plants.

##### Procedures for the selection of isolates for antimicrobial testing

At least one isolate from each epidemiological unit.

#### Laboratory used for detection for resistance

##### Antimicrobials included in monitoring

MIC was determined by broth dilution method using CRL AR recommended antimicrobial panel:

aminoglycosides: Streptomycin, Gentamycin.

Amphenicols: Chloramphenicol.

Beta-lactamic: Ampicillin.

Cephalosporins: Cefotaxim, Ceftazidim.

Quinolones: Nalidixic acid.

Fluoroquinolones: Ciprofloxacin.

Sulphonamides: Sulfonamides.

Trimethoprim.

Tetracyclines: Tetracycline.

##### Cut-off values used in testing

According to CLSI (former NCCLS) and CRL AR recommendations.

#### Control program/mechanisms

##### Recent actions taken to control the zoonoses

Introduced monitoring.

#### Results of the investigation

Four (4) strains of *Salmonella enterica* from mixed meat from FBO internal control, belonging to three (3) serovars were tested. One (1) strain of serovar Thompson was fully sensitive as well as one (1) of two (2) strains of Enteritidis. The other Enteritidis strain was resistant to Ciprofloxacin and Nalidixic acid. The strain of serovar Typhimurium was resistant to Chloramphenicol, Tetracycline, Sulfonamide, Streptomycin and Ampicillin.

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

It seems that cattle as such is not a major source of Salmonella for people. Most likely contamination of food containing beef occurs later by mixing it with other kinds of meat or other food ingredients. So in-process control in food industry is crucial for preventing food-borne Salmonella infections in humans especially with multiresistant strains.

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

Cattle doesn't seem to be a major source of Salmonella infections in humans.

## B. Antimicrobial resistance in Salmonella in foodstuff derived from poultry

### Sampling strategy used in monitoring

#### Frequency of the sampling

VARs

Subjected to test are isolates obtained within the monitoring of zoonoses and zoonotic agents and from all other samples tested within National Veterinary Institute. At least one isolate from each epidemiological unit.

#### Type of specimen taken

VARs

See the monitoring for Salmonella in poultry meat - at processing.

#### Methods of sampling (description of sampling techniques)

VARs

See the monitoring for Salmonella in poultry meat - at processing.

#### Procedures for the selection of isolates for antimicrobial testing

VARs

At least one isolate from each epidemiological unit.

#### Methods used for collecting data

VARs

Report of results obtained within the monitoring in processing plants, are reported to the VARs Main Office.

### Laboratory methodology used for identification of the microbial isolates

VARs

See the monitoring for Salmonella in poultry meat - at processing plants.

Broth dilution method according to CLSI and CRL AR recommendations.

### Laboratory used for detection for resistance

#### Antimicrobials included in monitoring

VARs

MIC was determined by broth dilution method using CRL AR recommended antimicrobial panel:  
minoglycosides: Streptomycin, Gentamycin.

Amphenicols: Chloramphenicol.

Beta-lactamic: Ampicillin.

Cephalosporins: Cefotaxim, Ceftazidim.

Quinolones: Nalidixinic acid.

Fluoroquinolones: Ciprofloxacin.

Sulphonamides: Sulfonamides.

Trimethoprim.

Tetracyclines: Tetracycline.

#### Cut-off values used in testing

According to CLSI (former NCCLS) and CRL AR recommendations.

#### Control program/mechanisms

Recent actions taken to control the zoonoses

Introduced monitoring.

#### Notification system in place

NRL-Salmonella reports to VARS at least once a year.

#### Results of the investigation

Eighteen (18) strains of *Salmonella enterica* belonging to seven (7) serovars from meat of broilers (*Gallus gallus*) were tested. Only strains of serovars Chartres, Enteritidis and Senftenberg were fully sensitive. Of twelve (12) strains of serovar Infantis only two (16.7%) were fully sensitive while two (2) were resistant to Ciprofloxacin, Nalidixic acid and Sulfonamides, seven (7) were resistant also to Tetracycline and one (1) also to Streptomycin. The last resistance pattern was found also in one (1) strain of serovar Kentucky. One (1) strain of serovar Virchow was resistant to Ciprofloxacin, Nalidixic acid, Ampicillin and Tetracycline. Four strains belonging to the serovars Chartres, Kentucky, Saintpaul and Typhimurium from turkey meat were tested. Serovar Chartres was resistant to Ciprofloxacin and nalidixic acid. the other three serovars were all resistant to Tetracycline, Ciprofloxacin, Nalidixic acid, Sulfonamide, Streptomycin and Ampicillin. Additionally serovar Kentucky was resistant to Gentamicin, Saintpaul to Trimethoprim and Typhimurium to Chloramphenicol.

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

The salmonella prevalence in poultry is low, so not many isolates were tested. We found multiresistant strains of serovars Infantis, Kentucky, saintpaul, Typhimurium and Virchow. The strains of serovars Enteritidis, Chartres and Senftenberg were fully sensitive. The results of poultry examinations for *Salmonella* do not indicate the poultry to be the major source of multiresistant strains however regarding big consumption of poultry meat it should not be neglected as a possible source of multiresistant strains for humans.

## C. Antimicrobial resistance of Salmonella spp. in Animals

### Sampling strategy used in monitoring

#### Frequency of the sampling

##### VARS

Subjected to test are isolates from all samples tested within National Veterinary Institute. At least one isolate from each epidemiological unit.

#### Procedures for the selection of isolates for antimicrobial testing

At least one isolate from each epidemiological unit.

### Laboratory methodology used for identification of the microbial isolates

Broth dilution method according to CLSI and CRL AR recommendations.

### Notification system in place

NRL-Salmonella reports to VARS at least once a year.

### Results of the investigation

Pigs: Both isolates were tested. Serovar Derby was resistant to Ampicillin and Tetracycline.

#### Fowl (Gallus gallus):

From poultry (Gallus gallus) we isolated 20 strains from control program and 7 from surveillance. Four isolates (2 Ohio, 2 Typhimurium) were from breeding flocks, two (Enteritidis, Ohio) from laying hens (both fully sensitive) and 21 (15 Infantis, 3 Typhimurium, 2 Coln, 1 Saintpaul) were from broilers. All the 15 strains of serovar Infantis were resistant to Ciprofloxacin and Tetracycline, 14 also to Nalidixic acid, four of them also to Streptomycin and one to Trimethopim. Of five strains of serovar Typhimurium two were fully sensitive and three resistant to Streptomycin, Chloramphenicol, Ciprofloxacin, Ampicillin, Nalidixic acid, Supfonamides and Tetracycline. The strains of serovars Coeln, Ohio and Saintpaul were fully sensitive. More than one isolate can be from the same holding, which might have been sampled both by the holder owner and by official veterinarian.

#### Turkey:

From turkeys we isolated 10 strains from control program and 3 from surveillance. We do not have breeding holdings. Samples were boot-swabs in fattening turkeys and liver and box-liner from one-day old chickens. Six strains were serovar Chartres (4 boot-swabs, 2 chickens), three Ohio (chickens), 3 Stanley (boot-swabs) and one Saintpaul (chicken). More than one isolate can be from the same holding, which might have been sampled both by the holder owner and by official veterinarian.

Resistance: All the six strains of serovar Chartres were resistant to Ciprofloxacin and Nalidixic acid; all the three strains of Stanley were resistant to Ciprofloxacin and Nalidixic acid, one of them also to Tetracycline and one also to both Tetracycline and Streptomycin. All the three strains of serovar Ohio were fully susceptible.

#### Pet animals:

In pet animals we isolated four strains from monitoring (3 reptiles, 1 mouse) and 1 from clinical dog sample. Each isolate belonged to different serovar (Infantis from dog, Typhimurium from mouse, Muenchen and two not fully serotyped from reptiles). Serovar Infantis was resistant to Ciprofloxacin, Nalidixic acid, Supfonamides and Tetracycline. Serovar Typhimurium from mouse was resistant to Streptomycin, Chloramphenicol, Ciprofloxacin, Ampicillin, Nalidixic acid, Supfonamides and Tetracycline and the three reptile isolates were fully sensitive.



## Additional information

### Environment:

Of seven environmental samples five were from monitoring and two from surveillance. Seven different serovars were detected. Four strains were identified as serovars Kisii, Livingstone, Ohio and Senftenberg and three were identified only to the group level O:3,10, O:4 and O:7. We found resistance only in the isolate belonging to the serogroup O:7 to Ciprofloxacin, Ampicillin, Sulfonamides and Tetracycline. All the other strains were fully susceptible.

D. Antimicrobial resistance of Salmonella spp. in Feed

History of the disease and/or infection in the country

No Salmonella were found in feed and feed ingredients in 2011.

## E. Antimicrobial resistance of *Salmonella* spp. in food

### Sampling strategy used in monitoring

#### Frequency of the sampling

See *Salmonella* spp. monitoring in food.

#### Type of specimen taken

Isolates were obtained within annual monitoring programme.

#### Methods of sampling (description of sampling techniques)

See relevant monitoring program.

#### Methods used for collecting data

##### VARs

Isolates were tested and reported at NVI.

### Results of the investigation

In monitoring of bovine animals meat we isolated one strain of serovar Enteritidis which was fully sensitive.

From monitoring pig meat we isolated five strains (3 Derby, 1 Bareilly, 1 Infantis). Two strains of serovar Derby were fully sensitive and one was resistant to Ampicillin and Sulfonamides, which is different to the resistance found in animals. Serovars Bareilly and Infantis were fully sensitive.

From meat from broilers we isolated 21 strains in monitoring and one in surveillance. Seventeen strains from monitoring and the one from surveillance belonged to serovar Infantis, three to Typhimurium and one to Chartres. This is consistent also with the results of animal control and surveillance where serovar Infantis was also the most frequent, followed by Typhimurium. Of 18 strains of serovar Infantis all were resistant to Ciprofloxacin, Nalidixic acid and Sulfonamides, 17 also to Tetracycline of which 3 also to Streptomycin and 2 other ones also to Ampicillin. The three strains of serovar Typhimurium had equal resistance pattern: Streptomycin, Chloramphenicol, Ciprofloxacin, Ampicillin, Nalidixic acid, Sulfonamides and Tetracycline. Chartres strain was fully sensitive.

In turkey meat monitoring we isolated two strains of serovars Kentucky and Saintpaul. Serovar Kentucky was resistant to Gentamicin, Ciprofloxacin, Ampicillin, Nalidixic acid, Sulfonamides and Tetracycline. Serovar Saintpaul was resistant to Ciprofloxacin, Ampicillin, Nalidixic acid, Sulfonamides and Trimethoprim.

From other products of animal origin we isolated six strains in monitoring and one in surveillance. Five isolated serovars were Infantis (2), Ohio (2), Derby (1), Typhimurium (1) and one monophasic Typhimurium (1,4,12:i:-). Both Infantis strains were resistant to Ciprofloxacin, Nalidixic acid, Sulfonamides and Tetracycline. Both Ohio strains and the Derby strain were fully susceptible. Typhimurium strain and monophasic Typhimurium (1,4,12:i:-) were resistant to Streptomycin, Ampicillin and Sulfonamides and Typhimurium was resistant also to Chloramphenicol and Tetracycline.

Table Antimicrobial susceptibility testing of Salmonella in meat from bovine animals

Salmonella  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		S. Dublin		S. Infantis		Salmonella spp.	
	yes											
	1											
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n
Aminoglycosides - Gentamicin	1	0										
Aminoglycosides - Streptomycin	1	0										
Amphenicols - Chloramphenicol	1	0										
Cephalosporins - 3rd generation cephalosporins	1	0										
Fluoroquinolones - Ciprofloxacin	1	0										
Penicillins - Ampicillin	1	0										
Quinolones - Nalidixic acid	1	0										
Sulfonamides	1	0										
Tetracyclines - Tetracycline	1	0										
Trimethoprim	1	0										
Fully sensitive	1	1										

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Salmonella  Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory  Antimicrobials:	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		S. Derby		Salmonella spp.	
							no		no	
							1		1	
	N	n	N	n	N	n	N	n	N	n
Aminoglycosides - Gentamicin							1	0	1	0
Aminoglycosides - Streptomycin							1	0	1	0
Amphenicols - Chloramphenicol							1	0	1	0
Cephalosporins - 3rd generation cephalosporins							1	0	1	0
Fluoroquinolones - Ciprofloxacin							1	0	1	0
Penicillins - Ampicillin							1	1	1	0
Quinolones - Nalidixic acid							1	0	1	0
Sulfonamides							1	0	1	0
Tetracyclines - Tetracycline							1	1	1	0
Trimethoprim							1	0	1	0
Fully sensitive							1	0	1	1
Resistant to 2 antimicrobials							1	1		

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		S. Derby		Salmonella spp.	
	Isolates out of a monitoring program (yes/no)						yes		yes	
	Number of isolates available in the laboratory						3		2	
	N	n	N	n	N	n	N	n	N	n
Antimicrobials:										
Aminoglycosides - Gentamicin							3	0	2	0
Aminoglycosides - Streptomycin							3	0	2	0
Amphenicols - Chloramphenicol							3	0	2	0
Cephalosporins - 3rd generation cephalosporins							3	0	2	0
Fluoroquinolones - Ciprofloxacin							3	0	2	0
Penicillins - Ampicillin							3	1	2	0
Quinolones - Nalidixic acid							3	0	2	0
Sulfonamides							3	1	2	0
Tetracyclines - Tetracycline							3	0	2	0
Trimethoprim							3	0	2	0
Fully sensitive							3	2	2	2
Resistant to 1 antimicrobial							3	0		
Resistant to 2 antimicrobials							3	1		

Table Antimicrobial susceptibility testing of Salmonella in meat from broilers (Gallus gallus)

Salmonella  Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory  Antimicrobials:	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		S. Paratyphi B var. Java		Salmonella spp.		S. Infantis	
			yes						yes		yes	
			3						1		18	
	N	n	N	n	N	n	N	n	N	n	N	n
Aminoglycosides - Gentamicin			3	0					1	0	18	0
Aminoglycosides - Streptomycin			3	3					1	0	18	2
Amphenicols - Chloramphenicol			3	3					1	0	18	0
Cephalosporins - 3rd generation cephalosporins			3	0					1	0	18	0
Fluoroquinolones - Ciprofloxacin			3	3					1	0	18	18
Penicillins - Ampicillin			3	3					1	0	18	2
Quinolones - Nalidixic acid			3	3					1	0	18	18
Sulfonamides			3	3					1	0	18	18
Tetracyclines - Tetracycline			3	3					1	0	18	16
Trimethoprim			3	0					1	0	18	0
Fully sensitive			3	0					1	0	18	0
Resistant to 1 antimicrobial											18	0
Resistant to 2 antimicrobials											18	0
Resistant to 3 antimicrobials											18	1
Resistant to 4 antimicrobials											18	14
Resistant to >4 antimicrobials			3	3							18	3

Table Antimicrobial susceptibility testing of Salmonella in Turkeys

Salmonella	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		S. Saintpaul		Salmonella spp.		S. Chartres		S. Ohio		S. Stanley	
	Isolates out of a monitoring program (yes/no)						yes				yes		yes		yes	
	Number of isolates available in the laboratory						1				6		3		3	
	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Antimicrobials:																
Aminoglycosides - Gentamicin							1	0			6	0	3	0	3	0
Aminoglycosides - Streptomycin							1	0			6	0	3	0	3	1
Amphenicols - Chloramphenicol							1	0			6	0	3	0	3	0
Cephalosporins - 3rd generation cephalosporins							1	0			6	0	3	0	3	0
Fluoroquinolones - Ciprofloxacin							1	1			6	6	3	0	3	3
Penicillins - Ampicillin							1	0			6	0	3	0	3	1
Quinolones - Nalidixic acid							1	1			6	6	3	0	3	3
Sulfonamides							1	0			6	0	3	0	3	2
Tetracyclines - Tetracycline							1	0			6	0	3	0	3	2
Trimethoprim							1	0			6	0	3	0	3	1
Fully sensitive							1	0			6	0	3	3	3	0
Resistant to 2 antimicrobials							1	1			6	2			3	1
Resistant to >4 antimicrobials															3	2



Table Antimicrobial susceptibility testing of Salmonella in meat from other poultry species

Salmonella	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		Salmonella spp.	
Isolates out of a monitoring program (yes/no)							yes	
Number of isolates available in the laboratory							2	
Antimicrobials:	N	n	N	n	N	n	N	n
Aminoglycosides - Gentamicin							2	1
Aminoglycosides - Streptomycin							2	0
Amphenicols - Chloramphenicol							2	0
Cephalosporins - 3rd generation cephalosporins							2	0
Fluoroquinolones - Ciprofloxacin							2	2
Penicillins - Ampicillin							2	2
Quinolones - Nalidixic acid							2	2
Sulfonamides							2	2
Tetracyclines - Tetracycline							2	2
Trimethoprim							2	1
Resistant to >4 antimicrobials							2	2

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - laying hens

<b>Salmonella</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory  <b>Antimicrobials:</b>	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		Salmonella spp.	
	yes						yes	
	1						1	
	N	n	N	n	N	n	N	n
Aminoglycosides - Gentamicin	1	0					1	0
Aminoglycosides - Streptomycin	1	0					1	0
Amphenicols - Chloramphenicol	1	0					1	0
Cephalosporins - 3rd generation cephalosporins	1	0					1	0
Fluoroquinolones - Ciprofloxacin	1	0					1	0
Penicillins - Ampicillin	1	0					1	0
Quinolones - Nalidixic acid	1	0					1	0
Sulfonamides	1	0					1	0
Tetracyclines - Tetracycline	1	0					1	0
Trimethoprim	1	0					1	0
Fully sensitive	1	1					1	1

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - broilers

Salmonella  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory  Antimicrobials:	S. Enteritidis		S. Typhimurium		S. 1,4,[5],12:i:-		S. Paratyphi B var. Java		Salmonella spp.		S. Infantis	
			yes						yes		yes	
			3						3		15	
	N	n	N	n	N	n	N	n	N	n	N	n
Aminoglycosides - Gentamicin			3	0					3	0	15	0
Aminoglycosides - Streptomycin			3	1					3	0	15	4
Amphenicols - Chloramphenicol			3	1					3	0	15	0
Cephalosporins - 3rd generation cephalosporins			3	0					3	0	15	0
Fluoroquinolones - Ciprofloxacin			3	1					3	0	15	15
Penicillins - Ampicillin			3	1					3	0	15	1
Quinolones - Nalidixic acid			3	1					3	0	15	15
Sulfonamides			3	1					3	0	15	15
Tetracyclines - Tetracycline			3	1					3	0	15	15
Trimethoprim			3	0					3	0	15	1
Fully sensitive			3	2					3	3		
Resistant to >4 antimicrobials			3	1								

Table Antimicrobial susceptibility testing of Salmonella in Dogs

<b>Salmonella</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory	Salmonella spp.	
	no	
	1	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	1	0
Aminoglycosides - Streptomycin	1	0
Amphenicols - Chloramphenicol	1	0
Cephalosporins - 3rd generation cephalosporins	1	0
Cephalosporins - Cefotaxime	1	0
Fluoroquinolones - Ciprofloxacin	1	1
Penicillins - Ampicillin	1	0
Quinolones - Nalidixic acid	1	1
Sulfonamides	1	1
Tetracyclines - Tetracycline	1	1
Trimethoprim	1	0
Fully sensitive	1	0
Resistant to 4 antimicrobials	1	1

Table Antimicrobial susceptibility testing of Salmonella in Mice

<b>Salmonella</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory  <b>Antimicrobials:</b>	S. Typhimurium		Salmonella spp.	
	no			
	1			
	N	n	N	n
Aminoglycosides - Gentamicin	1	0		
Aminoglycosides - Streptomycin	1	1		
Amphenicols - Chloramphenicol	1	1		
Cephalosporins - 3rd generation cephalosporins	1	0		
Cephalosporins - Cefotaxime	1	0		
Fluoroquinolones - Ciprofloxacin	1	1		
Penicillins - Ampicillin	1	1		
Quinolones - Nalidixic acid	1	1		
Sulfonamides	1	1		
Tetracyclines - Tetracycline	1	1		
Trimethoprim	1	0		
Fully sensitive	1	0		
Resistant to >4 antimicrobials	1	1		

Table Antimicrobial susceptibility testing of Salmonella in Reptiles

<b>Salmonella</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory	Salmonella spp.	
	no	
	3	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	3	0
Aminoglycosides - Streptomycin	3	0
Amphenicols - Chloramphenicol	3	0
Cephalosporins - 3rd generation cephalosporins	3	0
Cephalosporins - Cefotaxime	3	0
Fluoroquinolones - Ciprofloxacin	3	0
Penicillins - Ampicillin	3	0
Quinolones - Nalidixic acid	3	0
Sulfonamides	3	0
Tetracyclines - Tetracycline	3	0
Trimethoprim	3	0
Fully sensitive	3	3

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - breeding flocks, unspecified

Salmonella	S. Typhimurium		Salmonella spp.	
	yes		yes	
	2		2	
Isolates out of a monitoring program (yes/no)				
Number of isolates available in the laboratory				
Antimicrobials:	N	n	N	n
Aminoglycosides - Gentamicin	2	0	2	0
Aminoglycosides - Streptomycin	2	2	2	0
Amphenicols - Chloramphenicol	2	2	2	0
Cephalosporins - 3rd generation cephalosporins	2	0	2	0
Cephalosporins - Cefotaxime	2	0	2	0
Fluoroquinolones - Ciprofloxacin	2	2	2	0
Penicillins - Ampicillin	2	2	2	0
Quinolones - Nalidixic acid	2	2	2	0
Sulfonamides	2	2	2	0
Tetracyclines - Tetracycline	2	2	2	0
Trimethoprim	2	0	2	0
Fully sensitive	2	0	2	2
Resistant to >4 antimicrobials	2	2	2	0

Table Antimicrobial susceptibility testing of Salmonella in Meat from bovine animals and pig

<b>Salmonella</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory  <b>Antimicrobials:</b>	S. 1,4,12:i:-		S. Infantis		S. Typhimurium		Salmonella spp.	
	yes		yes		yes			
	1		1		1		3	
	N	n	N	n	N	n	N	n
Aminoglycosides - Gentamicin	1	0	1	0	1	0	3	0
Aminoglycosides - Streptomycin	1	0	1	0	1	1	3	0
Amphenicols - Chloramphenicol	1	0	1	0	1	1	3	0
Cephalosporins - 3rd generation cephalosporins	1	0	1	0	1	0	3	0
Cephalosporins - Cefotaxime	1	0	1	0	1	0	3	0
Fluoroquinolones - Ciprofloxacin	1	0	1	1	1	0	3	0
Penicillins - Ampicillin	1	1	1	0	1	1	3	0
Quinolones - Nalidixic acid	1	0	1	1	1	0	3	0
Sulfonamides	1	1	1	1	1	1	3	0
Tetracyclines - Tetracycline	1	0	1	1	1	1	3	0
Trimethoprim	1	0	1	0	1	0	3	0
Fully sensitive							3	3
Resistant to 2 antimicrobials	1	1						
Resistant to 4 antimicrobials			1	1				
Resistant to >4 antimicrobials					1	1		



Table Antimicrobial susceptibility testing of Salmonella in Meat from deer (venison)

<b>Salmonella</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory  <b>Antimicrobials:</b>	Salmonella spp.	
	yes	
	1	
	N	n
Aminoglycosides - Gentamicin	1	0
Aminoglycosides - Streptomycin	1	0
Amphenicols - Chloramphenicol	1	0
Cephalosporins - 3rd generation cephalosporins	1	0
Cephalosporins - Cefotaxime	1	0
Fluoroquinolones - Ciprofloxacin	1	1
Penicillins - Ampicillin	1	0
Quinolones - Nalidixic acid	1	1
Sulfonamides	1	1
Tetracyclines - Tetracycline	1	1
Trimethoprim	1	0
Fully sensitive	1	0
Resistant to 1 antimicrobial	1	0
Resistant to 2 antimicrobials	1	0
Resistant to 3 antimicrobials	1	0
Resistant to 4 antimicrobials	1	1
Resistant to >4 antimicrobials	1	0

Table Antimicrobial susceptibility testing of Salmonella in Meat from deer (venison)

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

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

  

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

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

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

  

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

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

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

  

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

## 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

In 1986/87 the notification of human cases Campylobacter enteritis started and became obligatory due to Law on Infectious diseases.

The number of notified cases decreased from 2000 to 2003, in 2006, 2008 and increased from 2003 to 2005 and in 2007. In 2008 888 cases were notified in 2009 921 ( incidence 45 / 100 000 inhabitants). In 2010 999 cases were notified, the incidence was 48/100 000 inhabitants.

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

The number of notified human cases decreased from 2000 to 2003, in 2006 and 2008 and increased from 2003 to 2005 and in 2007. In 2009 921 cases were notified ( incidence 45 /100 000 inhabitants), in 2009 999 ( incidence 48 / 100 000 inhabitants) in 2011 there were 998 notified cases.

From 2009 on campylobacter is the most frequent bacterial pathogen in Slovenia ( in previous years it was Salmonella).

No outbreaks were notified in last years.

Important source of infection is poultry.

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

##### Recent actions taken to control the zoonoses

In 2010 a three year research project on comparison of Campylobacter strains from human, food and animal origin was closed. Ongoing monitoring of food, feed and animals, laboratory confirmation of human cases.

## 2.2.2 Campylobacteriosis in humans

### A. Thermophilic Campylobacter in humans

#### Reporting system in place for the human cases

Campylobacter cases are notifiable by national law on infectious diseases (Official Gazette 69/95, revised 33/2006). Medical doctors notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

#### Case definition

According to definitions of EC /ECDC from 2008.

#### Diagnostic/analytical methods used

For identification and confirmation: microscopy, biochemical identification, PCR: (isolation on CCDA medium (or other selective media), Hyppurat test, Cephalotin and nalidixic acid resistance test, other biochemical tests and PCR).

- for typing: PFGE

#### Notification system in place

Campylobacter cases are notifiable by national Law on Infectious Diseases ( Official Gazette 69/95, revised 33 /2006). Medical doctors notify cases on daily basis to local institutes of public health. (Also laboratories are obliged to notify). Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

#### History of the disease and/or infection in the country

In 1986/87 the notification of Campylobacter enteritis started and became obligatory due to Law on Infectious diseases.

The number of notified cases decreased from 2000 to 2003 in 2006, 2008 and increased from 2003 to 2005 and in 2007, from 2009 to 2010.

#### Results of the investigation

The number of notified human cases decreased from 2000 to 2003 in 2006, 2008 and increased from 2003 to 2005 and in 2007, from 2009 to 2010.

The incidence of infection in 2006 was 47,2 / 100 000 inhabitants, in 2007 53,7 / 100 000 inhabitants, 44 / 100 000 inhabitants in 2008, 45 / 100 000 inhabitants in 2009, 48 / 100 000 inhabitants in 2010 and 2011.

No outbreaks were notified in last years. From 2009 on Campylobacter is the most common etiologic agent of acute gastroenterocolitis in Slovenia. Most common is Campylobacter jejuni (about 90%) .

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

From 2009 on *Campylobacter* is the most frequent bacterial (sporadic) gastroenteritis in Slovenia. Source of infection is probably poultry.

### Relevance as zoonotic disease

*Campylobacter* is the most frequent sporadic bacterial gastroenteritis in Slovenia in last three years.



Table Campylobacter in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.	Unknown status
Campylobacter	924	45.03	924	45.03	3	.15	0
C. coli	42	2.05	42	2.05	0	0	0
C. jejuni	882	42.98	882	42.98	3	0.15	0
C. upsaliensis	0	0	0	0	0	0	0

Table Campylobacter in humans - Age distribution

Age distribution	C. coli			C. jejuni			Campylobacter spp., unspecified		
	All	M	F	All	M	F	All	M	F
<1 year	2	1	1	50	34	16	3	1	2
1 to 4 years	2	1	1	167	97	70	10	6	4
5 to 14 years	6	4	2	140	87	53	9	3	6
15 to 24 years	10	2	8	158	97	61	5	3	2
25 to 44 years	6	2	4	166	97	69	15	3	12
45 to 64 years	10	4	6	107	65	42	8	4	4
65 years and older	6	1	5	94	42	52	11	5	6
Total :	42	15	27	882	519	363	61	25	36

Table Campylobacter in humans - Seasonal distribution

Seasonal Distribution Months	C. coli	C. jejuni	C. upsaliensi s	Campylobacter spp., unspecified
	Cases	Cases	Cases	Cases
January	0	49	0	1
February	1	32	0	2
March	3	47	0	7
April	6	45	0	1
May	1	80	0	6
June	6	145	0	5
July	3	123	0	5
August	6	133	0	6
September	6	74	0	12
October	5	55	0	7
November	2	57	0	6
December	3	42	0	3
not known	0	0	0	0
Total :	42	882	0	61

## 2.2.3 Campylobacter in foodstuffs

### A. C.,thermophilic in food

#### Monitoring system

##### Sampling strategy

###### VARs

Subjected to sampling was the poultry meat and meat preparations from poultry meat in registered establishments and at retail.

One meat sample is an epidemiological unit.

##### Frequency of the sampling

Sampling is distributed from May to December.

##### Type of specimen taken

###### VARs:

- poultry meat, fresh,
- meat preparations from poultry meat.

##### Methods of sampling (description of sampling techniques)

###### VARs

A single sample of a fresh meat or meat preparation shall be composed of one (1) unit (n=1), and every unit shall weigh at least 200 g.

Samples were delivered to the laboratory in the shortest time possible, as a rule, immediately after sampling (in 24 hours after sampling at the latest). In time between sampling and delivery to the laboratory, samples shall be kept at 4°C(+/-2°C).

##### Definition of positive finding

Positive sample is a sample in which Thermophilic Campylobacter has been isolated in 1g.

##### Diagnostic/analytical methods used

Bacteriological method: ISO 10272-1:2006.

##### Preventive measures in place

GMP, GHP, HACCP

##### Notification system in place

###### VARs

The laboratory sends the investigation reports to the VARs Main Office and to the official veterinarian who has conducted the sampling.

##### Results of the investigation

###### VARs

In 2011:

105 samples of fresh poultry meat and 100 samples of meat preparations from poultry meat were taken. Campylobacter jejuni was identified in 44 samples of fresh poultry meat and in 26 samples of meat preparations. Campylobacter coli was identified in 19 samples of fresh poultry meat and in 5 samples of meat preparations. Campylobacter lary was identified in 1 (one) fresh poultry meat sample.



Table Campylobacter in poultry meat

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from poultry, unspecified - fresh - chilled - Surveillance <sup>1)</sup>	VARs	Objective sampling	Official sampling	food sample		Single	1g	105	60	19	44
Meat from poultry, unspecified - meat products - Surveillance <sup>2)</sup>	VARs	Objective sampling	Official sampling	food sample		Single	1g	100	30	5	26

  

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from poultry, unspecified - fresh - chilled - Surveillance <sup>1)</sup>	1	0	0
Meat from poultry, unspecified - meat products - Surveillance <sup>2)</sup>	0	0	0

**Comments:**<sup>1)</sup> n=1<sup>2)</sup> n=1**Footnote:**

Meat from poultry, unspecified: In 4 samples, C.jejuni and C.coli were identified.

Meat from poultry/meat products: In 1 sample, C. jejuni and C.coli were identified.

## 2.2.4 Campylobacter in animals

### A. Thermophilic Campylobacter in Gallus gallus

#### Monitoring system

##### Sampling strategy

###### VARS

Sampling of broilers was carried out from May to December 2011 in all approved slaughterhouses where broiler animals slaughtering is conducted.

Sampled were broilers raised in the Republic of Slovenia only.

The sampling of faeces was carried out with the aim of establishing the prevalence of campylobacter in broiler flocks. Sampling of neck skin was carried out with the aim of establishing the level of contamination of poultry carcasses at slaughterhouses with campylobacter.

Slaughter batch of more than 2000 animals constitutes an epidemiological unit, if this is not possible, smaller batches can be sampled. Slaughter batch means animals originating from a single flock delivered to the slaughter establishment in a single means of transport.

Sampling is carried out by the slaughterhouse official veterinarians.

##### Frequency of the sampling

###### At slaughter

In the three (3) slaughterhouses where sampling was conducted the number of samples was equally distributed on the basis of the annual quantity of slaughtered animals.

##### Type of specimen taken

###### At slaughter

Sampling was conducted by taking a caeca sample and a neck skin sample from every random selected broiler slaughter batch. A caeca sample included the caeca of 10 broilers, taking 1 full and intact caecum from every broiler. Every caeca sample and neck skin sample were taken from the same slaughter batch.

##### Methods of sampling (description of sampling techniques)

###### At slaughter

In slaughtering batch of broilers sample of faeces (caeca) and neck skin was taken.

Sample of faeces consists of 10 animals (10 caeca). The sampling of faeces during the slaughtering process shall be equally distributed on the basis of the slaughtering batch. The sampling shall start at  $\frac{1}{4}$  and end at  $\frac{3}{4}$  of batch slaughtering. A final sample of faeces must comprise caeca taken from 10 animals. The caecum is removed during evisceration by sterile scissors and stored in a sterile plastic bag. In the laboratory, samples are pooled into a pool sample.

In each slaughtering batch from which faeces samples were taken, after cooling but before any other handling of carcasses (e.g. cutting, packaging), a neck skin sample is taken using a sterile gloves and put into a sterile plastic bag.

Samples shall be delivered to the laboratory as soon as possible, as a rule, immediately after sampling (on the same day) or within 24 hours of the sampling. In exceptional cases (holidays, weekend), the samples can be delivered to the laboratory within 80 hours after sampling. The laboratory must start with the investigation within 24 hours after receiving the material. If samples are delivered to the laboratory within 72 to 80 hours after taking, they must be tested immediately after the receipt. In the period from the

sampling to the beginning of the analysis, the sampled material must be stored in a cold place, at the temperature of 4 °C (+/-2 °C) and may not be exposed to light.

In the laboratory, the caecum shall be opened aseptically and the content pooled in 1 pool sample.

#### Case definition

##### At slaughter

A positive slaughter batch is a batch from which Thermophilic Campylobacter has been isolated in the pooled sample of faeces.

A positive neck skin sample is a sample from which Thermophilic Campylobacter was isolated in 1g.

#### Diagnostic/analytical methods used

##### At slaughter

Bacteriological method:ISO 10272-1:2006

#### Other preventive measures than vaccination in place

Persons, who in carrying out a registered activity of breeding or production come into direct contact with animals, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases.

In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP, and record keeping.

In slaughterhouses: GMP,GHP,HACCP

#### Control program/mechanisms

##### The control program/strategies in place

- Registration and/or approval of establishments subjected to veterinary controls
- Identification of animal products and their traceability
- Veterinary control in establishments

#### Notification system in place

Regional Offices must report to VARS Main Office on a monthly basis regarding the monitoring programme implementation.

On monthly basis the laboratory sends the investigation reports to the VARS Main Office and to the official veterinarian who has conducted the sampling.

#### Results of the investigation

In 2011, the broiler caecum samples from 100 slaughter batches were taken at slaughter establishments.

Thermophilic Campylobacter was detected in 77 samples/slaughter batches (77%):

- C. jejuni was isolated from 52 samples,
- C. jejuni and C.coli were isolated from 8 samples,
- C. coli was isolated from 15 samples,
- C. lari was isolated from 1 sample,
- C.spp. was isolated from 1 sample.

Neck skin samples were analysed from 100 slaughter batches. Thermophilic Campylobacter was detected in 92 samples/slaughter batches (92%):

- C. jejuni was isolated from 65 samples,
- C. jejuni and C. coli were isolated from 12 samples,
- C. coli was isolated from 15 samples.



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

Compared with results in year 2010 the percentage of positive broiler neck skin samples in 2011 stays approximately the same while the percentage of positive broiler caecum samples decreased for 10%.

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

A relatively high percentage of positive slaughter batches detected might lead to an increased meat contamination in case of a less strict observation of the good hygiene practice and internal control requirements in slaughterhouses. Contaminated meat may pose a threat to public health.

Table Campylobacter in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring	VARs	Objective sampling	Official sampling	animal sample > faeces		Batch	100	77	23	60	1
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring	VARs	Objective sampling	Official sampling	food sample > neck skin		Batch	100	92	27	77	0
	C. upsaliensis	Thermophilic Campylobacter spp., unspecified									
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring	0	1									
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring	0	0									

## Footnote:

Gallus gallus (fowl)-broilers-at slaughterhouse-monitoring:

FAECES: in 8 samples two serovars were identified (C.jejuni and C.coli).

NECK SKIN: in 12 samples two serovars were identified (C.jejuni and C.coli).

## 2.2.5 Antimicrobial resistance in Campylobacter isolates

### A. Antimicrobial resistance in Campylobacter jejuni and coli in poultry

#### Sampling strategy used in monitoring

##### Frequency of the sampling

VARs

Isolates were obtained within annual monitoring programme.

##### Type of specimen taken

Isolates were obtained within annual monitoring programme.

##### Methods of sampling (description of sampling techniques)

See relevant monitoring program.

##### Procedures for the selection of isolates for antimicrobial testing

See relevant monitoring program.

##### Methods used for collecting data

VARs

Isolates were tested and reported at NVI.

#### Laboratory methodology used for identification of the microbial isolates

Bacteriological test: ISO 10272:1995,

MIC determined by broth dilution method using CRL AR recommended antimicrobial panel.

#### Laboratory used for detection for resistance

##### Antimicrobials included in monitoring

Chloramphenicol, Tetracycline, Ciprofloxacin, Nalidixic acid, Streptomycin, Gentamicin, Erythromycin.

##### Cut-off values used in testing

Task Force of Zoonoses Data Collection, EFSA Journal (2007), 96,1-46.

#### Results of the investigation

Of 54 strains from broilers (*Gallus gallus*) meat, 6 (11%) were fully sensitive. The greatest was resistance to Ciprofloxacin (48 strains, 89%) and Nalidixic acid (40 strains, 74%) and Tetracycline (25 strains, 46%), while to Gentamicin there were only 2 resistant strains and to Erythromycin only one.

In fowl (*Gallus gallus*) none of the 22 strains was fully sensitive. The greatest was resistance to Ciprofloxacin (21 strains, 95%) and Tetracycline (15 strains, 68%) and Nalidixic acid (14 strains, 64%), while to Erythromycin there was only 1 resistant strain and to Gentamicin none.

The high percentage of strains resistant to Ciprofloxacin, Nalidixic acid and Tetracycline is very unfavourable. Of 76 strains tested, only 6 (8%) were still fully sensitive.

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

The high percentage of resistant strains and low percentage of fully susceptible strains is not favorable. Especially high resistance to quinolones might present a problem for treatment and spread of resistance

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genes.

Table Antimicrobial susceptibility testing of *Campylobacter* in *Gallus gallus* (fowl)

<b>Campylobacter</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory  <b>Antimicrobials:</b>	C. coli		C. jejuni		Campylobacter spp., unspecified	
			yes			
			22			
	N	n	N	n	N	n
Aminoglycosides - Gentamicin			22	0		
Fluoroquinolones - Ciprofloxacin			22	21		
Macrolides - Erythromycin			22	1		
Quinolones - Nalidixic acid			22	14		
Tetracyclines - Tetracycline			22	15		
Fully sensitive			22	0		
Resistant to 1 antimicrobial			22	1		
Resistant to 2 antimicrobials			22	13		
Resistant to 3 antimicrobials			22	8		

Table Antimicrobial susceptibility testing of Campylobacter in Meat from broilers (Gallus gallus)

Campylobacter	C. coli		C. jejuni		Campylobacter spp., unspecified	
	Isolates out of a monitoring program (yes/no)		yes			
	Number of isolates available in the laboratory		54			
Antimicrobials:	N	n	N	n	N	n
Aminoglycosides - Gentamicin			54	2		
Fluoroquinolones - Ciprofloxacin			54	48		
Macrolides - Erythromycin			54	1		
Quinolones - Nalidixic acid			54	40		
Tetracyclines - Tetracycline			54	25		
Fully sensitive			54	6		
Resistant to 1 antimicrobial			54	0		
Resistant to 2 antimicrobials			54	30		
Resistant to 3 antimicrobials			54	16		
Resistant to 4 antimicrobials			54	2		

Table Cut-off values used for antimicrobial susceptibility testing of *C. coli* in Animals

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		16	
Tetracyclines	Tetracycline		2	

Table Cut-off values used for antimicrobial susceptibility testing of C. coli in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		16	
Tetracyclines	Tetracycline		2	



Table Cut-off values used for antimicrobial susceptibility testing of *C. coli* in Food

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		16	
Tetracyclines	Tetracycline		2	

Table Cut-off values used for antimicrobial susceptibility testing of *C. jejuni* in Animals

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

  

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	1	
	Streptomycin	EFSA	2	
Fluoroquinolones	Ciprofloxacin	EFSA	1	
Macrolides	Erythromycin	EFSA	4	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline	EFSA	2	

Table Cut-off values used for antimicrobial susceptibility testing of *C. jejuni* in Feed

Test Method Used	Standard methods used for testing

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

Table Cut-off values used for antimicrobial susceptibility testing of *C. jejuni* in Food

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

  

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	1	
	Streptomycin	EFSA	2	
Fluoroquinolones	Ciprofloxacin	EFSA	1	
Macrolides	Erythromycin	EFSA	4	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline	EFSA	2	

## 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

From 1990 to 2011 0 to 38 human cases annually were notified.

In 2005 three (3) human cases were notified, in 2006 seven (7), in 2007 four (4), in 2008 three (3), in 2009 six (6) and in 2010 11, in 2011 10. The notified cases were meningitis and sepsis.

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

There are probably more cases than notified, because only most severe cases seek medical help and are therefore notified. Source of infection mostly remains mostly unknown.

##### Recent actions taken to control the zoonoses

Epidemiological surveillance of human cases, microbiological food control, monitoring of food, feed, animals by veterinary authority.

## 2.3.2 Listeriosis in humans

### A. Listeriosis in humans

#### Reporting system in place for the human cases

Listeriosis cases are notifiable by national Law on Infectious diseases (Official Gazette 69/95, revised 33/2006). Medical doctors notify cases on daily basis to local institutes of public health. (Laboratories are obliged to notify as well). Local institutes of public health notify disease to Institute of Public Health of Slovenia. Notification since 1977.

#### Case definition

According to standard definition of the ECDC from 2008.

#### Diagnostic/analytical methods used

Isolation from body fluids on differential and selective media, Gram staining; biochemical tests; serology; PCR.

#### Notification system in place

Listeriosis cases are notifiable by national Law on Infectious diseases. Medical doctors notify cases on daily basis to local institutes of public health. (Laboratories are obliged to notify as well). Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

#### History of the disease and/or infection in the country

From 1990 to 2011 0 to 38 human cases annually were notified.

In 2005 three human cases were notified, in 2006 seven in 2007 4 and in 2008 3 and 2009 6 cases were notified, in 2010 11 cases (incidence below 1 / 100 000 inhabitants).

#### Results of the investigation

According to notifications human listeriosis is a rare zoonosis. The mortality of notified cases with meningitis, sepsis is relatively high.

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

Real burden of human disease is probably greater than estimation from passive notification. Notified are most probable cases with more severe clinical picture who are admitted to hospital. Source of infection mostly remains unclear.

#### Relevance as zoonotic disease

Human listeriosis is rarely reported. Enhanced laboratory and epidemiological surveillance of human cases ( molecular methods)in comparison with positive food samples would give better insight in epidemiological situation and source of infection.

Table Listeria in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.
Listeria	1	.05
Listeria spp., unspecified	1	0.05
Congenital cases	0	0
Number of deaths	0	0



Table Listeria in humans - Age distribution

Age distribution	L. monocytogenes			Listeria spp., unspecified		
	All	M	F	All	M	F
<1 year	0	0	0	0	0	0
1 to 4 years	0	0	0	0	0	0
5 to 14 years	0	0	0	0	0	0
15 to 24 years	0	0	0	0	0	0
25 to 44 years	0	0	0	0	0	0
45 to 64 years	3	1	2	0	0	0
65 years and older	1	0	1	1	1	0
Age unknown	0	0	0	0	0	0
Total :	4	1	3	1	1	0

### 2.3.3 Listeria in foodstuffs

#### A. L. monocytogenes in food

##### Monitoring system

###### Sampling strategy

###### VARs

Sampling of RTE meat products, meat preparations, fishery products, dairy products (at processing and/or retail) and raw milk (on milk automates) for *L. monocytogenes* was conducted in the approved and registered establishments and at retail.

###### HIRS

Monitoring (foodstuffs intended for particular nutritional uses and catering)

Annual monitoring programme was prepared with respect to the risk analysis, legislative criteria and results of programme/controls carried out in the previous year.

Samples were taken at retail level, at wholesalers (foodstuffs intended for particular nutritional uses) and catering. Sampling was carried out by the health inspectors.

Programme:

- ready-to-eat foods intended for infants: 10 samples/year;
- ready-to-eat foods for special medical purposes: 5 samples/year;
- ready-to-eat filled cakes, deserts and pastry: 100 samples/year;
- ready-to-eat deli dishes (salads, sauces, spreads etc.): 180 samples/year.

###### IRSAFF

Monitoring (foodstuff of non-animal origin except intended for particular nutritional uses and catering)

Annual monitoring programme was prepared with respect to the risk analysis, legislative criteria, results of programme/controls carried out in the previous year.

Samples were taken at producer, wholesalers and at retail level and it was carried out by the inspectors for quality control

Programme:

- pre-cut RTE fruits and vegetables: 30 samples/year;
- frozen fruits and vegetables (RTE): 30 samples/year
- deserts and pastry: 100 samples/year
- RTE deli dishes with long shelf life : 50 samples/year.

##### Frequency of the sampling

###### At the production plant

###### VARs

Sampling was distributed evenly throughout the months: May - December.

The numbers of samples to be taken had been defined in advance and for every particular VARs

Regional Office separately.

###### At retail

VARs: Sampling was distributed evenly throughout the months: May- December.

The numbers of samples to be taken had been defined in advance and for every particular VARs Regional Office separately.

HIRS: Sampling takes place during the months January - September.

IRSAFF: Sampling takes place during the months February - December.

#### Type of specimen taken

At the production plant

VARs

RTE meat products, meat preparations, fishery products, dairy products and raw milk.

At retail

VARs

- RTE meat products,
- meat preparations,
- fishery products,
- RTE dairy products.

HIRS

- ready-to-eat foods intended for infants,
- ready-to-eat foods for special medical purposes,
- ready-to-eat filled cakes, deserts and pastry,
- ready-to-eat deli dishes (salads, sauces, spreads etc.)

IRSAFF:

- pre-cut RTE fruits and vegetables
- frozen fruits and vegetables (RTE)
- deserts and pastry,
- RTE deli dishes

#### Methods of sampling (description of sampling techniques)

At the production plant

VARs

A single sample of a meat product, minced meats, dairy product, fishery product or raw milk shall be composed of one unit (n=1). Unit of meat product, meat preparations and fishery product shall weigh at least 200 g, dairy products at least 300g/ml and raw milk at least 200ml.

Samples were delivered to the laboratory in the shortest time possible, as a rule, immediately after sampling (in 24 hours after sampling at the latest). In time between sampling and delivery to the laboratory, samples shall be kept at 4°C(+/-2°C).

As precedence dairy products made from raw milk shall be sampled. In cases where business operators produce dairy products using the different types of milk (raw, thermally treated, pasteurised), the dairy products obtained from the raw milk and thermally treated milk shall have precedence in sampling.

At retail

VARs

A single sample of a meat product, meat preparations or dairy product shall be composed of one unit (n=1). Unit of meat product, minced meat or fishery product shall weigh at least 200 g and every unit of dairy product or milk at least 300g/ml.

Samples were delivered to the laboratory in the shortest time possible, as a rule, immediately after

sampling (in 24 hours after sampling at the latest). In time between sampling and delivery to the laboratory, samples shall be kept at 4°C(+/-2°C).

As precedence dairy products made from raw milk shall be sampled. In cases where business operators produce dairy products using the different types of milk (raw, thermally treated, pasteurised), the dairy products obtained from the raw milk and thermally treated milk shall have precedence in sampling.

#### HIRS

Sampling plan (n = number of units comprising the sample):

- ready-to-eat foods intended for infants: n=10;
- ready-to-eat foods for special medical purposes: n=5;
- ready-to-eat filled cakes, deserts and pastry: n=1;
- ready-to-eat deli dishes (salads, sauces, spreads etc.): n=1.

Every unit of the sample weighed at least 100 g. If a sample was analysed in one unit and was not prepacked, a sample weighing 300-500 g was taken by sterile instrument and stored in a sterile bag or other sterile container. Samples had to be delivered to the laboratory in the shortest time possible. The period of time elapsing from sampling to analysis shall by no means exceed 24 hours. The temperature during storage and transport for samples of chilled products should not exceed + 4°C.

#### IRSAFF

Sampling plan (n = number of units comprising the sample):

- precut RTE fruits and vegetables(n=5)
- frozen fruits and vegetables (RTE)(n=5)
- deli dishes - sweet (n=1)
- RTE deli dishes (n=5)

Every unit of the sample weighed at least 100 g. If a sample was analysed in one unit and was not prepacked, a sample weighing 300-500 g was taken by sterile instrument and stored in a sterile bag or other sterile container. Samples had to be delivered to the laboratory in the shortest time possible. The period of time elapsing from sampling to analysis shall by no means exceed 24 hours. The temperature during storage and transport for samples of chilled products should not exceed + 4°C.

#### Definition of positive finding

At the production plant

A sample in which *Listeria monocytogenes* was isolated in 25g.

At retail

A sample in which *Listeria monocytogenes* was isolated in 25g.

#### Diagnostic/analytical methods used

At the production plant

Bacteriological method: ISO 11290-1:1996

At retail

Bacteriological method: ISO 11290-1, 2:1996, 1998/Amd.1:2004, ISO 11290-2:1998/Amd.1:2004

#### Preventive measures in place

GMP, GHP, HACCP

#### Control program/mechanisms

The control program/strategies in place

**VARS**

- Registration and/or approval of establishments subjected to veterinary controls
- Identification of animal products and their traceability
- Veterinary controls in establishments

**HIRS**

Registration of establishments and official control.

**IRSAFF**

Registration of establishments and official control.

Suggestions to the Community for the actions to be taken

## Measures in case of the positive findings

Informing the owner of the sample, food hygiene inspection and necessary enforcement action.

## Notification system in place

**VARS**

The laboratory sends the investigation reports to the VARS Main Office and to the official veterinarian who has conducted the sampling.

**HIRS**

Whenever zoonotic agent - *Listeria monocytogenes* exceeded the criteria in samples taken, relevant authority was informed.

**IRSAFF**

Whenever zoonotic agent - *Listeria monocytogenes* exceeded the criteria in samples taken, relevant authority was informed.

## Results of the investigation

**VARS**

In 2011:

364 samples of RTE meat products were taken. *Listeria monocytogenes* was detected (>100cfu/g) in 1 (one) sample.

141 samples of meat preparations were taken. *Listeria monocytogenes* was not detected in any of the samples.

30 fishery products samples were taken. *Listeria monocytogenes* was detected (>100cfu/g) in 4 (four) samples.

306 dairy products samples were taken. *Listeria monocytogenes* was not detected in any of the samples.

128 raw milk samples were taken. *Listeria monocytogenes* was detected (>100cfu/g) in 1 (one) milk sample.

**HIRS**

Monitoring (foodstuffs intended for particular nutritional uses and catering)

In 2011, 295 samples of different RTE foods from above describe groups were taken. *Listeria monocytogenes* (in 25 g) was found in 3 samples RTE deli dishes (ready-to-eat salads) and 1 sample of ready-to-eat filled cakes, deserts and pastry. No sample exceeded the criteria set in the legislation (< 100

cfu/g).

*Listeria monocytogenes* (in 25 g) was not detected in ready-to-eat foods intended for infants and ready-to-eat foods for special medical purposes.

Out of all 295 samples taken, 1,4% were positive on presence of *Listeria monocytogenes* in 25 g.

#### IRSAFF

Monitoring (foodstuffs of non animal origin except intended for particular nutritional uses and catering)

In 2010, 160 samples of different foods from above describe groups were taken. *Listeria monocytogenes* (in 25 g) was found in 4 samples of frozen fruits and vegetables. No sample exceeded the criteria set in the legislation (< 100 cfu/g).

*Listeria monocytogenes* (in 25 g) was not detected in deli dishes with long shelf life, RTE cut fruits and vegetables, deserts and pastry.

Out of 160 samples taken, 2,5% were positive on presence of *Listeria monocytogenes* in 25 g.

Table *Listeria monocytogenes* in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Cheeses, made from mixed milk from cows, sheep and/or goats - Surveillance <sup>1)</sup>	VARs	Objective sampling	Official sampling	food sample		Single	1g	167	0	0	0
Dairy products (excluding cheeses) - Surveillance <sup>2)</sup>	VARs	Objective sampling	Official sampling	food sample		Single	1g	139	0	0	0
Milk, cows' - raw milk - Surveillance <sup>3)</sup>	VARs	Census	Official sampling	food sample		Single	1g	128	1	0	0

  

	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	<i>L. monocytogenes</i> > 100 cfu/g
Cheeses, made from mixed milk from cows, sheep and/or goats - Surveillance <sup>1)</sup>	167	0	0
Dairy products (excluding cheeses) - Surveillance <sup>2)</sup>	139	0	0
Milk, cows' - raw milk - Surveillance <sup>3)</sup>	128	0	1

## Comments:

<sup>1)</sup> n=1<sup>2)</sup> n=1<sup>3)</sup> n=1





Table *Listeria monocytogenes* in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Foodstuffs intended for special nutritional uses - dietary foods for special medical purposes - at retail - Surveillance <sup>1)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25 g	5	0	5	
Bakery products - cakes - at catering - domestic production - Surveillance (filled cakes, deserts and pastry, ready-to-eat) <sup>2)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	200	2	100	1
Crustaceans - unspecified - cooked - chilled - Surveillance <sup>3)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	1g	10	1	0	0
Fish - smoked - Surveillance <sup>4)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	1g	10	0	0	0
Fishery products, unspecified - ready-to-eat - chilled - Surveillance <sup>5)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	1g	20	4	0	0
Foodstuffs intended for special nutritional uses - ready-to-eat - at retail - Surveillance (intended for infants) <sup>6)</sup>	HIRS	Objective sampling	Official sampling	food sample		Batch	25g	10	0	10	
Fruits and vegetables - pre-cut - ready-to-eat - at retail - Surveillance <sup>7)</sup>	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	60	0	30	0
Fruits and vegetables - pre-cut - ready-to-eat - at retail - Surveillance <sup>8)</sup>	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	60	3	30	3
Meat from bovine animals and pig - meat products - Surveillance <sup>9)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	1g	364	16	0	0
Meat from other animal species or not specified - meat preparation - intended to be eaten cooked - chilled - Surveillance <sup>10)</sup>	VARS	Objective sampling	Official sampling	food sample		Single	1g	141	0	0	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled - at retail - Surveillance <sup>11)</sup>	IRSAFF	Objective sampling	Official sampling	food sample		Batch	25g	100	0	50	0

Table *Listeria monocytogenes* in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled - at retail - Surveillance <sup>12)</sup>	IRSAFF	Objective sampling	Official sampling	food sample		Single	25g	200	0	100	0
Ready-to-eat salads - at catering - domestic production - Surveillance <sup>13)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	286	6	143	3
Sauce and dressings - at catering - domestic production - Surveillance (including spreads) <sup>14)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	25g	74	0	37	0

	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	<i>L. monocytogenes</i> > 100 cfu/g
Foodstuffs intended for special nutritional uses - dietary foods for special medical purposes - at retail - Surveillance <sup>1)</sup>			
Bakery products - cakes - at catering - domestic production - Surveillance (filled cakes, deserts and pastry, ready-to-eat) <sup>2)</sup>	100	1	0
Crustaceans - unspecified - cooked - chilled - Surveillance <sup>3)</sup>	10	0	1
Fish - smoked - Surveillance <sup>4)</sup>	10	0	0
Fishery products, unspecified - ready-to-eat - chilled - Surveillance <sup>5)</sup>	20	1	3
Foodstuffs intended for special nutritional uses - ready-to-eat - at retail - Surveillance (intended for infants) <sup>6)</sup>			

Table *Listeria monocytogenes* in other foods

	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	L. monocytogen es > 100 cfu/g
Fruits and vegetables - pre-cut - ready-to-eat - at retail - Surveillance <sup>7)</sup>	30	0	0
Fruits and vegetables - pre-cut - ready-to-eat - at retail - Surveillance <sup>8)</sup>	30	3	0
Meat from bovine animals and pig - meat products - Surveillance <sup>9)</sup>	364	15	1
Meat from other animal species or not specified - meat preparation - intended to be eaten cooked - chilled - Surveillance <sup>10)</sup>	141	0	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled - at retail - Surveillance <sup>11)</sup>	50	0	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled - at retail - Surveillance <sup>12)</sup>	100	0	0
Ready-to-eat salads - at catering - domestic production - Surveillance <sup>13)</sup>	143	3	0
Sauce and dressings - at catering - domestic production - Surveillance (including spreads) <sup>14)</sup>	37	0	0

## Comments:

<sup>1)</sup> ready-to-eat, n=5<sup>2)</sup> n=1<sup>3)</sup> n=1<sup>4)</sup> n=1

Table Listeria monocytogenes in other foods

## Comments:

- 5) n=1
- 6) n=10
- 7) prepacked
- 8) frozen
- 9) n=1
- 10) n=1
- 11) long shelf life foods
- 12) sweet dishes
- 13) ready-to-eat deli dishes, n=1
- 14) ready-to-eat deli dishes, n=1

## 2.3.4 Listeria in animals

### A. L. monocytogenes in animal

#### Monitoring system

##### Sampling strategy

Disease is monitored on the basis of clinical signs and/or detection of listeriosis in other animals at the same holding in accordance with national legislation.

Active monitoring of listeriosis in animals is not performing.

##### Frequency of the sampling

Samples are taken in case of clinical signs.

##### Type of specimen taken

Blood, milk, faetus (abortion), brain tissue.

##### Methods of sampling (description of sampling techniques)

Immediately upon suspicion of disease on the basis of clinical signs and/or detection of listeriosis in other animals in the same holding, the animal owner must immediately inform the authorised veterinary organisation which must submit the animal samples for investigation.

##### Case definition

The disease shall be considered officially confirmed on the basis of the clinical signs and positive bacteriological test results; in the opposite case it shall be considered that the disease has been ruled out.

##### Diagnostic/analytical methods used

Bacteriological method

Isolation and identification: ISO 11290-1

#### Other preventive measures than vaccination in place

Persons, who in carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases. In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP, and record keeping.

#### Control program/mechanisms

##### The control program/strategies in place

National control program is carried out in accordance with:

national Rules on contagious animal disease

- registration or approval of holdings, establishment, transporters, collection centres and dealers, who are subject to veterinary controls
- identification and registration of animals.
- regular official veterinary inspections at the holdings.
- movement of animals accompanied by the prescribed documents.
- veterinary referral form for sick animals and animals from stables with unverified or suspected epizootiological conditions.
- obligated notification between veterinary and public health services in case of zoonoses occurrence in animals or humans.

## Measures in case of the positive findings or single cases

Measures may be introduced after the public health service has notified the veterinary service of an onset of clinical signs of disease in humans. Depending on the nature of disease, or where necessary, VARS and public health service shall conduct the epidemiological and/or epizootiological investigations. Based on the investigation results, VARS may institute the required veterinary measures in animal husbandry, or other necessary measures.

- providing for potable water that is fit for consumption, water for watering, and feed,
- providing for and maintaining the required conditions of hygiene in animal accommodation facilities, and in other premises and installations intended for keeping animals,
- providing for hygiene at parturition and during milking,
- providing for veterinary order in public places intended for animal assembly, in the means of transport intended for the transport of animals, products, raw materials, foodstuffs, waste, and animal feed, in pens, on pastures and in facilities intended for animal assembly, animal slaughter, and for collecting, treating, processing and storing raw materials, products, foodstuffs, waste, and animal feed,
- providing for food safety and for compliance with the veterinary conditions for their production and circulation,
- preventing the introduction of disease agents into animal accommodation facilities,
- implementing veterinary measures in animal accommodation facilities,
- handling dead animal carcasses and other waste, waste waters, animal faeces, and urine in compliance with the required methods,
- providing for preventive disinfection, disinsectisation and deratisation in facilities, on public surfaces and in the means of transport,
- other recovery measures.

## Notification system in place

At the presence of a contagious disease, or signs giving rise to suspicion that an animal has fallen sick or died of a contagious disease, the animal keeper shall immediately notify thereof the veterinary organisation. A veterinary organisation shall notify of disease the relevant VARS Regional Office in cases only, where the diagnostic test results have confirmed the presence of disease. A report on the occurrence of such diseases shall be drawn up on a monthly basis, by day 10 in the month for the previous month, in the electronic form, via VARS Central Information System (CIS VURS-EPI). At a suspected or confirmed presence of disease, the competent public health services shall be notified as well.

## Results of the investigation

Results for 2011:

### CATTLE

Listeriosis was identified in 3 bovine animals on 3 holdings.

### SHEEP/GOATS

Listeriosis was identified in 8 small ruminants on 8 holdings.

## 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

Most notified human E.coli cases are probable pathogenic. From 1990 to 2011 from 51 to 233 cases of all E.coli were notified.

E.coli is the third most common etiological agent of bacterial enteritis in Slovenia ( after Camyplobacter and Salmonella).

Just minor part of all E.coli notifications were confirmed as VTEC infections where VTEC toxins and or genes were positive( up to 25 cases yearly).

HUS is notified usually once yearly, in 2011 there were 5 cases.

The real burden of VTEC infections is probably greater.

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

The real burden of human VTEC infection is not known.

According to notifications of real VTEC cases(laboratory confirmed - VTEC toxin positive and /or vtec genes positive), there were up to 25 confirmed cases yearly in last years. No outbreaks of VTEC were recorded (One EPEC O127 outbreak in a restaurant and one E.coli hydric outbreak were recorded in 2007).

Most human cases are young, vulnerable children.

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

In 2010, 299 bovine feces samples were tested on the presence of five VTEC serogroups (O157, O26, O103, O145 and O111). In three (3) samples one of the following serogroups was identified: O103, O145 and O157.

##### Recent actions taken to control the zoonoses

Surveillance of VTEC should be enhanced - all VTEC "suspected samples" should be sent to laboratory to confirm toxins/genes at least for some population groups.

## 2.4.2 E. coli infections in humans

### A. Verotoxigenic Escherichia coli infections in humans

#### Reporting system in place for the human cases

Human cases of E.coli are notifiable by national Law on Infectious Diseases (Official Gazette number 69/95, revised 33/2006).

Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health.

Local institutes of public health notify disease to Institute of Public Health of R. Slovenia.

HUS notification is not obligatory.

#### Case definition

Case definition of VTEC infections is in line with ECDC standard definitions from 2008.

Laboratory confirmed VTEC cases are cases with E.coli infection which produce V1 and or V2 toxins and have also gen(es) for toxin(s) and other genes.

#### Diagnostic/analytical methods used

Isolation, biochemical tests, O serotyping;

identification of VT1 and VT2 toxins and genes.

#### Notification system in place

Human cases are notifiable by National Law on Infectious Diseases. Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to National Institute of Public Health.

#### History of the disease and/or infection in the country

Real burden of disease is not known.

Notification data for all E.coli: from 1990 to 2011 yearly number of notifications ranged from 51 to 233.

Confirmed VTEC cases were a minor part of them, up to 25 cases.

#### Results of the investigation

According to notifications of laboratory confirmed VTEC cases, VTEC infections are small part of all E.coli infections however the real burden of VTEC infection is not known. In 2011 we recorded 5 HUS / VTEC cases which is the highest number in last years.

No VTEC outbreaks were recorded in last 10 years.

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

In 2010 20 VTEC confirmed cases were recorded; 2 of them were E.coli O157, in 2009 12 ( one of them was O157).

In 2011 25 VTEC cases were recorded; 7 of them were O157.

Sources of infection often remain unknown.

#### Relevance as zoonotic disease

The real burden of infection is not known.

According to notifications of real VTEC (VT1 and VT2 toxins and genes confirmed), the number of notifications is low and infection is not a problem yet. HUS is very rarely reported as well.

The source of infections often remains unclear; possible source is mostly bovine meat.

No outbreaks were recorded in last years (but one outbreak of EPEC O127 in a restaurant and one hydric outbreak of E.coli).





Table Escherichia coli, pathogenic in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochtho n cases	Autochtho n Inc.	Imported cases	Imported Inc.
Escherichia coli, pathogenic	160	7.79	160	7.79	0	0
HUS	5	0.24	5	0.24	0	0
- clinical cases	25	1.2	25	1.2	0	0
- lab. confirmed cases	25	1.2	25	1.2	0	0
- caused by O157 (VT+)	7	0.34	7	0.34	0	0
- caused by other VTEC	18	0.87	18	0.87	0	0
E.coli infect. (except HUS)	20	1	20	1	0	0
- clinical cases	20	1	20	1	0	0
- laboratory confirmed	20	1	20	1	0	0
- caused by O157 (VT+)	7	0.34	7	0.34	0	0
- caused by other VTEC	13	0.6	13	0.6	0	0

Footnote:

There were 25 confirmed cases of VTEC ( not 160 as the total column shows).

Table Escherichia coli, pathogenic in humans - Age distribution

Age distribution	Verotoxigenic E. coli (VTEC)			Verotoxigenic E. coli (VTEC) - VTEC O157:H7			Verotoxigenic E. coli (VTEC) - VTEC non-O157		
	All	M	F	All	M	F	All	F	M
<1 year	7	2	5	0	0	0	7	5	2
1 to 4 years	6	3	3	3	2	1	3	2	1
5 to 14 years	3	1	2	2	1	1	1	1	0
15 to 24 years	2	1	1	0	0	0	2	1	1
25 to 44 years	2	0	2	0	0	0	2	2	0
45 to 64 years	4	2	2	2	1	1	2	1	1
65 years and older	1	1	0	0	0	0	1	0	1
Total :	25	10	15	7	4	3	18	12	6

## 2.4.3 Escherichia coli, pathogenic in foodstuffs

### A. Verotoxigenic E. coli (VTEC) in food

#### Monitoring system

##### Sampling strategy

###### VARs

Monitoring at processing and at retail.

Sampling of minced meat, meat preparations, RTE meat products and raw cows milk for VTEC was conducted in the registered establishments and at retail.

Sampling of shellfishs was conducted at dispatch centres.

Sampling of crustaceans (cooked) was conducted at processing plants.

##### Frequency of the sampling

###### VARs

Sampling was distributed evenly throughout the months: May - December.

The number of samples to be taken had been defined in advance and for every particular VARs Regional Office separately.

##### Type of specimen taken

###### VARs:

- minced meat,
- meat preparations,
- RTE meat products,
- raw milk.

##### Methods of sampling (description of sampling techniques)

###### VARs

A single sample shall be composed of one unit (n=1), and shall weigh at least 200 g (raw milk - at least 300g/ml).

Samples were delivered to the laboratory in the shortest time possible, as a rule, immediately after sampling (in 24 hours after sampling at the latest). In time between sampling and delivery to the laboratory, samples shall be kept at 4°C(+/-2°C).

As precedence dairy products made from raw milk shall be sampled. In cases where business operators produce dairy products using the different types of milk (raw, thermally treated, pasteurised), the dairy products obtained from the raw milk and thermally treated milk shall have precedence in sampling.

##### Definition of positive finding

Positive sample is a sample in which VTEC O157, O103, O145, O26 and/or O111 has been isolated in 25g.

##### Diagnostic/analytical methods used

- PCR multiplex
- real time PCR
- ISO 16654:2001

##### Preventive measures in place

GMP, GHP, HACCP

##### Measures in case of the positive findings or single cases

Informing the owner of the sample and necessary enforcement action in accordance with Commission Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs and Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

#### Notification system in place

The laboratory sends the investigation reports to the VARS Main Office and to the official veterinarian who has conducted the sampling.

#### Results of the investigation

In 2011:

75 samples of RTE meat products, 100 samples of minced meat, 141 samples of meat preparations and 128 raw milk samples were taken.

Two (2) samples of minced meat were found positive. VTEC O103 and O157 (nontoxigenic) were identified, each in one sample.

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

Situation concerning VTEC in concerned food product groups is favourable.

Table VT E. coli in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Analytical Method	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157
Meat from bovine animals and pig - meat preparation - Surveillance <sup>1)</sup>	VARs	Objective sampling	Official sampling	food sample		Real-Time PCR	Single	25g	141	0	
Meat from bovine animals and pig - meat products - Surveillance <sup>2)</sup>	VARs	Objective sampling	Official sampling	food sample		Real-Time PCR	Single	25g	75	0	
Meat from bovine animals and pig - minced meat - intended to be eaten cooked - Surveillance <sup>3)</sup>	VARs	Objective sampling	Official sampling	food sample		Real-Time PCR	Single	25g	100	2	1
Milk, cows' - raw milk - Surveillance <sup>4)</sup>	VARs	Census	Official sampling	food sample		Real-Time PCR	Single	25g	128	0	

	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals and pig - meat preparation - Surveillance <sup>1)</sup>		
Meat from bovine animals and pig - meat products - Surveillance <sup>2)</sup>		
Meat from bovine animals and pig - minced meat - intended to be eaten cooked - Surveillance <sup>3)</sup>	1	0
Milk, cows' - raw milk - Surveillance <sup>4)</sup>		

## Comments:

<sup>1)</sup> n=1<sup>2)</sup> n=1

Table VT E. coli in food

Comments:

<sup>3)</sup> n=1<sup>4)</sup> n=1

## 2.4.4 Escherichia coli, pathogenic in animals

### A. Verotoxigenic Escherichia coli in cattle (bovine animals)

#### Monitoring system

##### Sampling strategy

###### VARS

Sampling is carried out continually throughout the year at approved bovine slaughter establishments where more than 1000 bovine animals per year are slaughtered.

Sampled are animals raised in the Republic of Slovenia only.

A slaughter animal constitutes an epidemiological unit.

Sampling is carried out by the slaughterhouse official veterinarians.

##### Frequency of the sampling

Animals at slaughter (herd based approach)

Sampling distributed evenly throughout the year

##### Type of specimen taken

Animals at slaughter (herd based approach)

Faeces

##### Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

A faeces sample is taken prior to slaughter or a sample of intestinal content is taken after slaughter, upon the evisceration from the intestines, upon the aseptic opening of the intestinal wall, or a tied-up portion of the caecum containing an adequate quantity of faeces is submitted to the laboratory. The sample shall be stored in a sterile bag. At least 50g of faeces shall be taken.

Samples must be delivered to the laboratory in the shortest possible time, as a rule, immediately after sampling (on the same day) or within 24 hours after sampling. In the period from the sampling to the beginning of the analysis the sample material must be stored in a cold place, at the temperature of 4°C (+/- 2°C).

##### Case definition

Animals at slaughter (herd based approach)

Positive animal means an animal, where a positive sample has been taken from.

Positive sample means a 10g faeces sample, where the zoonotic agent has been isolated from.

##### Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

###### a) Molecular methods:

- PCR Multiplex (verotoxin determination)
- Real time PCR (toxic strains determination)

###### b) Bacteriological methods:

- isolation (in accordance with CRL recommendations)
- ISO 16654: 2001



## Control program/mechanisms

### The control program/strategies in place

- Registration and/or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary checks
- Identified and registered animals
- Regular official veterinary checks on holdings
- Movements of animals accompanied by prescribed documents
- Veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation

### Notification system in place

The laboratory sends a copy of the form, together with the copy of the investigation report, to the main office of the VARS (once per month) and the original sampling report to the business operator and, in the event of official sampling, also to the official veterinarian.

VARS Regional Offices must report to VARS Main Office on a monthly basis regarding the monitoring programme implementation and control results.

### Results of the investigation

In 2010, 299 bovine faeces samples were analysed for the presence of the following serogroups of VTEC: O157, O26, O103, O145 and O111. In three (3) samples one of these serogroups were identified. The following serogroups were identified: O103, O145 and O157.

In 2011, sampling in bovine animals was not conducted.

## 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

Registry of TB cases of Slovenia was founded in 1954 and has been functioning since then in Hospital in Golnik.

It is updated regularly. In 1995 it was updated -reorganized according to demands of WHO and Euro TB, later ECDC.

The incidence of all TB cases in recent years is lower than 15 / 100 000 inhabitants.

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

Since year 2000 the annual incidence of TBC in Slovenia was lower than 20/100.000 inhabitants. In 2008 the incidence was 10,6/100.000 inhabitants and in 2009 the incidence was 8,5/100.000 inhabitants in 2010 the incidence was 7,38 /100 000 inhabitants and in 2011 8,43 / 100 000.

Most of the cases are autochthonous, some are imported.

In 2009, there were 57 imported cases of TBC in Slovenia: 36 from Bosnia, 5 from Croatia, 4 from Kosovo, 8 from Serbia, 1 from Montenegro, 1 from Iran, 1 from Nigeria and 1 from Macedonia.

In 2010, there were 41 imported cases; 22 from Bosnia, 4 from Kosovo, 3 from Serbia, 2 from Croatia, 1 case from other countries: Montenegro, Macedonia, Romania, Ukraine, other. In 4 cases there was reactivation of tbc.

Tuberculosis is not a major epidemiological problem.

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

Tbc due to *Mycobacterium bovis* in humans is not relevant as zoonotic disease.

## 2.5.2 Tuberculosis, mycobacterial diseases in humans

### A. Tuberculosis due to Mycobacterium bovis in humans

#### Reporting system in place for the human cases

Registry of TB cases of Slovenia was founded in 1954 and was since then in Hospital in Golnik. In 1995 it was updated -reorganized according to demands of WHO and Euro TB, ECDC.

Registry on TB encounters:

- personal data of TB cases;
- clinical data of TB cases, data on diagnostic procedures, therapy;
- data on antimicrobial resistance;
- data on diagnostics of TB contacts, HIV patients..;

Data on BCG vaccination from 2005 on.

Data on suspected (laboratory unconfirmed) TBC cases are also collated and sent to tbc registry. Further diagnostic procedures are done to confirm new cases. Epidemiological investigations of contacts of suspected cases are also performed.

Data on TB cases in Slovenia are sent to WHO and Euro TB.

#### Case definition

According to ECDC case definition from 2008.

#### Diagnostic/analytical methods used

Mycobacteria are mostly isolated from: (induced) sputum, bronchoscopy, gastric lavage, gastric juice.

Bacteria are rarely confirmed in exudates, liquor, biopsy specimen, blood, bone marrow..

Ziehl-Neelson and Auramin dyes (autofluorescent microscope) are used.

Lowenstein-Jensen solid medium and MGIT Bactec liquid medium are used.

Antimicrobial activity is tested on the same media.

Identification of types is done with combination of microbiological, molecular and biochemical methods.

#### Notification system in place

Reporting system: medical doctors and laboratories are obliged by law to notify the confirmed TB cases within one week to the TB registry in Hospital Golnik.

#### History of the disease and/or infection in the country

Registry of TB cases of Slovenia was founded in 1954 and has been functioning since then in Hospital in Golnik.

It is updated regularly. In 1995 it was updated -reorganized according to demands of WHO and Euro TB. The incidence of all TB cases in recent years is lower than 15 / 100 000 inhabitants.

#### Results of the investigation

In 2006 one case of human infection with Mycobacterium bovis was confirmed, in 2007 two cases.

In 2008, 2009 and in 2010 and 2011 as well, no case of human infection with Mycobacterium bovis was confirmed.

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

Tuberculosis is currently not an epidemiological problem.

Relevance as zoonotic disease

Tbc due to *Mycobacterium bovis* is not relevant as zoonotic disease.

Table Mycobacterium in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Mycobacterium	201	8.97	127	6.19	61	2.98
M. bovis	0	0	0	0	0	0
M. tuberculosis	190	8.43	120	5.85	57	2.78
Reactivation of previous cases	11	0.54	7	0.34	4	0.20

Footnote:

the countries from where tbc was imported: Bosnia, Serbia, Croatia, Montenegro, Romania, Macedonia, Montenegro, China.

Table Mycobacterium in humans - Age distribution

Age distribution	M. bovis		
	All	M	F
<1 year	0	0	0
1 to 4 years	0	0	0
5 to 14 years	0	0	0
15 to 24 years	0	0	0
25 to 44 years	0	0	0
45 to 64 years	0	0	0
65 years and older	0	0	0
Age unknown	0	0	0
Total :	0	0	0

## 2.5.3 Mycobacterium in animals

### A. Mycobacterium bovis in bovine animals

#### Status as officially free of bovine tuberculosis during the reporting year

##### The entire country free

The requirements for the recognition of status of the entire country was fulfilled at the end of 2008. Officially free status of bovine tuberculosis was granted to Slovenia with the Commission Decision 2009/342/EC.

#### Monitoring system

##### Sampling strategy

For OTF status maintenance, all bovine animals older than 6 weeks in three-annual intervals have to be tested.

In 2011, TB testing was performed on all bovine animals older than 6 weeks in 33% of all herds.

Bacteriological examination:

- lungs of cattle older than 30 month in all cases in which the official veterinarian found the signs of pneumonia in a post-mortem examination.

##### Frequency of the sampling

Intradermal tuberculin test:

- interval between routine tuberculin test: three years.

Bacteriological examination:

- lungs of cattle older than 30 month in all cases in which the official veterinarian found the signs of pneumonia in a post-mortem examination.

#### Methods of sampling (description of sampling techniques)

Intradermal TB testing in accordance with Council Directive 64/432/EEC and in accordance with the National Rules on animal diseases;

Samples of lungs in animals older then 30 month with the signs of pneumonia were taken by official veterinarian in slaughterhouses and sent to bacteriological examination to the National veterinary institute in Ljubljana.

#### Case definition

TBC is suspected if:

- weight loss or swelling of lymph nodes are found in animals that cough a lot;
- granulomatic or other changes that lead to the suspicion of TBC are found in the organs of slaughtered or dead animals;
- an inconclusive or positive reaction to intradermal tuberculin test was identified; the intradermal tuberculin test and the assessment of the results are carried out in accordance with the Rules on contagious animal diseases;
- animals came into contact with people or animals suspected to have been infected or are infected with TBC;
- animals are kept at a holding where TBC was found.

TBC is confirmed if M.bovis is isolated.

Status of an officially tuberculosis-free herd shall be withdrawn, when tuberculosis has been confirmed

through the isolation of the agent during laboratory investigation.

#### Diagnostic/analytical methods used

##### INTRADERMAL TB TESTING

Intradermal TB testing is carried out in accordance with Council Directive 64/432/EEC and in accordance with the National Rules on animal diseases.

##### BACTERIOLOGICAL EXAMINATION

*Mycobacterium bovis* shall be confirmed by:

1. direct microscopic examination of smears of suspect tissues (Ziehl-Neelsen staining, auramine-rodamine staining),
2. investigation on cell culture:
  - a. homogenisation, decontamination and concentration of material under examination, cultivation, and selective cell cultures (Lowenstein/Jensen, Stonebrink, Middlebrook 7H10 or 11, MGIT or Middlebrook 7H12),
  - b. cell cultures must be incubated for a minimum of 8 weeks (in the interim, the sediment shall be kept at -20°C),
  - c. isolate determination is carried out on the basis of the physical and biochemical characteristics, and on the basis of the characteristics of the nucleic acids,
  - d. strain typing is possible by the method of spoligotyping or by the RFLP method,
3. detection of the presence of characteristic nucleic acids:
  - a. by the PCR method (AMPLICOR, detection IS6110 or 16s rRNA)
  - b. by the TMA method (GEN-PROBE).

TB diagnostics in live animals is based on tuberculin tests.

Tuberculin tests must be carried out in accordance with the Regulation No. 1226/2002/EC, which is in compliance with the OIE "Manual of standards for diagnostic tests and vaccines, 4th edition, 2000".

Under Regulation No. 1226/2002/EC, the maximum number of contaminated animals may also be determined on the basis of the gamma interferon test, as detailed in the OIE "Manual of standards for diagnostic tests and vaccines, 4th edition, 2000".

In the NVI Laboratory of Bacteriology and Mycology, the methods are used that are indicated under items 1, 4a, b, c and 5 above. NVI Lab. is planning to introduce the typing of the *M. bovis* strains, or to cooperate with the reference laboratories that are carrying it out. At the same time, NVI Lab. intends to follow the new methods in the diagnostics, in particular in the field of confirmation of nucleic acids, and to simultaneously develop new methods on the basis of the quantitative PCR technique.

#### Control program/mechanisms

##### The control program/strategies in place

The disease has been controlled for several years on the basis of the annual order or rules. The programme is carried out in the scope of systematic monitoring and control of diseases in animal populations.

In 2003, all animals older than 6 weeks and all breeding bulls in insemination centres and natural mating were subjected to tuberculin testing. No agent was found. Status: in 2003, 44,276 herds were officially tuberculosis-free. In 2004, all animals older than 6 weeks in herds that obtained the officially tuberculosis-free status in the previous year were subjected to tuberculin testing. At the end of 2004, 99.983% of bovine herds were officially tuberculosis-free, while the tuberculosis-free status was temporarily suspended for 8 herds due to incompliance with the obligation to conduct tests.

Since the annual average of herds has not exceeded 1% in the recent two one-year control periods, the



interval between two regular investigations was extended to two years, which is why cattle was not tuberculin-tested in 2005. In 2006, all animals older than 6 weeks were tuberculin-tested. In addition all samples of lungs with pneumonic changes in animals older than 2 years were bacteriologically examined for presence of *M. bovis* in 2006.

In 2007, tuberculin testing was not carried out. However, according to the Rules on carrying out the systematic monitoring of contagious diseases and vaccination in 2007, the following examination had to be carried out for obtaining the status of an officially tuberculosis-free country:

Samples must be taken for bacteriological examination with the aim of excluding the infection with *Mycobacterium bovis* in all cases in which the official veterinarian found the signs of pneumonia in cattle older than 30 months in a post-mortem examination.

In 2008, TB testing was performed on all bovine animals older than 6 weeks. Also bacteriological examination of lungs of cattle older than 30 months in all cases in which the official veterinarian found the signs of pneumonia in a post-mortem examination.

In 2009, officially free status of bovine tuberculosis was granted to Slovenia.

National control program is carried out in accordance with:

- national Rules on contagious animal disease (rules define the conditions for officially tuberculosis-free bovine herd and officially tuberculosis-free status of the country, TB test procedures and interpretation of results, analytical methods for identification of agent, notification system)
- national Rules on systematic monitoring of animal diseases and vaccination issued every year (rules define the sampling strategy for every year);
- national Rules on measures for detection, prevention and eradication of tuberculosis in bovine animal (rules define the measures in case of suspected presence of TBC and confirmed presence of TBC).

National control program is harmonised with all existing Community legislation on TBC.

Other control mechanisms:

- Registration or approval of holdings, establishment, transporters, collection centres and dealers, who are subject to veterinary controls
- Identification and registration of animals.
- Regular official veterinary inspections at the holdings.
- Movement of animals accompanied by the prescribed documents.
- Veterinary referral form for sick animals and animals from stables with unverified or suspected epizootiological conditions.
- Measures at suspected and confirmed presence of TBC.
- Assessment and conferring of officially tuberculosis-free status.

## Measures in case of the positive findings or single cases

Measures at suspected presence of TBC

At the suspect holding, official control shall be introduced, epizootiological investigation shall be carried out as well as the necessary laboratory tests, and the status of the herd shall be temporarily withdrawn. Furthermore, the following measures shall be ordered:

- prohibition of movement from and to the holding with the exception of the movement to the slaughterhouse where animals are to be slaughtered under official supervision,
- all the animals which have reacted positively to the intradermal tuberculin test must be removed for slaughter under official supervision,
- isolation of animals suspected to have TBC; subject to preliminary heat treatment, the milk of such animals may be used as food for other animals at the holding; the milk of other animals may be used as

- food for humans, provided that it is at least pasteurised in the dairy under official supervision,
- setting up of disinfection barriers at the exit from and entry to the holding and into individual facilities where cattle is kept.

#### Measures at confirmed presence of TBC

Furthermore, the following measures shall be implemented at the infected holding:

- the status of officially TBC-free herd is temporarily suspended;
- isolation of all the animals in which the disease has been identified because or they did not react negatively to tests and which could be infected, as estimated on the basis of the epizootiological data;
- the animals stated in the previous indent shall be slaughtered within 30 days of receiving the results of performed tests under the official supervision;
- prohibited marketing of the products of cattle origin from the infected holding;
- prohibited removal of feed and manure; the manure removed from all the facilities in which cattle is kept must be stored at a location to which the susceptible animals may not access; disinfection of the solid and liquid manure, storage of manure for a period of at least three months. Disinfection shall not be necessary if manure is covered with a layer of uninfected manure or soil.
- cleaning and disinfecting;
- intradermal tuberculin test in all cattle at the holding in accordance with the rules regulating contagious animal diseases;
- other recovery measures.

In animals that have shown positive reaction to intradermal tuberculin test, or when the disease is suspected on the basis of clinical signs or during the pathoanatomical examination, the decision if meat of animal is fit for human consumption shall be assessed in accordance with the provisions of hygiene regulations.

The officially tuberculosis-free status of a herd shall not be restored until the cleaning and disinfection of the premises and equipment has taken place, and until all the remaining animals over six weeks of age have reacted negatively to at least two consecutive intradermal tuberculin tests the first test shall be carried out at least 60 days, and the second test at least 4 months up to a maximum of 12 months, upon culling the last positive reactor.

#### Notification system in place

According to Rules on animal disease the notification of disease is mandatory. In case of a suspected presence of disease, all the necessary steps shall immediately be taken in order to confirm the presence of disease, or to rule out the suspicion thereof. Veterinary administration of the RS officially confirms the presence of the disease.

Natural and legal persons shall immediately notify a Regional Office of VARS or a veterinary organisation in case they establish a threat to animal health or as a consequence thereof to human health, present within the required deadline and free of charge the data on the state of health of the animals, on the safety of animal products and animal feed and on the use of medicinal products and implementation of measures, and enable the verification of the data presented (Veterinary Compliance Criteria Act). When the presence of a disease is suspected the veterinary organisation shall immediately inform the Regional Office of the VARS of the suspected disease.

The designated laboratory shall immediately inform the Regional Office of the VARS on the results of diagnostic test by telephone and by fax or via email.

In case of a primary outbreak of disease in the country, the designated laboratory shall immediately communicate the results of diagnostic test by telephone and by fax or via email to the Main Office of the VARS.

The designated laboratory must report the results of diagnostic test via computer database CIS VURS-EPI.

In the case of a zoonosis, the official veterinarian shall notify of the suspected presence of disease also the competent public health services.

### Results of the investigation

In 2011, TB testing was carried out in 11.691 bovine herds and 148.956 bovine animals. For bacteriological examination 14 samples were sent and all were negative. At the end of 2011, 100% of herds were officially tuberculosis-free.

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

The presence of tuberculosis (*Mycobacterium bovis*) was not confirmed in 2011.

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

In Slovenia, taking into account the results of testing, the possibility of transmission of the disease from animals to humans is negligible.

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

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/432/EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Slovenija	35225	457634	35225	100	0	0	every three years	148956		21	0
Total : <sup>1)</sup>	35225	457634	35225	100	0	0	N.A.	148956	0	21	0

Comments:

<sup>1)</sup> N.A.

## 2.6 BRUCELLOSIS

### 2.6.1 General evaluation of the national situation

#### A. Brucellosis general evaluation

##### History of the disease and/or infection in the country

Human cases of brucellosis are notifiable by National law on infectious diseases (Official Gazette number 33/ 2006).

Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health.

Local institutes of public health notify disease to Institute of Public Health of R. Slovenia.

Brucellosis in Slovenia has been notifiable for more than 50 years.

Human infections were generally alimentary and between 1945 and 1954 549 cases were registered in littoral Slovenia (Slovensko Primorje) alone.

Brucellosis in bovine animals was eliminated in 1961. The disease in goat has been eliminated already in 1955.

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

Human brucellosis has not been considered as epidemiological problem for a long time. The disease may be imported from endemic countries.

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

Source of infection was in most cases milk, cheese, and milk products consumed abroad.

##### Recent actions taken to control the zoonoses

Epidemiological and laboratory investigation of all suspected cases.

##### Suggestions to the Community for the actions to be taken

None, as the disease is not considered as epidemiological problem in Slovenia; otherwise continuation of the existing monitoring programmes.

## 2.6.2 Brucellosis in humans

### A. Brucellosis in humans

#### Reporting system in place for the human cases

Human cases of brucellosis are notifiable by National law on infectious diseases (Official Gazette number 69/1995, revised 33 /2006).

Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health.

Local institutes of public health notify disease to National Institute of Public Health of R. Slovenia.

Brucellosis in Slovenia is notifiable for more than 50 years.

#### Case definition

EC /ECDC case definition from 2008.

#### Diagnostic/analytical methods used

Brucella specific antibody response by the standard agglutination test (SAT), ELISA or equivalent tests.

#### Notification system in place

Human cases are notifiable by national Law on infectious diseases. Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to National Institute of Public Health of R. Slovenia. Notification was introduced after the second world war.

#### History of the disease and/or infection in the country

Caprine-ovine brucellosis in Istria and the Slovenian littoral in the middle of the 20th:

From an epizootiological point of view, the sheep and goat husbandry of Mediterranean Slovenia, Croatian Istria and southeastern Friuli (Isonzo plain) had some important attributes. In the middle of the 20th century more than 5,000 sheep, which were kept and bred in small flocks of between 50 and 150 animals, migrated seasonally to the Isonzo (Soča) plain and western Istria during winter, and to the mountainous inland regions during summer. Both the ovine and caprine *Brucella melitensis* infections started in the 1930's and became panzootic during World War II and the years immediately following it.

Another epidemiologically important feature was the production of cheese from the ewes' milk. Human infections were generally alimentary and between 1945 and 1954 549 cases were registered in littoral Slovenia (Slovensko Primorje) alone.

The Yugoslav eradication programme, which involved the testing of animals and immediate culling of reactors, was a radical one. Where 30 % or more of a flock tested positively, the entire flock was eliminated.

In 1952 brucellosis was eliminated in Slovenia.

The danger of reimportation of disease still exists.

### Results of the investigation

In 2008 and 2009 we identified 2 cases of brucellosis. Both were imported.

In 2010 no human cases were notified, in 2011 one.

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

Human brucellosis in Slovenia has not been considered an epidemiological problem for a long time.

Nevertheless the infection may be imported from endemic countries.

### Relevance as zoonotic disease

Human brucellosis is not considered as epidemiological problem for a long time (more than 20 years).

Table Brucella in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochtho n cases	Autochtho n Inc.	Imported cases	Imported Inc.
Brucella	0	0	0	0	0	0
B. abortus	0	0	0	0	0	0
B. melitensis	0	0	0	0	0	0
B. suis	0	0	0	0	0	0
Occupational cases	0	0	0	0	0	0



Table Brucella in humans - Age distribution

Age distribution	B. abortus			B. melitensis			Brucella spp., unspecified		
	All	M	F	All	M	F	All	M	F
<1 year	0	0	0	0	0	0	0	0	0
1 to 4 years	0	0	0	0	0	0	0	0	0
5 to 14 years	0	0	0	0	0	0	0	0	0
15 to 24 years	0	0	0	0	0	0	0	0	0
25 to 44 years	0	0	0	0	0	0	0	0	0
45 to 64 years	0	0	0	0	0	0	1	1	0
65 years and older	0	0	0	0	0	0	0	0	0
Age unknown	0	0	0	0	0	0	0	0	0
Total :	0	0	0	0	0	0	1	1	0

## 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

Officially free status of bovine brucellosis was granted to Slovenia with the Commission Decision 2007/399/EC.

#### Monitoring system

##### Sampling strategy

In accordance with the provisions of Annex A, point II. A of Council Directive 64/432 to retain the officially brucellosis free status of the country the following sampling scheme has been implemented:

According to the Decree on carrying out the systematic monitoring of contagious diseases and vaccination in 2011, the following examination was carried out:

- all bovine animals older than 24 months in 20% of all herds according to the VARS programme,
- notification of abortions suspected of being due to brucellosis and further investigation by CA.

Samples are taken by veterinarians of the veterinary organisations performing public veterinary service on the basis of concession.

Samples are analysed in NRL. Rose Bengal has been used as a screening test and CFT has been used as a confirmatory test.

#### Frequency of the sampling

Annually.

#### Type of specimen taken

Blood

#### Methods of sampling (description of sampling techniques)

The method used for taking blood samples is aseptic venipuncture. Blood is taken from the jugular vein or tail vein and put into sterile test tubes. Immediately after taking the samples, the test tubes for obtaining the serum are left for some time at room temperature. When the coagulation is completed, the test tube is put into the refrigerator at 4 °C. Blood samples must be kept in a cool environment (cooling bag) during the transport and must be delivered to the analytical laboratory within 48 hours after sampling.

#### Case definition

The disease is suspected if:

- an inconclusive or positive reaction with serological confirmatory test was identified in the framework of regular monitoring. The confirmatory serological test and the assessment of the results are carried out in accordance with the Rules on contagious animal diseases;
- one or more clinical signs appear: abortion, late placenta, infection of testicles and epididymis, arthritis, which could be in causal relationship with other clinical signs;
- animals came into contact with people or animals suspected to have been infected or are infected with Brucellosis.

The disease is confirmed if:

- the agent has been isolated or
- the brucellosis skin test was positive or
- clinical signs have been found and the results of laboratory tests are positive.

Veterinary administration of the RS officially confirm the presence of disease.

#### Diagnostic/analytical methods used

a) Serological methods:

- Rose Bengal (RB) - screening test (OIE Manual, last edition)
- Complement fixation test - confirmatory test (OIE Manual, last edition)
- ELISA

b) Brucellosis skin test

c) Bacteriological method

- Identification of the agent (OIE Manual, last edition)

#### Vaccination policy

Vaccination prohibited.

#### Control program/mechanisms

The control program/strategies in place

National control program is carried out in accordance with:

- Rules on animal disease (rules define the conditions for officially brucellosis free bovine herd and officially brucellosis free status of the country, test procedures and interpretation of results, notification system),
- Decree on systematic monitoring of animal diseases and vaccination issued every year (rules define the sampling strategy for every year),
- Rules on measures for detection, prevention and eradication of brucellosis in bovine animal (rules define the measures in case of suspected and confirmed presence of brucellosis, case definition).

National control program is harmonised with all existing Community legislation on Brucellosis.

Other control mechanisms:

- Registration or approval of holdings, establishment, transporters, collection centres and dealers, who are subject to veterinary controls;
- Identification and registration of animals;
- Regular official veterinary inspections at the holdings;
- Movement of animals accompanied by the prescribed documents;
- Veterinary referral form for sick animals and animals from stables with unverified or suspected epizootiological conditions;
- When the presence of a disease is suspected the veterinary organisation shall immediately inform the Regional Office of the VARS of the suspected disease;
- Mandatory notification of abortus cases in cattle;
- Measures at suspected and confirmed presence of TBC;
- Assessment and conferring of officially brucellosis-free status.

#### Measures in case of the positive findings or single cases

Rules on the detection, prevention and eradication of brucellosis (Ur. l. RS, st. 91/2005, 13/2006)

1. Measures at suspected presence of brucellosis

Measures to be implemented at suspect holding include:

- immediate suspension of officially brucellosis free status of the herd;
- ban on movement on and from the holding in ruminants, pigs and horses with the exception of the movement to the slaughterhouse where animals are to be slaughtered under official supervision;
- the decision if meat of animal is fit for human consumption shall be assessed in accordance with the provisions of hygiene regulations;
- isolation of animals susceptible for the disease;
- milk from those animals can be used for feeding animals on the same holding after heat treated;
- milk from other animals on the holding can be used for human consumption after heat treated (pasteurized) under official supervision in a dairy establishment;
- carrying out of the necessary diagnostic investigations;
- epidemiological investigation;
- setting up of disinfection barriers at the exit from and entry to the holding and into individual facilities where cattle is kept.

## 2. Measures at confirmed presence of brucellosis

Once brucellosis is officially confirmed the following measures are introduced (beside the above mentioned):

- withdrawal of officially brucellosis free status of the herd;
- census of all infected animals on the holding, and animals suspected to be infected;
- ban on trade of the products of animal origin or animal products;
- isolation and slaughter of infected cattle and all cattle suspected to be infected under official supervision;
- cattle has to be slaughtered within 30 days after confirmation of the disease; the decision if meat of animal is fit for human consumption shall be assessed in accordance with the provisions of hygiene regulations.
- harmless disposal of dead and culled animals, aborted fetuses, placentas and ovarian fluids;
- harmless disposal of waste, manure, litter, by which the disease can be transmitted;
- ban of removal of feed and manure; the manure must be stored at a location to which the susceptible animals may not access, for a period of at least three months; disinfection and covering of the manure with a layer of uninfected manure or soil
- cleaning and disinfecting
- other recovery measures

The measures at the infected holding shall remain in force until the status of officially brucellosis-free herd is restored.

The officially brucellosis-free status of the herd may be restored, when all the animals having been in the herd at the time of the outbreak, are removed from the herd, or when all animals in the herd are subjected to examination, and where the results of two consecutive tests carried out in a 60-day interval on all animals older than 12 months are negative, where the first test shall be carried out at least 30 days after the removal of the last infected animal. In case of cows, which had been pregnant at the time of the outbreak of infection, the final test shall be carried out at least 21 days after calving of the last of the cows, which had been pregnant at the time of the outbreak of infection.

## Notification system in place

According to Rules on animal disease the notification of disease is mandatory. In case of a suspected presence of disease, all the necessary steps shall immediately be taken in order to confirm the presence of disease, or to reverse the suspicion thereof. Veterinary administration of the RS officially confirm the presence of disease.

Natural and legal persons shall immediately notify a Regional Office of VARS or a veterinary organisation in case they establish a threat to animal health or as a consequence thereof to human health, present within the required deadline and free of charge the data on the state of health of the animals, on the safety of animal products and animal feed and on the use of medicinal products and implementation of measures and enable the verification of the data presented (Veterinary Compliance Criteria Act).

When the presence of a disease is suspected the veterinary organisation shall immediately inform the Regional Office of the VARS of the suspected disease.

The designated laboratory shall immediately inform the Regional Office of the VARS on the results of diagnostic test by telephone and by fax or via email.

In case of a primary outbreak of disease in the country, the designated laboratory shall immediately communicate the results of diagnostic test by telephone and by fax or via email to the Main Office of the VARS.

The designated laboratory must report the results of diagnostic test via computer database CIS VURS EPI.

In the case of a zoonosis, the official veterinarian shall notify of the suspected presence of disease also the competent public health services.

### Results of the investigation

In 2011, among the 42.797 examined animals (7.289 herds), none was positive. At the end of 2011, 100% of herds were officially brucellosis-free.

No bovine abortions were reported.

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

In Slovenia, taking into account the results of testing, the possibility of transmission of the disease to humans is negligible.

### Additional information

Compulsory notification of abortions suspected of being due to brucellosis in accordance with Council Directive 64/432/EEC.

## B. Brucella melitensis in goats

### Status as officially free of caprine brucellosis during the reporting year

The entire country free

Officially free status of ovine/caprine brucellosis was granted to Slovenia with the Commission Decision 2005/179/EC.

### Monitoring system

#### Sampling strategy

Following the recognition of officially brucellosis (*B. melitensis*) free status, animals have been tested in accordance with Point II.2.i of Annex A of Council Directive 91/68/EEC (5% of the ovine and caprine animals over six months of age).

According to the Decree on carrying out the systematic monitoring of contagious diseases and vaccination in 2011, 5% of sheep and goats older than 6 months was serologically tested for *Brucella melitensis* at the registered holdings with the aim of maintaining the status of officially brucellosis-free country.

Samples were taken by veterinarians of the veterinary organisations performing public veterinary service on the basis of concession.

Rose Bengal has been used as a screening test and CFT has been used as a confirmatory test.

#### Frequency of the sampling

Annually.

#### Type of specimen taken

Blood

#### Methods of sampling (description of sampling techniques)

The method used for taking individual blood samples is aseptic venipuncture. Blood is taken from the jugular vein and put into sterile test tubes. Immediately after taking the samples, the test tubes for obtaining the serum are left for some time at the room temperature. When the coagulation is completed, the test tube is put into the refrigerator at 4 °C. Blood samples must be kept in a cool environment (cooling bag) during the transport and must be delivered to the analytical laboratory within 48 hours after sampling.

#### Case definition

The presence of the disease is officially confirmed or excluded by the VARS on the basis of clinical signs and the results of investigations.

In the event of an epidemic, the VARS officially confirms the presence of the disease on the basis of clinical signs and/or the results of epizootiological inquiries.

#### Diagnostic/analytical methods used

##### a) Serological methods:

- Rose Bengal (RB) - screening test (OIE Manual, last edition)
- Complement fixation test - confirmatory test (OIE Manual, last edition)
- ELISA

##### b) Bacteriological method

- Identification of the agent (OIE Manual, last edition)

### Vaccination policy

Vaccination prohibited.

### Control program/mechanisms

The control program/strategies in place

National control program is carried out in accordance with:

- Rules on contagious animal disease (rules define the conditions for officially brucellosis free ovine/caprine herd and officially brucellosis free status of the country, test procedures and interpretation of results, notification system)
- Decree on systematic monitoring of animal diseases and vaccination issued every year (rules define the sampling strategy for every year)
- Instruction on measures for detection, prevention and eradication of Brucellosis (rules define the measures in case of suspected presence and confirmed presence of disease, case definition).

National control program is harmonised with all existing Community legislation on Brucellosis in ovine/caprine animals.

Other control mechanisms:

- Registration or approval of holdings, establishment, transporters, collection centres and dealers, who are subject to veterinary controls,
- Identification and registration of animals,
- Regular official veterinary inspections at the holdings,
- Movement of animals accompanied by the prescribed documents,
- Veterinary referral form for sick animals and animals from stables with unverified or suspected epizootiological conditions.

## Measures in case of the positive findings or single cases

### 1. Measures at suspected presence of brucellosis

At suspected presence of brucellosis, the veterinary organisation with concession shall immediately confirm or reverse the suspicion, and immediately notify thereof the relevant Regional Office of the VARS, and the NVI. Measures to be implemented at suspect holding include:

- laboratory examination of carcasses and blood samples;
- epidemiological investigation;
- harmless disposal of dead animals;
- quarantine of the infected holding
- census of all animals on the holding, susceptible for the disease, affected, suspected to be infected and dead; census shall be up to date, all newborn animals, and animals died during the infection have to be registered;
- isolation of animals susceptible for the disease,
- ban on movement of susceptible animals inside the holding, taking into account possible vectors of the disease;
- ban on movement on and from the holding;
- ban on movement of all animals and stuff by which the disease can be transmitted;

The same measures can be introduced also for other holdings, which are suspected to be infected.

### 2. Measures at confirmed presence of brucellosis

Once brucellosis is officially confirmed the following measures are introduced (beside the above mentioned):

- ban on trade with animals, animal products, b-products, waste, feeding stuff and all other stuff by which the disease can be transmitted;
- slaughter of infected cattle;
- harmless disposal of dead and culled animals, aborted foetuses, placentas and ovarian fluids;
- harmless disposal of waste, manure, litter, by which the disease can be transmitted;
- testing of all susceptible animals on the holding;
- ban on use of milk from the infected holding;
- ban on use of animals from the infected holding in breeding purposes;

- DDD;

The same measures can be introduced also for other holdings, which are suspected to be infected.

Cessation of disease

It shall be considered that the disease has ceased, when the serological investigation of animals upon three examinations in an interval of 3 months has shown negative results, and when all the prescribed measures have been implemented.

The decision if meat of animal is fit for human consumption shall be assessed in accordance with the provisions of hygiene regulations.

### Notification system in place

According to Rules on animal disease the notification of disease is mandatory. In case of a suspected presence of disease, all the necessary steps shall immediately be taken in order to confirm the presence of disease, or to reverse the suspicion thereof. Veterinary administration of the RS officially confirm the presence of disease.

Natural and legal persons shall immediately notify a Regional Office of VARS or a veterinary organisation in case they establish a threat to animal health or as a consequence thereof to human health, present within the required deadline and free of charge the data on the state of health of the animals, on the safety of animal products and animal feed and on the use of medicinal products and implementation of measures and enable the verification of the data presented (Veterinary Compliance Criteria Act).

When the presence of a disease is suspected the veterinary organisation shall immediately inform the Regional Office of the VARS of the suspected disease.

The designated laboratory shall immediately inform the Regional Office of the VARS on the results of diagnostic test by telephone and by fax or via email.

In case of a primary outbreak of disease in the country, the designated laboratory shall immediately communicate the results of diagnostic test by telephone and by fax or via email to the Main Office of the VARS.

The designated laboratory must report the results of diagnostic test via computer database CIS VURS EPI.

In the case of a zoonosis, the official veterinarian shall notify of the suspected presence of disease also the competent public health services.

### Results of the investigation

In 2011, 3.151 sheep/goats were examined (146 herds), none was positive. At the end of 2011, 100% of herds were officially brucellosis-free.

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

No case of disease has been found since 1951.

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

In Slovenia, taking into account the results of testing, the possibility of transmission of the disease to humans is negligible.

### Additional information



## C. Brucella melitensis in sheep

### Status as officially free of ovine brucellosis during the reporting year

The entire country free

Officially free status of ovine/caprine brucellosis was granted to Slovenia with the Commission Decision 2005/179/EC.

### Monitoring system

#### Sampling strategy

Following the recognition of officially brucellosis (*B. melitensis*) free status, animals have been tested in accordance with Point II.2.i of Annex A of Council Directive 91/ 68/ EEC (5% of the ovine and caprine animals over six months of age).

According to the Decree on carrying out the systematic monitoring of contagious diseases and vaccination in 2011, 5% of sheep and goats older than 6 months was serologically tested for *Brucella melitensis* at the registered holdings with the aim of maintaining the status of officially brucellosis free country.

Samples were taken by veterinarians of the veterinary organisations performing public veterinary service on the basis of concession.

Rose Bengal has been used as a screening test and CFT has been used as a confirmatory test.

#### Frequency of the sampling

Annually.

#### Type of specimen taken

Blood

#### Methods of sampling (description of sampling techniques)

The method used for taking individual blood samples is aseptic venipuncture. Blood is taken from the jugular vein and put into sterile test tubes. Immediately after taking the samples, the test tubes for obtaining the serum are left for some time at the room temperature. When the coagulation is completed, the test tube is put into the refrigerator at 4 °C. Blood samples must be kept in a cool environment (cooling bag) during the transport and must be delivered to the analytical laboratory within 48 hours after sampling.

#### Case definition

The presence of the disease is officially confirmed or excluded by the VARS on the basis of clinical signs and the results of investigations.

In the event of an epidemic, the VARS officially confirms the presence of the disease on the basis of clinical signs and/ or the results of epizootiological inquiries.

#### Diagnostic/analytical methods used

##### a) Serological methods:

- Rose Bengal (RB) - screening test (OIE Manual, last edition)
- Complement fixation test - confirmatory test (OIE Manual, last edition)
- ELISA

##### b) Bacteriological method

- Identification of the agent (OIE Manual, last edition)

### Vaccination policy

Vaccination prohibited.

### Control program/mechanisms

The control program/strategies in place

National control program is carried out in accordance with:

- Rules on contagious animal disease (rules define the conditions for officially brucellosis free ovine/ caprine herd and officially brucellosis free status of the country, test procedures and interpretation of results, notification system)
- Decree on systematic monitoring of animal diseases and vaccination issued every year (rules define the sampling strategy for every year)
- Instruction on measures for detection, prevention and eradication of Brucellosis (rules define the measures in case of suspected presence and confirmed presence of disease, case definition).

National control program is harmonised with all existing Community legislation on Brucellosis in ovine/ caprine animals.

Other control mechanisms:

- Registration or approval of holdings, establishment, transporters, collection centres and dealers, who are subject to veterinary controls
- Identification and registration of animals,
- Regular official veterinary inspections at the holdings,
- Movement of animals accompanied by the prescribed documents,
- Veterinary referral form for sick animals and animals from stables with unverified or suspected epizootiological conditions.

## Measures in case of the positive findings or single cases

### 1. Measures at suspected presence of brucellosis

At suspected presence of brucellosis, the authorised veterinary organisation shall immediately confirm or reverse the suspicion, and immediately notify thereof the relevant Regional Office of the VARS, and the NVI. Measures to be implemented at suspect holding include:

- laboratory examination of carcasses and blood samples;
- epidemiological investigation;
- harmless disposal of dead animals;
- quarantine of the infected holding
- census of all animals on the holding, susceptible for the disease, affected, suspected to be infected and dead; census shall be up to date, all newborn animals, and animals died during the infection have to be registered;
- isolation of animals susceptible for the disease,
- ban on movement of susceptible animals inside the holding, taking into account possible vectors of the disease;
- ban on movement on and from the holding;
- ban on movement of all animals and stuff by which the disease can be transmitted;

The same measures can be introduced also for the holdings, which are suspected to be infected.

### 2. Measures at confirmed presence of brucellosis

Once brucellosis is officially confirmed the following measures are introduced (beside the above mentioned):

- ban on trade with animals, animal products, b-products, waste, feeding stuff and all other stuff by which the disease can be transmitted;
- slaughter of infected cattle;
- harmless disposal of dead and culled animals, aborted fetuses, placentas and ovarian fluids;
- harmless disposal of waste, manure, litter, by which the disease can be transmitted;
- testing of all susceptible animals on the holding;
- ban on use of milk from the infected holding;

- ban on use breeding materials of susceptible animals from the infected holding;
- DDD;

The same measures can be introduced also for the holdings, which are suspected to be infected.

#### Cessation of disease

It shall be considered that the disease has ceased, when the serological investigation of animals upon three examinations in an interval of 3 months has shown negative results, and when all the prescribed measures have been implemented.

The decision if meat of animal is fit for human consumption shall be assessed in accordance with the provisions of hygiene regulations.

### Notification system in place

According to Rules on animal disease the notification of disease is mandatory. In case of a suspected presence of disease, all the necessary steps shall immediately be taken in order to confirm the presence of disease, or to reverse the suspicion thereof. Veterinary administration of the RS officially confirm the presence of disease.

Natural and legal persons shall immediately notify a Regional Office of VARS or a veterinary organisation in case they establish a threat to animal health or as a consequence thereof to human health, present within the required deadline and free of charge the data on the state of health of the animals, on the safety of animal products and animal feed and on the use of medicinal products and implementation of measures and enable the verification of the data presented (Veterinary Compliance Criteria Act).

When the presence of a disease is suspected the veterinary organisation shall immediately inform the Regional Office of the VARS of the suspected disease.

The designated laboratory shall immediately inform the Regional Office of the VARS on the results of diagnostic test by telephone and by fax or via email.

In case of a primary outbreak of disease in the country, the designated laboratory shall immediately communicate the results of diagnostic test by telephone and by fax or via email to the Main Office of the VARS.

The designated laboratory must report the results of diagnostic test via computer database CIS VURS EPI.

In the case of a zoonosis, the official veterinarian shall notify of the suspected presence of disease also the competent public health services.

### Results of the investigation

In 2011, 3.151 sheep/goats were examined (146 herds), none was positive. At the end of 2011, 100% of herds were officially brucellosis-free.

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

No case of disease has been found since 1951.

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

In Slovenia, taking into account the results of testing, the possibility of transmission of the disease to humans is negligible.

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

If present, the row "Total -1" refers to analogous data of the previous year.

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 microbiologically	Number of animals positive microbiologically	Number of suspended herds
Slovenija	7708	155206	7708	100	0	0	146	3151	0	0	0	0	0	0
Total : <sup>1)</sup>	7708	155206	7708	100	0	0	146	3151	0	0	0	0	0	0

Comments:

<sup>1)</sup> N.A.

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

If present, the row "Total -1" refers to analogous data of the previous year.

	Total number of existing bovine		Officially free herds		Infected herds		Surveillance						Investigations of suspect cases								
							Serological tests			Examination of bulk milk			Information about			Epidemiological investigation					
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of suspended herds	Number of positive animals		Number of animals examined microbio logically	Number of animals positive microbio logically
Region																		Sero logically	BST		
Slovenija	35225	457634	35225	100	0	0	7289	42797	0	0	0	0		0	0	2	0	0	0	0	0
Total : <sup>1)</sup>	35225	457634	35225	100	0	0	7289	42797	0	0	0	0	0	0	0	2	0	0	0	0	0

Comments:

<sup>1)</sup> N.A.

## 2.7 YERSINIOSIS

### 2.7.1 General evaluation of the national situation

#### A. Yersinia enterocolitica general evaluation

##### History of the disease and/or infection in the country

Yersiniosis is rarely reported in Slovenia.

From 1990 to 2011 the number of yearly notifications were low (from 16 to 80 notifications).

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

*Yersinia* spp. is notifiable by national Law on Infectious diseases /( Official Gazette 69/95, revised 33/2006). Medical doctors and laboratories notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

From year 2000 to 2010 the number of notified cases was between 16 and 80 ( max incidence was 4/ 100 000). In 2009 there were 27 notifications of human cases, in 2010, 16 and in 2011 also 16.

The source of infections is mostly not known. No outbreaks were detected recently.

## 2.7.2 Yersiniosis in humans

### A. Yersiniosis in humans

#### Reporting system in place for the human cases

Yersinia is notifiable by national Law on Infectious diseases ( Official Gazette 69/95, revised 33/2006). Medical doctors notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

#### Case definition

According to definition of ECDC from 2008.

#### Diagnostic/analytical methods used

Isolation on Cefsulodin-Irgasan-Novobiocin Agar (CIN);  
- identification and confirmation (Gram staining, biochemical tests);  
- serotyping and biotyping;  
- virulence genes detection with PCR.

#### Notification system in place

Yersinia is notifiable by national Law on Infectious diseases ( Official Gazette 69/95). Medical doctors notify cases on daily basis to regional institutes of public health. Regional institutes of public health notify disease to National Institute of Public Health of R. Slovenia.  
Notification since 1977.

#### History of the disease and/or infection in the country

Yersiniosis is rarely reported in Slovenia.  
From 1997 to 2011 the number of yearly notifications were low ( from 16 to 80 notifications).

#### Results of the investigation

Rarely reported human disease. In 2011 16 notifications.  
The source of infections is mostly not known. No outbreaks were detected in last 10 years.

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

The real burden of disease is not known because of underreporting of disease.  
Source of infection is mostly not known.

#### Relevance as zoonotic disease

According to number of notifications a rare zoonosis.

Table Yersinia in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Yersinia	16	.78	16	.78	0	0
Y. enterocolitica	3	0.15	3	0.15	0	0
Y. enterocolitica - O:3	13	0.63	13	0.63	0	0
Y. enterocolitica - O:9	0	0	0	0	0	0



Table Yersinia in humans - Age distribution

Age distribution	Y. enterocolitica			Yersinia spp., unspecified		
	All	M	F	All	M	F
<1 year	0	0	0	0	0	0
1 to 4 years	2	2	0	1	0	1
5 to 14 years	5	4	1	1	1	0
15 to 24 years	3	2	1	0	0	0
25 to 44 years	3	2	1	0	0	0
45 to 64 years	1	1	0	0	0	0
65 years and older	0	0	0	0	0	0
Age unknown	0	0	0	0	0	0
Total :	14	11	3	2	1	1

Table Yersinia in humans - Seasonal distribution

Seasonal Distribution Months	Y. enterocoliti ca	Yersinia spp., unspecifie d
	Cases	Cases
January	1	
February	0	
March	0	
April	2	
May	1	0
June	3	0
July	1	0
August	2	0
September	1	0
October	4	0
November	1	0
December	0	0
not known	0	0
Total :	16	0

## 2.7.3 Yersinia in animals

### A. Yersinia enterocolitica in pigs

#### Monitoring system

##### Sampling strategy

Animals at slaughter (herd based approach)

##### VARs

In 2008 and 2009, monitoring was carried out in all approved slaughterhouses with capacity of the slaughter more than 1000 porcine animals per year (99% of all yearly porcine slaughter). Sampled were animals raised in the Republic of Slovenia only.

Sampling was carried out by the slaughterhouse official veterinarians.

In 2011, monitoring of Yersinia enterocolitica in pigs was not performed.

#### Frequency of the sampling

Animals at slaughter (herd based approach)

Sampling distributed evenly throughout the year

#### Type of specimen taken

Animals at slaughter (herd based approach)

Tonsil swabs.

#### Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

Tonsil swabs shall be taken from three(3) randomly selected pigs immediately after slaughter. A dry swab shall be placed against the tonsil wall, pressing the thumb and the index finger against the soft palate and rotating the swab by 360 degrees. The swab shall be placed in a dry test tube.

Samples must be delivered to the laboratory in the shortest possible time, as a rule, immediately after sampling (on the same day) or within 24 hours after sampling. In exceptional cases (holidays, weekend), the samples can be delivered to the laboratory within 80 hours after sampling. The laboratory must start with the investigation within 24 hours after receiving the material. If samples are delivered to the laboratory within 72 to 80 hours after sampling, samples must be tested immediately after the receipt. In the period from the sampling to the beginning of the analysis, the sampled material must be stored in a cold place, at the temperature of 4°C(+/-2°C) and may not be exposed to light.

#### Case definition

Animals at slaughter (herd based approach)

Isolation of agent from pooled sample of three (3) tonsil swabs (using enrichment method).

#### Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

Bacteriological method: Modified ISO 10273:2003

#### Other preventive measures than vaccination in place

Persons, who in carrying out a registered activity of breeding or production, come into direct contact with animals, must have thorough knowledge in contagious animal diseases, the prevention thereof and

transmissibility to man and in the regulations governing the protection against contagious diseases. In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP and record keeping.

### Control program/mechanisms

#### The control program/strategies in place

The control mechanisms envisages inter alia as follows:

- registration or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary control,
- identified and registered animals,
- regular official veterinary checks on holdings,
- movements of animals accompanied by prescribed documents,
- veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation.

### Notification system in place

Regional Offices must report to VARS Main Office on a monthly basis regarding the monitoring programme implementation.

On monthly basis the laboratory sends the investigation reports to the VARS Main Office and to the official veterinarian who has conducted the sampling.

### Results of the investigation

In 2009, the tonsil swabs from 131 slaughter batches were taken at slaughter establishments. *Yersinia enterocolitica* was detected in 26 samples/slaughter batches (19,8%).

In 2011, monitoring of *Yersinia enterocolitica* in pigs was not performed.

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

Compared the results from 2008 (19,3% positive samples) and 2009 (19,8% positive samples), the percentage of positive tonsil swab samples remains almost the same.

## 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

Human cases are notifiable by National Law on Infectious Diseases (Official Gazette number 33 /2006). Medical doctors are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to National Institute of Public Health of R. Slovenia. Notification since 1977. Trichinellosis is a rare zoonosis in humans. From 1990 to 2011 from 0 to 7 cases annually were recorded. In 2010 no cases were notified while in 2011 one case was notified.

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

Trichinellosis is a rare human disease in Slovenia. No cases were notified in 2004, 2005 and 2007, 2010; there was one case notified in 2006, 2008, 2009 and in 2011.

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

Trichinellosis is a rare human zoonosis in Slovenia.

##### Recent actions taken to control the zoonoses

Control of meat of pigs, horses and game on trichinellosis; surveillance of human cases.

## 2.8.2 Trichinellosis in humans

### A. Trichinellosis in humans

#### Reporting system in place for the human cases

According to Law on Communicable Diseases (Official Gazette 33/2006) human cases are reported by doctors and laboratories on daily basis to local institutes of public health. Local institutes of public health notify disease to National Institute of Public Health.

#### Case definition

According to definition of EC /ECDC from 2008.

#### Diagnostic/analytical methods used

Serological tests, ELISA and Westernblot; parasite cysts in bioptic specimen of skeletal muscle.

#### Notification system in place

Human cases are notifiable by National Law on Infectious Diseases (official Gazette number 33/2006). Medical doctors are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to national Institute of Public Health. Notification since 1977.

#### History of the disease and/or infection in the country

Trichinellosis is a rare zoonosis in Slovenia. From 1990 to 2011 we received from 0 to 7 cases annually. No human cases were recorded in last years. In 2006 and 2008, 2009 and 2011 as well one case was notified.

Most of sporadic cases in last 20 years were infected due to ingestion of imported meat.

In 1989 an outbreak was recorded. 39 people were infected. The source of infection was pork. in the same year there were also 5 sporadic cases.

Another outbreak occurred in 1996, 7 people were infected. The source of infection was pork, imported from Croatia.

In 1992 42-years old man died from encephalitis due to *T. spiralis*.

#### Results of the investigation

Trichinellosis is a rare human disease in Slovenia.

#### Description of the positive cases detected during the reporting year

In 2009 one case was detected where infection was contracted abroad;

In 2010, no human cases were notified.

In 2011 one case was detected.

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

A rare human disease in Slovenia.

#### Relevance as zoonotic disease

In the moment not important as zoonotic disease.

Table Trichinella in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Trichinella	1	.05	1	.05	0	0
Trichinella spp., unspecified	1	0.05	1	0.05	0	0

Table Trichinella in humans - Age distribution

Age distribution	Trichinella spp., unspecified		
	All	M	F
<1 year	0	0	0
1 to 4 years	0	0	0
5 to 14 years	0	0	0
15 to 24 years	0	0	0
25 to 44 years	0	0	0
45 to 64 years	0	0	0
65 years and older	1	0	1
Age unknown	0	0	0
Total :	1	0	1



## 2.8.3 Trichinella in animals

### A. Trichinella in horses

#### Monitoring system

##### Sampling strategy

###### VARS

The presence of *Trichinella* in carcasses is monitored in the framework of mandatory post mortem examination of the animal in approved slaughterhouses.

In the slaughterhouse, systematic testing is carried out for *Trichinella* in all horse carcasses.

The epidemiological unit is the animal. Samples are taken by official veterinarian or official auxiliaries.

##### Frequency of the sampling

Examination of *Trichinella* is carried out on all horses slaughtered at the approved slaughterhouses.

##### Type of specimen taken

Fresh meat: preferable lingual or jaw muscle, otherwise diaphragm, abdominal muscle, front leg muscles or intercostal muscles (if aforementioned muscles are lacking).

##### Methods of sampling (description of sampling techniques)

In accordance with the Commission Regulation (EC) No 2075/ 2005 laying down specific rules on official controls for *Trichinella* in meat, as stipulated in:

- Annex III

##### Case definition

The disease shall be considered officially confirmed by identifying the agent of disease; in the opposite case it shall be considered that the disease has officially been ruled out.

Positive animal - animal where *Trichinella* spp. has been detected.

##### Diagnostic/analytical methods used

Tests for *Trichinella* is carried out in the laboratories within approved slaughterhouses by official veterinarians or official auxiliaries and in designated laboratories according to Regulation of the European Parliament and of the Council (EC) No. 882/ 2004.

Methods used:

- Reference method of detection: Magnetic stirrer method for pooled sample digestion (Annex I, Chapter I of Reg.(EC)No.2075/2005).

- Trichoscopic examination (Annex I, Chapter III of Reg.(EC)No.2075/2005).

In all laboratories within approved slaughterhouses reference method of detection is used.

##### Results of the investigation including the origin of the positive animals

In 2011, 1.773 horses were examined for trichinae. No case of trichinellosis in equidae was confirmed.

##### Control program/mechanisms

###### The control program/strategies in place

Persons, who in carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the

protection against contagious diseases.

In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GHP, and record keeping.

- mandatory testing of all slaughtered equide,
- registration or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary control,
- identified and registered animals,
- regular official veterinary checks on holdings,
- movements of animals accompanied by prescribed documents,
- veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation,
- where the meat is intended for placing on the market it shall be ensured that the fresh horse meat, in case it has not been examined for trichinae, is subjected to freezing process,
- fresh horse meat intended for placing on the market as fresh meat shall be examined for trichinae,
- identification of foodstuffs placed on the market accompanied by prescribed documents,
- obligate informing between veterinary and health service in case of zoonoses occurrence in animals or humans,
- Measures for the detection, prevention and suppression of disease.

### Measures in case of the positive findings or single cases

Meat of the trichinae-infested animals shall be assessed as unfit for human consumption.

Measures may be introduced after the public health service has notified the veterinary service of an onset of clinical signs of disease in humans. Depending on the nature of disease, or where necessary, VARS and public health service shall conduct the epidemiological and/or epizootiological investigations. Based on the investigation results, VARS may institute the required veterinary measures in animal husbandry, or other necessary measures.

### Notification system in place

At the presence of a contagious disease, or signs giving rise to suspicion that an animal has fallen sick or died of a contagious disease, the animal keeper shall immediately notify thereof the veterinary organisation. A veterinary organisation shall within 24 hours notify of disease the relevant VARS Regional Office in cases only, where the diagnostic test results have confirmed the presence of disease. A report on the occurrence of such diseases shall be drawn up on a monthly basis, by day 10 in the month for the previous month, in the electronic form, via VARS Central Information System (CIS VURS-EPI).

At a suspected or confirmed presence of disease, the competent public health services shall be notified as well.

In case of detection of *Trichinella* in laboratories within approved slaughterhouses or designated laboratories according to Regulation of the European Parliament and of the Council (EC)No. 882/2004, official veterinarian or laboratories must enter the data into the CIS EPI application for reporting the disease of animals.

In case of detection of *Trichinella* in the laboratories within veterinarian organisation with concession the organisation must immediately inform Regional office of VARS.

The Main Office of VARS collects the data from Regional Offices of VARS about confirmed cases of trichinelosis within the ante- and post-mortem examinations in slaughterhouses conducted by the official

veterinarians, and applies them in relation to the diagnoses of diseases communicable to man.

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

In Slovenia, no case of trichinellosis in equidae has been confirmed since testing of equide has been carried out.

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

In Slovenia, taking into account the findings in equidae, the possibility of transmission of the disease to humans is negligible.

## B. Trichinella in pigs

### Monitoring system

#### Sampling strategy

##### General

##### VARS

The presence of *Trichinella* in carcasses of pigs is monitored in the framework of mandatory post mortem examination of the animal in approved slaughterhouses or on the tourist farms.

In the approved slaughterhouses, systematic testing is carried out for *Trichinella* in all pig carcasses.

Furthermore, pigs slaughtered on the tourist are tested for the presence of *Trichinella* in the framework of mandatory post mortem examination.

The epidemiological unit is the animal. Samples are taken by official veterinarian.

#### Frequency of the sampling

##### General

All porcine animals slaughtered are subjected to examination for *Trichinella* - either at approved slaughterhouses or at tourist farms. Only testing of pigs slaughtered on the holdings of origin for private domestic consumption is not mandatory.

#### Type of specimen taken

##### General

Fresh meat - diaphragm, jaw muscle, lingual muscle, abdominal muscle, front leg muscles, intercostal muscles or other muscles (if aforementioned muscles are lacking).

In case of trichinoscopic examination both diaphragm pillar are taken.

#### Methods of sampling (description of sampling techniques)

##### General

In accordance with the Commission Regulation (EC)No. 2075/2005 laying down specific rules on official controls for *Trichinella* in meat, as stipulated in:

- Annex I, Chapter I, Point 2

#### Case definition

##### General

The disease shall be considered officially confirmed by identifying the agent of disease; in the opposite case it shall be considered that the disease has officially been ruled out.

Positive animal - animal where *Trichinella* spp. has been detected.

#### Diagnostic/analytical methods used

##### General

Tests for *Trichinella* is carried out in designated laboratories according to Regulation of the European Parliament and of the Council No. 882/2004.

Method used:

Reference method of detection: Magnetic stirrer method for pooled sample digestion (Annex I, Chapter I of Reg.(EC) No.2075/2005),

### Preventive measures in place

Persons, who in carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases.

In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GHP, and record keeping.

### Control program/mechanisms

The control program/strategies in place

- Mandatory testing of all slaughtered pigs,
- Registration or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary control,
- Identified and registered animals,
- Regular official veterinary checks on holdings,
- Movements of animals accompanied by prescribed documents,
- Veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation,
- Holder of a tourist farm activity shall at least 48 hours prior to slaughtering porcine animals notify an official veterinarian of the relevant Regional Office of VARS, who shall carry out the ante-mortem examination of animals prior to slaughter and a post-mortem examination of the meat upon slaughter. Business operator is obligated to assure the trichoscopic examination of the porcine meat,
- Where the meat is intended for placing on the market it shall be ensured that the fresh porcine, in case it has not been examined for trichinae, is subjected to freezing process,
- Fresh porcine meat intended for placing on the market as fresh meat shall be examined for trichinae,
- Identification of foodstuffs placed on the market accompanied by prescribed documents,
- Obligate informing between veterinary and health service in case of zoonoses occurrence in animals or humans,
- Measures for the detection, prevention and suppression of disease.

### Measures in case of the positive findings or single cases

Meat of the trichinae-infested animals shall be assessed as unfit for human consumption.

Measures may be introduced after the public health service has notified the veterinary service of an onset of clinical signs of disease in humans. Depending on the nature of disease, or where necessary, VARS and public health service shall conduct the epidemiological and/or epizootiological investigations. Based on the investigation results, VARS may institute the required veterinary measures in animal husbandry, or other necessary measures.

### Notification system in place

At the presence of a contagious disease, or signs giving rise to suspicion that an animal has fallen sick or died of a contagious disease, the animal keeper shall immediately notify thereof the veterinary organisation. A veterinary organisation shall within 24 hours notify of disease the relevant VARS Regional Office in cases only, where the diagnostic test results have confirmed the presence of disease. A report

on the occurrence of such diseases shall be drawn up on a monthly basis, by day 10 in the month for the previous month, in the electronic form, via VARS Central Information System (CIS VURS-EPI).

At a suspected or confirmed presence of disease, the competent public health services shall be notified as well.

In case of detection of *Trichinella* in designated laboratories according to Regulation of the European Parliament and of the Council (EC)No. 882/2004, official veterinarian or laboratories must enter the data into the CIS EPI application for reporting the disease of animals.

In case of detection of *Trichinella* in the laboratories within veterinarian organisation with concession the organisation must immediately inform Regional office of VARS.

The Main Office of VARS collects the data from Regional Offices of VARS about confirmed cases of trichinellosis within the ante- and post-mortem examinations in slaughterhouses and on tourist farms conducted by the official veterinarians, and applies them in relation to the diagnoses of diseases communicable to man.

#### Results of the investigation including description of the positive cases and the verification of the *Trichinella* species

In 2011, 279.485 pigs slaughtered in slaughterhouses and 568 pigs slaughtered on tourist farms were examined for trichinae. No case of trichinellosis in porcine animals was confirmed.

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

The last case of trichinellosis was confirmed in 1989. According to data, the positive animal was not of Slovenian origin. Since 1989 *Trichinella* haven't been detected in pigs.

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

In Slovenia, taking into account the results of testing in pigs, the possibility of transmission of the disease to humans is negligible.

## C. Trichinella spp., unspecified in animal - Wild animals

### Monitoring system

#### Sampling strategy

##### VARs

The presence of *Trichinella* in carcasses is monitored in the framework of mandatory post mortem examination of the animal in game handling establishments or game collection centres.

Wild boars and other wild game susceptible for trichinella infection is tested for the presence of trichinella in the game handling establishments as part of mandatory post mortem examination.

Small quantities of wild game meat that the game collection centre supplies to local retailers which sell it directly to the final consumers is tested for trichinella in the collection centre as part of mandatory post mortem examination.

The game collection centre for wild game must ensure testing for *Trichinella* in wild game which are in small quantities supplied directly to the final consumer.

If farmed game is slaughtered in the slaughterhouse systematic testing for *Trichinella* is carried out in the framework of mandatory post mortem examination.

The epidemiological unit is the animal.

Samples are taken by official veterinarian if animals are tested as part of mandatory post mortem examination. In case when game collection centre supplies small quantities directly to the final consumer the samples are taken by the food business operators responsible for game collection centres.

#### Frequency of the sampling

Compulsory is the examination of wild boars and other farmed or wild game, which may be carriers of trichinae and the meat whereof is intended for public consumption.

Examination for *Trichinella* is mandatory in all wild boars or other farmed and wild game susceptible to trichinella infection delivered in the game handling establishment. Examination is also mandatory for wild game which are directly supplied to the final consumer or local retail which supply the meat directly to the final consumer.

Only testing of wild animals intended for private domestic consumption of hunters is not mandatory.

#### Type of specimen taken

Fresh meat: diaphragm, lingual muscle, jaw muscle, abdominal muscles, intercostal muscles or front leg muscles, as appropriate.

#### Methods of sampling (description of sampling techniques)

In accordance with the Commission Regulation (EC) No. 2075/2005 laying down specific rules on official controls for *Trichinella* in meat, as stipulated in:

- Annex I, Chapter III, Point 2
- Annex III

#### Case definition

The disease shall be considered officially confirmed by identifying the agent of disease; in the opposite case it shall be considered that the disease has officially been ruled out. Positive animal - animal where *Trichinella* spp. has been detected.

#### Diagnostic/analytical methods used

If samples are taken by official veterinarian examination for *Trichinella* is carried out in designated

laboratories according to Regulation of the European Parliament and of the Council (EC) No. 882/2004. In case samples are taken by the food business operators responsible for game collection centres (for game which is directly supplied to the final consumer or game intended for private domestic consumption of hunters) examination for *Trichinella* is carried out in laboratories within veterinary organisation with concession or in designated laboratories according to Regulation of the European Parliament and of the Council (EC) No. 882/2004.

Method used:

Reference method of detection: Magnetic stirrer method for pooled sample digestion (Annex I, Chapter I of Reg.(EC) No.2075/2005),

### Preventive measures in place

Persons, who are hunting wild animals for placing on the market for public consumption, shall have the required knowledge of wild animal pathology and of the production and processing of wild game meat after hunting so as to be able to conduct the on-the-spot preliminary examination of wild game.

### Control program/mechanisms

The control program/strategies in place

Mandatory examination for *Trichinella* of all carcasses of wild and farmed game susceptible for trichinella infection which are intended for placing on the market for human consumption.

VARs shall conduct surveillance of possible contagious diseases occurring in particular hunting grounds.

In case of detection of a contagious disease, measures depending on the type of disease shall be taken.

### Measures in case of the positive findings or single cases

Meat of the trichinae-infested animals shall be assessed as unfit for human consumption.

### Notification system in place

In case of detection of *Trichinella* designated laboratories according to Regulation of the European Parliament and of the Council (EC) No. 882/2004 laboratories must enter the data on the positive result into the CIS EPI application for reporting the disease of animals.

In case of detection of *Trichinella* in the laboratories within veterinarian organisation with concession the organisation must immediately (in 24 hours at the latest) inform Regional office of VARs.

VARs shall inform also the competent public health service of confirmed presence of the disease.

### Results of the investigation including the origin of the positive animals

In 2011, 817 wild boars, 1,212 foxes and 15 bears were examined for the presence of *Trichinella*.

Four (4) cases of trichinellosis in fox were confirmed.

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

In 1998, a single positive case was detected in a wild animal. No positive cases were detected in the period 1999-2003. In 2004, trichinellosis was detected in one (1) wild boar, the same as in 2006, 2008 and 2009.

In 2005 and 2007, no positive cases were detected in wild game used for human consumption.



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

In Slovenia, taking into account the findings in animals, the possibility of transmission of the disease to humans is negligible.

Table Trichinella in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Solipeds, domestic - horses - at slaughterhouse - Surveillance	VARs	Census	Official and industry sampling	animal sample > organ/tissue		Animal	1773	0		
Wild boars - wild - Surveillance	VARs	Census	Official and industry sampling	animal sample > organ/tissue		Animal	817	0		
Bears - Surveillance	VARs	Census	Official and industry sampling	animal sample > organ/tissue		Animal	15	0		
Foxes - Monitoring	VARs	Unspecified	Official and industry sampling	animal sample > organ/tissue		Animal	1212	4	0	4
Pigs - mixed herds - unspecified	VARs	Census	Official and industry sampling	animal sample > organ/tissue		Animal	280053	0		

## 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

According to notifications it is a rare disease in Slovenia. From 1990 to 2010 0 to 9 human cases were notified annually.

Hydatid cysts are detected from time to time by the compulsory post-mortem examinations at slaughterhouses.

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

According to number of notifications a rare zoonosis. From 2005 to 2011, 3 to 9 human cases were notified.

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

Infections are mostly imported.

## 2.9.2 Echinococcosis in humans

### A. Echinococcus spp. in humans

#### Reporting system in place for the human cases

Human cases are notifiable by national Law on Infectious Diseases (Official Gazette 69/95, revised 33/2006). Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

#### Case definition

According to definition of EC /ECDC from 2008.

#### Diagnostic/analytical methods used

Serology (ELISA etc); detection of Echinococcus nucleic acid in clin. specimen; ultrasonography, Rtg, CT, MRI, other.

#### Notification system in place

Human cases are notifiable by national Law on Infectious Diseases, Official Gazette 33/2006. Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

#### History of the disease and/or infection in the country

According to notifications it is a rare disease in Slovenia. From 1990 to 2011 0 to 9 cases were notified annually.

Most of cases in last years were imported.

#### Animals

Hydatid cysts are detected from time to time by the compulsory ante- and post-mortem examinations at slaughterhouses.

#### Results of the investigation

From 2005 to 2011 there were 3 to 9 notifications yearly. Many cases were probably infected abroad.

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

A rare disease. Most infections are imported.

#### Relevance as zoonotic disease

Currently not important.

Table Echinococcus in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Echinococcus	8	.39	8	.39	0	0
E. granulosus	2	0.10	2	0.10	0	0
E. multilocularis	0	0	0	0	0	0
Echinococcus spp., unspecified	6	0.29	6	0.29	0	0

Table Echinococcus in humans - Age distribution

Age distribution	E. granulosus			E. multilocularis			Echinococcus spp., unspecified		
	All	M	F	All	M	F	All	M	F
<1 year	0	0	0	0	0	0	0	0	0
1 to 4 years	0	0	0	0	0	0	0	0	0
5 to 14 years	0	0	0	0	0	0	1	1	0
15 to 24 years	0	0	0	0	0	0	1	0	1
25 to 44 years	1	1	0	0	0	0	3	1	2
45 to 64 years	1	0	1	0	0	0	1	1	0
65 years and older	0	0	0	0	0	0	0	0	0
Age unknown	0	0	0	0	0	0	0	0	0
Total :	2	1	1	0	0	0	6	3	3

## 2.9.3 Echinococcus in animals

### A. E. granulosus in animal

#### Monitoring system

##### Sampling strategy

###### VARs

Monitored are all slaughter animals, farmed and wild game intended for human consumption.

Slaughter animals and farmed game were examined by the official veterinarians at slaughterhouses within the scope of the compulsory veterinary post-mortem examination.

Animals slaughtered on tourist farms (pigs, sheeps, goats, farmed game) were examined by the official veterinarians within the scope of the compulsory veterinary post-mortem examination.

Post-mortem examination of wild game shall be conducted on the spot after killing by a qualified person, or by an official veterinarian in the wild game processing house or in wild game collecting centre in cases, where the non-eviscerated wild game carcasses are submitted to the establishment.

An animal constitutes an epidemiological unit.

##### Frequency of the sampling

Post-mortem examination of all animals and/or meat and organs upon slaughter or killing.

##### Type of specimen taken

Organs with hydatid cysts.

##### Methods of sampling (description of sampling techniques)

Visual examination of the slaughtered/killed animal and its organs, and palpation of the liver.

##### Case definition

Echinococcosis is the disease of pigs, small ruminants, bovines, equidae, and some wild game species, in which the presence of hydatid cysts in the liver, the lungs and some other organs is detected, and the causative agent is confirmed by laboratory testing.

Using laboratory microscopy specific structures in the hydatid cysts must be observed or the presence of characteristic antibodies must be determined by serology.

##### Diagnostic/analytical methods used

Macroscopic (visual) examination of organs and laboratory parasitological identification of the agent.

##### Other preventive measures than vaccination in place

Persons, who in carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases.

Persons involved in hunting wild game for placing on the market for human consumption shall have sufficient knowledge in the field of wild game pathology and wild game meat processing so as to be in a position to conduct the preliminary inspection on the spot after killing. All the persons conducting wild game preliminary inspection after killing shall be qualified in compliance with the regulation governing the

method of training of hunters in the preliminary inspection of killed wild game.

In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GHP, and record keeping.

Systematic dehelminthisation of dogs along with anti-rabies vaccination.

## Control program/mechanisms

### The control program/strategies in place

- Registration or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary control
- Identified and registered animals,
- Regular official veterinary checks on holdings,
- Movements of animals accompanied by prescribed documents,
- Veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation,
- Obligatory post-mortem examination after slaughtering/killing-visual, palpation,
- Holder of a tourist farm activity shall at least 48 hours prior to slaughtering animals notify an official veterinarian of the relevant Regional Office of VARS, who shall carry out the ante-mortem examination of animals prior to slaughter and a post-mortem examination of the meat upon slaughter,
- The meat and/or wild game may be placed on the market after the slaughtered/killed animals have visually been inspected by the official veterinarian, or by a hunter acting as the veterinary auxiliary and supervised by the official veterinarian,
- Harmless disposal of organs with hydatid cysts,
- Measures for the detection, prevention and suppression of the disease,
- Measures at the onset of disease in humans.

### Measures in case of the positive findings or single cases

Harmless disposal of organs with hydatid cysts.

Measures may be introduced after the public health service has notified the veterinary service of an onset of clinical signs of disease in humans. Depending on the nature of disease, or where necessary, VARS and public health service shall conduct the epidemiological and/or epizootiological investigations. Based on the investigation results, VARS may institute the required veterinary measures in animal husbandry, or other necessary measures.

### Notification system in place

At the presence of a contagious disease, or signs giving rise to suspicion that an animal has fallen sick or died of a contagious disease, the animal keeper shall immediately notify thereof the veterinary organisation. A veterinary organisation shall notify of disease the relevant VARS Regional Office in cases only, where the diagnostic test results have confirmed the presence of disease. A report on the occurrence of such diseases shall be drawn up on a monthly basis, by day 10 in the month for the previous month, in the electronic form, via VARS Central Information System (CIS VURS-EPI). At a suspected or confirmed presence of disease, the competent public health services shall be notified as well.

The authorised laboratory submits the diagnostic test results to the relevant Regional Office of VARS, and to the consigner of samples.

The Main Office of VARS collects the results of ante- and post-mortem examinations conducted by the official veterinarians, , and applies them in relation to the diagnoses of diseases communicable to man.



## Results of the investigation

### 1. AT SLAUGHTERHOUSE

In 2011, *Echinococcus granulosus* was detected in bovine animals in 6 cases (0,004%) out of 122.374 bovine animals examined, and in porcine animals in 2 cases (0,0007%) out of 279.698 porcine animals examined.

No *E. granulosus* was detected in the slaughtered small ruminants (out of 10.072 examined) neither in slaughtered horses (out of 1.773 examined).

### 2. ON TOURIST FARM

On tourist farms were in 2011, 598 animals slaughtered: 368 porcine animals (15 piglets, 553 fattening pigs) and 30 lambs. *Echinococcus granulosus* was not detected.

### 3. AT GAME COLLECTION CENTRE

*E. granulosus* was not detected in any of the wild animals, whose internal organs were inspected by official veterinarians in the wild game collection centres.

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

The percentage of positive cases of *E. granulosus* in animals remains relatively low and therefore, the situation is assessed as favourable.

Table Echinococcus in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis
Cattle (bovine animals) - at slaughterhouse - Surveillance	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		122374	6	6	0
Sheep - at slaughterhouse - Surveillance	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		9537	0		
Goats - at slaughterhouse - Surveillance	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		535	0		
Pigs - at slaughterhouse - Surveillance	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		279698	2	2	0
Solipeds, domestic - horses - at slaughterhouse - Surveillance	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		1773	0		
Reindeers - at slaughterhouse - Surveillance	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		9	0		
Deer - wild - roe deer - at game handling establishment	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		53	0		
Pigs - fattening pigs - at farm	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		568	0		
Reindeers - wild - at game handling establishment	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		19	0		
Sheep - at farm	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		30	0		
Wild boars - wild - at game handling establishment	VARs	Census	Official sampling	animal sample > organ/tissue		Animal		3	0		

Table Echinococcus in animals

	Echinococcus spp., unspecified
Cattle (bovine animals) - at slaughterhouse - Surveillance	0
Sheep - at slaughterhouse - Surveillance	
Goats - at slaughterhouse - Surveillance	
Pigs - at slaughterhouse - Surveillance	0
Solipeds, domestic - horses - at slaughterhouse - Surveillance	
Reindeers - at slaughterhouse - Surveillance	
Deer - wild - roe deer - at game handling establishment	
Pigs - fattening pigs - at farm	
Reindeers - wild - at game handling establishment	
Sheep - at farm	
Wild boars - wild - at game handling establishment	

## 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

From 1990 to 2011 we received from 9 to 34 notifications of human disease annually.

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

In 2010 there were recorded 10 notifications of human disease in 2011 20.

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

-

##### Recent actions taken to control the zoonoses

Notification system, screening of pregnant women on routine basis.

## 2.10.2 Toxoplasmosis in humans

### A. Toxoplasmosis in humans

#### Reporting system in place for the human cases

Human cases are notifiable by national Law on Infectious Diseases. Medical doctors, laboratories are obliged to notify cases on daily basis to regional institutes of public health. Regional institutes of public health notify disease to Institute of Public Health of R. Slovenia. Notification since 1977.

#### Case definition

According to EC /ECDC from 2008.

#### Diagnostic/analytical methods used

Toxoplasma is identified in laboratory of Medical Faculty in Ljubljana, in Laboratory of Institute for Transfusion medicine and in some laboratories in Institutes of Public Health.

Methods used are:

Serology: detection of IgG, IgM, IgA with EIA (Abott);  
avidity of Ig (Biorat Platelia);  
isolation;  
PCR.

#### Notification system in place

Human cases are notifiable by national Law on Infectious Diseases (Official Gazette 69/95, revised 33/2006). Medical doctors, laboratories are obliged to notify cases on daily basis to regional institutes of public health. Regional institutes of public health notify disease to National Institute of Public Health of R. Slovenia. Notification since 1977.

#### History of the disease and/or infection in the country

From 1990 to 2011 from 9 to 38 human cases were reported.

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

Toxoplasmosis is according to notifications a rare zoonosis in Slovenia.

#### Relevance as zoonotic disease

Important for some population groups- on example pregnant women. Screening during pregnancy is obligatory according to Law and is implemented routinely.

Table Toxoplasma in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.
Toxoplasma	21	1.02
Toxoplasma spp., unspecified	21	1.02
Congenital cases	0	0

Table Toxoplasma in humans - Age distribution

Age distribution	Toxoplasma spp., unspecified		
	All	M	F
<1 year	0	0	0
1 to 4 years	0	0	0
5 to 14 years	1	0	1
15 to 24 years	5	2	3
25 to 44 years	10	1	9
45 to 64 years	4	0	4
65 years and older	0	0	0
Age unknown	0	0	0
Total :	20	3	17

## 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

From 1946 to 1950 13 human rabies cases-deaths were recorded. Since 1950 no human cases have been notified in Slovenia.

Dog-mediated rabies was eradicated soon after World War II, when compulsory vaccination of dogs against rabies came into force (1947). Since that time all dogs in Slovenia are compulsorily vaccinated against rabies.

Wildlife-mediated rabies has been present since 1973, when the first rabid animal (red fox) was detected in the NW of Slovenia. It had progressively spread through the territory of the municipalities of Murska Sobota and Lendava, but it has never crossed the natural barrier of the Mura River.

The second wave of sylvatic rabies reached Slovenia in 1979 from Austria. From there it has been spread throughout the country and has persisted until the present.

Due to the inconvenient epizootiological situation regarding rabies in the 1980-ies, the Veterinary Administration decided to implement the oral vaccination of foxes against rabies. In 1988, when the pilot project of the manual distribution of baits (so-called T bingen Model with the SAD type) was started, vaccination was conducted in a small part of Slovenia only. Thereafter, two vaccination campaigns (in spring and autumn) were performed as the strategy of pushing rabies from west to east. At that time, 40,000 to 60,000 baits were distributed in each campaign in a rate of 16 to 20 baits per km<sup>2</sup>. In a few years that followed, the whole territory of Slovenia was covered three times. It was found that if only a certain region was covered at one time, the success rate was poor.

And this was the reason that in 1995, we started with a new strategy to combat rabies. The aircraft distribution of baits has been performed twice per year - spring and autumn. The GPS was used to support bait distribution and is still used today as a prevailing strategy. Each year, 640,000 baits were deposited (320,000 per campaign, 20 baits/km<sup>2</sup>). The follow up investigations such as anti-body and marker investigations, have been carried out. Specific software has been developed in order to analyse data received from the computer (connected to the GPS). The results of new strategy were very encouraging. The number of rabies cases decreased from 1089 (996 foxes) in 1995 to only few per year recently. All cases were detected near the border with Croatia.

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

No human cases were recorded after 1950.

In 2004, only two(2) positive animals (foxes) were detected. Both cases were on the SE border.

In 2005, two(2) rabies cases on the border of vaccination area were detected. Emergency vaccination in 30 km radius around this two outbreaks and taking into account the natural barriers was carried out. With emergency vaccination we tried to avoid the spread of the disease outside the vaccination area.

The third case was detected in May in municipality Ilirska Bistrica on the border region with Croatia.

In 2006, 1.896 (1.645 foxes) animals were tested on rabies. Two(2) rabid foxes were detected near the border with Croatia.

In 2007, 2.075 animals were subjected to tests, whereof three 3 animals (all foxes) tested positive for rabies.

Due to the immense infection pressure from neighbouring country, the number of rabies cases in 2008



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increased to 55 (51 foxes, 2 badgers, 1 horse, 1 dog).

In 2009, 2.809 animals were subjected to tests, whereof 1 cattle and 33 foxes were tested positive for rabies.

In 2010, 2.590 animals were tested and 16 (15 foxes and 1 cattle) were positive. All cases in recent years have been detected near the border with Croatia.

In 2011, 2.229 animals were tested and there were no positive cases.

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

Epizootic situation improved since introduction of vaccination of wild animals.

There is possibility of importation of human cases from endemic countries in spite of the fact, that preexposure vaccination is available for foreign travellers.

### Recent actions taken to control the zoonoses

Ongoing oral vaccination of foxes twice yearly, monitoring of animals, vaccination of animals, post and preexposure vaccination of people. Informing and advising travellers to endemic countries.

## 2.11.2 Rabies in humans

### A. Rabies in humans

#### Reporting system in place for the human cases

Rabies cases are notifiable by national Law on Infectious Diseases ( Official Gazette 33/2006). Medical doctors, laboratories are obliged to notify cases on daily basis to local institutes of public health. Local institutes of public health notify disease to National Institute of Public Health.  
No human cases in Slovenia since 1950.

#### Case definition

According to standard definition EC /ECDC from 2008.

#### Diagnostic/analytical methods used

Virologic laboratory of Veterinary Faculty in Ljubljana uses methods:

- serology (neutralisation test);
- isolation on cell cultures, also mice neuroblasts;
- direct imunofluorescent test, imunohistochemistry RT-PCR.

#### Notification system in place

Rabies cases are notifiable by national Law on Infectious Diseases, Official Gazette 33/2006. ( Official Gazette 69/95, revised 33/2006). Medical doctors are obliged to notify cases on daily basis to regional institutes of public health. Regional institutes of public health notify disease to National Institute of Public Health. Notification since second World War.

#### History of the disease and/or infection in the country

From 1946 to 1950 13 human rabies cases-deaths were recorded. Since 1950 no human cases have been notified in Slovenia.  
There were no human and animal cases from 1950 to 1973.  
From 1973 to 1988 rabies spread among wild animals in all regions of Slovenia. In 1988 vaccination campaign of wild animals started and continued in 1995 and last years.

#### Results of the investigation

Epizootic situation improved since the start of vaccination of wild animals.

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

Epizootic situation improved since introduction of vaccination of wild animals; no human cases were recorded after 1950.  
(There is possibility of importation of human cases).

#### Relevance as zoonotic disease

In Slovenia postexposure prophylaxis of injured persons after bite or injury, caused by unknown wild or domestic animal, is defined by law.  
Preexposure prophylaxis is obligatory by law as well for persons, potentially exposed to infection during work.

Preexposure prophylaxis is also available for travellers to endemic countries.  
Surveillance of epizootic situation goes on.

### 2.11.3 Lyssavirus (rabies) in animals

#### A. Rabies in dogs

##### Monitoring system

###### Methods of sampling (description of sampling techniques)

In case of suspicion of disease and if animal dies due to condition which involves signs of neurological disease, head or whole body must be sent for testing. Samples are sent to National veterinary institute by veterinarian organisation.

For the purposes of rabies confirmation, the direct Immunofluorescence Test (FAT), virus isolation and determination of virus isolates are used.

###### Diagnostic/analytical methods used

FAT, virus isolation and determination of virus isolates.

##### Vaccination policy

Compulsorily vaccination of all dogs older than 3 months and re-vaccination every 12 month with inactivated vaccines.

##### Control program/mechanisms

###### The control program/strategies in place

- identification and registration of dogs
- compulsory vaccination of dogs
- measures in case of suspicion of disease

##### Notification system in place

According to Rules on animal disease the notification of disease is mandatory. In case of a suspected presence of disease, all the necessary steps shall immediately be taken in order to confirm the presence of disease, or to reverse the suspicion thereof. Veterinary administration of the RS officially confirm the presence of disease.

When the presence of a rabies is suspected the veterinary organisation shall immediately inform the Regional Office of the VARS of the suspected disease.

The designated laboratory shall immediately inform the Regional Office of the VARS on the results of diagnostic test by telephone and by fax or via email.

The designates laboratory must report the results of diagnostic test via computer database CIS VURS EPI.

In the case of a zoonosis, the official veterinarian shall notify of the suspected presence of disease also the competent public health services.

##### Results of the investigation

In 2011, 91 dogs/cats were tested. None was positive.

##### Additional information

Dog-mediated rabies was eradicated soon after World War II, when compulsory vaccination of dogs against rabies came into force (1947). Since that time all dogs in Slovenia are compulsorily vaccinated against rabies.



Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Cattle (bovine animals)	VARs			animal sample > brain		Animal	Slovenija	17	0	0	0
Sheep	VARs			animal sample > brain		Animal	Slovenija	7	0	0	0
Goats	VARs			animal sample > brain		Animal	Slovenija	4	0	0	0
Solipeds, domestic	VARs			animal sample > brain		Animal	Slovenija	1	0	0	0
Bats - wild - Monitoring	VARs			animal sample > brain		Animal	Slovenija	47	0	0	0
Foxes - wild - Monitoring	VARs			animal sample > brain		Animal	Slovenija	2001	0	0	0
Wolves - wild - Monitoring	VARs			animal sample > brain		Animal	Slovenija	10	0	0	0
Badgers - wild - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	40	0	0	0
Bats - Monitoring - active	VARs			animal sample		Animal	Slovenija	111	0	0	0
Cats - pet animals - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	56	0	0	0
Deer - wild - red deer - from hunting - Surveillance	VARs			animal sample > brain		Animal	Slovenija	1	0	0	0

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Deer - wild - roe deer - from hunting - Surveillance	VARs			animal sample > brain		Animal	Slovenija	24	0	0	0
Dogs - pet animals - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	35	0	0	0
Dormice - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	1	0	0	0
Hamsters - pet animals - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	1	0	0	0
Hares - wild - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	1	0	0	0
Marten - wild - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	20	0	0	0
Polecats - wild - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	2	0	0	0
Polecats - zoo animal - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	1	0	0	0
Rabbits - pet animals - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	2	0	0	0
Rodents - wild - unspecified - Surveillance	VARs			animal sample > brain		Animal	Slovenija	3	0	0	0
Squirrels - wild - unspecified - Surveillance	VARs			animal sample > blood		Animal	Slovenija	2	0	0	0

Table Rabies in animals

	EBLV-2	Lyssavirus (unspecified virus)
Cattle (bovine animals)	0	0
Sheep	0	0
Goats	0	0
Solipeds, domestic	0	0
Bats - wild - Monitoring	0	0
Foxes - wild - Monitoring	0	0
Wolves - wild - Monitoring	0	0
Badgers - wild - unspecified - Surveillance	0	0
Bats - Monitoring - active	0	0
Cats - pet animals - unspecified - Surveillance	0	0
Deer - wild - red deer - from hunting - Surveillance	0	0
Deer - wild - roe deer - from hunting - Surveillance	0	0
Dogs - pet animals - unspecified - Surveillance	0	0
Dormice - unspecified - Surveillance	0	0
Hamsters - pet animals - unspecified - Surveillance	0	0
Hares - wild - unspecified - Surveillance	0	0
Marten - wild - unspecified - Surveillance	0	0



Table Rabies in animals

	EBLV-2	Lyssavirus (unspecified virus)
Polecats - wild - unspecified - Surveillance	0	0
Polecats - zoo animal - unspecified - Surveillance	0	0
Rabbits - pet animals - unspecified - Surveillance	0	0
Rodents - wild - unspecified - Surveillance	0	0
Squirrels - wild - unspecified - Surveillance	0	0

## 2.12 STAPHYLOCOCCUS INFECTION

### 2.12.1 General evaluation of the national situation

## 2.13 Q-FEVER

### 2.13.1 General evaluation of the national situation

#### A. Coxiella burnetii (Q-fever) general evaluation

##### History of the disease and/or infection in the country

Q fever was a frequent human zoonosis after the second world war. In last 20 years it was notified rarely in Slovenia.

In 2007 a group of veterinary students and two teachers and a group of high veterinary school students contracted a laboratory-confirmed Q fever infection during a training course on a sheep farm in Slovenia in March 2007. From 144 serologically tested, 83 (87,1%) were positive.

Another small family outbreak of Q fever was detected in 2007 between members of a family, who were visiting and working on a farm in Istra, northern Croatia.

In 2008 and 2009 and 2011 no human cases were notified.

In 2010 one (1) human case was reported (most probably imported).

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

Usually a rare human disease in Slovenia. Source of infection are mostly sheep.

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

In 2011, 128 samples of raw cows milk were tested on a presence of *Coxiella burnetii* with PCR method.

The presence of *C. burnetii* was confirmed in 41 raw milk samples.

Although, no case of Q fever in humans in 2011 was reported.

##### Recent actions taken to control the zoonoses

Monitoring of Q fever in raw milk.

## 2.13.2 Q-fever in humans

### A. C. burnetii in humans

#### Reporting system in place for the human cases

Human cases are notifiable by national Law on Infectious Diseases (Official Gazette number 69/95, revised 33/2006).

Medical doctors, laboratories are obliged to notify cases on daily basis to regional institutes of public health. Regional institutes of public health notify disease to Institute of Public Health of R. Slovenia.

#### Case definition

According to ECDC definition from 2008.

#### Diagnostic/analytical methods used

Indirect immunofluorescence (test FOCUS diagnostics) for the presence of IgG and IgM antibodies to C. burnetii phase I and II antigens, detection of nucleic acid of C. burnetii in clinical specimen, other.

#### Notification system in place

Human cases are notifiable by national Law on Infectious Diseases (Official Gazette number 69/95, revised 33/2006).

Medical doctors, laboratories are obliged to notify cases on daily basis to regional institutes of public health. Regional institutes of public health notify disease to Institute of Public Health of R. Slovenia.

#### History of the disease and/or infection in the country

Q fever was a frequent zoonosis after second world war. In last 20 years it was notified rarely in Slovenia. In 2007 a group of veterinary students and teachers and a group of high veterinary school students contracted a laboratory-confirmed Q fever infection during a training course on a sheep farm in Slovenia in March 2007. From 144 serologically tested, 83 (87,1%) were positive.

Another small family outbreak of Q fever was detected in 2007 between members of a family, who were visiting and working on a farm in Istra, northern Croatia.

In years 2008, 2009 and 2011 no cases in humans were recorded.

#### Results of the investigation

In 2010 one (1) case was reported (most probably imported) in 2011 there were no human cases.

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

Recent epidemiological situation is stable, animals are regularly monitored on Q fever.

#### Relevance as zoonotic disease

Q fever was a rare zoonosis in last years, except in 2007.

In 2008, 2009 and in 2011 no human cases were recorded.

## 2.13.3 Coxiella (Q-fever) in animals

### A. C. burnetii in animal

#### Monitoring system

##### Sampling strategy

In 2011, active monitoring in bovine animals and small ruminants was not performed.

##### Frequency of the sampling

Serological testing of breeding animals and animals with clinical signs.

##### Type of specimen taken

Blood

##### Methods of sampling (description of sampling techniques)

Blood samples shall be taken aseptically by venepuncture. Blood shall be taken from the jugular vein or median caudal vein, and decanted into sterile test tubes. After sampling, the test tubes intended for obtaining the serum shall be kept at room temperature. On finished coagulation, the test tubes shall be refrigerated at +4 C. Blood samples shall be kept chilled during transport (cooling container) and delivered to the testing laboratory within 48 hours of sampling.

##### Case definition

Identification of IgG antibodies against *Coxiella burnetii*.

##### Diagnostic/analytical methods used

Serology: OIE Manual, 5th ed., 2004  
ELISA for antibody detection.

#### Other preventive measures than vaccination in place

Persons, who are carrying out a registered activity of breeding or production come into direct contact with animals, foodstuffs, raw materials, products or waste, must have thorough knowledge in contagious animal diseases, the prevention thereof and transmissibility to man, and in the regulations governing the protection against contagious diseases. In accordance with legislation, the business operator shall provide for conditions of hygiene in primary production - GAP, GHP, and record keeping.

#### Control program/mechanisms

##### The control program/strategies in place

- Registration and/or approval of holdings, establishments, transporters, collection centres and dealers, who are subjected to veterinary checks;
- Identified and registered animals;
- Regular official veterinary checks on holdings;
- Movements of animals accompanied by prescribed documents;
- Veterinary referral form to accompany sick animals and animals coming from holdings with an unverified or suspect epizootiological situation;
- Obligatory notification between veterinary and health service in case of zoonoses occurrence.

#### Measures in case of the positive findings or single cases

Measures may be introduced after the public health service has notified the veterinary service of an onset of clinical signs of disease in humans. Depending on the nature of disease, or where necessary, VARS and public health service shall conduct the epidemiological and/or epizootiological investigations. Based

on the investigation results, VARS may institute one or more following measures in animal husbandry:

- providing for potable water that is fit for consumption, water for watering, and feed,
- providing for and maintaining the required conditions of hygiene in animal accommodation facilities, and in other premises and installations intended for keeping animals,
- providing for hygiene at parturition and during milking,
- providing for veterinary order in public places intended for animal assembly, in the means of transport intended for the transport of animals, products, raw materials, foodstuffs, waste, and animal feed, in pens, on pastures and in facilities intended for animal assembly, animal slaughter, and for collecting, treating, processing and storing raw materials, products, foodstuffs, waste, and animal feed,
- providing for food safety and for compliance with the veterinary conditions for their production and circulation,
- preventing the introduction of disease agents into animal accommodation facilities,
- implementing veterinary measures in animal accommodation facilities,
- handling dead animal carcasses and other waste, waste waters, animal faeces, and urine in compliance with the required methods,
- providing for preventive disinfection, disinsectisation and deratisation in facilities, on public surfaces and in the means of transport,
- other recovery measures.

### Notification system in place

At the presence of a contagious disease, or signs giving rise to suspicion that an animal has fallen sick or died of a contagious disease, the animal keeper shall immediately notify thereof the veterinary organisation. A veterinary organisation shall notify of disease the relevant VARS Regional Office in cases only, where the diagnostic test results have confirmed the presence of disease. A report on the occurrence of such diseases shall be drawn up on a monthly basis, by day 10 in the month for the previous month, in the electronic form, via VARS Central Information System (CIS VURS-EPI). At a suspected or confirmed presence of disease, the competent public health services shall be notified as well.

### Results of the investigation

In 2011, IgG antibodies against *Coxiella burnetii* were not identified in any of 145 tested animals.

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Analytical Method	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii	No of clinically affected herds
Cattle (bovine animals) - at farm - Clinical investigations	VARs	Suspect sampling	Official sampling	animal sample > blood		ELISA	Animal	107	0	0	0
Sheep - at farm - Clinical investigations	VARs	Suspect sampling	Official sampling	animal sample > blood		ELISA	Animal	19	0	0	0
Goats - at farm - Clinical investigations	VARs	Suspect sampling	Official sampling	animal sample > blood		ELISA	Animal	8	0	0	0
Zoo animals, all - Clinical investigations	VARs	Suspect sampling	Official sampling	animal sample > blood		ELISA	Animal	11	0	0	0

### 3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

### 3.1 ESCHERICHIA COLI, NON-PATHOGENIC

#### 3.1.1 General evaluation of the national situation

##### A. Escherichia coli general evaluation

##### History of the disease and/or infection in the country

According to Law on infectious diseases (Official Gazette 69/95) human E.coli infections are notifiable. Doctors and laboratories are obliged to notify them in three days after diagnosis. Most notified E.coli human cases are probable pathogenic.

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

The number of all notified E.coli infections in 2009 was 157 , in 2010 139 in 2011 216.  
The real burden of E.coli infections is not known.

##### Recent actions taken to control the zoonoses

Improvement of diagnostics of human E.coli cases (specially VTEC) and HUS.



### 3.1.2 Escherichia coli, non-pathogenic in foodstuffs

#### A. E. coli in food

##### Monitoring system

###### Sampling strategy

###### HIRS

###### Monitoring (catering)

Annual monitoring programme was prepared with respect to the risk analysis and results of programme/controls carried out in the previous year.

Samples were taken at retail level (catering) and it was carried out by the health inspectors.

###### Programme:

- precut RTE fruits and vegetables: 100 samples/year;
- unpasteurised fruit and vegetable juices (RTE): 25 samples/year;
- RTE cakes, deserts and pastry: 100 samples/year;
- RTE deli dishes (salads, sliced cooked meat products and sausages, sauces etc.): 200 samples/year.

###### VARs

Annual monitoring programme was prepared with respect to the risk analysis and results of programme/controls carried out in the previous year.

Samples were taken by the official veterinarians.

###### Programme:

- smoked fish, 10 samples/year;
- crustaceans, cooked, 10 samples/year;
- molluscan shellfish, live, 20 samples/year

###### Frequency of the sampling

###### HIRS

Sampling was distributed evenly throughout the months: March - October.

###### VARs

Sampling was distributed evenly throughout the months: May - December.

###### Methods of sampling (description of sampling techniques)

###### HIRS

Sampling plan (n = number of units comprising the sample):

- precut RTE fruits and vegetables: n=1
- unpasteurised fruit and vegetable juices (RTE): n=1
- RTE cakes, deserts and pastry: n=1
- RTE deli dishes (salads, sliced cooked meat products and sausages, sauces etc.): n=1

A sample weighing 300-500 g was taken by sterile instrument and stored in a sterile bag or other sterile container. Samples had to be delivered to the laboratory in the shortest time possible. The period of time elapsing from sampling to analysis shall by no means exceed 24 hours. The temperature during storage and transport should not exceed + 4°C.

###### VARs

- smoked fish, n=1
- crustaceans, cooked, n=1
- molluscan shellfish, live, n=1

A sample weighing at least 200 g or 10 shellfishes is  
prostorov in opreme obseg površine vzetega vzorca obsega 100 cm<sup>2</sup>.

V primeru, da je velikost ene enote manjša od navedene minimalne velikosti enote, se mora  
vzorčit toliko enot iste serije živila, da se doseže minimalna velikost enote.

#### Definition of positive finding

A sample in which non-pathogenic *Escherichia coli* (> 100 cfu/g) was detected.

#### Diagnostic/analytical methods used

Bacteriological method: ISO 16649-2:2001

#### Preventive measures in place

GMP, GHP, HACCP

#### Control program/mechanisms

The control program/strategies in place

Registration of establishments and official control.

#### Measures in case of the positive findings or single cases

Informing the owner of the sample, food hygiene inspection and necessary enforcement action.

#### Results of the investigation

HIRS

Monitoring (catering)

Out of 425 samples taken in 2010, non-pathogenic *Escherichia coli* (> 100 cfu/g) was detected in 2  
samples of RTE deli dishes (ready-to-eat salads).

Out of all 425 samples taken, 0,5% samples were positive on presence of non-pathogenic *Escherichia coli*  
(> 100 cfu/g).

VARs

Out of 40 samples tested in 2011, non-pathogenic *E.coli* (< 100 cfu/g) was detected in 3 (three) samples  
of molluscan shellfishes and in 1 (one) sample of crustaceans.

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

HIRS

The percentage of samples contaminated with non-pathogenic *Escherichia coli* (> 100 cfu/g) was the same  
as in 2009, although the number of the samples taken was much lower than in 2009 (1210 samples).

Situation concerning non-pathogenic *Escherichia coli* is favourable.

### 3.1.3 Antimicrobial resistance in *Escherichia coli*, non-pathogenic

#### A. Antimicrobial resistance of *E.coli* in food

##### Sampling strategy used in monitoring

###### Frequency of the sampling

VARs

Isolates were obtained within annual monitoring programme.

###### Type of specimen taken

Isolates were obtained within annual monitoring programme. Meat samples from different animal species were taken.

###### Methods of sampling (description of sampling techniques)

See relevant monitoring program.

###### Procedures for the selection of isolates for antimicrobial testing

Random selection from different monitoring samples.

###### Methods used for collecting data

VARs

Isolates were tested and reported at NVI.

##### Laboratory methodology used for identification of the microbial isolates

Bacteriological method: ISO 16649-2:2001

Disc diffusion test according to CLSI.

##### Laboratory used for detection for resistance

###### Antimicrobials included in monitoring

Aminoglycosides: Streptomycin, Gentamycin, Kanamycin.

Amphenicols: Chloramphenicol.

Beta-lactamic: Ampicillin, Amoxycillin/Clavulanic acid.

Cephalosporins: Cefotaxime, Cephalothin, Cefpodoxime, Ceftazidim.

Fluoroquinolones: Ciprofloxacin, Enrofloxacin.

Quinolones: Nalidixic acid.

Sulfonamides: Sulfonamide.

Trimethoprim.

Trimethoprim/sulfonamides.

Tetracyclines: Tetracycline.

###### Cut-off values used in testing

Agar Diffusions method according to CLSI (Clinical Laboratory Standard Institute).

##### Control program/mechanisms

###### Recent actions taken to control the zoonoses

Introduced monitoring.

##### Notification system in place

VARs

Delegated laboratory yearly reports the results of testing into the zoonosis web application.

## Results of the investigation

### VARS

Of 30 *E. coli* strains from cows' milk 25 (83%) were fully sensitive. Of the remaining five 4 were resistant to Chloramphenicol, 3 to Ampicillin and one to Kanamycin, Neomycin, Streptomycin, Ciprofloxacin, Enrofloxacin, Nalidixic acid, Sulfonamides, Tetracycline, Trimethoprim and Trimethoprim+Sulfonamides.

Of 18 *E. coli* strains from dairy products 14 (78%) were fully sensitive. Of the remaining four all were resistant to Ampicillin, 3 to Tetracycline, 2 to Ciprofloxacin, Enrofloxacin, Nalidixic acid and Sulfonamides and one to Chloramphenicol, Florfenicol, Trimethoprim and Trimethoprim+Sulfonamides.

Of 7 *E. coli* strains from meat from bovine animals 4 (57%) were fully sensitive. Of the remaining three all were resistant to Tetracycline, 2 to Streptomycin and 1 to Florfenicol, Ciprofloxacin, Enrofloxacin, Nalidixic acid and Sulfonamides.

Of 41 *E. coli* strains from mixed meat and its products 25 (61%) were fully sensitive. Of the remaining 16 12 were resistant to Streptomycin, 11 to Tetracycline, 10 to Ampicillin and Sulfonamides, 6 to Trimethoprim, 5 to Kanamycin, Neomycin, Ciprofloxacin, Enrofloxacin, Nalidixic acid and Trimethoprim+Sulfonamides, 3 to Chloramphenicol and Florfenicol, 2 to Gentamycin and 1 to Cefotaxime.

Relatively high sensitivity of strains from milk and dairy products (81%) is favourable. More concerning is decrease of sensitivity in strains from meat (60%) and wide panel of antimicrobials to which resistance has already developed.

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

### VARS

The high antimicrobial resistance of *E. coli* strains indicates the use of antimicrobials in food producing animals. Special care should be taken to use antimicrobials prudently and in accordance with principles of their rational use. When possible the use of antimicrobials should be avoided and other measures to control bacterial infectious diseases like vaccinations and sanitary measures should be taken. This is the only way to prevent the transmission of resistant genes into pathogenic bacteria and their spread into human population.

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals

Escherichia coli, non-pathogenic  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	7	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	7	0
Aminoglycosides - Kanamycin	7	0
Aminoglycosides - Neomycin	7	0
Aminoglycosides - Streptomycin	7	2
Amphenicols - Chloramphenicol	7	0
Amphenicols - Florfenicol	7	1
Cephalosporins - 3rd generation cephalosporins	7	0
Fluoroquinolones - Ciprofloxacin	7	1
Fluoroquinolones - Enrofloxacin	7	1
Penicillins - Ampicillin	7	0
Quinolones - Nalidixic acid	7	1
Sulfonamides	7	1
Tetracyclines - Tetracycline	7	3
Trimethoprim	7	0
Trimethoprim + Sulfonamides	7	0
Fully sensitive	7	4
Resistant to 1 antimicrobial	7	1
Resistant to 2 antimicrobials	7	1
Resistant to >4 antimicrobials	7	1

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Milk, cows'

Escherichia coli, non-pathogenic  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	30	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	30	0
Aminoglycosides - Kanamycin	30	1
Aminoglycosides - Neomycin	30	1
Aminoglycosides - Streptomycin	30	1
Amphenicols - Chloramphenicol	30	4
Amphenicols - Florfenicol	30	0
Cephalosporins - 3rd generation cephalosporins	30	0
Cephalosporins - Cefotaxime	30	0
Fluoroquinolones - Ciprofloxacin	30	1
Fluoroquinolones - Enrofloxacin	30	1
Penicillins - Ampicillin	30	3
Quinolones - Nalidixic acid	30	1
Sulfonamides	30	1
Tetracyclines - Tetracycline	30	1
Trimethoprim	30	1
Trimethoprim + Sulfonamides	30	1
Fully sensitive	30	25
Resistant to 1 antimicrobial	30	2
Resistant to 2 antimicrobials	30	2

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Milk, cows'

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
	yes	
	30	
	N	n
Antimicrobials:		
Resistant to >4 antimicrobials	30	1



Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Dairy products, unspecified

Escherichia coli, non-pathogenic  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	18	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	18	0
Aminoglycosides - Kanamycin	18	0
Aminoglycosides - Neomycin	18	0
Aminoglycosides - Streptomycin	18	0
Amphenicols - Chloramphenicol	18	1
Amphenicols - Florfenicol	18	1
Cephalosporins - 3rd generation cephalosporins	18	0
Cephalosporins - Cefotaxime	18	0
Fluoroquinolones - Ciprofloxacin	18	2
Fluoroquinolones - Enrofloxacin	18	2
Penicillins - Ampicillin	18	4
Quinolones - Nalidixic acid	18	2
Sulfonamides	18	2
Tetracyclines - Tetracycline	18	3
Trimethoprim	18	1
Trimethoprim + Sulfonamides	18	1
Fully sensitive	18	14
Resistant to 3 antimicrobials	18	1
Resistant to >4 antimicrobials	18	3

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Dairy products, unspecified

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Meat, mixed meat - meat products - fermented sausages

Escherichia coli, non-pathogenic  Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	41	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	41	2
Aminoglycosides - Kanamycin	41	5
Aminoglycosides - Neomycin	41	5
Aminoglycosides - Streptomycin	41	12
Amphenicols - Chloramphenicol	41	3
Amphenicols - Florfenicol	41	3
Cephalosporins - 3rd generation cephalosporins	41	1
Cephalosporins - Cefotaxime	41	1
Fluoroquinolones - Ciprofloxacin	41	5
Fluoroquinolones - Enrofloxacin	41	5
Penicillins - Ampicillin	41	10
Quinolones - Nalidixic acid	41	5
Sulfonamides	41	10
Tetracyclines - Tetracycline	41	11
Trimethoprim	41	6
Trimethoprim + Sulfonamides	41	5
Fully sensitive	41	25
Resistant to 1 antimicrobial	41	2

Table Antimicrobial susceptibility testing of *Escherichia coli*, non-pathogenic in Meat, mixed meat - meat products - fermented sausages

<b>Escherichia coli, non-pathogenic</b>  Isolates out of a monitoring program (yes/no)  Number of isolates available in the laboratory  <b>Antimicrobials:</b>	E.coli, non-pathogenic, unspecified	
	yes	
	41	
	N	n
Resistant to 2 antimicrobials	41	4
Resistant to 3 antimicrobials	41	3
Resistant to >4 antimicrobials	41	7

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

Test Method Used	Standard methods used for testing

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

Test Method Used	Standard methods used for testing

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

Test Method Used		Standard methods used for testing		
Disc diffusion		NCCLS/CLSI		

  

		Concentration (microg/ml)		Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	NON-EFSA		12
	Kanamycin			13
	Neomycin			12
	Streptomycin	NON-EFSA		11
Amphenicols	Chloramphenicol	NON-EFSA		12
	Florfenicol			16
Cephalosporins	Cefotaxime	NON-EFSA		22
Fluoroquinolones	Ciprofloxacin	NON-EFSA		15
	Enrofloxacin			16
Penicillins	Ampicillin	NON-EFSA		13
Quinolones	Nalidixic acid	NON-EFSA		13
Sulfonamides	Sulfonamides	NON-EFSA		12
Tetracyclines	Tetracycline	NON-EFSA		11

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Trimethoprim	Trimethoprim	NON-EFSA		10
Trimethoprim + Sulfonamides	Trimethoprim + Sulfonamides			10



## 3.2 ENTEROCOCCUS, NON-PATHOGENIC

### 3.2.1 General evaluation of the national situation

### 3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

Table Cut-off values for antibiotic resistance of *E. faecalis* in Animals

Test Method Used	Standard methods used for testing

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

Table Cut-off values for antibiotic resistance of *E. faecalis* in Animals

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of *E. faecalis* in Feed

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

Table Cut-off values for antibiotic resistance of *E. faecalis* in Food

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

Table Cut-off values for antibiotic resistance of *E. faecium* in Animals

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of *E. faecium* in Feed

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

Table Cut-off values for antibiotic resistance of *E. faecium* in Food

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

## 4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS



## 4.1 ENTEROBACTER SAKAZAKII

### 4.1.1 General evaluation of the national situation

#### A. Enterobacter sakazakii general evaluation

##### History of the disease and/or infection in the country

Human infections with *Enterobacter sakazakii* are according to our Law on infectious diseases (Official Gazette 69/95, revised 33/2006) not notifiable.

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

The recent situation is favourable, there were no cases identified.

##### Recent actions taken to control the hazard

Regular monitoring.

## 4.1.2 Cronobacter in foodstuffs

### A. Enterobacter sakazakii in foodstuffs

#### Monitoring system

##### Sampling strategy

HIRS is executing monitoring mainly at wholesale level, where samples of different producers are taken.

Programme:

Dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age: 10 samples/year.

##### Frequency of the sampling

Samples were taken in February.

##### Methods of sampling (description of sampling techniques)

Samples were taken randomly from the available part of the consignment.

A single sample was comprised of 5 prepacked units of the product. Every unit of the sample weighed at least 100 g.

##### Definition of positive finding

Presence of *E. sakazakii* in 10g.

##### Diagnostic/analytical methods used

Bacteriological method: ISO/TS 22964:2006

#### Preventive measures in place

GHP, HACCP

#### Control program/mechanisms

##### The control program/strategies in place

Registration of establishments and official control.

#### Measures in case of the positive findings or single cases

Informing the owner of the sample, inspection of distributor, necessary enforcement action, informing competent authority in the country of producer and other countries flagged for action through RASFF system.

#### Notification system in place

Whenever *Enterobacter sakazakii* is detected in sample taken, relevant authorities must be informed with the result.

#### Results of the investigation

In 2011, *Enterobacter sakazakii* was not detected in any sample.

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

In 2007, 2008, 2010 and 2011 *Enterobacter sakazakii* was not detected in any sample (in 2009, *Enterobacter sakazakii* was detected in 1 sample).

Situation concerning *Enterobacter sakazakii* is favourable.



Table Enterobacter sakazakii in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Cronobacter	Cronobacter spp, unspecified
Infant formula - dried - at retail - Surveillance <sup>1)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	10g	8	0	
Foodstuffs intended for special nutritional uses - dried dietary foods for special medical purposes intended for infants below 6 months - at retail - Surveillance <sup>2)</sup>	HIRS	Objective sampling	Official sampling	food sample		Single	10g	2	0	

## Comments:

<sup>1)</sup> intended for infants below 6 months (n=5)<sup>2)</sup> n=5

## 4.2 HISTAMINE

### 4.2.1 General evaluation of the national situation

#### A. Histamine General evaluation

##### History of the disease and/or infection in the country

Histamin intoxication is according to Law on infectious diseases (Official Gazette number 33/2006) not notifiable. (It could be notified as gastroenterocolitis acuta, without identified agent). Most patients with symptoms of histamin intoxication, which is not severe, do not seek medical help. Even if they go to doctor, cases are probably not reported.

From 1980 on to 2009 less than 15 cases of histamin intoxication were officially recorded in Slovenia. In 2007 a small outbreak ( 2 persons went ill) of histamin intoxication was recorded in coast region of Slovenia.

Cases were intoxicated by eating fishes in sandwich, on pizza, noodles with tuna fish and tomato sauce, fried small fishes.

In 2008 and 2009 and 2010 no cases or outbreaks were notified

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

The last sporadic case of histamin poisoning was recorded in 2002, last outbreak in 2007. The patient ate tunna salad and went ill one hour later.

In 2007 a small outbreak of histamin intoxication was recorded. Two persons ate small, fried fishes in a restaurant. 15 minutes after meal they went ill with nausea, headache, red rash, mainly on face, but also on body. They seeked medical help.

Representative of health authority and regional institute of public health inspected the premises of restaurant/ kitchen. Hygienic conditions were bad, HACCP was not implemented at all. Food samples were taken. In a sample of small fishes histamin was identified (2970 mg histamin / kilogram, HM006 /HPLC laboratory method). The concentration of histamin was much higher than "normal" concentration ( from zero to 200 mg/ kg; according to EU decision number 2073/2005 from 15.nov 2005). (The incriminated fishes were probably stored at room, summer temperature long before they were fried).

From 2008 to 2011 no cases were notified.

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

The source of infection was mostly canned fish: tuna fish, mackerel, fried small fishes-sardines. Frequently fish was stored at room temperatures.

##### Recent actions taken to control the hazard

Sampling of food in restaurants, in food shops, education of food workers against: storing fishes, opened canned fish on room temperature;

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using large amounts of fish instead of opening smaller cans, containing fish; implementation of HACCP system - control of critical control points) etc.

### Suggestions to the Community for the actions to be taken

Occasional monitoring of canned fish on histamin content.

## 4.2.2 Histamine in foodstuffs

### A. Histamine in foodstuffs

#### Monitoring system

##### Sampling strategy

###### VARs

Histamine sampling of fishery products shall be conducted at processing establishments and at fish markets.

##### Frequency of the sampling

Sampling was distributed evenly throughout the months: June-December.

The numbers of samples of fishery products to be taken had been defined in advance and for every particular VARs Regional Office separately.

##### Type of specimen taken

Oily fish (fresh, salted, smoked, canned).

##### Methods of sampling (description of sampling techniques)

A single fish sample shall be composed of nine units (n=9). Every unit of fish sample shall weigh at least 200 g (in case of canned fish samples every unit of sample shall weigh at least 300g).

Samples were delivered to the laboratory in the shortest time possible, as a rule, immediately after sampling (in 24 hours after sampling at the latest). In time between sampling and delivery to the laboratory, samples shall be kept at 4°C(+/-2°C).

##### Definition of positive finding

Definition of positive finding as written in the Commission Regulation (EC) No 2073/2005.

##### Diagnostic/analytical methods used

HPTLC

#### Control program/mechanisms

##### The control program/strategies in place

- Registration and/or approval of establishments subjected to veterinary controls
- Identification of animal products and their traceability
- Veterinary controls in establishments

#### Measures in case of the positive findings or single cases

Informing the owner of the sample, food hygiene inspection and necessary enforcement action.

#### Notification system in place

The laboratory sends the investigation reports to the VARs Main Office and to the official veterinarian who has conducted the sampling.

#### Results of the investigation

In 2011, 76 fish samples were tested. Histamin was not detected in any sample.

Comments:

<sup>1)</sup> n=9[illegible]



## 4.3 STAPHYLOCOCCAL ENTEROTOXINS

### 4.3.1 General evaluation of the national situation

#### A. Staphylococcal enterotoxins general evaluation

##### History of the disease and/or infection in the country

The number of sporadic notified cases of staphylococcal food poisoning were less than 10 in recent years. From 1997 to 2010 there were from 0 to 5 outbreaks of staph. poisoning yearly. From 2008 to 2011 there was 1 outbreak.

Places of intoxication were: schools, school camps, restaurants, family outbreaks, hotel. In 2006 we notified three outbreaks of staphylococcal poisoning (two in school camps and one in a restaurant) in 2007 there was no outbreak in 2008 one outbreak in factory canteen, in 2009 in pizzeria, in 2010 in school and in 2011 in a hotel).

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

The epid. situation is more or less stable; in last three years one outbreak yearly was detected. In 2009 an outbreak of staphylococcal food poisoning was detected in pizzeria. The causative agent was *Staphylococcus aureus*, enterotoxin A, C. In 2010 one school outbreak was caused by *Staph. aureus* enterotoxin A in 2011 an outbreak of *Staph aureus* toxin D occurred in a hotel.

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

Sources of infection from outbreaks in last years are different - from human carriers to milk/milk products, potato salad, buckwheat porridge, sauces, cakes etc.

##### Recent actions taken to control the hazard

Control of implementation of HACCP system.

Education of food workers about *Staphylococcus* spp. infections.

### 4.3.2 Staphylococcal enterotoxins in foodstuffs

#### A. Staphylococcal enterotoxins in foodstuffs

##### Monitoring system

###### Sampling strategy

###### VARS

Sampling of raw milk for Staphylococcal enterotoxins shall be conducted at all milk automats.

###### Frequency of the sampling

Sampling was distributed evenly throughout the months: May - December.

###### Type of specimen taken

Raw cows milk.

###### Methods of sampling (description of sampling techniques)

A single sample of raw milk shall be composed of one unit ( $n=1$ ) which shall weigh at least 300 ml. Samples were delivered to the laboratory in the shortest time possible, as a rule, immediately after sampling (in 24 hours after sampling at the latest). In time between sampling and delivery to the laboratory, samples shall be kept at 4°C(+/-2°C).

###### Definition of positive finding

Positive sample is a sample in which Staphylococcal enterotoxin was found in 25g.

###### Diagnostic/analytical methods used

ELISA

##### Control program/mechanisms

###### The control program/strategies in place

- Registration and/or approval of establishments subjected to veterinary controls
- Identification of animal products and their traceability
- Veterinary controls in establishments

##### Measures in case of the positive findings or single cases

Informing the owner of the sample, food hygiene inspection and necessary enforcement action.

##### Notification system in place

The laboratory sends the investigation reports to the VARS Main Office and to the official veterinarian who has conducted the sampling.

##### Results of the investigation

In 2011, 128 samples of raw cows milk were tested. Staphylococcal enterotoxins were not detected.

Table Staphylococcal enterotoxins in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Milk, cows' - raw milk - Surveillance <sup>1)</sup>	VARS	Census	Official sampling	food sample		Single	25g	128	0

Comments:

<sup>1)</sup> n=1

## 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, epidemiological investigations and reporting of foodborne outbreaks

System for identification of foodborne outbreaks is: mandatory and national.

It covers: family, general and international outbreaks;  
and all classes of microbiological agents.

An outbreak of foodborne illness may be defined as two or more linked cases of the same illness or the situation, where the observed number of cases exceeds the expected number.

Outbreaks of foodborne infections are notifiable by National Law on Infectious Diseases, issued in 1995, revised in 2006. Public health professionals in regional institutes are requested to report regularly all investigated outbreaks of infectious intestinal diseases to the National Institute of Public Health.

### Description of the types of outbreaks covered by the reporting:

Reporting covers:

family, general and international outbreaks.  
It covers all range of microbiological agents.

### National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

In 2010 from 74 outbreaks 3 were foodborne. In 2011 there were 8 foodborne outbreaks.

The average number of yearly notified foodborne outbreaks from 2004 to 2011 is around 10.

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

The causative agents of foodborne outbreaks were *Salmonella* Enteritidis and *Salmonella* Java, *Staphylococcus aureus* and norovirus.

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

Foodborne outbreaks in 2010:

*Staph. aureus* outbreak in a school, vehicles were probable different food categories;

Norovirus - a family outbreak, probably with salad;

Lipophilic marine biotoxin an outbreak on a small ship with tourists who ate mussels.

From 2005 to 2010, 53 outbreaks were caused by *Salmonella*. 49% of them were identified in restaurants, 21% in families, 6% in homes for the elderly, others in schools, boarding schools etc.

Foodborne outbreaks in 2011 were all defined as weak evidence. There were 8 outbreaks

One norovirus outbreak was a family outbreak.

The second one happened in a hotel with a pool. The infection was probably spread by a kitchen worker who prepared meals and had acute gastroenteritis

*Staphylococcus aureus* producing toxin D was confirmed in a cake served in a hotel.

Salmonella Java outbreak occurred in a home for the elderly, the source of infection was not found. Three persons got ill, among them two died.

One Salmonella Enteritidis outbreak was in a restaurant, the possible vehicle could be chocolate cake.

The vehicle of second Salmonella Enteritidis outbreak could be tiramisu.

A group of tourists, who travelled abroad, went ill with acute gastroenteritis (Salmonella Enteritidis was confirmed from feces). The source/vehicle of infection was not found.

#### Evaluation of the severity and clinical picture of the human cases

There was a big outbreak of Salmonella Enteritidis in catering facility in 2009, which delivers meals to elderly people; one person died. Other outbreaks were small.

#### Descriptions of single outbreaks of special interest

Foodborne outbreak in home for the elderly in 2007:

from 580 inhabitants, 420 went ill; 39 were hospitalized and 5 persons died.

The causative agent was Salmonella Enteritidis, isolated from feces and food; PFGE profile confirmed similarity in more than 99%. The incriminated food was bean salad, "cross contaminated" probably from meat.

Foodborne outbreak in the canteen in 2008:

from 700 workers, who ate lunch and dinner in canteen, 40 went ill with acute gastroenterocolitis. The causative agent was probably Staphylococcus aureus, with enterotoxin C, who was isolated also from food sample of salad with buckwheat porridge. In stool samples of some cases noroviruses were confirmed as well.

#### Control measures or other actions taken to improve the situation

Improvement of general hygienic conditions in kitchens;

cleaning and disinfection of public kitchens;

education of public kitchen workers about food hygiene;

excluding of public kitchen workers with infectious gastroenteritis from food handling;

excluding of public kitchen workers from food handling because of lack of knowledge of food hygiene;

control of HACCP system implementation;

control and improvement of HACCP system in places, where most outbreaks occur - smaller restaurants, inns;

booklet with information about Salmonella in food for consumers.

Table Foodborne Outbreaks: summarised data

	Weak evidence or no vehicle outbreaks				Strong evidence Number of Outbreaks	Total number of outbreaks
	Number of outbreaks	Human cases	Hospitalized	Deaths		
Salmonella - S. Typhimurium	0	unknown	unknown	unknown	0	0
Salmonella - S. Enteritidis	4	36	6	2	0	4
Salmonella - Other serovars	1	3	1	2	0	1
Campylobacter	0	unknown	unknown	unknown	0	0
Listeria - Listeria monocytogenes	0	unknown	unknown	unknown	0	0
Listeria - Other Listeria	0	unknown	unknown	unknown	0	0
Yersinia	0	unknown	unknown	unknown	0	0
Escherichia coli, pathogenic - Verotoxigenic E. coli (VTEC)	0	unknown	unknown	unknown	0	0
Bacillus - B. cereus	0	unknown	unknown	unknown	0	0
Bacillus - Other Bacillus	0	unknown	unknown	unknown	0	0
Staphylococcal enterotoxins	1	31	6	0	0	1
Clostridium - Cl. botulinum	0	unknown	unknown	unknown	0	0
Clostridium - Cl. perfringens	0	unknown	unknown	unknown	0	0

	Weak evidence or no vehicle outbreaks				Strong evidence Number of Outbreaks	Total number of outbreaks
	Number of outbreaks	Human cases	Hospitalized	Deaths		
Clostridium - Other Clostridia	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Brucella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Shigella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Other Bacterial agents	0	unknown	unknown	unknown	0	0
Parasites - Trichinella	0	unknown	unknown	unknown	0	0
Parasites - Giardia	0	unknown	unknown	unknown	0	0
Parasites - Cryptosporidium	0	unknown	unknown	unknown	0	0
Parasites - Anisakis	0	unknown	unknown	unknown	0	0
Parasites - Other Parasites	0	unknown	unknown	unknown	0	0
Viruses - Norovirus	2	25	0	0	0	2
Viruses - Hepatitis viruses	0	unknown	unknown	unknown	0	0
Viruses - Other Viruses	0	unknown	unknown	unknown	0	0
Other agents - Histamine	0	unknown	unknown	unknown	0	0
Other agents - Marine biotoxins	0	unknown	unknown	unknown	0	0
Other agents - Other Agents	0	unknown	unknown	unknown	0	0



Unknown agent

Weak evidence or no vehicle outbreaks				Strong evidence Number of Outbreaks	Total number of outbreaks
Number of outbreaks	Human cases	Hospitalized	Deaths		
0	unknown	unknown	unknown	0	0