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Part 1

Trends and sources of zoonotic agents in animals, feedingstuffs, food and man in the European Union and Norway in 2003

Part 1

An evaluation of the trend reports provided for the year 2003 by the Member States and Norway to the European Commission in accordance with Article 5 of the Directive 92/117/EEC

Prepared by the Community Reference Laboratory on the Epidemiology of Zoonoses, BfR, Berlin, Germany

NOTE:

This report has to be carefully interpreted.

For most of the zoonotic agents covered by the report, comparable or uniform surveillance schemes are not applied in the European Union.

The data presented may not necessarily derive from national plans where sampling is specific and statistically planned. Therefore the results are often not directly comparable between different Member States.

This edition includes only Part 1 of the report.

Part 2, which contains all the original reports from the 15 Member States and Norway.

In addition, the reports provided on a voluntary basis by four New Member States are attached too.

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Introduction

The main objectives of Council Directive 92/117/EEC on zoonoses were the collection of epidemiological data in order to follow epidemiological trends of zoonoses and to indicate the need for appropriate measures to control them. According to Article 5 of Directive (as amended by Directive 97/22/EC) each Member State had to provide a national report by May 31 of each year. This directive has been repealed in 2004.

Four of the countries, which entered the European Union in 2004, provided on a voluntary basis a report on the zoonoses situation in 2003. These reports have been taken into account to some extent, all data are included in the Annex to the summary report.

The main aim of the current surveillance system for zoonoses in the European Union is to compile available information on the occurrence, and the distribution of zoonotic agents in humans and the veterinary sector. Based on this information, trends within the individual countries are assessed. This will give support to the efforts of the authorities to evaluate the current situation, to determine the need for control activities and to develop strategies for the control of diseases. In the future the purpose of this report should be an analysis and synthesis of current evidence that could form the basis of a risk assessment of the zoonotic risks within the Community.

The optimal ways of reporting have been discussed with representatives of the National Reference Laboratories at ten workshops. It has proved to be very useful to meet each year to discuss the next steps of further harmonisation of surveillance systems. Details on the results are laid down in the protocols on these workshops.

As an aid for reporting, the Community Reference Laboratory for the Epidemiology of Zoonoses (CRL-E) has prepared separate data collection sheets and data reporting tables for animals, food, feedingstuffs and humans. As in previous years these sheets have been slightly modified in order to state more precisely the epidemiological approach. As a result, the available reports have improved continuously since the first report for 1994. Most Member States have included some details on their surveillance systems. Unfortunately not all Member States provided a national evaluation of the situation in their country.

The national reports concerning trends and sources of zoonotic agents for 2003 have been passed on to the CRL-E, whose task is to assist the technical analysis and the co-ordination of reporting on the EU level, while taking into consideration the rules of confidentiality.

Figure A depicts the date of first receipt of the report and Table A provides some more details.

This report presents information on all zoonoses and zoonotic agents, which are covered by the reporting system. The National reports, which are presented in part 2 of this report as submitted to the European Commission, can be used as a source of further information.

Data for the previous years are given where appropriate. Further data are included in the Annex and in the National reports. As was the case in previous years it becomes obvious that for most aspects covered in this report, data were not available from all Member States. Therefore, countries are invited to complete their information in the future years.

This report has to be carefully interpreted. At the moment, surveillance systems, diagnostic methods and ways of reporting are not fully harmonised. Community rules on the control and surveillance are in force only for co-financed eradication programmes of bovine tuberculosis, bovine, ovine and caprine brucellosis, Salmonella (*S.*) Enteritidis and *S.* Typhimurium in poultry breeding flocks, as well as for *Trichinella* and *Echinococcus* sp. in connection of meat inspection. These rules form a basis for comparable data.

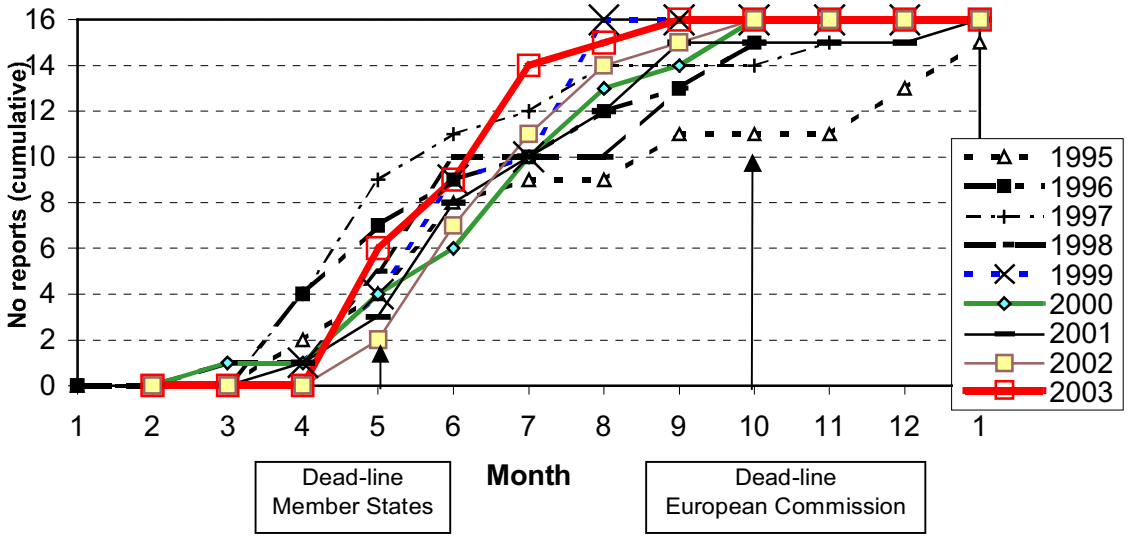
For other aspects (other animal species, food, other zoonoses and agents thereof), a valuable overview is available on the national approaches to tackle zoonoses and the results thereof.

Table A. Month of first receipt of the National trend reports

Country	Report 2000	Report 2001	Report 2002	Report 2003
A (Austria)	August	August; December	September	July
B (Belgium)	May	June	June	June
D (Germany)	August	January 2003	July	July
DK (Denmark)	May	May	June	June
E (Spain)	May / July	July; August	July	July
EL (Greece)	July	June	June	June
F (France)	October	September	August	September
FIN (Finland)	June	May	June	May
I (Italy)	August	September	August	August
IRL (Ireland)	July	July / August	July	July
L (Luxembourg)	March	April / November	August	May
N (Norway)	June	June	May	July
NL (The Netherlands)	July	June	May	May
P (Portugal)	October	August	October	May
S (Sweden)	July	June	June	May
UK (United Kingdom)	September	September	July	May

* Norway was not included into the reporting system as regards the reporting year 1999

Figure A. Month of first receipt of the National trend reports



Executive summary

Directive 92/117/EEC on zoonoses laid down rules on collection of information on zoonoses and zoonotic agents in humans, animals, food and feedingstuffs. In 2003 this data collection covered 11 zoonoses and antimicrobial resistance in two zoonotic agents and one indicator bacterium. The Member States and Norway sent their annual reports to the Commission, which together with the Community reference laboratory has prepared this yearly Community report. In addition, four new Member States provided a zoonoses report on a voluntary basis. These reports have been taken into account too.

In 2003, again salmonellosis and campylobacteriosis were by far the most frequently reported zoonoses in humans, with approximately 135 000 cases each. As regards the other zoonoses the numbers of reported human cases varied between 0 and 9 400.

For salmonellosis the decreasing tendency observed over several years continued and for campylobacteriosis, the downward trend observed since 2002 continued. In 2003, the overall reduction was 7 % for salmonellosis and 9 % for campylobacteriosis. In addition, a decrease in number of reported cases was observed for human brucellosis, yersiniosis, echinococcosis and verotoxigenic *E. coli* infections.

When compared with the previous years a slight increase in the number of cases was observed regarding listeriosis and toxoplasmosis. No major changes were detectable in the number of tuberculosis cases caused by *M. bovis* and trichinellosis cases. In 2003, no human rabies case was reported.

As regards *Salmonella*, there was no general trend in the prevalence in animals. In some countries, an increase of *S.* Enteritidis in the poultry population was observed. Among foodstuffs, poultry meat was most often reported to be contaminated with *Salmonella*.

Similarly, there is no common trend for *Campylobacter.* In some countries, *Campylobacter* was quite frequently detected in poultry and other livestock as well as in poultry meat.

Resistance to nalidixic acid and, to a lower extent, to fluoroquinolones and cephalosporins in *Salmonella* isolates of animal origin was demonstrated in several countries. In addition, high resistance rates to nalidixic acid and fluoroquinolones in *Campylobacter* isolates of animal and human origin were reported in several countries.

Yersiniosis (Yersinia enterocolitica) is ranked 3 by the number of reported human cases (9 399). Findings were reported mainly in pork.

Altogether, 1 094 human cases of brucellosis were notified in the European Union (13 MS) and Norway in 2003. In principle, for bovine, ovine and caprine brucellosis in those countries that are not officially free of that disease, the situation improved or remained on the level observed in previous years in those regions were control programmes are run.

1048 cases of listeriosis in humans were reported in the EU (13 countries*)* and Norway*. Listeria monocytogenes* was found in a broad range of different type of foods, including ready to eat foods, usually at low concentrations.

2 607 human cases of VTEC infections or HUS were reported in the EU (13 countries) and Norway. The presence of Verotoxigenic *E. coli,* especially serotype O157 but also of other types with public health relevance, in cattle herds and the link to human infections was demonstrated in several countries. The importance of non O157 serotypes to public health has also been confirmed. A total of 203 laboratory confirmed HUS syndromes were reported, 45 of them were attributed to non O157.

408 cases of human toxoplasmosis were notified in the EU and Norway. No specific studies on *Toxoplasma gondii* were conducted in animals during 2003.

374 cases of human echinococcosis were reported in the EU (14 countries) and Norway. Out of these, there were at least 30 cases of alveolar echinococcosis (*E. multilocularis). Echinococcus granulosus* was prevalent in animals in southern Member States, there no

major changes were observed. *E. multilocularis* findings in animals were reported by four European countries during 2003.

57 cases of human tuberculosis caused by *M. bovis* were reported in the EU (10 countries) and Norway. In countries that are not officially free of bovine tuberculosis, in all but one, situation continued to improve or remained unchanged.

56 cases of human trichinellosis were reported in the EU (13 countries) and Norway. *Trichinella* was reported in nine countries either in pigs or/and wildlife.

Five countries reported rabies cases in animals. The number of reported cases in animals has slightly decreased in Germany compared to 2002.

Summary

All Member States of the European Union and additionally Norway provided national reports on trends and sources of zoonotic agents in 2003 in accordance with Council Directive 92/117/EEC which has been repealed in 2004. This report contains a summary of the national information submitted and it covers 11 zoonotic agents, which are included in the reporting system. In addition, information on antimicrobial resistance in *Salmonella, Campylobacter* and for the first time in *E. coli* is covered.

For the first time, four new Member States provided a zoonoses report on a voluntary basis. These reports have been included in the summary report.

Community rules on monitoring or control are in force for bovine tuberculosis, bovine, ovine and caprine brucellosis, *Salmonella* (*S.)* Enteritidis and *S.* Typhimurium in poultry breeding flocks as well as for *Trichinella* and *Echinococcus sp*. in the framework of mandatory meat inspection. These rules form a basis for comparable data. For other zoonoses, a valuable overview is available on the national approaches to tackle zoonoses and the results thereof. However, the data concerning these zoonoses are usually not directly comparable between the Member States.

Tuberculosis

- **Cattle**

At the end of 2003, nine Member States (Austria, Belgium, Denmark, France, Finland, Germany, Luxembourg, Sweden, The Netherlands), six provinces in Italy and Norway were recognised being officially free of bovine tuberculosis (OTF). During 2003, Belgium and the provinces Bergamo, Lecco, Sondrio and Ascoli Piceno in Italy gained this status.

Within the non-OTF countries, at the end of 2003, between 89 % and 99 % of the herds were recognised OTF on national or regional level. Altogether, the percentage of infected herds at the year end ranged between 0,08% and 6,9%. There was no common trend in the non-OTF countries, but in principle situation continued to improve. In Ireland, Italy, Portugal and Spain, the number of newly identified positive herds and infected herds at the year end decreased slightly. In Great Britain it remained at the same level whereas in Northern-Ireland, the number of newly identified positive herds and infected herds at the year end increased.

In Italy and the mainland of Portugal, less than 1% of the tested herds showed positive reactors on national or regional level. In Greece, Ireland, Spain and the United Kingdom, these figures are above 1 %. In Northern Ireland, 12,4 % of the herds tested showed positive reactors.

- **Humans**

Only in a few countries, the notification system provides separate figures on cases caused by *M. tuberculosis* and *M. bovis*. In principle, the proportion for *M. bovis* is small compared to *M. tuberculosis*, which is man to man transmission. In total, 57 cases of human tuberculosis caused by *M. bovis* have been reported in 10 Member States of the European Union and Norway. This is comparable to the situation in the previous year.

Most cases in the domestic population are recurrent cases in the elderly population. Additionally, sporadic cases are identified in immigrants.

Brucellosis

- **Cattle**

In 2003, nine Member States (Austria, Belgium, Denmark, Finland, Germany, Luxembourg, Sweden, The Netherlands, and Great Britain), Norway, 21 provinces in Italy and four islands of the autonomous region of the Azores (Portugal) were recognised as officially brucellosis

free (OBF). During 2003, Belgium and 21 provinces in the regions Lombardia (6 provinces), Marche (1 province), Trentino-Alto Adige (1 province in addition to Bolzano), Emilia-Romagna (9 provinces) and Sardinia (4 provinces) in Italy gained this status.

In the **non-OBF countries**, at the end of 2003, between 81 % (Greece, Portugal) and 100 % (Ireland) of the herds were recognised OBF. The rate of herds with positive reactors ranged between 0,001 % (France) and 1,3 % (Portugal) in 2003. In Madeira, no positive reactors were identified. In France, reactors in three herds were confirmed. In another three countries, Ireland, Northern Ireland and the mainland of Portugal, less than 1% of the tested herds showed positive reactors. Highest rates of infection were reported on some of the Azores islands (4,9%).

There was no common trend in the countries but in most countries situation remained at the same level or improved. In Italy, situation has remained comparable over several years now. In Spain, after an increase observed in 2001, the infection rate remained at the level observed in 2002. In Ireland and Northern Ireland, a lower number of herds gave a positive result in routine testing. Similarly, on the Azores and the mainland of Portugal, the share of herds positive in routine testing decreased in 2003. In Greece, 4,1 % of the herds tested in those regions where an eradication campaign is run were found positive in 2003, which is an increase compared to the 3,6 % observed in 2002.

- **Sheep and goats**

Altogether, 10 Member States, regions in 4 Member States and Norway are recognised officially brucellosis free (ObmF) (*B. melitensis*): Austria, Belgium, Denmark, Finland, Germany, The Netherlands, Ireland, Luxembourg, Sweden, the United Kingdom, 64 départments in France, 2 regions in Spain, 18 provinces in Italy and the autonomous region of the Azores in Portugal by the end of 2003. During 2003, 17 provinces in the regions Lombardia (11 provinces), Trentino-Alto Adige (1 province in addition to Bolzano), Toskana (1 province) and Sardinia (4 provinces) in Italy and the autonomous region of the Azores (Portugal) were recognised ObmF.

In the non-ObmF Member States the share of ObmF holdings at year-end varied between 46 % (Spain) and 82 % (France). The rate of herds with positive reactors ranged between 0,02 % (France) and 5,6 % (Spain) in 2003. Again, on Madeira no positive reactors were identified. In France, 0,02 % of the tested herds under an eradication programme implemented only in few departments showed positive reactors on national level. Infection rates, clearly above 1 %, were reported in Greece, Italy, the mainland of Portugal and Spain as in previous years. In Italy, Spain and Portugal, a decreasing tendency has continued for several years now. Within the eradication programme implemented in Greek islands and covering only a limited number of flocks, the share of infected holdings increased to 4,7 % in 2003.

- **Humans**

Altogether, 1094 human cases were notified in the European Union (13 MS) and Norway in 2003. There was a clear reduction of the number of cases in 2003. This is especially true for Greece, Portugal and Spain where the situation continued to improve.

Salmonella

- **Feed materials**

Data available demonstrate a *Salmonella* (S.) risk in animal and vegetable derived proteins as well as in feedingstuffs. In most countries the contamination of vegetable derived proteins is higher compared to that in animal derived proteins. On average, 0,7 % of the animal derived proteins compared to 2,6 % vegetable derived proteins were contaminated with Salmonella.

0,6 % of the meat and bone meal and 0,4 % of the fish meal samples were Salmonella positive on average. The contamination rate ranged between 0% and 2 % for meat and bone meal and between 0 % and 7 % for fish meal.

As in the previous years, the *Salmonella* contamination of oil seeds, oil fruits, their products and by-products was considerably higher compared to cereals in almost all countries. On average, 0,7 % of the cereals and 3,5 % of the oil seeds were contaminated with *Salmonella*.

Some *Salmonella* findings were reported in compound feedingstuffs in 12 out of 14 countries. On average, 0,95 % of poultry feed, 0,8 % of cattle feed and 0,5 % of pig feed batches were *Salmonella* positive but this does not take into account differences in monitoring procedures. *Salmonella* were detected in compound feedingstuffs for poultry (in 7 of 12 countries), cattle (in 5 of 12 countries) and pigs (in 4 of 11 countries).

The most frequent serotypes in animal derived proteins were *S.* Montevideo, *S.* Typhimurium, *S.* Derby, *S.* Livingstone and *S.* Give, reflecting more than 80 % of all isolates typed. In vegetable derived proteins, in 2003, *S.* Agona, *S.* Mbandaka, *S.* Tennessee and *S.* Senftenberg were the four most frequent ones. In compound feedingstuff, again *S.* Mbandaka and *S.* Senftenberg were the most frequent serovars.

- **Poultry (Gallus gallus)**

Directive 92/117 laid down harmonised rules for control of *S.* Enteritidis and *S.* Typhimurium in breeding flocks of Gallus gallus, by means of repeated sampling of flocks/hatcheries. In addition, on the basis of this Directive, the Commission approved national programmes to control salmonella in poultry in 7 Member States (Austria, France, Denmark, Ireland, Finland, Sweden and The Netherlands) and Norway. Although these programmes have different scope, they all go further than the minimum provisions for breeders foreseen in the Directive.

Breeding flocks

In general, the very favourable situation has continued in 2003 as regards *S.* Enteritidis and *S.* Typhimurium in Denmark, Finland, Ireland, Sweden and Norway. The *Salmonella* control programmes run in Finland, Sweden and Norway have documented that the prevalence of all *Salmonella* serovars in poultry is low. During 2003, in Finland and Norway, no *Salmonella* were detected in poultry breeding flocks (*Gallus gallus*). In Sweden and Ireland, no *S.* Enteritidis and *S.* Typhimurium were isolated, but a few other *Salmonella* serovars were found. In Denmark, one *S.* Enteritidis and six *S.* Typhimurium infected breeding flocks were detected.

In the other countries, infection rates reported in 2003 ranged between 0% and 8,4% for *S.* Enteritidis and *S.* Typhimurium infections. In Austria, Belgium, Germany, France, Italy, Great Britain and Northern Ireland, less than 1% of the flocks were infected with *S.* Enteritidis or *S.* Typhimurium during 2003. For Italy this is an improvement compared to the previous year. In Spain and Greece, *S.* Enteritidis could be detected at a considerable level, which is even higher than in 2002. In Netherlands, an increase of *S.* Enteritidis infected flocks was registered.

As in previous years, *S.* Enteritidis is the dominating serovar, sharing 38% of all isolates reported compared to 42 % in 2002. *S.* Typhimurium was reported in 4,5 % of all isolates from breeding flocks, which is comparable to 2002. In addition, some country specific patterns were observed. In Great Britain, *S.* Livingstone was dominating, in addition *S.* Virchow and *S.* Senftenberg were more frequently detected. In contrast, in Germany *S.* Anatum was the most frequent serovar in animal related data of poultry breeders.

Breeding flocks – egg production line

In principle, in the five countries (Denmark, Finland, Ireland, Sweden, Norway) which are running an approved control programme for several years no Salmonella are prevalent in

layer breeders. One positive imported flock, infected with *S.* Montevideo was reported in Sweden in 2003.

In Belgium, Germany, Italy and Northern Ireland, no *S.* Enteritidis or *S.* Typhimurium were confirmed in layer breeder flocks in 2003. In contrast to this, in Austria, France and the United Kingdom, where all flocks were negative last year, flocks infected with *S.* Enteritidis or *S.* Typhimurium were reported during 2003. An increase of the number of infected flocks is obvious for Spain, France and The Netherlands. In these countries up to 7,3% flocks infected with *S.* Enteritidis and 1,5% flocks infected with *S.* Typhimurium were observed in 2003. Similar, the share positive samples has increased in Greece. In The Netherlands, *S.* Paratyphi B var. Java has been identified in layer breeder flocks.

There was a clear reduction of *S.* Enteritidis within the isolates typed. In layer breeders, on average 24,5 % of the isolates belonged to this serovar compared to 62,8 % in 2002. *S.* Enteritidis was the dominating serovar in Greece and Spain. *S.* Typhimurium represented 22,6 % of all isolates.

Egg production line – laying hens (Table egg production)

As in 2002, in Norway, all flocks of laying hens (table egg production) were *Salmonella* negative. In Finland, Sweden and Ireland one positive layer flock, infected with *S.* Enteritidis or *S.* Typhimurium respectively was detected. In addition, some flocks infected with other serovars occurred in Ireland and Sweden. In Denmark, altogether 18 flocks, four pullet rearing flock and 14 table egg flocks infected with Salmonella were detected in 2003 which is slightly less than in 2002. Again, the prevalence was higher among battery flocks (5,4 %) than in any other production type (0,6-2,8 %).

In the other countries, as far as a trend can be assessed, an increasing trend was observed in several countries. In 2003, the reported infection rates for *S.* Enteritidis and *S.* Typhimurium in laying hens ranged from 1,9 % to 11,2 %. The prevalence rate for all Salmonella serovars ranged up to 18%.

An increase of Salmonella infected layer flocks was observed in Germany, Spain and Great Britain. The marked increase of reported incidents in layer flocks, observed in 2003 in Great Britain may reflect enhanced monitoring of this sector of the industry during the year. In France, the proportion *S.* Enteritidis infected flocks increased slightly. In the Netherlands, the percentage of *S.* Enteritidis positive flocks has gradually decreased whereas the percentage of *S.* Typhimurium positive flocks remained low. In Italy, the share of positive herds decreased. In Austria and Greece, 5,3% and 1% of the samples tested were positive for *S.* Enteritidis or *S.* Typhimurium.

In layers, there was a slightly lower proportion of *S.* Enteritidis isolates, 53,7 % in 2003 compared with 57,7 % in 2002. *S.* Enteritidis is still dominating in Austria, Germany, Denmark, France, Italy, Portugal and Spain and on the second position in Great Britain. *S.* Infantis, which is on the second position with 10,5 % of all isolates in 2003, was the most frequent serovar in the Netherlands. In addition, several isolates were reported in Austria and Germany. 9 % of all isolates were *S.* Typhimurium.

Eggs and egg products

In 2002, a *Salmonella* prevalence above 1 % in table eggs was reported in five out of nine reporting countries. The highest contamination rate had been reported in Spain. In 2003, all countries reported lower rates compared to the previous year. In two out of eight countries, Salmonella have been isolated in more than 1% of the table eggs investigated. In Spain, 1,9 % and in Greece, 2,9 % of the eggs were positive for Salmonella. In contrast, in raw material for egg products, in two out of five countries, Salmonella were isolated in 2003, whereas no *Salmonella* findings were reported in 2002. In egg products, in three countries positive samples were reported.

In the United Kingdom, two studies were run on raw shell eggs. 0,2 % of the pooled samples of six eggs collected from United Kingdom catering premises and 0,3 % pools (mostly boxes) of six eggs from UK produced shell eggs on retail sale were contaminated with Salmonella. In Germany, the *Salmonella* contamination rate in eggs was 0,57 %, which is slightly lower than the results in 2001 and 2002.

In all countries, with the exception of Spain, *S.* Enteritidis was most frequently isolated. Spain reported that all 37 isolates were other serovars than *S.* Enteritidis and S. Typhimurium.

Breeding flocks – meat production line

In the meat production sector situation is not as favourable as reported in the egg production sector.

In Finland, Sweden and Norway, all broiler breeder flocks were *Salmonella* negative. In Ireland, again no *S.* Enteritidis and *S.* Typhimurium were detected, but about 2% of the broiler breeder flocks were infected with other serovars than *S.* Enteritidis and *S.* Typhimurium. In Denmark, *S.* Typhimurium was detected in seven broiler breeder flocks. Three central rearing flocks were infected with *S.* Typhimurium DT170, three broiler breeder flocks, reared on the same premises, were infected with *S.* Typhimurium DT41, and one flock was infected with *S.* Enteritidis.

During 2003, in Germany, Great Britain, and Northern Ireland no findings of *S.* Enteritidis and *S.* Typhimurium were reported whereas in the other countries the prevalence for these two serovars together ranged between 0,4 % and 10 % infected flocks. Additionally, other serovars were detected in varying quantities. The overall Salmonella prevalence in these countries ranged between 0,5% and 16%.

Compared to the previous year, a lower infection rate with *S.* Enteritidis or *S.* Typhimurium has been reported in Germany and Italy. In Austria, a few more findings were reported in 2003. In France and Greece, situation is similar to 2002. In Spain, 9,3% broiler breeders infected with *S.* Enteritidis have been observed in 2003, compared to 4,5% infected flocks in 2002. In the Netherlands the share positive flocks has increased from 0,7% in 2002 to 2,1% in 2003, mainly due to an increase of *S.* Enteritidis. In addition, a rise of *S.* Paratyphi B var. Java during the last years has been observed. In Belgium, three *S.* Enteritidis positive and 5 *S.* Typhimurium positive broiler breeder herds were identified.

In Great Britain, during 2003, 260 incidents were reported in the meat production breeder line, and *S.* Livingstone and *S.* Senftenberg accounted for the majority of these reports.

S. Enteritidis continued to be the dominating serovar in broiler breeding flocks. In 2003, 38% of all isolates belonged to this type. *S.* Enteritidis was the most frequent serovar in broiler breeders in Austria, France, Greece, Portugal and Spain and on the second position in Germany (animal related data). *S.* Livingstone, *S.* Virchow, *S.* Senftenberg and *S.* Typhimurium were the serovars, which were also more frequently detected in broiler breeders.

Poultry meat production line - broilers

Altogether, infection rates in broiler flocks are higher compared to the breeder level.

In Sweden and Norway, one broiler flock infected with *Salmonella* was detected. In Finland, the share of *Salmonella* positive flocks was 0,2 %. In Denmark, 1,8 % of the broiler flocks were *Salmonella* positive on the average, which is a slight increase compared to 2002.

The infection rates reported in broiler flocks in the other countries ranged from 4,0 % to 24,3 % which reflects an increase in the *Salmonella* infection rate observed in some countries. Compared to 2002, a lower infection rate was reported in Italy. Similarly, the number of incidents reported in Great Britain was considerably reduced. In contrast, a higher infection rate was reported in Austria, Spain and Greece. In Germany, the number of

investigated broiler flocks decreased considerably, within these a reduced share of infected flocks was observed. In contrast, the proportion infected broilers tested for *Salmonella* has increased from 1,6 % to 4,8 %.

In broilers, *S*. Paratyphi B var. Java was dominating in 2002. In 2003, *S.* Enteritidis was the predominant type in broilers and poultry meat, representing 40 % and 13% of all isolates respectively. Within the individual countries, *S.* Enteritidis was the most frequent serovar in broilers in Austria, Germany, Greece, Portugal and Spain. In broilers, *S*. Paratyphi B var. Java moved to the second position in 2003, representing 15 % of all isolates compared with 20 % in 2002. Again, all isolates were reported in the Netherlands. *S*. Infantis, *S*. Livingstone and *S*. Virchow are on the next places and this is in line with the situation in 2002.

Poultry meat production line – poultry meat

The situation in the broiler flocks is reflected in the *Salmonella* situation in poultry meat. In Finland, Sweden and Norway, no *Salmonella* or only low *Salmonella* rates were reported at slaughterhouse or at processing plants in domestic products. In Denmark and Ireland, *Salmonella* was more frequently detected in poultry meat than in Finland, Sweden and Norway.

In the other countries, there is no common trend. In Belgium, for chicken carcasses, the detection rates varied between 2,0 % for samples collected at retail level and 17,5 % for samples taken at slaughterhouses. Chicken breasts were contaminated with Salmonella in 14,2 % of 148 samples collected at processing plants. This is in the same range as in the previous year.

In the Netherlands, the data collected at retail level closely followed the trend found at slaughterhouses. In 2003, the monitoring programme for poultry meat showed that the contamination with *Salmonella* is still declining, reaching 11,3 % in 2003. As in the previous year, more than 50% of the isolates consisted of *S.* Paratyphi B var. Java.

In contrast, in Germany, the share of *Salmonella* positive poultry meat samples increased to 16,5 % compared with 13,3 % in 2002. In Spain, 6,7 % of the poultry meat sampled at slaughterhouses, 18,5 % of the poultry meat sampled at processing plants and where 12,7 % of the samples at retail level were *Salmonella* positive. These are higher levels than reported in 2002. In Italy, at processing plants and retail level, 2,3 % and 1,0 % of the samples were *Salmonella* positive, whereas 3,3 % of the samples taken at slaughterhouses were positive for *Salmonella*. In Greece, 8,4 % and 6,3 % of the poultry meat samples collected at slaughterhouses and at retail were positive for Salmonella.

Within a survey run to estimate the *Salmonella* contamination in whole chickens available to the consumers in Wales, 42 (5,7 %) out of 735 samples tested positive for *Salmonella*.

As seen in 2002, in the overall distribution the serovar pattern in poultry meat is more divers compared to the live birds. *S.* Enteritidis and *S.* Typhimurium are dominating in poultry meat, followed by serotypes *S*. Saintpaul, *S*. Heidelberg and *S*. Blockley.

- **Turkey**

The sampling scheme fixed in Directive 92/117/EEC for *Gallus gallus* is applied in turkey breeders too in several countries voluntarily. In turkey breeding flocks, no *S.* Enteritidis or *S.* Typhimurium were detected in Germany, Sweden, Norway and Ireland. In Sweden, one rearing flock originating from another EU country infected with *S.* Anatum was detected. In Finland, 3 flocks infected with *S.* Typhimurium were detected. In Austria, 9 % of the samples taken at hatchery level from imported hatching eggs were positive for Salmonella.

In turkey flocks at the production level, no *Salmonella* were detected in Norway. In Finland, Ireland and Sweden a few positive flocks were identified. In Finland and Sweden, *S.* Typhimurium was detected whereas in Ireland, as in previous years only other serovars

than *S.* Enteritidis and *S.* Typhimurium were isolated. For Finland, Sweden and Norway, situation is comparable to previous years, with no or a few findings per year. In Denmark, Germany and Ireland, the share positive flocks was lower than in 2002. The contamination rates varied between 1,7 % and 5,7 %.

In Great Britain, a decreasing trend in the number of reported incidents in turkeys was seen in 2001 and 2002. In 2003, the number of reported incidents increased to 295. This may reflect increased monitoring by the industry.

In the Netherlands, results of the monitoring programme in turkey did not show an improvement of the contamination level over the last years.

Only very limited data are available on the Salmonella prevalence in turkey meat. In Germany, about 9 % of the samples tested were *Salmonella* positive which is similar to the previous year.

In turkeys, S. Montevideo was the most frequent serovar, mainly due to the findings in Great Britain and Austria. In 2003, *S*. Heidelberg moved to the second position, in the previous year it was the most frequent one. It is still the most frequent one in Austria. On the next positions are *S.* Typhimurium, *S*. Indiana and *S*. Kottbus. In addition, *S*. Newport was among the more frequent ones in Great Britain.

- **Pigs and pork**

In Finland, Sweden and Norway, low contamination rates were detected in the carcass swabs and lymph node samples taken at the slaughterhouses and in the crushed meat samples taken at slaughterhouses or cutting plants. No or very few *Salmonella* infected herds were identified in these countries in 2003. In Sweden, a feed mill distributed feed contaminated with *S.* Cubana to several pig and cattle farms. In 30 pig herds at least one faecal sample was positive for *S.* Cubana, and in 18 herds only positive feed samples were found.

In the other countries, the situation as regards fattening pigs is different.

In Denmark, again 1,4% of the individual carcass swabs were *Salmonella* positive. In the serological control programme, by the end of 2003, 3,3 % of the herds fell in Level 2 or 3, which indicate Salmonella infection which is slightly higher than in 2002.

In Austria, 1 % of the faecal samples of fattening pigs were positive for *Salmonella*. Similarly, in diagnostic submissions, 0,7 % of the animals tested positive for *Salmonella*. In Belgium, 14,6 % of the carcass swabs were positive which compares to 15,4 % reported in 2002. In Germany, 6,6 % of the fattening pigs tested at slaughterhouse showed a positive immunological test result compared with 5,8 % in 2002. In bacteriological investigations, 5,5 % of the animals were *Salmonella* positive compared with 3,8 % in 2002. In Great Britain, the number of reported incidents increased from 207 in 2002 to 214 in 2003. The prevalence of *Salmonella* carriage in pigs at slaughter was 23,4 %.

In pork, contamination level at slaughterhouse ranged between 0,04 % and 6,10 %. At retail level, the contamination rate ranged between 0 % and 18,2 % for pork, 0 % and 9,4 % for minced meat and 0 % to 2,8 % in pork meat products.

In Belgium, 1,7 % positive samples of minced meat and 6,1 % positive cutted pork samples at processing plants have been reported. At retail level, 9,4 % of the minced meat samples were *Salmonella* positive. In the Netherlands, the prevalence of Salmonella in pork was more than halved in 2003, rating at 4,8 % in 2003 compared with 10,5 % in 2002. In Germany, 3,0 % of the pork samples taken at retail level were *Salmonella* positive, compared to 2,9 % in 2002.

Within the study on modified atmosphere packaged and vacuum packed cooked ready – to – eat meats at the end of shelf-life from retail premises, in Great Britain, none of the samples examined had *Salmonella* present.

The serovar pattern in pigs and pork remained unchanged. *S.* Typhimurium is clearly dominating in the overall figure, and this is true in most of the individual countries. The next frequent serovar is *S.* Derby. Interestingly, *S.* Infantis and *S.* Enteritidis isolates from pigs and pork were reported from several countries.

- **Cattle and products thereof**

Results of the surveillance programme at slaughterhouses and cutting plants run in Finland, Sweden and Norway showed that the *Salmonella* situation continued to be at a low level in cattle. In lymph node samples and carcass swabs *Salmonella* were rarely detected.

Within the abattoir survey, run in Finland, 0,07 % of the faecal samples were positive for *Salmonella*. In 2003, lymph nodes samples and carcass swabs were again very rarely contaminated, with levels of 0,06% each. In crushed meat samples, taken at processing plants, 0,08% of the samples were positive, compared with 0,4 % detected in the previous year.

In Denmark, the rate of *Salmonella* positive pooled carcass swabs increased from 0,32 % and 0,6 % in 2001 and 2002 respectively to 0,9 % in 2003. From 2,6 % of the faecal samples (one animal per farm) collected at slaughterhouse, *Salmonella* were isolated. During 2003, 74 outbreaks of clinical salmonellosis in Danish cattle herds were notified compared with 107 outbreaks in 2002. One cattle herd was found infected with multi-drug resistant *S.* Typhimurium DT 104.

In Styria (Austria), no Salmonella were isolated in faecal samples from cattle. Within clinical samples, 4 (0,2 %) out of 1804 animals were positive in Austria. In Germany, 15,4 % of the herds investigated and 4,3 % of the animals tested *Salmonella* were isolated in 2003. This is a further increase in the infection rate for cattle herds compared to 2001 and 2002. Additionally, the number of notified outbreaks of clinical salmonellosis in cattle herds was 232 compared with 258 in 2002 and 194 in 2001.

In Great Britain, the number of incidents reported in cattle increased to 1179 incidents compared with 1004 in 2002 and 626 in 2001. Within these reports, an isolation of *S.* Paratyphi B var. Java with a multiresistence pattern from a calf was reported. In Northern Ireland, 300 *Salmonella* isolates were received in 2003 compared with 280 in 2002.

In beef, contamination level was usually below 1 %. Within limited investigations in Austria and Spain, higher contamination rates were detected. In beef products, no *Salmonella* were detected in the study run in Wales. In contrast, in other countries *Salmonella* were isolated in up to 1,6 % of the samples tested.

In ready to eat milk products, *Salmonella* contamination rates up to 0,13% in cheese samples and up to 0,26 % in batches of milk products were detected.

In 2003, in cattle, again *S.* Dublin is dominating and *S.* Typhimurium is on the second place in the overall figure. In the individual Member States, either *S.* Typhimurium or *S.* Dublin is most frequently reported. Again, *S.* Enteritidis isolates from cattle were reported from several countries. The next frequent serovar was *S.* Mbandaka, compared with S. Montevideo in 2002 as well as *S.* London and *S.* Panama in 2001.

In beef, the overall pattern is more divers. Altogether, *S.* Typhimurium and *S.* Derby are the most frequently reported serovars. *S.* Dublin moved to the third position followed by *S.* Enteritidis. *S.* Enteritidis was isolated from beef in four Member States. S. Dublin was almost exclusively isolated from beef in Denmark.

- **Humans**

Altogether, 135 546 cases of human salmonellosis have been reported by the 15 Member States of the European Union and Norway in 2003. This means an overall decrease by 7% compared to 2002. In the individual countries, the situation is different. Compared to 2002,

the number of reported cases increased considerably in Belgium, Greece, Ireland, Portugal and Netherlands. In Belgium, an increase by 28% in the total number of human cases was recorded mainly due to *S.* Enteritidis, exceeding now 70% of all cases. Similarly, in the Netherlands, a considerable increase in human salmonellosis cases, fully caused by *S.* Enteritidis could be attributed to egg imports. A slight increase was observed in Spain, Norway and Scotland. A clear reduction in notified salmonellosis cases could be observed in Denmark, Germany, Italy and Luxembourg.

As in previous years, *S*. Enteritidis was dominating, causing 61,8 % (2002: 67,1 %) of all notified cases in the European Union and Norway. Rates in the individual countries ranged between 87,9 % in Austria and 33,3 % in France. *S.* Typhimurium was on the second place, causing 16,5 % of all cases. Rates in the individual countries ranged between 5,8 % in Austria and 28,7 % in Ireland. As in previous years, next to *S.* Enteritidis and *S.* Typhimurium, most cases were caused by *S.* Virchow, *S.* Infantis, and *S.* Hadar. Each of these serovars is involved in less than 1 % of all notified cases.

In Finland, Ireland, Norway and Sweden, there is a considerable difference in the serovar patterns of domestic and imported cases. There, *S*. Enteritidis is more frequently reported in imported cases. This is less pronounced in Northern Ireland and Scotland. In contrast to this, in Austria, Belgium and the Netherlands, the same proportion of *S*. Enteritidis cases was observed in domestic and imported cases or *S*. Enteritidis was more frequently involved in domestic cases.

Trichinellosis

- **Animals**

Pigs and horses are regularly tested for trichinellosis during meat inspection in the European Union and Norway. In 7 countries, no single *Trichinella* case was detected in 2003. As in previous years, *Trichinella* was found in domestic pigs in Finland and Spain. In addition, one positive finding was reported in Germany. No *Trichinella* larvae were detected in pigs in the Netherlands during 2003, there one positive sample had been detected in 2002. In horses, *Trichinella* is rarely detected. In 2003, no *Trichinella* was detected in the EU in horses. In wild boars, *Trichinella* was detected in 7 countries in 2003. In these countries, findings had been reported in previous years too. Positive findings in other wildlife animals were reported by six countries. Altogether, in 9 countries *Trichinella* larvae were reported in wildlife animals.

- **Humans**

Trichinellosis was very rare in humans in 2003. Altogether, 56 human cases were registered in the European Union (13 MS), against 48 (13 MS) in 2002, 53 (12 MS) in 2001 and 67 (11 MS) in 2000.

Rabies

- **Animals**

Rabies cases were reported in the same 5 Member States (Austria, Denmark, The Netherlands, Germany and Spain) of the European Union as in the previous years.

In Finland, Ireland, Italy, Sweden and Norway (mainland) no domestic cases of rabies were recorded since reporting commenced in 1994. For the forth year in row no cases of rabies were detected in Belgium. In Austria, cases of rabies were detected in the domestic and wildlife population in previous years, during 2003 only one infected horse was detected. In Germany, rabies was detected in wildlife only. During 2003, there was a slight decrease in the total number of reported cases in Germany. As each year, so far, Spain reported cases of rabies in dogs from Melilla (North Africa).

In Denmark, Germany and The Netherlands rabies was detected in bats during 2003. No bat cases were reported on the mainland of Spain and in Great Britain during 2003.

- **Humans**

In 2003, no case of rabies in humans was reported in the European Union and Norway.

Campylobacteriosis

- **Poultry and poultry meat**

In the monitoring activities and studies performed in 2003, the *Campylobacter* contamination rate in broiler flocks ranged between 4,9 % and 71,4 %. This is in principle in line with results seen in previous years. These data reflect the high infection rate in broiler flocks in most countries.

In contrast, in Finland, 6,5 % of the flocks tested were *Campylobacter* positive in 2003. In 2000 and 2001, an infection rate below 10% had been observed in a survey at slaughterhouse level. In Norway, the infection rate determined within the surveillance programme was below 10%. In 2003, 4,9 % of the flocks were positive compared with 6,3 % in 2002 and 7,7 % in 2001. In Sweden, where the sampling scheme had been changed during 2001, since then each year an infection rate close to 20% was detected. In 2003, from 17,6 % of the flocks *Campylobacter* was isolated.

In the other countries, higher infection rates were detected. In Denmark, the prevalence in broiler flocks was 35 % in 2003 compared to 42,6 % in 2002. The total prevalence in raw chicken of domestic origin was 33 %. For chicken products, this represents a decrease compared to 2002 when the prevalence was 42 %. In Ireland, within the enhanced surveillance programme using a carcass wash method 58 % of the poultry meat samples, taken at processing plants, were positive for thermophilic *Campylobacter*. This is in the same range as in previous years. In Belgium, within the national random sampling at slaughterhouses, cutting plants and retail *Campylobacter* contamination rates in broiler and culled layer's carcasses and breast meat varied between 12,3 % and 45 %. In Germany, *Campylobacter* could be detected in about 20 % of the poultry meat samples collected within official food control. In the Wales chicken survey, 536 (73 %) out of 734 samples tested positive for *Campylobacter*.

- **Other animal species and products thereof**

As in previous years, quite high infection rates were reported in pigs. In Denmark, the prevalence rate was 93,4 % compared with 80 % in 2002. In Austria, Italy and Great Britain, the infection rates were slightly lower, ranging between 52 % in Italy and 69 % in Great Britain. Investigations run on *Campylobacter* in pork showed low contamination rates in some countries. In Italy, thermophilic *Campylobacter* were detected in 4 (9,8 %) out of 41 pork samples collected at retail shops. In Spain, 72 (55 %) out of 132 pork samples were *Campylobacter* positive. In Germany, 2,7 % of the pork samples were positive.

In Austria and Italy, about 35 % of the cattle herds were positive. In Denmark, the prevalence was 64 %. In the British survey, in 55 % of the cattle tested at slaughter thermophilic *Campylobacter* species were present. In the Finish survey, 31,3 % of the bovines were positive. Investigations run on *Campylobacter* in beef showed low contamination rates. In the beef samples tested, only a few positive findings were reported. In Finland, thermophilic *Campylobacter* was detected in 4,1 % of the carcass swabs taken from the surfaces of randomly chosen carcasses.

In 2003, *Campylobacter* was not reported in raw milk. One sample of a dairy products was *Campylobacter* positive.

No *Campylobacter* were detected in fish and fish products during 2002. In 2003, *Campylobacter* was isolated from 6 out of 57 samples of oysters tested in The Netherlands.

- **Humans**

Altogether, 135 974 cases of human campylobacteriosis have been reported in the European Union (13 Member States) and Norway. After an increasing trend over several years, in 2002 for the first time a decrease by 5% was reported. This trend continued in 2003, with an overall reduction by 9%.

There is no common trend among the countries. A pronounced increase in the number of notified human campylobacteriosis cases was observed in France, Ireland and Spain. In Sweden and Norway the overall number was slightly above the previous year. In contrast to this, the decreasing tendency continued in Denmark, Finland, the Netherlands and United Kingdom. A first decrease is reported in Austria, Belgium and Germany.

Listeriosis

- **Food**

High contamination with *L. monocytogenes* was reported in all type of meat and meat products. Most results reported are restricted to presence or absence of L. *monocytogenes.*

Contamination rates up to 11% in ready-to-eat beef, 6% in pork products, 21,5% in other meat products and 32,5% in poultry meat products were reported.

In Sweden, a total of 2,1% of cold cuts and sliced samples from domestic production facilities were positive for L. *monocytogenes*.

In the study of modified atmosphere packaged and vacuum packed ready-to-eat meats at end of shelf-life from retail premises, run in United Kingdom, 27 (1%) samples contained L. *monocytogenes* above 100 cfu/g. This was more frequently true for beef products (1,6%) and poultry meat products (1,1%) compared to porcine products (0,7%).

In Denmark, during 2003, 3 (0,3%) of 876 meat product samples contained more than 100 cfu/g. In Spain, in 9,5% of 885 minced meat, 2,6% of 807 pork products and 5,5% of 127 poultry meat samples, more than 100 cfu/g were present. In The Netherlands, one out of 19 samples of poultry meat products contained more than 100 cfu/g.

In milk and milk products L. monocytogenes was detected in varying proportions. Overall, the contamination rate in raw milk was low. In milk products, in up to 4,8% of samples L. monocytogenes was detected. The highest rates were reported in soft cheeses and cheeses containing raw milk. In Spain, 71 out of 1471 samples of ready-to-eat milk products contained more than 100 cfu/g. 65 of the 71 isolates were detected during one occasion in one company. In the Netherlands, in one out of 148 cheese samples, a contamination rate above 100 cfu/g was detected.

- **Human**

In total, 1048 listeriosis cases have been reported in the European Union (figures from 13 Member States) and Norway, in the previous year 860 cases in 12 Member States and Norway were notified. This is a clear increase in the number of reported cases compared to the previous year. The increase in number of cases from 2002 to 2003 is attributable predominantly to England and Wales, where 226 cases in 2003 compared with 129 cases in

2002 have been notified. In addition, more cases than in 2002 have been registered in Belgium, Finland, Germany, and The Netherlands.

Some countries were able to provide further details on the severity of the cases. Altogether, at least 63 fatalities (7 countries) and 148 pregnancy associated cases (9 countries) were registered.

Yersiniosis

- **Animals and products thereof**

The disease is not notifiable in animals in any of the reporting countries. *Y. enterocolitica* was isolated from several animal species.

In 2003, a total of 63 (13 %) of 493 examined pigs were found positive for *Y. enterocolitica* in Denmark. All of the obtained isolates were serotype O:3. Within the abattoir survey in Great Britain, 13,4% of 2112 pigs, 4,5% of 672 cattle and 8,0% of 715 sheep were positive for *Y. enterocolitica.* In Italy, within a survey run in 2003, no *Y. enterocolitica* were detected in poultry but 10 (13,3%) of 75 cattle, 2 (39%) of 51 pigs, 146 (65%) of 225 sheep were positive for *Y. enterocolitica*.

In contrast to these results, a considerable number of animals has been tested in Portugal but no or very few *Y. enterocolitica* were isolated from poultry, cattle, pigs, sheep, goats and other animals.

Most Y. *enterocolitica* isolates were reported in pork and pork products at retail. In other types of food, only single positive findings were reported in 2003.

- **Humans**

Altogether, 9399 human cases of yersiniosis were reported in the European Union (figures from 10 countries) and Norway. This is a clear decrease compared to the previous year, if figures are compared from those countries, where data are available for both years. In Sweden, again an increase in number of cases was observed, whereas in the other countries a stable situation or slightly lower numbers were reported. The increase observed in Sweden was almost exclusively observed during the summer months June to August. As in the previous years, in Denmark, Germany, France, Spain and Norway, the majority of isolates were serotype 0:3.

Echinococcosis

- **Animals and products thereof**

Surveillance and control of *Echinococcus* (*E. granulosus*) through meat inspection in all known potential intermediate host species is compulsory in the EU. Data available from Greece, Italy, Portugal and Spain confirm that *E. granulosus* is prevalent in sheep, goat, cattle, pigs and wildlife.

In Greece, situation remained at the level observed in the previous year or has decreased slightly.

In Italy, the infection rate increased in sheep to the level observed in 2000 and 2001. In goats the prevalence observed in 2003 was similar to the level before the major increase in 2001. In cattle, pigs and solipeds situation remained comparable to the previous year. In wild boars, no Echinococcus findings were reported in 2003, where as in 2002 1,7 % of the animals were positive.

In Spain, the share positive pigs increased to 1,8 % compared to 0,6 % in 2002 and 0,4 % in 2001. This is due to an increase observed in domestic pigs slaughtered at home. During 2002, 13,5% of the wild boars were infected with *Echinococcus spp*., which was considerably higher compared to the reports from previous years. In 2003, the rate infected wild boars was comparable to the situation before 2002.

No *E. multilocularis* has been found in 2003, or earlier, in Finland, Sweden and the mainland of Norway. During 2003, again, *E. multilocularis* was detected in foxes in Austria, Luxembourg, The Netherlands and in sibling voles in the archipelago of Svalbard. In several other countries, the presence of *E. multilocularis* has been reported in previous years but no specific studies were conducted during 2003.

- **Humans**

In total, 374 human cases of echinococcosis were registered in the European Union and Norway in 2003 (figures from 14 countries). Compared to the previous year, there was an overall decrease in the number of reported cases.

Cases of alveolar echinococcosis had been reported in Austria, France, Germany, and Scotland in previous years. Altogether, 30 cases of alveolar echinococcosis were reported in Austria, France and Germany in 2003.

Altogether, 307 cases of cystic echinococcosis were notified in 2003. In Austria, Finland, Germany, and The Netherlands, all or most of these cases were imported.

Toxoplasmosis

- **Animals**

In most Member States, toxoplasmosis is not reportable. No specific studies were reported in 2003. As in the years before *Toxoplasma* (*T.*) isolates were detected in several animal species, i.e. cattle, pigs, sheep, goat, cats, dogs, and wildlife in diagnostic investigations.

- **Humans**

Altogether, 408 cases have been notified in the European Union (figures from 11 Member States). There is a slight increase compared to the previous year in those countries which provided data over the last five years.

Verocytotoxic E. coli infections and HUS

- **Cattle and beef**

In Denmark, faecal samples from slaughtered calves were monitored for VT *E. coli* O157 and 7,1 % of the samples were found positive in 2003. In addition, in a study of the occurrence of five serogroups of *E. coli*, a total of 58 isolates were verified as belonging to serogroups O26 (14), O103 (4), O111 (0), O145 (5) and O157 (35). Three (0,4 %) O26 isolates and 23 (3,1 %) O157 isolates were identified as verocytotoxin producers.

In a survey, run in Finland, 0,4 % of the 1490 faecal samples were positive for VT E.coli O157. In addition, VTEC O157 was isolated from one cattle carcass.

In the British abattoir survey, the prevalence of VTEC O157 carriage in animals at slaughter was 4,7 % for cattle.

In The Netherlands, the prevalence of *E. coli* O157 in cattle was gradually increasing up to 2002. In investigations within the first quarter of 2003 the prevalence was already high for the time of the year, rating at 15,4 % positive calves. For the first time since 1989, VTEC O157 was isolated from beef at retail within the surveillance programme.

In a survey in Norway for the presence of VTEC O26, O103, O139, O145 and O157 in dairy farms, the overall animal prevalence of VTEC O157 was 0,2 %. In 126 (92 %) herds VTEC O103 was detected, while VTEC O157 was detected in one herd only (0,7 %).

In Germany, in 17,3 % of the cattle VTEC was reported in 2003 compared to 12,2 % in 2002. In 2002, some isolates of VT *E. coli* O157 were reported but not in 2003. In beef, VT *E. coli* was isolated from 6 out of 197 samples tested, but none of the isolates were VTEC O157.

In Belgium, within the national random survey, VTEC O157 was isolated from 0,7 % of beef carcasses at slaughterhouse and cutting meat at processing plants. At retail, 2,4 % of the minced beef samples were positive for VT *E. coli* O157.

- **Humans**

Altogether, 2607 laboratory confirmed cases of verotoxigenic *E. coli* infections or HUS were reported in 2003 compared with 2664 cases in 2002. A total of 203 laboratory confirmed HUS cases were reported in 13 countries compared with 238 cases in 2002. Out of these, 156 cases were caused by VT *E.coli* O157, and 45 cases by other serotypes.

Compared to the previous years, the number of reported cases has slightly decreased for the first time.

Antimicrobial resistance in Salmonella

Information on antimicrobial resistance in *Salmonella* was provided by all countries. In general, resistance to tetracycline seems to be common among the *Salmonella* isolates. In addition, resistance to ampicillin, streptomycin and sulfonamides were often detected.

Some resistance to ciprofloxacin or enrofloxacin was reported by 9 Member States. No resistance to these antimicrobials was identified in Austria, Belgium, Finland, The Netherlands and Norway. Resistance to nalidixic acid, which is an indicator of developing resistance to fluoroquinolones, was reported by most Member States. Most of the resistant isolates were *S.* Enteritidis from poultry, but this type of resistance was also detected in other serovars and animal species. No resistance to fluoroquinolones was detected in Finland and Norway. Resistance to cephalosporins was detected in animal or food isolates in Belgium, France, Italy, The Netherlands, Spain, Portugal and England and Wales.

The resistance patterns observed in the isolates from the individual animal species is closely linked to the dominating serovars. In cattle, as in previous years, the highest resistance rates are reported for tetracycline, chloramphenicol, ampicillin, sulfonamide, and streptomycin. In contrast, for the aminoglycosides gentamicin, kanamycin and neomycin, low rates were prevalent. Resistance to cephalosporins was detected in England and Wales. Isolates with resistance to fluoroquinolones were detected in Italy, Luxembourg and Sweden.

Resistance to tetracycline, ampicillin, nalidixic acid, sulfonamide and streptomycin are dominating in poultry isolates. Nalidixic acid resistance was found in most Member States and resistance to fluoroquinolones was detected in isolates from poultry or poultry products in 7 Member States.

In *S.* Enteritidis, in principle, very low resistance rates were reported in pig and cattle isolates. In poultry isolates, higher resistance rates were observed. Resistance to nalidixic acid was mainly linked to this serovar. In four countries, resistance to fluoroquinolones in *S.* Enteritidis from poultry was detected.

In *S.* Typhimurium, as in the previous year, high resistance rates were obvious for those antimicrobials where resistance occurs. Resistance to cephalosporins in *S.* Typhimurium from cattle and pigs was reported in England and Wales, but not in the other countries which investigated this group of antimicrobials.

High resistance rates were observed in some other serovars. Resistance to nalidixic acid was mainly observed in *S.* Kottbus*, S.* Saintpaul*, S.* Paratyphi B var. Java*, S.* Hadar and *S.* Blockley isolated from poultry. Additional resistance to fluoroquinolones was seen in the serovars *S.* Hadar and *S.* Saintpaul. The vast majority of *S.* Virchow isolates were resistant to nalidixic acid, few isolates acquired the additional resistance to fluoroquinolones.

It is also apparent that the resistance situation is different in the Member States.

Antimicrobial resistance in Campylobacter

In *Campylobacter* resistance rates between the northern countries, Denmark, Sweden and Norway, and the other reporting countries, Styria (Austria), Spain and The Netherlands were different. The resistance pattern were similar, but the share of resistant isolates differed. In the northern countries, low resistance rates were reported in isolates from domestic animals or animal products and all were susceptible to gentamicin and erythromycin. Isolates from pigs showed a higher resistance rate, in Denmark 24% were resistant to erythromycin, in Sweden 18% were resistant to nalidixic acid and 16% to fluoroquinolones. An opposite picture was seen in Spain, there isolates from pigs and poultry showed resistance rates above 90% for tetracycline, nalidixic acid and fluoroquinolones. In addition, they were resistant to erythromycin and gentamicin. In the other countries resistance to tetracycline, nalidixic acid and fluoroquinolones was high.

Antimicrobial resistance in Escherichia coli

For the first time, information on antimicrobial resistance in isolates of Escherichia coli investigated as indicator bacteria was collected. Isolates of *E. coli* were resistant to tetracycline, ampicillin, sulfonamides and streptomycin. A few or no isolates were resistant to chloramphenicol, nalidixic acid, cephalosporins, gentamicin, neomycin and kanamycin.

Isolates from cattle and beef, collected within a monitoring programme, were mainly sensitive to the antimicrobials tested. As regards pigs, more isolates showed resistance to tetracycline, trimethoprim, sulfonamides and streptomycin. Compared to bovine isolates, less isolates were resistant to ampicillin and chloramphenicol and 0 to 2% resistance to nalidixic acid and fluoroquinolones was observed. In Spain a higher percentage, 14% of the isolates, were resistant to nalidixic acid.

The resistance pattern in isolates from poultry is similar to the other food animals. Resistance rates to nalidixic acid were higher, fluoroquinolone resistance was present and also resistance to aminoglycosides other than streptomycin was higher than in pigs and poultry.