

## 1. Tuberculosis

### 1.1. Bovine tuberculosis

#### 1.1.1. Bovine tuberculosis in cattle

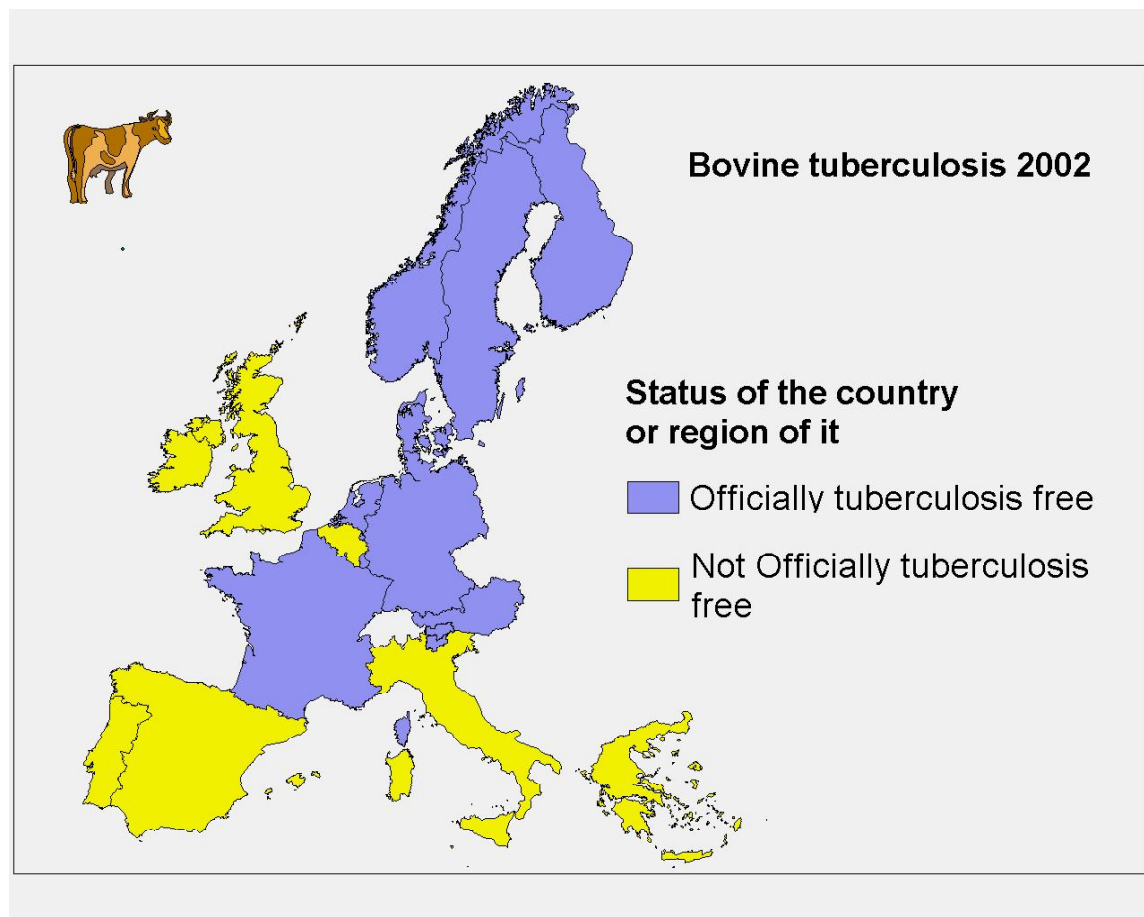
Rules for trade in cattle as regards tuberculosis are laid down in Council Directive 64/432/EEC as amended by Council Directive 97/12/EC [last amended by Regulation (EC) 1226/2002]. As a result of these control measures, several countries have eradicated this zoonotic agent in livestock and others have reached a low prevalence level.

During 2002, no additional countries or regions were recognised officially tuberculosis free (OTF). Thus, at the end of 2002, eight Member States (Austria, Denmark, France, Germany, Luxembourg, Finland, The Netherlands and Sweden), Norway and the provinces Trento and Bolzano in Italy were recognised OTF (Figure MY 1).

Eradication programmes approved for Community co-financing were implemented in Spain, Greece, Italy, Ireland, United Kingdom (Northern Ireland) and Portugal in 2002 (Commission Decision 2001/853/EC).

Requirements for surveillance of tuberculosis in cattle are different for countries recognised OTF and the other countries. Therefore, the epidemiological situation as regards bovine tuberculosis is described separately in the following paragraphs.

Figure MY 1. Bovine tuberculosis in the European Union and Norway, 2002



### **Officially tuberculosis free countries**

In the OTF countries, surveillance has mainly to be done by clinical surveillance, routine testing (i.e. at Artificial insemination (AI) stations), and during meat inspection.

In Denmark, Finland, Luxembourg, Sweden, and Norway, as in 2001, no infected herds were detected in 2002.

In Austria, France, The Netherlands and Germany, some outbreaks were identified in 2002. Both, in Austria and The Netherlands, no outbreaks were reported in 2001, while 2 outbreaks occurred during 2002.

In the Netherlands, one of the positive animals had been imported from abroad at the age of one and a half year, and fattened for another year in the Netherlands. The other positive animal was a veal-calf, which had been imported as a new-born calf. Altogether 16 contact herds were traced in the Netherlands from 3 positive herds of origin in another Member State. All the contact herds tested negative. During 2002, in Netherlands a total of 57 herds the OTF status was suspended, and 34 herds regained their status before the end of 2002.

In Germany, as in previous years a few cases of bovine tuberculosis were notified. In 2002, 6 outbreaks and in the previous year 4 cases in cattle were registered. In France, 51 cases of new infections in cattle herds were notified over the year 2002, which is a reduction compared to the previous year, when 73 new cases were notified.

Data from routine post mortem examination of animals are available from most OTF countries, except from Germany. Usually, a few suspicious lesions were reported but they were not confirmed to be positive. However, in Austria, The Netherlands and France, positive tuberculosis cases have been identified during meat inspection.

No positive results of intradermal testing were reported in artificial insemination (AI) bulls or other routine tests in Denmark, Finland, The Netherlands, Sweden and Norway.

### **Member States not officially free**

#### **Surveillance systems in place**

Community legislation provides for regularly tuberculin testing in order to reach the OTF status. The testing frequency depends on the epidemiological situation in the country or region of a country. It can range from annual testing, in areas where the average incidence of confirmed tuberculosis in cattle over the past two years has been more than 1 %, down to four yearly tests, where the average incidence over the past six years has been less than 0,1 %. More frequent testing may be applied in areas considered to be specifically at risk. This programme of herd tests is supplemented by investigations following the discovery of suspicious lesions in post mortem inspections at slaughterhouses.

In countries, which apply an eradication programme, not all positive results to the skin test are automatically subjected to further confirmation. Measures might be taken already on the basis of this positive result. These units might be recorded as positives although not all are really infected.

Test data in respect of examinations due to exports, at AI stations or imports are usually included in the total routine testing data and are therefore not reported separately.

#### **Notification data**

In Table MY 1 the numbers of infected herds notified in the countries not officially free are summarised. A distinction is made between the situation at the end of the year and the new cases identified during the year. The number of cases notified at the year end covers all positive cases which by definition are still prevalent at the end of the reporting year. This covers also infected farms, which were already present at the beginning of the reporting year and had not yet reached OTF status again. In contrast, the number of cases notified during

the year covers those cases where the OTF status is suspended or the herd is confirmed to be infected at one point during the reporting year. Thus, this figure gives an indication of the incidence of the disease. As can be taken from Table MY 1 this information is not provided by all countries.

There was no common trend in the non-OTF countries, but in principle situation continued to improve. In Belgium, the very favourable situation continued in 2002. In Italy situation was comparable to the previous year. In Ireland, Portugal and Spain, the number of newly identified positive herds and infected herds at the year end decreased slightly. In contrast, in Great Britain, the number of newly identified positive herds and infected herds at the year end increased. Greece did not provide this type of information.

Altogether, the percentage of infected herds at the year end ranged between 0,03% and 4,2%.

In Belgium, 10 newly infected herds have been notified in 2002, and the OTF status was suspended from 12 herds by the end of the year. These figures are comparable to the 20 infected herds notified in 2001. At the end of 2002, 99,97% of the herds were officially free of tuberculosis.

In Italy, as regards the whole territory of this Member State, the share of infected herds was clearly below 1%. No data were submitted on the regional level. In the mainland of Portugal and in Spain, the overall share positive herds at the year end was slightly above 1%. Data on regional level for Spain show that in some autonomous regions no or only very few infected herds are prevalent.

In Ireland and Northern Ireland, the share of positive herds is still the highest.

In Ireland, the share of herds whose status was suspended or withdrawn during the year has continued to decrease. In 2002, 6,5% of the herds were notified infected during the year. This is now the second year in row with a decreasing tendency, after the year 2000, when an increase in the prevalence from 7,9% to 8,2% was observed. At the year end 2002, 3,6% of the cattle herds were infected.

In Northern Ireland, the share of herds recognised OTF was reduced in 2002. The number of herds in which the disease was found has been increasing since 2001.

**Table MY 1. Notification of bovine tuberculosis in Member States not officially tuberculosis free in 2002**

	Herds under control	Herds OTF	% Herds OTF	Notification at year end		Notification during year	
				Herds infected	% Herds infected	Herds infected	% Herds infected
Belgium	47330	47314	99,97	16	0,03	10	0,02
Greece <sup>2</sup>	30228	-	-	-	-	-	-
Ireland <sup>1</sup>	127711	122483	95,91	4643	3,64	8338	6,53
Italy	153707	146620	95,39	1026	0,67	827	0,54
Portugal	-	-	-	-	-	-	-
- Mainland	95927	94957	98,99	970	1,01	-	-
- Madeira	-	-	-	-	-	-	-
- Azores	-	-	-	-	-	-	-
Spain	169565	159086	93,82	2181	1,29	-	-
Great Britain	99584	97101	97,51	1453	1,46	1905	1,91
Northern Ireland	30244	24636	81,46	1262	4,17	756	2,50

Figures given in this table do not necessary coincide with those reported by the Member States in the framework of the eradication programmes

- No information available

<sup>1</sup> This figure reflects all herds whose status was suspended / withdrawn for whatever reason

<sup>2</sup> Total territory

The incidence of new confirmed cases of bovine tuberculosis in cattle in Great Britain was slightly below that of the year 2000. Due to the outbreak of Foot and Mouth Disease in Great Britain, the field operations associated with the tuberculosis control programme were suspended for most of the year 2001. Testing resumed in 2002, but was concentrated on herds with overdue tests and, consequently, at higher risk of infection. These factors make it difficult to assess the underlying trends in tuberculosis incidence during 2001 and 2002 in Great Britain and comparisons with earlier periods should be treated with caution.

### Regular tuberculin testing

Table MY 2 summarises the results of regularly tuberculin testing available from non-OTF countries.

There is no clear relationship between the number of infected cases, which were notified and the results on the basis of tuberculin testing. This might be partly attributable to the sampling schedule applied for tuberculin testing, as not all herds are tested each year and focus may be laid on those herds at the highest risk.

On national level, the rate of herds with positive reactors ranged between 0,36% and 13,1% in 2002. In two countries, Italy and the mainland of Portugal, less than 1% of the tested herds showed positive reactors on national level. In Greece, Ireland, Spain and the United Kingdom, these figures are above 1%. This might reflect that testing was specifically performed in regions where tuberculosis is still prevalent, with testing not performed each year in regions with a very low prevalence rate.

**Table MY 2. Bovine tuberculosis: Tuberculin testing of herds in Member States not officially tuberculosis free**

	2001			2002		
	Herds tested <sup>1</sup>	Herds positive <sup>2</sup>	% herds positive	Herds tested <sup>1</sup>	Herds positive <sup>2</sup>	% herds positive
Belgium	-	-	-	-	-	-
Greece <sup>3</sup>	9998	113	1,13	11419	147	1,29
Greece <sup>4</sup>	2191	60	2,74	-	-	-
Ireland	124133	5267 <sup>5</sup>	4,24	124195	4364	3,51
Italy	151202	1068	0,71	123114	1026	0,83
Portugal	-	-	-	-	-	-
- Mainland	59457	176	0,30	63343	225	0,36
- Madeira	-	-	-	-	-	-
- Azores	-	-	-	-	-	-
Spain <sup>5</sup>	144994	4206	2,90	166409	3733	2,24
Spain <sup>6</sup>	150939	5120	3,39	172215	4577	2,66
Spain <sup>7</sup>	144994	1432	0,99	166409	1039	0,62
Great Britain	11393	511	4,50	44129	1905	4,31
Northern Ireland	29521	2479	8,40	23975	3136	13,08

Figures given in this table do not necessarily coincide with those reported by the Member States in the framework of the eradication programmes

- No information available

<sup>1</sup> Number of herds subjected to test during the course of the year

<sup>2</sup> Results of tuberculin testing; the figure does not include herds whose status was suspended/withdrawn for reasons of suspicion on basis of post-mortem examination, or suspect trace or contacts

<sup>3</sup> Total territory

<sup>4</sup> Area where eradication programme is co-financed by Commission

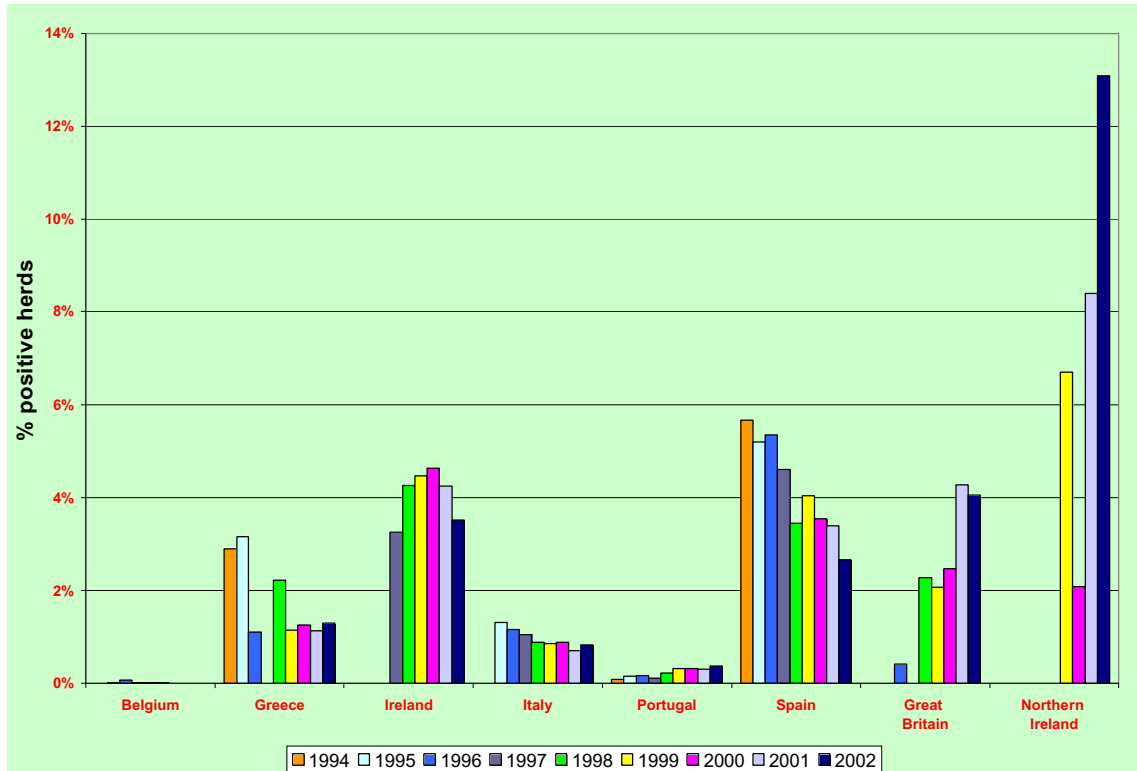
<sup>5</sup> First testing

<sup>6</sup> First and repeated testing

<sup>7</sup> Estimate: Confirmed positive herds in repeated testing and positive herds in first testing not re-tested in relation to all herds tested in first testing

In Greece, Italy, and Portugal, the proportion of herds with positive results in tuberculin testing is either comparable to the previous year or slightly higher. In Ireland and Spain, there is a clear reduction in the share of positive herds in tuberculin testing. In contrast, in Northern Ireland, there was an increase in 2002, as in the previous year. There, 13,1% of tested herds showed positive reactors in 2002, whereas in 2001, this was the case in 8,4% of the tested herds only. In Ireland, the decreasing tendency has been continuing for two years in row. Figure MY 2 depicts the tendency over several years.

Figure MY 2. Bovine tuberculosis: Herds positive in tuberculin testing in NON-OTF Member States, 1994 - 2002



### Routine meat inspection

Within non-OTF Member States only limited data are available on the results of routine meat inspection in 2002 (Table MY 3). In Great Britain, the number of slaughterhouse reports increased in 2002. Only one third of these were confirmed by isolation of *M. bovis* from suspicious lesions.

### Animals slaughtered or destroyed

Table MY 4 summarises the numbers of animals slaughtered or destroyed due to bovine tuberculosis within the non-OTF countries in 2002. When evaluating this data it has to be kept in mind, that in case a stamping out strategy is applied in the country, an increasing number of negative in-contact animals are slaughtered. In total, at least 120160 positive or contact animals were slaughtered or destroyed in these countries. This is a considerable higher number compared to 2001, when this was reported to be 94180 animals. A higher number was reported in all countries except in Ireland.

**Table MY 3. Bovine tuberculosis: Meat inspection of animals in Member States not officially tuberculosis free**

	2001			2002		
	Animals slaughtered	Animals suspected positive	% Animals positive <sup>1</sup>	Animals slaughtered	Animals suspected positive	% Animals positive <sup>1</sup>
Belgium	-	-	-	641292	7	0,001
Ireland	1775501	4160	0,15	-	4317	-
Spain	2391884	-	0,54	-	-	-
Great Britain	-	194	-	2281400	383	0,01
Northern Ireland	-	-	-	555000	1598	0,20

- No information available

<sup>1</sup> This diagnosis might be done on the basis of the lesions only, or using microscopy, or laboratory examinations

**Table MY 4. Bovines destroyed or slaughtered in Member States not officially tuberculosis free due to bovine tuberculosis**

	2001			2002		
	Animals slaughtered or destroyed	Positives slaughtered or destroyed	Contacts slaughtered or destroyed	Animals slaughtered or destroyed	Positives slaughtered or destroyed	Contacts slaughtered or destroyed
Belgium <sup>1</sup>	1338	-	-	820 <sup>3</sup>	-	-
France <sup>1</sup>	6111	1928	4183	6273	1041	5232
Greece <sup>1</sup>	1759	1759	-	3794	2659	-
Ireland <sup>1</sup>	35006	33702	1304	29909	28930	979
Italy <sup>1</sup>	8491	7891	600	11347	10464	873
Portugal	-	-	-	-	-	-
- Mainland <sup>2</sup>	1194	494	700	1414	716	-
- Madeira	-	-	-	-	-	-
- Azores	-	-	-	-	-	-
Spain <sup>1</sup>	25849	25253	596	28198	-	-
Great Britain <sup>1</sup>	6449	2417	904	23585	6956	3094
Northern Ireland <sup>1</sup>	9321	8817	504	15640	15115	525

Figures given in this table do not necessary coincide with those reported by the Member States in the framework of the eradication programmes

- No information available

<sup>1</sup> Reflects number of positive and in-contact animals removed for slaughter not destroyed

<sup>2</sup> Reflects number of animals destroyed

<sup>3</sup> Seven whole carcasses and 57 parts were condemned

### 1.1.2. Sheep and goats

Surveillance of tuberculosis in sheep and goats is performed mostly by post mortem meat inspection. In addition, results from bacteriological investigations are sometimes reported. Findings of *M. bovis* are notifiable in Finland, Ireland, Sweden and Norway. In Spain, results from a specific surveillance programme were given.

Some kind of information is available from 11 countries: Austria, Belgium, Finland, France, Greece, Sweden, The Netherlands, Norway, Portugal, Spain and the United Kingdom.

Positive results in meat inspection were reported in Spain and Great Britain. In Spain, in a surveillance programme, 19% of the goat flocks tested positive. This is in line with results from the previous years.

In bacteriological examinations, *M. bovis* was isolated from sheep or goats in France, Portugal and Great Britain. The results of the investigations, reported by the Member States are summarised in Table AN 1.1.3. in the Annex.

### 1.1.3. Pigs

Surveillance of tuberculosis in swine is performed mostly by post mortem meat inspection. Findings of *M. bovis* are notifiable in Finland, Sweden and Norway. Some kind of information is available from 10 countries (Table AN - 1.1.3.).

Suspicious findings in meat inspection were reported in Spain and Belgium. In Great Britain, *M. bovis* was isolated once from a clinical specimen. In the previous years, no positive *M. bovis* findings in pigs were reported by any of the countries.

### 1.1.4. Deer (farmed and wildlife)

Findings of *M. bovis* in these animal species are notifiable in Denmark, Finland, Ireland, Sweden, Great Britain and Norway

In Sweden a tuberculosis control program in deer is in force since 1994 and movement of deer is only allowed from tuberculosis free herds. In Great Britain, membership of the Deer Health Scheme requires periodical testing of the herd. In other Member States the situation is less well known.

No cases of bovine tuberculosis were identified in Austria, Denmark, Finland, and Sweden in deer in 2002. Positive findings were reported in France, Great Britain and Spain.

In Austria 11 deer and 2 chamois locally associated with an outbreak of bovine tuberculosis (*Mycobacterium caprae*, formerly *M. bovis* ssp. *caprae*) in a herd of cattle that was pastured in the alps were investigated pathologically, bacteriologically and by PCR. No signs of tuberculosis were found in the 13 wildlife animals.

Bovine tuberculosis has not been diagnosed in deer in Denmark since December 1994.

In Sweden, by December 2002, 564 (96 %) out of the 589 farmed deer herds were affiliated to the control programme. No infected herds have been identified since 1997. A total of 451 herds (80 %) had obtained tuberculosis-free status, in 2001 this was the case for 75% of the herds.

In Finland, as in previous years, a few suspicious samples were identified in slaughter from deer that belonged to the health monitoring programme. No *M. bovis* was cultured from these samples.

In Norway an official surveillance system was established in 2000. This programme was not operative during 2002, but has been re-established from January 1, 2003.

In Great Britain, *M. bovis* was isolated in 11 cases from red deer. Seven of those were from a severe outbreak involving farmed red deer kept on the same premises. Two isolations were made from park red deer and two more from wild red deer in 2002. This is in comparison to the year 2001, when no cases of bovine tuberculosis in farmed deer were reported, and one infection with *M. bovis* was confirmed in a wild deer.

In France, nine *M. bovis* isolates were reported from the reference laboratory. The number of investigations and further details are not available for these findings. In Spain, 0,5% of the animals tested showed suspicious lesions in meat inspection.

Table AN - 1.1.2 gives more detailed data.

### 1.1.5. Other wildlife

Tuberculosis in wildlife is usually not notifiable in the Member States, except in Finland, Sweden and Norway

During 2002, *M. bovis* was confirmed in 6 occasions in wild boars in France. In Spain, in routine post-mortem inspection of the wild boars 0,3% showed suspicious lesions.

#### **1.1.6. Zoo animals**

*M. bovis* has not been reported during the last years in zoo animals. In 2002, *M. bovis* was isolated from an antelope, which was kept in a zoo on the Isle of Man.

In 2002, as in previous years, a few *M. tuberculosis* infections were detected in zoo animals.

In Sweden, the investigation was continued, as *M. tuberculosis* was detected in an elephant at a zoo in October 2001. In 2002, all contact animals were investigated. Two additional elephants and one giraffe were euthanised. In all these animals, *M. bovis* was confirmed by culture.

In The Netherlands, tuberculosis due to *M. tuberculosis* was diagnosed in a group of 10 bonobos in a zoo. In 4 animals, the disease was confirmed, the remaining 6 animals and two new-borns were treated following the 'human protocol' and will be controlled for a long period.

#### **1.1.7. Pets**

In 2002, *M. bovis* was identified in a dog by the French Reference laboratory.

### **1.2. Tuberculosis in humans caused by *Mycobacterium bovis***

In most of the reporting countries, the notification system for human tuberculosis does not distinguish the tuberculosis cases caused by different *Mycobacterium* species. Nevertheless, some information on human cases caused by *M. bovis* could be collected. But it has to be kept in mind that these figures do not fully reflect the real situation.

In total, 49 cases of human tuberculosis caused by *M. bovis* have been reported in 10 Member States of the European Union and Norway, which is comparable to the situation in the previous year (2001: 59 cases in 12 MS and Norway). In previous years, variation in the number of reported cases were detected, but this has always been related to exceptionally high number provided by a single country. In 2000 Greece notified 93 cases, and in 1999 Germany reported 64 cases. In the other years, these countries reported no or very few cases.

In those countries, where figures on cases caused by *M. tuberculosis* and *M. bovis* are reported separately, the proportion for *M. bovis* is small compared to *M. tuberculosis*, which is man to man transmission. In Austria, Finland, The Netherlands, and the United Kingdom this proportion ranged between 0% and 0,6%, whereas in Ireland 7 (3,3%) cases of *M. bovis* infection and 204 cases *M. tuberculosis* infection were registered.

In some countries, most cases in the domestic population are recurrent cases in the elderly population. Additionally, sporadic cases are identified in immigrants.

Interestingly, in Belgium two cases of *M. bovis* infection in humans was identified in farmers in 2002. In both farms, the agent has been isolated from cattle. This indicates, that even today there might still be some occupational cases.

The information available is summarised in Table MY 5.

**Table MY 5. Human tuberculosis caused by *Mycobacterium bovis***

<b>Tuberculosis cases caused by <i>M. bovis</i></b>							
Country	1996	1997	1998	1999	2000	2001	2002
<b>Countries officially tuberculosis free (bovine tuberculosis)</b>							
Austria	-	0	1	1	1	5	4
Denmark	11	11	8	2	12	4	2
Finland	0	0	0	0	0	0	0
Germany	-	-	-	64	-	-	-
Sweden	8	6	4	2	5	5	7
The Netherlands	17	14	15	19	13	5	-
Norway	-	-	-	1 <sup>1</sup>	2 <sup>1</sup>	1 <sup>1</sup>	1 <sup>1</sup>
<b>Member States not officially tuberculosis free (bovine tuberculosis)</b>							
Belgium	-	1	1	0	0	2	2
France	-	-	-	22	-	-	-
Greece	5	0	0	-	93	0	0
Ireland	-	-	5	8	1	3	7
Italy	1	2	2	-	0	0	4
Spain	4	5	4	2	5	3	2
United Kingdom	12	21	26	40	21	31	20

- No information available

<sup>1</sup> Imported cases

