

# 1. Tuberculosis

## 1.1. Bovine tuberculosis

### 1.1.1. Bovine tuberculosis in cattle

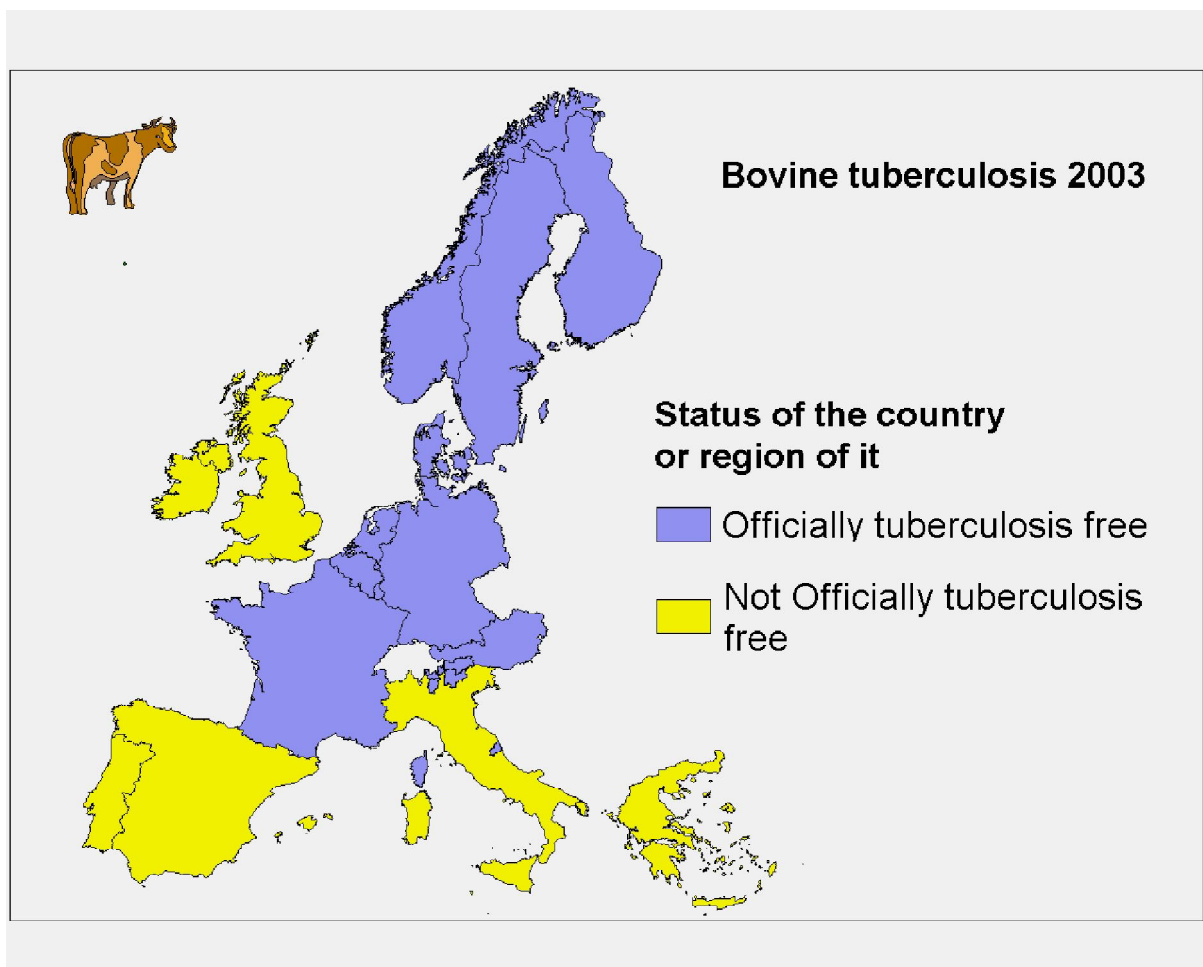
Rules for trade in cattle as regards tuberculosis are laid down in Council Directive 64/432/EEC as amended by Council Directive 97/12/EC [last amended by Regulation (EC) 1226/2002]. As a result of the control measures, several countries have eradicated this zoonotic agent in livestock and others have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

During 2003, Belgium and the provinces Bergamo, Lecco, Sondrio and Ascoli Piceno in Italy were recognised officially tuberculosis free (OTF) by Commission Decision 2003/467/EC. Thus, at the end of 2003, nine Member States (Austria, Belgium, Denmark, France, Finland, Germany, Luxembourg, The Netherlands and Sweden), Norway and six provinces in Italy were recognised OTF (Figure MY 1).

Eradication programmes approved for Community co-financing were implemented in Spain, Greece, Italy, Ireland and Portugal in 2003 (Commission Decision 2002/943/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, 2003



## **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 Austria, Denmark, Finland, Luxembourg, Sweden, The Netherlands and Norway, no infected herds were detected in 2003. New infections were detected in Belgium, France and Germany during 2003.

In Germany, as in previous years a few cases of bovine tuberculosis were notified. In 2003, 9 outbreaks and in the previous year 6 cases in cattle were registered.

In France, 57 cases of new infections in cattle herds were notified over the year 2003, which is similar to the previous year, when 51 new cases were notified.

In Belgium, a total of 7 infected herds were recognised in 2003, which is comparable to the 10 herds notified in 2002. At the end of 2003, 99,98% of the herds were officially free of tuberculosis.

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

No positive results of intradermal testing were reported in other routine tests in Denmark, Finland, Luxembourg, 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. For Portugal and United Kingdom, regional data are presented. 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 or regions of the country.

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Altogether, the percentage of infected herds at the year end ranged between 0,08% (Portugal) and 6,9 % (Northern Ireland).

There was no common trend within the non-OTF countries, but in principle situation continued to improve on national or regional level. 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. In contrast, in Northern-Ireland, the number of newly identified positive herds and infected herds at the year end increased.

In the mainland of Portugal a major reduction of infected herds was observed. At the end of 2003, 69 herds, that is 0,08% of the herds under control was considered infected. In Italy, as regards the whole territory of this Member State, the share of infected herds was at 0,45 %. No data were submitted on the regional level. In Spain, the overall share positive herds at the year end was 0,8 %. Data on regional level for Spain show that in some autonomous regions no or only very few infected herds are prevalent. In Greece, 0,4 % of the herds were infected at year end.

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

**Table MY 1. Notification of bovine tuberculosis in Member States not officially tuberculosis free in 2003**

	Herds under control	Herds OTF	% Herds OTF	Notification at year end		Notification during year	
				Herds infected	% Herds infected	Herds infected	% Herds infected
Greece <sup>2</sup>	24723	24109	97,52	102	0,41	-	-
Ireland <sup>1</sup>	125517	120856	96,29	4140	3,30	7699	6,13
Italy	150187	133740	89,05	669	0,45	620	0,41
Portugal	81612	80863	99,08	69	0,08	43	0,05
- Mainland	81612	80863	99,08	69	0,08	43	0,05
- Madeira	-	-	-	-	-	-	-
- Azores	-	-	-	-	-	-	-
Spain	159551	152817	95,78	1255	0,79	-	-
Great Britain	95708	93762	97,97	1408	1,47	1610	1,68
Northern Ireland	30367	27060	89,11	2105	6,93	2355	7,76

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 2002. Testing in 2002 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 or regional level, the rate of herds with positive reactors ranged between 0,26 % and 12,4 % in 2003. In Italy and the mainland of Portugal, less than 1% of the tested herds

showed positive reactors. In Greece, Ireland, Spain and the United Kingdom, these figures are above 1 %.

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

	2002			2003		
	Herds tested <sup>1</sup>	Herds positive <sup>2</sup>	% herds positive	Herds tested <sup>1</sup>	Herds positive <sup>2</sup>	% herds positive
Greece <sup>3</sup>	11419	147	1,29	10634	194	1,82
Ireland	124195	4364	3,51	122006	4002	3,28
Italy	123114	1026	0,83	119634	1142	0,95
Portugal	-	-	-	-	-	-
- Mainland	63343	225	0,36	69129	179	0,26
- Madeira	-	-	-	-	-	-
- Azores	-	-	-	-	-	-
Spain <sup>5</sup>	166409	3733	2,24	158850	2932	1,85
Spain <sup>6</sup>	172215	4577	2,66	-	-	-
Spain <sup>7</sup>	166409	1039	0,62	-	-	-
Great Britain	44129	1905	4,31	45133	1610	3,57
Northern Ireland	23975	3136	13,08	24650	3047	12,36

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> 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>5</sup> First testing

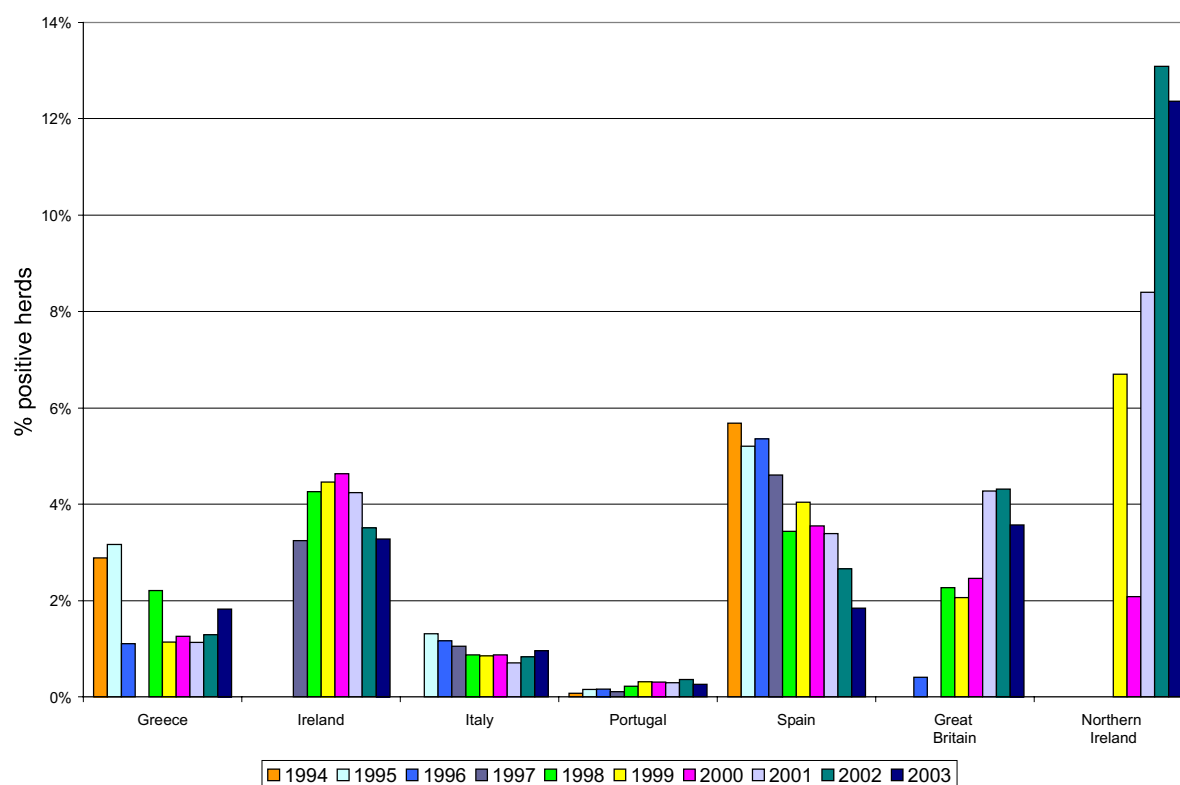
<sup>6</sup> First and repeated testing

<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, again, 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 further slight reduction in the share of positive herds in tuberculin testing. In Northern Ireland and Great Britain, after an increase observed in 2001 and 2002, a lower share of herds with positive reactions was observed. In 2003, 12,4 % of tested herds showed positive reactors in Northern Ireland.

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 - 2003**



### Routine meat inspection

Within non-OTF Member States only limited data are available on the results of routine meat inspection in 2003 (Table MY 3). Compared to 2002, the number of slaughterhouse reports decreased in 2003.

### 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 2003. 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 111730 positive or contact animals were slaughtered or destroyed in these countries. This is a lower number compared to 2002, when this was reported to be 120160 animals.

### New Member States

Four New Member States provided some information on the current situation as regards bovine tuberculosis in their territory. No infected herds were reported in Cyprus, Latvia, Lithuania and Slovenia.

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

	2002			2003		
	Animals slaughtered	Animals suspected positive	% Animals positive <sup>1</sup>	Animals slaughtered	Animals suspected positive	% Animals positive <sup>1</sup>
Ireland	-	4317	-	1762495	3947	0,14
Portugal	-	-	-	-	-	-
- Mainland	-	-	-	1725	1696	70,78
Spain	-	-	-	-	-	-
Great Britain	2281400	383	0,01	2458614	303	0,01
Northern Ireland	555000	1598	0,20	505125	1271	0,18

- 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**

	2002			2003		
	Animals slaughtered or destroyed	Positives slaughtered or destroyed	Contacts slaughtered or destroyed	Animals slaughtered or destroyed	Positives slaughtered or destroyed	Contacts slaughtered or destroyed
France <sup>1</sup>	6273	1041	5232	-	-	-
Greece <sup>1</sup>	3794	2659	-	4066	2637	-
Ireland <sup>1</sup>	29909	28930	979	28705	27978	727
Italy <sup>1</sup>	11347	10464	873	8304	6994	1310
Portugal	-	-	-	-	-	-
- Mainland <sup>2</sup>	1414	716	-	1725	1221	-
- Madeira	-	-	-	-	-	-
- Azores	-	-	-	-	-	-
Spain <sup>1</sup>	28198	-	-	27835	21556	-
Great Britain <sup>3</sup>	23585	6956	3094	23748	6676	2930
Northern Ireland <sup>1</sup>	15640	15115	525	16333	16066	267

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

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

<sup>3</sup> Positives slaughtered or destroyed relates to reactors which had typical TB lesions at post-mortem examination or positive on culture

### 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.

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

Positive results in meat inspection were reported in Portugal and Spain. In Spain, during 2003, 0,02 % of the tested goats showed a positive result. In 2002, in a limited surveillance programme, 19% of the goat flocks tested positive.

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 11 countries (Table AN - 1.1.3.).

Suspicious findings in meat inspection were reported in Spain, Belgium and Norway. In Norway, *M. avium subsp. avium* was isolated from the suspicious pigs. In Great Britain, *M. bovis* was isolated from eight animals. In 2002, one positive *M. bovis* finding in pigs was 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 Norway an official surveillance system was established in 2000. If the cause of death is uncertain, the animals are submitted for pathological examination and if indicated, bacteriological examination.

No cases of bovine tuberculosis were identified in Denmark, Finland, Sweden and Norway in deer in 2003. Positive findings were reported in Great Britain and Spain.

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

In Sweden, in 2003, 585 (97 %) out of 605 farmed deer herds were affiliated to the voluntary control programme. No infected herds have been identified since 1997. A total of 488 herds (83 %) had obtained tuberculosis-free status. Compared with the previous year, 37 additional herds were declared free during 2003. Two deer from one herd tested positive in tuberculin test, but were negative in histological investigation and culture.

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

This programme was not operative during 2002, but has been re-established from January 1, 2003.

In Great Britain, during 2003, *M. bovis* infection was confirmed in deer samples from 22 of 64 suspect cases. All but one of these originated in areas of high tuberculosis prevalence in cattle. The remaining positive samples were all from farmed red deer in a heavily infected herd that was re-formed after the foot and mouth epidemic.

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 2003, in Spain, in routine post-mortem inspection of the wild boars 0,2 % showed suspicious lesions which is similar to the results in the previous year.

### **1.1.6. Zoo animals**

*M. bovis* has been reported during 2002, when *M. bovis* was isolated from an antelope, which was kept in a zoo on the Isle of Man. No isolations were reported in 2003.

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In 2003, as in previous years, a few *M. tuberculosis* infections were detected in zoo animals.

In Sweden, *M. tuberculosis* was detected in two elephants at a zoo in October 2001. Both elephants were euthanised. In 2002, all contact animals were investigated and one elephant and giraffe, respectively, were confirmed positive by culture and euthanised. The last two elephants in the outbreak of *M. tuberculosis* in a zoo were euthanised during 2003. Both were positive in culture performed on autopsy material. Also, granuloma found at autopsy in one dolphin was investigated for tuberculosis and found negative. No other animal, cultured during 2003 were finally confirmed positive.

No other positive findings in zoo animals were reported.

#### **1.1.7. Pets**

A few pets were tested during 2003 in Norway and Sweden, all with negative results.

### **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, the real number of cases might be much higher.

In total, 57 cases of human tuberculosis caused by *M. bovis* have been reported in 10 Member States of the European Union and Norway, which is in the same range as in the previous year (2002: 57 cases in 11 MS and Norway). Over the last years, variation in the number of reported cases was detected, but this has always been related to exceptionally high number provided by a single country in a specific year and attributable to inconsistencies in the reporting system.

As far as the notification system provides for more detailed data, the number of cases due to *M. bovis* is small compared to *M. tuberculosis*, which is man to man transmission.

In the countries where bovine tuberculosis is eradicated, most cases in the domestic population are recurrent cases in the elderly population. Additionally, sporadic cases are identified in immigrants. In England and Wales, an increase in the number of laboratory reports was observed in 2003 but these are provisional figures and may over estimate the true figure. For none of the reported cases a current link with disease in cattle was known. In Northern Ireland, there were two cases in 2003 compared to none in the previous year.

In Figure MY 3 the age distribution of tuberculosis caused by *M. bovis* is given. There is no common pattern obvious within the countries still eradicating bovine tuberculosis. In Spain, Italy and Ireland the cases are spread among adults and the elderly, in Northern Ireland and Scotland, cases in elderly are dominating.

The information available is summarised in Table MY 5.

#### **New Member States**

Cyprus, Latvia and Lithuania reported on human tuberculosis on a voluntary basis. No case caused by *M. bovis* was registered there.

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

Country	Tuberculosis cases caused by <i>M. bovis</i>						
	1997	1998	1999	2000	2001	2002	2003
<b>Countries officially tuberculosis free (bovine tuberculosis)</b>							
Austria	0	1	1	1	5	4	3
Belgium	1	1	0	0	2	2	5
Denmark <sup>1</sup>	11	9	2	12	4	2	1 (1)
Finland	0	0	0	0	0	0	0
Germany	-	-	64	-	-	-	-
Sweden	6	4	2	5	5	7	5
The Netherlands	14	15	19	13	5	8	-
Norway <sup>1</sup>	-	-	1 (1)	2 (2)	1 (1)	1 (1)	0
<b>Member States not officially tuberculosis free (bovine tuberculosis)</b>							
France	-	-	22	-	-	-	-
Greece	0	0	-	93	0	0	0
Ireland	-	5	8	1	3	7	6
Italy	2	2	-	0	0	4	1
Spain	5	4	2	5	3	2	6
United Kingdom	21	26	40	21	31	20	30 <sup>3</sup>

- No information available

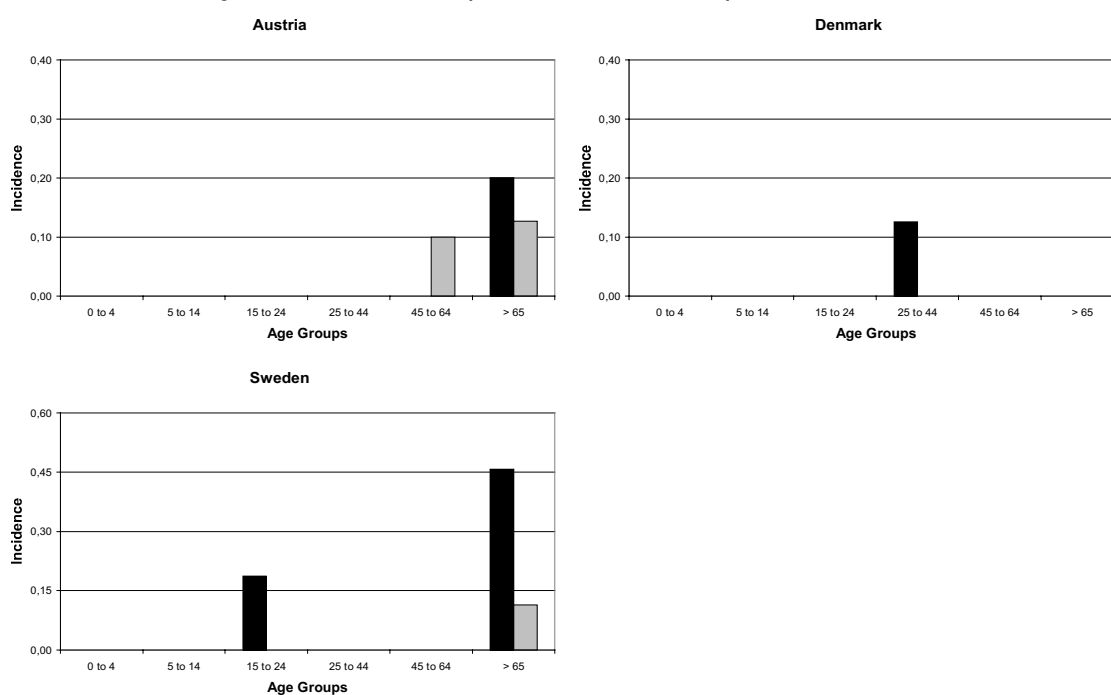
<sup>1</sup> Imported cases are shown in brackets

<sup>2</sup> Member States not officially tuberculosis free (bovine tuberculosis)

<sup>3</sup> Provisional

**Figure MY 3. The age distribution of tuberculosis caused by *M. bovis* (incidence rate per 100 000 persons of the age and gender group) in the European countries and Norway**

**Countries officially tuberculosis free (bovine tuberculosis)**



**Figure MY 3. The age distribution of tuberculosis caused by *M. bovis* (incidence rate per 100 000 persons of the age and gender group) in the European countries and Norway - continued**

**Member States not officially tuberculosis free (bovine tuberculosis)**

