

Report on the Assessment of the Geographical BSE-Risk (GBR) of HUNGARY

NOTE TO THE READER

Independent experts have produced this report, applying an innovative methodology by a complex process to data that were voluntarily supplied by the responsible country authorities. Both, the methodology and the process are described in detail in the final opinion of the SSC on "the Geographical Risk of Bovine Spongiform Encephalopathy (GBR)", 6 July 2000. This opinion is available at the following Internet address:

<http://europa.eu.int/comm/food/fs/sc/ssc/outcome_en.html>

In order to understand the rationale of the report leading to its conclusions and the terminology used in the report, it is highly advisable to have read the opinion before reading the report. The opinion also provides an overview of the assessments for other countries.

FULL REPORT

1. DATA

- The available information was sufficient to carry out the qualitative assessment of the GBR.

Sources of data

Country dossier (CD) consisting of:

- The completed questionnaire for the assessment of the GBR (3 November 2000) and annexes.
- Clarification comments on the draft report (12 January 2001)
- Comments and further information on the draft final report (19 February 2001 and 26 March 2001)

Other sources:

- EUROSTAT export data (EU) on exports of "live bovine animals" and of "flour, meal and pellets of meat or offal, unfit for human consumption; greaves" from EU Member States covering the period 1980 to 1999.
- UK-export data (UK) on "live bovine animals" (1980-1996) and on "Mammalian Flours, Meals and Pellets", 1980-2000. As it was illegal to export mammalian meat meal, bone meal and MBM from UK since 27/03/1996, exports indicated after that date may have included non-mammalian MBM.
- Final report of an Animal Health Mission to Hungary with regard to Import control (27/09-01/10/1999), FVO, 06/03/00-33609

2. EXTERNAL CHALLENGES

2.1 **Import of cattle from BSE affected countries**

Table 1 provides an overview of the import of live cattle into Hungary, as provided in the country dossier (CD) and compares this with the exports from BSE-affected countries, as indicated in Eurostat and UK export statistics.

No data are available for the period 1980-1986 in the CD. It is stated that all the imported animals were for breeding purposes and the average age at slaughter of these imported cattle is 60 months.

According to Eurostat and UK export statistics, in total 105 animals were imported from UK before 1987 (57 in 1987 according to CD). No information is provided on the fate of 41 and 7 cattle that were, according to Eurostat and UK export statistics, exported from the UK to Hungary respectively in 1982 and in 1985.

On the other hand very detailed information is provided on 57 Aberdeen Angus cattle that were imported from the UK in 1987. Of these cattle 37 were slaughtered, 5 were culled and slaughtered, one died, 9 were sold in the domestic market as breeding

animals (and later on also slaughtered) and 5 animals were exported for immediate slaughter to Croatia.

There were clinical observations during the life of these animals and also an investigation before slaughter, selling or exportation. None of the slaughtered cattle showed clinical symptoms in pre-transport and ante mortem inspection.

Seven of these 57 cattle were two or three years when slaughtered, 3 were four or five years old and the remaining were 7 years or older at slaughter or death. Only 10 cattle were therefore young enough at slaughter to be unlikely to show signs of BSE, should they have been infected prior to export. The other animals, which were 7 to 12 years old when slaughtered, should normally have shown signs of BSE if they would have been infected with BSE before export.

Most of these 57 cattle, or parts of it were processed for feed. Given the fact that some were already slaughtered in 1987-1990 it cannot be excluded that the BSE-agent entered the feed cycle of Hungary already at that time, if one of these younger cattle was incubating BSE. At that age (<5 years) clinical signs would not necessarily have been apparent. For the other animals, that were much older when slaughtered in an apparently healthy state, the rather intensive clinical control during their life and the investigations in these cattle before slaughter, make it less likely that these could have carried the agent.

Hungary also imported cattle from several other BSE-affected countries. While the country dossier indicates about 8,600 cattle in total since 1987, Eurostat recorded that more than 10,000 cattle in total were exported from BSE-affected Member States to Hungary since 1980, the large majority, according to both sources, in the 90s, mainly from the Netherlands, Denmark and Germany. Most of the differences between sources results from the period before 1994 (mainly exports from DE not recorded by CD).

The imports from Austria (1,629 between 1992 and 2000, according to CD) are not regarded as presenting an external challenge but are provided here for completeness. No exports from PT, IRE or Spain to Hungary were recorded in Eurostat.

It has also to be noted that according to CD, between 1992 and 2000, in total more than 31,000 cattle were imported from the Czech Republic, Lithuania, Slovakia, Poland and Romania.

| Import of live cattle (n/year) into HUNGARY from BSE-affected countries | | | | | | | | | | | | | | | | | | |
|---|-----------|------------|------------|-----------|------------|--------------|-----------|------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|------------|--------------|---------------|
| Period | UK | | | CH | FR | | BE/Lux | | NL | | DE | | DK | | IT | | Non-UK | |
| Source: | CD | EU | UK | CD | CD | EU | CD | EU | CD | EU | CD | EU | CD | EU | CD | EU | CD | EU |
| 1980 | No data | | | No data | No data | | No data | | No data | | No data | | No data | | | | No data | |
| 1981 | | | | | | 438 | | | | | | 400 | | 4 | | | | 842 |
| 1982 | | 41 | 41 | | | | | | | | | | | | | | | |
| 1983 | | | | | | 4 | | | | | | | | | | | | 4 |
| 1984 | | | | | | 59 | | | | | | 5 | | 4 | | | | 68 |
| 1985 | | 7 | 7 | | | | | | | | | 62 | | | | | | 62 |
| 1986 | | | | | | | | | | | | | | | | | | |
| 1987 | 57 | 57 | 57 | | 4 | 4 | | | | | | 3 | | | | | 4 | 7 |
| 80-87: | 57 | 105 | 105 | | 4 | 505 | | | | | | 470 | | 8 | | | 4 | 983 |
| 1988 | | | | | | 51 | | | | | | 1 | | | | | | 52 |
| 1989 | | | | | | 40 | | | | | | | | 2 | | | | 42 |
| 1990 | | | | | | 6 | | | | | | 112 | | | | 9 | | 127 |
| 1991 | | | | | | | | | 50 | | | 726 | | | | | | 776 |
| 1992 | | | | 40 | | | | | | | 42 | 295 | | | | | 82 | 295 |
| 1993 | | | | 40 | | | | 8 | 35 | 107 | 11 | 98 | | | | 71 | 86 | 284 |
| 88-93: | 0 | 0 | 0 | 80 | 50 | 97 | | 8 | 35 | 157 | 53 | 1,232 | | 2 | | 80 | 218 | 1,576 |
| 1994 | | | | 5 | 2 | 2 | | 248 | 572 | 273 | 135 | 127 | 324 | 324 | | | 1,038 | 974 |
| 1995 | | | | | | 4 | | | 95 | 208 | 264 | 14 | | 247 | | | 359 | 473 |
| 1996 | | | | | 178 | 227 | | | 208 | 170 | 34 | 397 | 180 | 180 | | 35 | 910 | 1,009 |
| 1997 | | | | | 46 | 1 | 10 | 50 | 294 | 329 | 24 | 23 | 84 | 160 | 283 | 496 | 741 | 1,059 |
| 1998 | | | | | 418 | 417 | 3 | | 1,912 | 1,784 | 598 | 597 | 380 | 317 | 84 | 100 | 3,395 | 3,315 |
| 1999 | | | | | 2 | 2 | | | 1,237 | 1,154 | 381 | 466 | 102 | 102 | 203 | 103 | 1,925 | 1,827 |
| 94-99: | 0 | 0 | 0 | 5 | 646 | 653 | 13 | 298 | 4,318 | 3,918 | 1,746 | 1,624 | 1,070 | 1,330 | 570 | 734 | 8,368 | 7,598 |
| 80-00: | 57 | 105 | 105 | 85 | 700 | 1,255 | 13 | 306 | 4,353 | 4,075 | 1,799 | 3,326 | 1,070 | 1,340 | 570 | 814 | 8,590 | 10,157 |

Table 1: Live Cattle imports. Shading indicates period of different risk that UK-exports carried the agent, 1988-1993 being the period of highest risk. Sources: CD = Country Dossier, EU = Eurostat, UK = Export data from UK. No exports were registered from IRE, PT, or Spain

2.2 Import of MBM or MBM-containing feedstuffs from BSE affected countries

Table 2 gives an overview about the MBM-imports into Hungary, as provided in the country dossier and compares it with the Eurostat and UK-export statistics.

Imports are controlled as follows:

- The licensing of import of live animals, animal products and feed (including MBM etc.) is based on individual judgement of the licensing authority. For an application (which is obligatory), “the department investigates the animal health situation of the country of origin with attention to the reports and recommendations of the OIE, as well as the latest results of veterinary science. If there is the possibility of introducing any infectious animal disease from that country, the Animal Health and Food Control Department does not grant the import licence.”
- Due to this Regulation, the Department did not give any licence for importing live cattle or mammalian MBM¹ from the UK since 1987. Therefore the MBM-imports from UK, indicated by Eurostat and UK export data, could only be of non-mammalian origin. Furthermore, the export, import and transport of live animals and animal products are supervised at veterinary border inspection posts. At these posts official veterinarians control the consignments and the import-licences. The country dossier states that therefore after 1987 no products originated in the UK and falling into this category could have legally entered the Hungarian territory. However, the FVO report on a mission concerning import controls (1999) does indicate certain weaknesses of the control executed at the border inspection posts visited. Similar import restrictions have apparently not been applied to imports from France (first case in 1991), NL and BE/LUX (first cases in 1996/97).
- According to the country dossier, the MBM, MM, BM and/or greaves that were imported from CH, FR, BE, NL and DK (only fishmeal) were dedicated for pig and poultry only. Each import consignment of fishmeal, poultry meal or compound feeding-stuffs intended for ruminants is controlled by laboratory test for mammalian protein determination (see “cross contamination” below). If the result is positive, it is forbidden to use that consignment for ruminant feeding purposes.
- According to the country dossier, the two ELISA used (CORTECS DIAGNOSTICS Ltd - UK) are specific to bovine and to ovine proteins, respectively. They have been tested by Hungarian experts at different dilutions and are said to be able to detect bovine or ovine proteins after heat treatment of 136°C for 3 hours. No pressure parameters are provided.

The country dossier only contains MBM-import statistics for the period 1987-2000. These import data differ from the export data provided by EUROSTAT.

¹ MBM means MBM, BM, MM and greaves

- According to the country dossier, there were no MBM, BM, MM, greaves and/or feedstuff imports containing any of these from the UK. Although UK & EUROSTAT export statistics indicate only amounts of 2.3 tons in 1998, and of 6 tons for the first nine months of 2000 (only UK data for the latter), which is assessed as negligible in view of dates and quantities concerned.
- Some inconsistencies are noticed, specially for BE, DE, FR and NL, however the total figures are in the same order of magnitude, they provide a clear idea of the trade trend (continuing trade recorded in 2000 also) and would not change the overall assessment.
- In addition to the data given in Table 2 (see below), EUROSTAT only indicates exports of 3 tons of MBM from Spain to Hungary in 1999 while the country dossier shows imports of 61 tons from Spain in the period 1995-1999.

From Austria 42,675 tons of MBM were exported to Hungary in 1995-99. These are indicated for information only. For the time being they are not regarded to represent an external challenge. No other MBM exports from other MS (also not from PT, DK) were recorded in EUROSTAT for the period 1980 to 1999.

| Import of MBM, MM, BM or greaves (t/year) into HUNGARY from BSE-affected countries | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------|------------|------------|-----------|---------|--------------|-----------|--------------|-----------|--------------|--------------|--------------|--------------|----|-----------|--------------|--------------|---------------|-----------------|---------------|--|--|--|--|-------|--|-------|-----|
| Period | UK | | | CH | FR | | BE/LUX | | NL | | DE | | IRE | | IT | | Non-UK | | | | | | | | | | | |
| Source: | CD | EU | UK | CD | CD | EU | CD | EU | CD | EU | CD | EU | CD | EU | CD | EU | CD | EU | | | | | | | | | | |
| 1980 | No Data | | | No Data | No Data | 1,000 | No Data | | No Data | | No Data | | No Data | | No Data | | 16,341 | No Data | 17,341 | | | | | | | | | |
| 1981 | | | | | | | | | | | | | | | | | | | | | | | | | 8,308 | | 8,308 | |
| 1982 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 1983 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 139 |
| 1984 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 1985 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 80-85 | | | | | | 1,000 | | | | | | | | | | | | 24,788 | | 25,788 | | | | | | | | |
| 1986 | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | |
| 1987 | | | | | | | | | | | | | | | | | | | | 21 | | | | | | | | |
| 1988 | | | | | | | | | | | | | | | | | | | | 40 | | | | | | | | |
| 1989 | | | | | | | | | 140 | | | | | | | | | | | 140 | | | | | | | | |
| 1990 | | | | | | 900 | | | | | | 3 | | | | | | | | 837 | | | | | | | | |
| 86-90 | | | | | | 900 | | 140 | | | | 3 | | | | | | | | 898 | | | | | | | | |
| 1991 | | | | | | | | | | | | 32 | | | | | | | | 24 | | | | | | | | |
| 1992 | | | | | | 120 | | 4 | | 2 | | 80 | | | | | | | | 22 | | | | | | | | |
| 1993 | | | | | | | | | | | | 490 | | | | | | | | 645 | | | | | | | | |
| 91-93 | | | | | | 120 | | 4 | | 2 | | 695 | 602 | | | | | | | 691 | | | | | | | | |
| 1994 | | | | 10 | | | | | 134 | 883 | | 640 | | 60 | 70 | 1,736 | | | 214 | 2,619 | | | | | | | | |
| 1995 | | | | | | 124 | | | 108 | 108 | | 44 | | | 972 | 1,157 | | | 1,204 | 1,265 | | | | | | | | |
| 1996 | | | | | | 415 | | | 110 | 111 | | 59 | | | 1,147 | 1,225 | | | 1,672 | 1,336 | | | | | | | | |
| 1997 | | | | | | | | | 24 | 201 | | 148 | | | 1,640 | 1,626 | | | 1,664 | 1,827 | | | | | | | | |
| 1998 | | 2.3 | 2.3 | | | | 86 | | 241 | 182 | | 1,001 | | | 1,559 | 1,292 | | | 1,886 | 1,474 | | | | | | | | |
| 1999 | | | | | | 64 | 34 | 759 | 26 | 22 | 188 | | | | 1,374 | 1,448 | | | 2,219 | 1,696 | | | | | | | | |
| 94-99: | | 2.3 | 2.3 | 10 | | 603 | 34 | 845 | 26 | 639 | 1,673 | 9,251 | 1,959 | | 60 | 6,762 | 8,484 | | * 18,110 | 12,236 | | | | | | | | |
| 2000 | | | ***6 | | | 1,763 | | 901 | | 1,108 | | | 1,631 | | | | | | | 1,297 | | | | | | | | |
| 80-00** | | | | 10 | | 3,386 | | 1,889 | | 1,750 | | | 4,192 | | | | | | | 36,158 | | | | | | | | |

Table 2: MBM-imports. Shading indicates period of different risk that exports carried the agent, 1986-1990 being the period of highest risk for UK imports while 1994-1999 UK-exports are assumed to have been safer than exports from other BSE-affected countries. Sources: CD = Country Dossier, EU = Eurostat, UK = UK-Export statistics. * The figure includes the MBM imports from Germany and Italy as indicated in Table (no breakdown per year, therefore total > total of column above). ** Quantities of MBM-imports given in the dossier for the period 1987-2000. *** UK Customs figures for 9 months only.

2.3 Overall assessment of the external challenge

The level of the external challenge that has to be met by the BSE/cattle system is estimated according to the guidance given by the SSC in its final opinion on the GBR of July 2000.

It appears that the challenge resulting from live cattle imports have been low from 1980 to 1993 and moderate from 1994 to 1999.

The imports of MBM posed a high external challenge between 1980 and 1993 and a very high external challenge from 1994 onwards.

It is assessed as high only (and not very high) for the period before 1985 as it corresponds mainly to imports of MBM from Italy in 1980. Therefore a factor 10 is applied to reduce the external challenge during that period.

| External Challenge experienced by HUNGARY | | | | |
|--|------------------|---|--------------------|---|
| <i>External challenge</i> | | <i>Reason for this external challenge</i> | | |
| Period | Level | Cattle imports | MBM imports | Comment |
| 1980-1993 | High | Low | High | Mainly due to MBM imports from BSE affected countries |
| 1994- at current | Very High | Moderate | Very high | |

Table 3: External Challenge resulting from live cattle and/or MBM imports from the UK and other BSE-affected countries. The Challenge level is determined according to the SSC-opinion on the GBR of July 2000.

On the basis of the available information the overall assessment of the external challenge is as given in the table above. Hungary was exposed to a high external challenge from 1980 to 1993 and a very high challenge from 1994 onwards. This challenge resulted mainly from MBM-imports from countries now known to be affected with BSE. It therefore is very likely that the BSE agent was introduced to Hungary by this route.

3. STABILITY

3.1 Overall appreciation of the ability to avoid recycling of BSE infectivity, should it enter processing

Feeding:

Since 1984, the National Codex standards did not allow MBM for cattle feed.

Since 1990 an RMBM-ban exists.

Since 1997 this ban has been extended to a mammalian MBM ban. Since then only non-mammalian MBM may have been fed to cattle.

Official Hungarian control services have always carried out detailed controls on production “product sheets” (approval of raw material prior production and document of reference during production).

On the basis of available information, documentary feed controls have apparently been implemented at least since 1990, but analytical controls have not been demonstrated before 1997. Since then an ELISA test for the control of imported and domestic animal feed has been used (see below, chapter on “cross contamination”).

According to the country dossier, Hungary did not feed voluntarily any MBM to ruminants at least since 1980. Until 1991/92 urea, which is inexpensive, was used as nitrogen supplement in ruminant feed. After this time, soybean oil meal (extracted) was used.

However, it cannot be excluded that feeding cattle with mammalian and even ruminant MBM, BM, MM or greaves did occur. The measures adopted in 1997 made voluntary feeding less likely (all mammalian proteins banned for cattle feed) and the control measures were significantly improved.

Rendering

A rendering industry exists.

Bovine material including brain, spinal cord and fallen bovine stock is rendered for feed production. It is also stated that “generally the raw materials originating from poultry and the raw materials originating from mammals are not rendered together”. However, it is not specified if dedicated poultry rendering facilities exists and if and how the separation of mammalian and non-mammalian rendering is ensured and controlled.

Since February 2001, high risk materials are defined as the parts of cattle skull covered with mucous membrane, the brain of cattle older than two years, eyes (in case of all species) and tonsils (in case of all species).

According to the country dossier, the batch process (133°C, 3 bar, 20 min) has been legally prescribed during rendering of animal waste on the basis of the Decree N°1/1982-1.1. It is also indicated that the Hungarian Zoosanitary Code does not require low risk materials to be treated at 133°C/20^{min}/3^{bar}. However, it is indicated that all rendering plants in Hungary apply the batch process (133°C, 3 bar, 20 min). There is no low risk material rendering plant producing MBM. The only plants processing low risk materials are producing pet food only.

No information is provided on the correct application of the process conditions and no information is available on the annual domestic production of MBM, BM, MM, and Greaves from different raw materials and on their market outlets.

It is noted that some MBM produced in Hungary are exported to Austria.

SRM and fallen stock

There is no SRM ban at current. SRM was included in the material rendered for feed production, as well as fallen stock throughout the reference period.

From 31 March 2001, it will be compulsory to destroy the following animal waste by incineration or by incineration after rendering:

- all carcasses of dead bovine animals, pigs, goats, sheep, solipeds, poultry;
- by-products derived from the slaughtered ruminants including products unfit for human consumption and specified risk materials.

Cross-contamination

The Animal Health Service checks every plant that produces compound feeding-stuffs and basic material of feedstuffs. All feed stuffs have product-sheets that are approved and controlled by the County Animal Health and Food Control Station. The product-sheets contain the most important information on feed produced, including all ingredients.

The County Animal Health Food Control Station controls the feed produced in accordance with production sheets, official licences are delivered for feed circulation.

According to the country dossier, the feeding and rendering systems were examined several times with special consideration to the prevention of BSE. However, no documentation was provided on these examinations.

According to the country dossier the following measures are in place to prevent cross-contamination of cattle feed with MBM, BM, MM and/or greaves:

- Measures in feed mills that were implemented and controlled before 1990:
 - flushing batches between ruminant and non-ruminant feed or separated production lines for cattle feed and other feed; it is not explained why these measures were in place already at that time.
- Measures in feed mills and during transport, implemented and controlled since 1981, but with special consideration for BSE since 1990:
 - control of the basic materials and of the end products (ELISA investigations since 1997 for the presence of ruminant proteins);
 - labelling (to indicate the ingredients and to indicate if the feeding of the feedstuff to ruminants is forbidden or not, user's guide);
 - separated transport on the basis of labelling;
 - suitable (closed, protected) transport vehicles;
- Measures on the farm implemented and controlled since 1996:
 - official feed control (use of animal proteins, storage);
 - correct use of feedstuffs according to the label and the user's guide.

Since 1997 cattle feed samples are examined with an ELISA-test that is said to be able to differentiate between ruminant and non-ruminant protein. Information on the number of samples tested and the result are given in Table 4 below. The Hungarian State Veterinary Service started the ELISA investigations during 1997's

autumn mainly for the control of the imported fishmeal and poultry meal. Beside the investigation of the imported products they started to monitor the domestic feed production, too. During this ELISA investigations Hungarian experts test samples originated not only from fish meals, poultry meals or feedstuffs intended for ruminants, but also for MM, MBM, mixed animal meal or BM which are not allowed to be fed to ruminants. The Hungarian State Veterinary Service on the request of the industry has carried out these controls of products not allowed for ruminants.

The imported MBM batches found positive were not allowed for ruminants feeding purposes.

| Year | Test method | N° sample tested | Of which, N°: | | Of which, imported | Total N° of positive ** (% / N° sample tested) | N° of positive among imported |
|-------------|-------------|------------------|---------------|----------------------|--------------------|---|-------------------------------|
| | | | allowed | banned for ruminants | | | |
| End of 1997 | ELISA | 44 * | 3 | 41 | ? | 10 (25%), of which only 3 samples (6.8%) were originating from feed intended for ruminants* | |
| 1998 | ELISA | 760 | 751 | 9 | 724 | 42 (5.5%) | 37 |
| 1999 | ELISA | 1,038 | 1,035 | 3 | 975 | 21 (2%) | 19 |
| 2000 | ELISA | 1,086 | 1,077 | 9 | 1,032 | 8 (<1%) | 4 |

Table 4: Results of the testing of ruminant feedstuff for presence of MBM, MM, BM, Greaves or animal protein in general. In 1999, there were 8 tests and in 2000 there were 5 tests done with PCR. * The 44 samples investigated in 1997 originated from fishmeals, poultry meals or feedstuffs intended for ruminants. ** A positive is defined as a sample with cattle or sheep protein contamination > 0%

In 1998, in total 760 samples were investigated with 42 positive results for cattle or sheep proteins. From the 42 positive results, 37 samples were taken from imported products, and only 5 samples from domestically produced feeds. From these 5 positive samples 3 originated from mammalian blood meal and 1 sample was taken from MBM, only 1 sample originated from feed intended for ruminants.

In 1999, in total 1,038 samples were investigated with 21 positive results for cattle or sheep proteins. From the 21 positive result 19 samples were taken from imported products, and only 2 samples from domestically produced feeds. All the 2 positive samples were taken from MBM (not allowed for the feeding of ruminants).

In 2000, in total 1,089 samples were investigated with 10 positive results for cattle or sheep proteins. Beside the investigation of feeds 3 ground samples were investigated also with 2 positive results. Therefore 1,086 feed samples were investigated totally with 8 positive results. From these 8 positive samples 4 were taken from domestically produced feeds, but all of them originated from feeds which are not allowed for feeding of ruminants.

The results of the feed examination (Table 4) indicate that controls were effectively carried out but also indicate that cross-contamination of feed that should not contain mammalian MBM with ruminant protein did occur, although to a limited extend.

Conclusion on the ability to avoid recycling

In light of the above-discussed information it cannot be excluded that the BSE agent, should it have entered the territory of Hungary, could have reached domestic cattle and was recycled. Even if intentional feeding was probably not common, it cannot be excluded before 1990 and even until 1997. Since 1997, the likelihood that the agent would have been recycled and amplified decreased, mainly due to the strengthening of the feed controls and the extension of the RMBM-ban to a mammalian MBM-ban. The feed controls clearly show a decrease of cross-contamination, however, they also demonstrate that cross-contamination existed even in 2000.

3.2 Overall appreciation of the ability to identify BSE-cases and to eliminate animals at risk of being infected before they are processed

Cattle population structure

According to Eurostat, the cattle population in 1994 was 910,000 animals, of which 415,000 were cows. According to CD, in 1998 the total population was reduced to 0.9 million heads, of which 75% was dairy cattle, 20% was of double use and 5% was meat cattle. Figures for 1999 indicate a slight change: the total population was further decreased to 0.85 million, the dairy fraction was about 69%, 23% was of double use and 8% was meat cattle.

Since 1980 the average age at slaughter has apparently been around 5 years.

The average standard lactation raised from 4.138 kg per year per cow in 1980 to 6.523 in 1999 (5.534 in 1990).

According to the country dossier, there is no co-farming in "large scale" farms (herd size of at least 50 cattle). In smaller farms it can happen sometimes, "but the cattle and the other animals are held in different buildings".

Table 5 summarises the cattle population figures.

| Period | Total number of cattle (average) | Over 24 months old | |
|---------|----------------------------------|--------------------|-------------------|
| | | Cow | Heifers and bulls |
| 1995-99 | 893,000 | 410,000 | 33,000 |
| Current | 845,000 | 390,000 | 31,000 |

Table 5: Key data on the cattle population of Hungary.

Surveillance and culling

Notification of BSE is compulsory since 1996.

Since 1996 compensation is provided and a culling strategy established. This requires that the entire herd must be slaughtered if BSE is officially confirmed. It is then compulsory to compensate the farmer for all culled animals. Currently the level of the compensation of farmers for killed animals in case of a notifiable disease is 90% of the market value of the animal, but it will be 100% soon (after

the changing of the Act on Veterinary Rules currently being examined by the Hungarian Parliament).

From 1 January 2001 there are only two regional veterinary institutes in Hungary (five before).

Training and awareness raising measures are apparently in place since 1991 only for the laboratory veterinarians, in 1991-1992 and in 1996 two trainings were held.

It is also indicated that since 1991 the BSE and other TSEs have been part of education in the Hungarian Veterinary University (including postgraduate courses). Furthermore the Hungarian Academy of Science and the Hungarian Association of Zoonosis organised several meetings in this area.

Apparently, no measures are in place to target the veterinary practitioners active in the field or the farmers themselves. On the basis of the available information the efficiency of these measures is judged to be low.

Histopathology is used to examine BSE-suspects. According to the country dossier, investigations of the brains of all ruminants showing any neurological signs have been carried out for BSE or scrapie since 1989 with histopathological methods, apparently according to the recommendations of the OIE Manual of Standards for Diagnostic Tests and Vaccines. From 1990 to 2000 there was a total account of 1,613 BSE-examinations with neither BSE-doubtful nor BSE-positive results. The exact age of the animals investigated because of neurological signs is not known.

In addition to this "passive" surveillance, depending of the notification of BSE- or at least CNS-suspects, active surveillance is carried out as follows:

In 1997 Hungary began to investigate "the brains of the culled and slaughtered ruminants, and the cattle being older than three years or the sheep being older than two years which died even without any neurological signs". The veterinary service takes the sample randomly from this population. From 1997 to 2000 there were 268 cattle investigated in this monitoring system.

| Year | BSE examinations | | Differential diagnosis | N° of doubtful / positive |
|--------------|------------------|------------------|--|---------------------------|
| | N° | Reason(s) | | |
| 1990 | 157 | NS | Listeriosis, IBR (encephalitis form), rabies, CCN, sporadic bovine encephalitis (SBE), meningitis (Corynebacterium, Streptococcus) | 0/0 |
| 1991 | 174 | NS | | 0/0 |
| 1992 | 150 | NS | | 0/0 |
| 1993 | 139 | NS | | 0/0 |
| 1994 | 148 | NS | | 0/0 |
| 1995 | 132 | NS | | 0/0 |
| 1996 | 154 | NS | | 0/0 |
| 1997 | 179 | NS (160) MO (19) | | 0/0 |
| 1998 | 135 | NS (40) MO (95) | | 0/0 |
| 1999 | 123 | NS (82) MO (41) | | 0/0 |
| 2000 | 122 | NS (58) MO (64) | 0/0 | |
| Total | 1,613 | | | |

Table 6: Cattle that were examined for BSE, results of their examination (by year). NS = cattle showing any neurological signs, MO = monitoring, random sampling from all culled and slaughtered cattle, and from cattle over 3 years that died without neurological signs.

It is not clear if the animals tested were mainly imported animals or not. It is noted that Hungary tested more animals since 1990 than required by the OIE (± 100), but it is not clear how many of the tested animals have not fulfilled the OIE-criteria.

It has to be noted that from March 2001 the surveillance system regarding TSE will be changed as follows:

- It is compulsory to investigate all ruminants showing any neurological signs in an official laboratory (as it was in the past, too). But there are some differences in the examination of the different species.
- In case of bovine animals only the Central Veterinary Institute (Budapest) is allowed to carry out investigation for BSE. In the first step a histopathology examination is carried out as laid down in the latest edition of the OIE Manual. Where the result of the histopathology examination is inconclusive or negative or where the material autolysed, the tissues shall be subjected to an examination by one of the other diagnostic methods laid down in the Manual (immuno-blotting, immunocytochemistry, or demonstration of characteristic fibrils by electron microscopy).
- In case of bovine animals examined in the framework of the annual monitoring one of the prion tests listed in Annex IVA of the amended Commission Decision 98/272/EC has to be carried out. Where the result of the monitoring test is inconclusive or positive, the tissues shall be immediately subjected to confirmatory examinations. The confirmation examination shall start by a histopathology examination of the brainstem as laid down in the Manual. Where the results of the histopathology examination is inconclusive or negative or where the material is autolysed, the tissues shall be subjected to an examination by one of the other diagnostic methods laid down in the Manual (immuno-blotting, immunocytochemistry, or demonstration of characteristic fibrils by electron microscopy), but the method must not be the same as the method used in the monitoring test. The Central Veterinary Institute carries these monitoring investigations out.
- A minimum of 2,250 animals over 30 months that died without any neurological signs has to be investigated annually in the frame of this monitoring programme. If the number of the dead bovine animals is less than 2,250, cattle subjected to emergency slaughter or cattle culled and slaughtered may be examined in the monitoring programme.

3.3 Overall assessment of the stability

For the overall assessment of the stability the impact of the three main stability factors and of the additional stability factors, mainly cross-contamination and surveillance has to be estimated. Again the guidance provided by the SSC in its opinion on the GBR of July 2000 are applied.

Feeding: Feeding ruminant MBM to cattle is not allowed since 1984 (feed standards) and was legally possible until 1990. Feeding non-ruminant mammalian MBM was allowed until 1997. Non-mammalian MBM may still have been fed to ruminants. Feed controls have been implemented in 1990, but detailed data on controls and findings are only available since 1997, indicating that cross-contamination did appear. Even if voluntary feeding of MBM to cattle was probably infrequent even before the feed-bans of 1990 and 1997, it cannot be excluded and cross contamination was occurring, feeding therefore was "not OK" until 1990. Thanks to the enlarged feed ban and the improved feed controls it became "reasonably OK" from 1990 onwards.

Rendering: Rendering of ruminant material including SRM and fallen stock is and was common practice in Hungary. Since 1982, Hungary apparently applied the batch pressure cooking process at least to all "high risk" material. Rendering is regarded as "not OK" before 1982 and "reasonably OK" since 1982 as no information is provided on implementation and analytical controls carried out during that period. It has also to be mentioned that low risk materials were processed at more gentle conditions and low risk material could include some SRM and certainly vertebral column.

SRM-removal: There is no SRM ban. Therefore SRM removal was "not OK" throughout the reference period.

Other stability factors: Measures against cross contamination are in place since 1990, but their efficiency is only documented since 1997. Passive surveillance is in place since the late 80s and since 1990 the number of cattle brains annually checked for BSE is above the OIE-requirements. Since 1997 active surveillance is introduced, improving it further. A targeted active surveillance will start in March 2001. It is concluded that the "other" factors enhance the stability since 1990.

| Stability of the BSE/cattle system in <u>HUNGARY</u> over time | | | | | |
|--|--------------------|---------------|---------------|--------------|-------|
| Stability | | Reasons | | | |
| Period | Level | Feeding | Rendering | SRM | Other |
| 1980-81 | Extremely unstable | Not OK | Not OK | Not OK | |
| 1982-90 | Very Unstable | | | | |
| 1991-96 | Unstable | Reasonably OK | Reasonably OK | | |
| 1997- at current | | | | ↑ since 1990 | |

Table 7: Stability resulting from the interaction of the three main stability factors and the other stability factors. The Stability level is determined according to the SSC-opinion on the GBR of July 2000.

On the basis of the available information it has to be concluded that the country's BSE/cattle system was extremely unstable until 1981 i.e. it would have recycled and amplified BSE-infectivity, should it have entered the system, rather fast. The system became very unstable in 1982 when the rendering conditions were able to reduce BSE infectivity and is unstable since 1997 when a RMBM ban was enhanced to a mammalian-MBM-ban and feed controls were further improved. Since 1990 the measures against cross-contamination and the good surveillance enhance the stability.

4. CONCLUSION ON THE RESULTING RISKS

4.1 Interaction of stability and challenges

The conclusion on the stability of the Hungarian BSE/cattle system over time and on the external challenges the system had to cope with are summarised in the table below. From the interaction of the two parameters "stability" and "external challenge" a conclusion is drawn on the level of "internal challenge" that emerged and that had to be met by the system, in addition to external challenges that occurred.

| INTERACTION OF STABILITY AND EXTERNAL CHALLENGE IN HUNGARY | | | |
|---|---------------------------|---------------------------|---|
| Period | Stability | External Challenge | Internal challenge |
| 1980-81 | Extremely Unstable | High | Unlikely but cannot be excluded |
| 1982-90 | Very Unstable | | Likely to be present and growing |
| 1991-93 | Unstable | | |
| 1994-96 | | Very high | |
| 1997 - at current | | | |

Table 8: Internal challenge resulting from the interaction of the external challenge and stability. The internal challenge level is determined according to guidance given in the SSC-opinion on the GBR of July 2000.

The BSE/cattle system of Hungary was exposed to a high external challenge between 1980 and 1993 and a very high challenge from 1994 to 1999. Before 1982 the system was extremely unstable. Thereafter the system was very unstable (between 1982 and 1990) and unstable thereafter, it would have recycled incoming BSE-infectivity, albeit at a lower rate. This combination makes it likely that an internal challenge is present since the late 80s and is growing since then.

- The external challenge resulting from UK-cattle import in the eighties could have led to an internal challenge, if the UK-cattle slaughtered in 1987/88/89 and 90 were incubating BSE without showing clinical signs, were rendered for feed, and this contaminated feed reached domestic cattle. (There was no feed ban before 1990). At least for most of the 57 cattle imported in 1997 this seems to be unlikely, because they were older than 7 years when slaughtered while being apparently healthy.
- The imports of live cattle from other BSE-affected countries increased since 90 and theoretically some of these animals could have been infected prior to export. If such incubating animals were already rendered, it could not be excluded that contaminated MBM was produced and already reached domestic cattle.
- MBM, MM, BM or Greaves were imported from several BSE-affected countries, other than the UK, since the 80s, mainly from IT and DE but also

from NL and FR. The risk that these imports were contaminated increased since the early 90s, as did the amounts that were imported. In view of the "not OK" feeding factor until 1990, and "reasonably OK" thereafter, such imports are likely to have reached domestic cattle and created an internal challenge since the early 90s. (As long as Hungary cannot prove in detail that imported, potentially contaminated feed stuffs could not have reached domestic cattle, it is assumed that such imports led to an internal challenge in the year of import.)

It is regarded to be likely that indeed an internal challenge developed, met the extremely to very unstable system and was recycled and amplified, growing over time.

4.2 Risk that BSE infectivity entered processing

A certain risk that BSE-infected cattle entered processing in Hungary, and were at least partly rendered for feed, occurred in the late 80s when UK-imported cattle were slaughtered. This risk continued to exist, and grew significantly in the mid 90s, when domestic cattle, infected by MBM-imports from IT, DE, or FR, reached processing. If that happened, and given the instability of the system, the risk that incubating cattle are processed is still growing.

4.3 Risk that BSE infectivity was recycled and propagated

Given that the BSE-agent was potentially imported into the country in the 80s when the system was extremely unstable, a risk that BSE infectivity was recycled and amplified existed since the moment when infected cattle (imported or domestic) entered the feed chain (since the late 80s). Given the instability of the system, this risk grew over time and is still growing.

5. CONCLUSION ON THE GEOGRAPHICAL BSE-RISK

5.1 The current GBR as function of the past stability and challenge

- The current geographical BSE-risk (GBR) level is *III*, i.e. it is likely but not confirmed that domestic cattle are (clinically or pre-clinically) infected with the BSE-agent.

5.2 The expected development of the GBR as a function of the past and present stability and challenge

- As long as the system remains unstable, the probability of cattle to be (pre-clinically or clinically) infected with the BSE-agent will further increase, even if no additional external challenges would occur.
- Any additional external challenges would support this process.
- However, it is noted that the planned (from March 2001) measures on SRM and rendering (incineration of fallen stock and SRM), if properly implemented, associated to a strengthened active surveillance will improve further the stability of the system.

5.3 Recommendations for influencing the future GBR

- Improving the stability of the system, in particular by ensuring that appropriate rendering of all materials is properly enforced (proper heat treatment) and by excluding SRM and fallen stock from rendering, would, over time, reduce the GBR. Further improved feed controls would be useful, too, as would be improved measures to reduce the risk of cross-contamination (separate feed production lines, total feed ban...).
- Improving the active surveillance further, e.g. by introducing targeted sampling of asymptomatic at-risk cattle populations (adult cattle in fallen stock and emergency slaughter) by means of improved diagnostic methods (histopathology, immunohistochemistry...) and rapid screening tests and by implementing an awareness training for farmers and veterinarians in the field would further improve the basis for monitoring the GBR.