Final report on the updated assessment of the Geographical BSE-Risk (GBR) of

THE REPUBLIC OF CYPRUS - 2003

10 April 2003

NOTE TO THE READER

Independent experts have produced this report, applying an innovative methodology by a complex process to data that were 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 and its update of 11 January 2002. These opinions are available at the following Internet address:

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

This report, and the opinion of the SSC based on it, is now serving as the risk assessment required by the TSE-Regulation EU/999/2001 for the categorisation of countries with regard to their BSE-status. The final BSE-status categorisation depends also on other conditions as stipulated in annex II to that TSE-Regulation.

1. DATA

- The information available was suitable to carry out a qualitative assessment of the GBR. Nevertheless, this report is based on reasonable worst case assumptions, in cases where data are not complete.

Sources of data

- Country dossier (CD) consisting of information provided from the country's authorities in 2000-2002.

Other sources:

- EUROSTAT data on export of "live bovine animals" and on "flour, meal and pellets of meat or offal, unfit for human consumption; greaves" (customs code 230110), covering the period 1980-2001.
- UK-export data (UK) on "live bovine animals" (1980-1996) and on "Mammalian Flours, Meals and Pellets", 1988-1996. As it was illegal to export mammalian meat meal, bone meal and MBM from UK since 27/03/1996, exports indicated after that date under customs code 230110 should only have included non-mammalian MBM.
- Export data from the Czech Republic, Estonia, Hungary, Lithuania, Romania, Slovenia and Switzerland.

2. EXTERNAL CHALLENGES

2.1 Import of cattle from BSE-Risk[1] countries

Table 1 provides an overview of the data on live cattle imports, as provided in the country dossier (CD) and the corresponding data on relevant exports as available from BSE risk countries that exported to Cyprus. Only data from risk periods are indicated, i.e. those periods when exports from a BSE risk country already represented, according to the SSC opinion on the GBR method of January 2002, an external challenge.

- According to the CD, the Republic of Cyprus did not import live cattle from the UK 1980 until today. This is confirmed by Eurostat and UK export-data.
- Moreover, according to the Republic of Cyprus, no live cattle were imported from any other BSE risk country since 1980. Two sources of data were checked for this claim:
  - Data collected by the Department of Veterinary Services when issuing import permits, and records available at the 2 entry points;
  - Data collected by the Department of Statistics and Research from the Ministry of Finance (certificate provided).
- Eurostat data, however, indicate exports of 426 live cattle from France and the Netherlands to the Republic of Cyprus (76 cattle in 1983, 324 in 1989; and 26 in 1994).

[1] BSE-Risk countries are all countries already assessed as GBR III or IV or with at least one confirmed domestic BSE case.

2.2 Import of MBM[2] or MBM-containing feedstuffs from BSE-Risk countries

- The CD indicates the import of 94 tons from the UK from 1994 – 1996 and 147 tons in 1998 – 1999. The latter amount is considered to have been of poultry origin.
- According to Eurostat and other data, 86 tons of MBM have been exported from the UK from 1980 – 1996. UK revised data do not confirm MBM exports to Cyprus for the period 1988-1996, therefore Eurostat data for 1993 (230 t) and for 1995 (6 t) are not taken into account.
- From 1997 – 2001 another 1,405 tons of MBM have been exported to Cyprus. However, it is assumed that the export after 1996 was in fact of poultry origin.
- The CD indicates the import of only 5,415 tons of MBM from BSE-risk countries other than the UK.
- In contrast to these figures, other BSE-risk countries than the UK reported the export of 32,616 tons of MBM to Cyprus from 1980 – 2001 (Eurostat and other data). The main exporters were Italy (13,575 tons), Belgium (10,250 tons) and France (6,298 tons). Smaller amounts were exported by Denmark, Germany, the Netherlands, Spain and Greece.
- According to the CD, no proteins of bovine origin were imported from EU BSE-risk countries. Examples of certificates issued in Belgium and the Netherlands have been provided. It is not clear if such certificates exist for other countries that exported MBM to Cyprus. The Republic of Cyprus notes that certificates are destroyed every three years and therefore certificates for earlier years are not available anymore.
- For the import of pet food into the Republic of Cyprus, evidence is provided that the UK has issued specific certificates stating that the pet food does not contain any products from bovine animals slaughtered in the UK or mammalian derived meat and bone meal of UK origin. Evidence of certificates for poultry meal has been provided as well (1999-2000).
- According to the CD, imported concentrates were exclusively destined for feed for partridges, horses and fish, and that they anyway did not contain proteins of mammalian origin. It is not clear if and how the appropriate use was controlled. The composition was not verified by analytical controls, but it was taken from the import certificates.
- Cyprus argues that due to the fact that most of the MBM imports into Cyprus came in form of “concentrates", the MBM import figures given are not fully comparable to the export figures of Eurostat which reports the category "flours, meals, pellets of meat or meat offal, greaves; unfit for human consumption". According to the CD, the quantities reported by Cyprus also include fishmeal and protein concentrates for poultry and pigs as well as feed supplements and premixes with trace elements, vitamins and coccidiostats.

[2] For the purpose of the GBR assessment the abbreviation “MBM” refers to rendering products, in particular the commodities Meat and Bone Meal as such; Meat Meal; Bone Meal; and Greaves. With regard to imports it refers to the customs code 230110 “flours, meals and pellets, made from meat or offal, not fit for human consumption; greaves”.

Country:	Data	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	Total
France	CD																							0
	other				76																			76
Netherlands	CD																							0
	other										324					26								350
UK	CD																							0
	other																							0
ALL TOTALS																								
non UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	other	0	0	0	76	0	0	0	0	0	324	0	0	0	0	26	0	0	0	0	0	0	0	426
UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1: Live cattle imports into Cyprus (CD) and corresponding exports from BSE-Risk countries. Source for export data: Eurostat and UK export statistics and, where available, export statistics from other BSE-Risk countries. Note: Only imports in Risk periods (grey shaded) are taken into account for assessing the external challenge. Risk periods are defined according to the SSC opinion of 2000 as updated in 2002.

Country:	Data	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	Total
Belgium	CD														418	425	349	215	18	93	485			2003
	other				639	680	797	678	600	800	1291	529	863	664	701	620	343	161	21	267	468	128		10250
Denmark	CD																	20						20
	other										40	140	160	120	30									490
France	CD														105	149				20				274
	other	733	1369	626	1214	1040	612	256	72	40					210	126								6298
Germany	CD																							0
	other										8										171	60		239
Italy	CD														162	139	102	122	127	535	547			1734
	other						84	124	345	557	584	87		575	1131	268	4977	2931	127	578	715	492		13575
Netherlands	CD														104	84	100	101	20	168	167	640		1384
	other							2	2		38		83	128			57	121	44	64	366	119		1024
Spain	CD																							0
	other									560	60						100							720
Greece	CD																							0
	other																	18					2	20
UK	CD														18	76								94
	other	58			10				18						0		0							86
TOTALS																								
non UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	789	797	551	458	165	816	1199	640	0	5415
	other	733	1369	626	1853	1720	1493	1060	1019	1957	2021	756	1106	1487	2072	1014	5477	3231	192	909	1720	799	2	32616
UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	18	76	0	0	0	0	0	0	0	94
	other	58	0	0	10	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86

Table 2: MBM imports into Cyprus (CD) and corresponding exports from BSE-Risk countries. Source for export data: Eurostat and UK export statistics and, where available, export statistics from other BSE-Risk countries. Note: Only imports in Risk periods (grey shaded) are taken into account for assessing the external challenge. Risk periods are defined according to the SSC opinion of 2000 as updated in 2002.

- The CD further informs that most of the imported protein concentrates were used on farms, mixing their own feed. However, no evidence was provided e.g. veterinary certificates accompanying the consignments showing a farm address to substantiate this claim.
- Since 1990, the Republic of Cyprus has undertaken a series of measures to control MBM imports e.g. import bans were enforced by authority (more detailed information in 3.1).

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 (as updated in January 2002).

- Live cattle imports

In total the country imported over the period 1980 to 2001 426 live cattle (Eurostat and other data) from BSE-risk countries, of which none came from the UK. Broken down to 5-years periods the resulting external challenge is as given in table 3.

Compared to the external challenge caused by MBM imports the external challenge due to live cattle imports is negligible and would not change the total external challenge if these cattle imports would be neglected.

- MBM imports

In total the country imported over the period 1980 to 2001 32,702 tons of MBM (Eurostat and other data) from BSE-risk countries, of which 86 tons (Eurostat and other data) came from the UK. Broken down to 5-years periods the resulting external challenge is as given in table 3.

External Challenge experienced by CYPRUS				
External challenge		***Reason for this external challenge***		
Period	**Overall Level**	**Cattle imports**	**MBM imports**	**Comment**
1980 to 1990	**High**	**Negligible**	**High**	
1991 to 1995	**Very high**		**Very high**	
1996 to 2000	**High**		**High**	

Table 3: External Challenge resulting from live cattle and/or MBM imports from the UK and other BSE-Risk countries. The Challenge level is determined according to the SSC-opinion on the GBR of July 2000 (as updated in January 2002).

On the basis of the available information, the overall assessment of the external challenge is as given in the table above.

3. STABILITY

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

Feeding

- In 2000, 360 feed mills operated in Cyprus (370 in 2002): 70 produce feed exclusively for cattle (76 in 2002), 112 for pigs (127 in 2002) and 114 for poultry (109 in 2002) only. All these feed mills are home-mixers. 64 commercial feed mills produce feed for ruminants, pigs and poultry on the same production line (58 in 2002).
- In 2000, the commercial feed mills produced 172,000 tons of cattle feed, 217,000 tons of pig feed and 130,000 tons of poultry feed.

Use of MBM in cattle feed

- According to the CD, it has never been "common practice" to feed MBM to ruminants. It is said that no animal tissue has ever been incorporated in ruminant feed. It is claimed that ruminant feed is only based on raw materials of plant origin. Due to the subsidy of grain, feedmills have not any financial advantage to include animal proteins in feed for ruminants. It was, however, not forbidden to feed ruminants with MBM until 1990.
- According to the CD, the milk yields in Cyprus are low, which makes the use of high value animal proteins unnecessary and unprofitable. In addition, the prices of meat and milk are fixed and controlled by the Ministry of Commerce and an open competition does not exist. This practice was supported by the Government policy to strongly subsidise feeding stuffs of plant origin. The prices for cereals during the years 1970-1990 varied from 25-35 Cyprus pounds per ton and for soybean meal from 80-120 Cyprus pounds per ton. The prices of meat meal varied from 150-200 Cyprus pounds per ton and for fishmeal from 200-250 Cyprus pounds per ton.
- Fish meal is either not used in commercial feed mills or if used only in feed mills on separated production lines.

Feed bans

- According to the CD, since October 1990 by order 236/90 feeding of ruminant MBM to ruminants was prohibited. This order also contains an import ban for animal feed from BSE/Scrapie-affected countries.
- Another order of the same year (250/90) requests a veterinary certificate to accompany the import consignment for feed of animal or plant origin that guarantees the absence of bovine protein.
- Since 1991, any consignment of feed has to be cleared before import by the veterinary service.
- In December 1994, the feed ban was extended to mammalian protein (Legal Orders N. 291 and 300/94).

- Since 1994, veterinary certificates for the import of feed from all EU countries other than the UK, are requested to guarantee that the feed does not contain animal protein of bovine origin and that other animal protein was processed according to the 133°C/20^{min}/3^{bars} standard.
- Order 300/1994 calls for labelling provisions for imported feed containing mammalian protein ("not for ruminants").
- Since 1996, the import of any product derived from UK-ruminants is prohibited.
- Since January 2001, the feeding of all farmed animals with processed animal protein as defined in Commission Decision 2000/766/EC with the exception of fishmeal for the feeding of non-ruminants is prohibited (Legal Order 28/2001). All quantities of processed animal protein stored on farms and in feed mills, which were imported prior to the prohibition, were confiscated and destroyed by incineration.

Potential for cross-contamination and measures taken against

- According to the CD, imported concentrates containing animal protein have been exclusively used for feeding of pigs, poultry and fish. All containers or bags containing feedstuffs with animal protein have to be labelled "not for feeding to ruminants". According to the CD, the compliance with the labelling requirement is controlled and the District Veterinary officers report quarterly on the results of such inspections. Feed samples have been examined between 1990-1994 using a microscopic method (all results are stated to be negative) and since the year 2000 by a specific ELISA test. No information was provided on whether samples have been taken between 1995 and 1999 and which method was used to examine them. Of the 20 samples sent for ELISA examination, two were reported to have included bovine protein. However, this indicates that the imported ruminant protein containing consignments were not properly heat-treated and it does not prove that the consignments “not containing ruminant protein” were really free of ruminant protein.
- The country provided analyses of such concentrates showing in fact that they were intended for the raising and fattening of pigs. However, the amount of imported concentrates remained unclear and it seems probable that these concentrates were used in multi-species feed mills in Cyprus making the cross contamination with MBM of ruminant feed possible.
- According to the CD, the worst case scenario for cross-contamination of ruminant feed with animal protein during mixing is not more than 0.1%, and during the last ten years no bovine animal protein was imported in the Republic of Cyprus. Furthermore, all imported MBM has been treated at the 133°C/20^{min}/3^{bar} standard since 1994 (according to accompanying veterinary certificates). During the years 1993-2000, 22 tons of animal feedingstuffs were sent back because they did not fulfil the veterinary import requirements after laboratory and other examinations upon import.
- According to the CD, a standard procedure in multi-species feedmills where MBM was used for the production of pig and poultry feed, was the cleaning of the production line by flushing with 300-400 kg grain and corn grindings for several times, before the production of ruminant feed. However, in other CD data it was stated, that only in 24 of the 30 feed mills producing feed for ruminants, pigs and poultry (that have vertical mixers) flushing is performed using batches with grains

and wheat feed for several times. The material used for flushing is kept separately for use in feeds for non-ruminants. Apparently only since 1997 feed mills are inspected to verify if the use of flushing batches between production runs for ruminant and non-ruminant feed is implemented. Inspections (a total of 219) have been carried out on a random basis directly in feed mills since 1997.

- All feed for ruminants produced in feed mills is packed in new bags or is transported in special containers, and there is no possibility for cross-contamination during transport with poultry or pig feed which is always sold and distributed from these feed mills in bags.

Control of Feed bans and cross-contamination

- The enforcement of all feeding prohibitions for ruminants is controlled by:

- education of farmers,
- inspection visits to feed mills,
- control of storage of animal proteins separately from grains and soy used for the production of feeds for ruminants,
- sampling for laboratory examination (samples taken in feedmills, home mixers, on farm etc.),
- inspections at the port of entry.

- No violations of the provisions of the legal orders on the prohibitions for feeding animal protein of mammalian origin were reported. This statement is in contrast to the experience of the European Commission for certain Member States and Third Countries.
- According to the CD, co-farming in the Republic of Cyprus does not exist and since 1993, 1,044 farms were visited to control the feed ban and to verify that no feeding items containing mammalian protein are stored in cattle farms.
- According to the CD, in 2001, 25 inspections on farms and 149 inspections of feed mills were carried out. 419 feed samples (taken in feed mills, on farm and imported feed) were taken, but only 205 (140 samples from cattle farms and home mixers; 51 from commercial feed mills; 14 from imported feed) of them were microscopically examined (according to Commission Directive 98/88/EC) for the presence of animal protein. All results were negative. No information was provided on the detection limit of the method.
- According to the CD, in 2002, 106 inspections of commercial feed mills and 179 of home mixers (93 on ruminant farms, 57 on pig farms, 29 on poultry farms) were carried out.
- During the inspections, 550 feed samples were taken in 2002. All of them have been examined microscopically for the presence of prohibited animal protein. These samples were taken in commercial feed mills (220), from imported feed (217), on cattle farms (70) without own feed production and on the premises of home mixers producing feed for their own cattle (43). No breaches were found.

Rendering

- Before 1990, no rendering industry existed in the Republic of Cyprus and animal waste was either incinerated or buried, as this was a provision of a Legal Order issued in 1972 for the control and eradication of Echinococcosis.
- Since 1990, one rendering plant operates in the Republic of Cyprus. The rendering plant processes slaughterhouse waste including rejected animals originating from the Central Slaughterhouse and from a poultry slaughterhouse that belongs to the rendering plant company. No fallen stock is processed but SRM from animals fit for human consumption may be processed.
- The amount of MBM produced annually is 4,500 tonnes (15-18 tons per day). In 2001 and 2002, 23,500 and 23,200 tonnes of raw material have been processed respectively, which resulted in 4,848 and 5,333 tonnes of MBM respectively.
- Since 2001, another rendering plant operates in Cyprus. This plant is attached to a poultry slaughterhouse and the MBM (poultry meal) is used for the production of petfood (yearly MBM production 170 – 310 tonnes).
- According to the CD the rendering plant is visited by the veterinary service on a daily basis and also audits are performed.
- According to the legislation, since 1990, all bovine materials are rendered in a batch pressure cooker at 133°C/20^{min}/3^{bar} at a maximum particle size of 50 mm. The CD contains thermograph records for several batches between 1996-2000. However, it seems that the pressure in the cooker is not continuously recorded.

According to the CD, since the beginning of 2001, all animal waste except fallen stock is collected, transported and processed at the rendering plant at 133°C/20^{min}/3^{bar}. The end product is bought by the Ministry of Agriculture, Natural Resources and Environment and destroyed by incineration at a cement factory under official control. Since the introduction of the prohibition, 4,428 tons of MBM have been destroyed.

SRM and fallen stock

- According to the CD, there was no official SRM ban before January 2001. Until the end of 2000 SRM was rendered with other slaughterhouse waste and the resulting MBM was used for feed production.
- Since January 2001, the Republic of Cyprus has harmonised its legislation with EU Decision 2000/418/EC (now repealed) as amended by Decision 2001/2/EC. The relevant Legal Order N. 28/2001 requests the removal of SRM and its destruction and the collection and destruction of fallen stock either by incineration or burial after full heat treatment in an approved rendering plant.
- The list of SRM is in accordance with EC legislation except for the vertebral column of animals over 12 months of age, which is not considered SRM. SRM is collected separately from other waste and is processed in a dedicated line of the rendering plant. Since July 2002, the list of SRM is in accordance with the relevant EU legislation.
- Fallen stock is destroyed by burial in approved disposal pits. New arrangements for the collection and separate rendering of SRM followed by incineration is being prepared.

Conclusion on the ability to avoid recycling

- In light of the above-discussed information it has to be assumed that the BSE- agent, should it have entered the territory of the Republic of Cyprus via MBM could have reached cattle but before 1990 it would not have been recycled. After 1990, recycling and amplification became technically possible because ruminant material was rendered for feed although the rendering process if applied properly was able to reduce infectivity if it was present in the raw material.
- Due to the situation in the feedmills it can be concluded that cross-contamination of cattle feed with MBM was likely.
- Due to the different control measures (controls on farm level 1993, control of rendering conditions 1996, controls in feed mills 1997) it is assumed that recycling became less likely since 1997.

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 the CD, the total cattle population of the Republic of Cyprus in 1999 was 54,023 heads of which 24,052 were dairy cattle. The average slaughter age for beef cattle is reported to be 12 months (before 1994-18 months) and dairy cattle are slaughtered between 7 and 8 years of age. It should be noted that a substantial increase in the cattle population took place in the eighties, which is an indication for large imports.
- In 2001, 45 slaughterhouses were registered with the veterinary service.
- In 2000, 18,427 cattle were slaughtered (9,873 < 24 months, 8,590 > 24 months).

Year	Total n° of farms	Total n° of dairy farms	Total n° of dairy cows	N° of bulls >1 year	Total n° of cattl (all ages)
1980	1,117	909	8,549	1,797	19,873
1985	1,098	892	16,168	4,536	39,618
1990	646	526	22,411	5,383	54,032
1991	592	480	23,120	5,457	54,681
1992	558	433	23,897	5,346	55,613
1993	495	390	25,646	5,568	60,954
1994	434	338	27,574	5,443	64,214
1995	379	316	29,481	4,919	67,949
1996	348	293	27,319	6,608	69,918
1997	311	282	25,491	3,251	62,276
1998	281	266	23,822	1,991	55,741
1999	276	268	24,052	530	54,023
2002	333		28,806	1,432	58,928

Table 4: Cattle population structure in the Republic of Cyprus.

- Since 1995, the average milk yield per year increased from 5,158 kg/cow to 6,080 kg/cow.

- Information on the feeding of dairy calves was provided: for the first 50 days they are fed using milk produced on the holding. From 10 days of age hay, straw and/or trefoil is added. No milk replacers are used as import is prohibited and no own production of milk replacers exist.

BSE surveillance

- Notification of BSE has been compulsory since June 1990.
- No specific description is given of the criteria for a BSE-suspect. It is only indicated that animals "displaying neurological signs" and "moribund animals without signs of infection" are considered as suspect BSE cases.
- Since 1990, compensation has covered 75% of the market value of confirmed cases and culled suspects.
- Awareness/training measures have been in place since 1991 and instructions for all veterinary officers and inspectors are provided. Farmers and private veterinarians are trained by lectures and video about BSE. Since 1990, laboratory personnel were trained in Weybridge (UK) on different diagnostic techniques.
- Since 2001, one of the approved rapid BSE post mortem tests is used for the examination of samples.

Passive surveillance

- Since 1996, all field veterinary officers and private veterinarians under contract were instructed to send the heads of bovines over 4 years of age showing neurological symptoms, which did not respond to treatment, for laboratory examination (instructions provided). Until 1998, only one such animal was diagnosed but turned out negative after histopathological examination (confirmed by the Institute of Tierneurologie, Bern, Switzerland).
- Since 1998, the Republic of Cyprus has followed the criteria for BSE surveillance and testing set by Commission Decision 98/272/EC. Since then, 46 cows over 36 months of age were examined for BSE with negative results. It is not clear if all cattle examined were normal slaughter animals from slaughterhouses or if fallen stock on farm level or animals dead on arrival at slaughterhouses had been included.

Active surveillance

- In 1999 and 2000, 94 samples have been taken from healthy slaughtered cattle over 30 months of age. They were examined histologically. All of them were negative for BSE.
- In January 2001, 48 brains of cattle at risk, which were collected during the last six months of the year 2000, were examined histologically with negative results.
- 282 brain samples from cattle at risk (1.2% of the bovine population over 24 months of age) were collected between December 2000 and March 2001, examined by ELISA and all showed negative results.

- According to the CD, since January 2001, under Legal Order No. 28/2001 all bovine animals over 30 months of age at risk are tested using a rapid test. Animals to be tested are:
  - bovines over 30 months of age which are subject to emergency slaughter,
  - bovines which have died on farm or during transport
  - bovines which have shown lasting neurological symptoms and did not respond to a therapeutic treatment.
- Since July 2001, all regularly slaughtered bovine animals over 30 months of age are also tested using a rapid test and the age of the other cattle categories (risk populations) to be tested was lowered to 24 months. Since 2002 (order 334 of 2002) a monitoring programme as defined in Regulation (EC) No. 999/2001 is applied.
- Tests performed in the framework of the surveillance program (all with negative results):

category	**2001**	**2002**	**2003***
normal slaughter	2946	5652	1224
emergency slaughter	58	104	20
sick slaughter	50	26	9
fallen stock	177	900	216
Total	**3231**	**6682**	**1469**

Table 5: number of examinations performed in the framework of BSE surveillance *until 28 February 2003

3.3 Overall assessment of the stability

For the overall assessment of the stability, the impact of the three main stability factors (i.e. feeding, rendering and SRM removal) and of the additional stability factor, surveillance has to be estimated. Again, the guidance provided by the SSC in its opinion on the GBR of July 2000 is applied.

Feeding

Feeding ruminant MBM to cattle was legally possible until 1990 and of non-ruminant MBM until December 1994. Inspection on enforcement of the mammalian to ruminant feed-ban started in 1995, therefore it is assumed that feeding was **"not OK"** before 1995 and to be **"reasonably OK"** since then. From 2001 onwards, feeding is considered **"OK"** due the introduction of a total feed ban and the implementation of controls.

Rendering

Rendering was introduced in the Republic of Cyprus in 1990. Before 1990 slaughterhouse offal was either buried or incinerated. Materials rendered since 1990 include ruminant material and SRM from healthy animals. Fallen stock is not rendered. Rendering is therefore assessed as **"OK"** before 1990. The process parameters used since 1990 have been according to the $133°C/20^{min}/3^{bars}$ standard, but rendering was only **"reasonably OK"** for 1990 to 2000 as controls of appropriate process conditions are provided only since 1996 and not in a complete manner. Rendering is assessed as **"OK"** from 2001 onwards.

SRM-removal

An official SRM ban exists since January 2001. Before 1990 no animal waste including SRM was rendered at all. Therefore SRM-removal was **"OK"** before 1990. From 1990 to 2000, only SRM from fallen stock was excluded from rendering. SRM removal is therefore assessed as **"not OK"** for that period. The measures installed since 2001 on SRM-removal (non complete SRM list) changed this stability factor to **"reasonably OK"**. Since the second half of 2002 the full list of SRM organs/tissues. This stability factor is therefore considered to be **"OK"** since 2003.

BSE surveillance

The passive surveillance system, which was the only system in place until 1999 was unable to detect low levels of BSE incidence.

The situation improved since in 1999, when an active surveillance system was installed in parallel to the passive system. However, also the active surveillance system was not carried out satisfactorily until the end of 2001. Since 2002, the surveillance improves the stability but so far the number of examinations that have been carried out is not sufficient to detect a low number of BSE-cases.

<table>
<tr><th colspan="6">Stability of the BSE/cattle system in CYPRUS over time</th></tr>
<tr><th colspan="2">Stability</th><th colspan="4">Reasons</th></tr>
<tr><th>Period</th><th>Level</th><th>Feeding</th><th>Rendering</th><th>SRM removal</th><th>BSE surveillance</th></tr>
<tr><td>1980 - 1989</td><td>Stable</td><td rowspan="2">Not OK</td><td>OK</td><td>OK</td><td rowspan="4">↓</td></tr>
<tr><td>1990 - 1994</td><td>Extremely unstable</td><td rowspan="2">Not OK</td><td rowspan="2">Not OK</td></tr>
<tr><td>1995 - 2000</td><td>Very unstable</td><td>Reasonably OK</td></tr>
<tr><td>2001</td><td rowspan="2">Very stable</td><td rowspan="2">OK</td><td rowspan="2">OK</td><td rowspan="2">Reasonably OK</td></tr>
<tr><td>2002</td><td>↑</td></tr>
</table>

Table 6: Stability resulting from the interaction of the three main stability factors and the BSE surveillance. The stability level is determined according to the SSC-opinion on the GBR of July 2000 (as updated in January 2002).

4. CONCLUSION ON THE RESULTING RISKS

4.1 Interaction of stability and challenges

In conclusion, the stability of the Cyprus BSE/cattle system in the past and the external challenges the system has coped 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 had to be met by the system, in addition to external challenges that occurred.

INTERACTION OF STABILITY AND EXTERNAL CHALLENGE IN CYPRUS			
Period	**Stability**	**External Challenge**	**Internal challenge**
1980 - 1989	**Stable**	**High**	**Likely present**
1990	**Extremely unstable**		**Likely present and growing**
1991 – 1994		**Very high**	
1995	**Very unstable**		
1996 – 2000		**High**	
2001- 2002	**Very stable**	**no data**	**Likely present but decreasing**

Table 7: 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 (as updated in January 2002).

An external challenge resulting from cattle imports could only lead to an internal challenge once imported infected cattle were rendered for feed and this contaminated feed reached domestic cattle. Cattle imported for slaughter would normally be slaughtered at an age too young to harbour plenty of BSE infectivity or to show signs, even if infected prior to import. Breeding cattle, however, would normally live much longer and only animals having problems would be slaughtered younger. If being 4-6 years old when slaughtered, they could suffer from early signs of BSE, approaching the end of the BSE-incubation period. In that case, they would harbour, while being pre-clinical, as much infectivity as a clinical BSE case. Hence cattle imports could have led to an internal challenge about 3 years after the import of breeding cattle (that are normally imported at 20-24 months of age) that could have been infected prior to import.

In the case of Cyprus cattle imports always posed only a negligible external challenge.

On the other hand imports of contaminated MBM would lead to an internal challenge in the year of import, if fed to cattle. The feeding system is of utmost importance in this context. If it could be excluded that imported, potentially contaminated feed stuffs reached cattle, such imports might not lead to an internal challenge at all.

In the case of Cyprus this implies that it cannot be excluded that some imported MBM reached domestic cattle, especially before October 1990 when no ruminant MBM ban was yet installed.

The imports of MBM to Cyprus represented a high external challenge already from 1980 to 1990 and from 1996 to 2000. Between 1991 to 1995 the external challenge due to MBM imports was very high.

Since 2001, when the rendering process has been properly controlled and also feeding and SRM-removal improved, the system turned to very stable and consequently the internal challenge is decreasing.

In view of the above-described reflection the registered external challenges could have led to an internal challenge in Cyprus since the early or mid 80ies and remained likely and growing until 2000.

4.2 Risk that BSE infectivity entered processing

- Given the fact that the BSE-agent was probably imported in non-negligible quantities into the country by MBM-imports already in the early 80ies, a risk that BSE infectivity entered processing first existed when infected cattle were slaughtered i.e. since the middle of the 80ies. Due to the absence of rendering until 1990 possible infectivity could not have been recycled.

4.3 Risk that BSE infectivity was recycled and propagated

- A risk that BSE infectivity was recycled and amplified first existed when potentially infected cattle were processed and rendered system existed, i.e. since 1990.
- Since 2001 the recycling and propagation risk starts to decrease due to improved rendering, SRM removal and feeding measures.

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

- If the measures taken recently were properly implemented the GBR will start to decrease.

5.3 Recommendations for influencing the future GBR

- An enhanced surveillance will improve the basis for controlling the efficiency of the stability enhancing measures. Moreover, it will fortify the current GBR and show evidence of the decreasing trend.