

# **Final Report on the updated assessment of the Geographical BSE-Risk (GBR) of CHILE - 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](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 1998-2002.

### 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 Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Romania, Slovenia and Switzerland.

## 2. EXTERNAL CHALLENGES

### 2.1 Import of cattle from BSE-Risk<sup>1</sup> 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 Chile. 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, no animals were imported from the UK in the period 1980-2001. According to the UK export figures no cattle were exported from UK to Chile in the period 1980-2001.
- According to the CD, Chile imported 65 cattle from Denmark in 1998. According to Eurostat data, 106 live cattle were imported from Denmark in that year. In the CD it is explained that only 65 cattle were officially recorded as imported because 41 out of the 106 died during the transport. From the 65 effectively imported, one animal was reported to have died due to an accident. It was tested for the presence of BSE with negative result. All the others were traced and put under strict control. According to the CD they were slaughtered in 2001-2002 as a preventive measure and tested for the presence of BSE. None was found positive. All animals were incinerated and did not enter the rendering system.
- A ban on cattle imports from non-BSE free countries was introduced in 1990.

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<sup>1</sup> BSE-Risk countries are all countries already assessed as GBR III or IV or with at least one confirmed domestic BSE case.

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
Denmark	CD																			65				65
	other																			106				106
UK	CD																							0
	other													45										0
TOTALS																								
Non UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106	0	0	0	65
	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	0	0	0	106
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	45	0	0	0	0	0	0	0	0	0	45

**Table 1: Live cattle imports into Chile (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 amended 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
Denmark	CD								5											30	14			49
	other																			14	14			28
UK	CD																							0
	other																							0
TOTALS																								
non UK	CD	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	30	14	0	0	49
	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	0	0	28
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 2: MBM imports into Chile (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 amended in 2002.

## 2.2 Import of MBM<sup>2</sup> from BSE-Risk countries

- According to the CD, no MBM was imported from UK in the period 1985-2001. For the years 1980-1984 no data were provided. According to UK export figures no MBM was exported to Chile from 1980-2001.
- According to the CD, Chile imported from Denmark 45 tons of MBM in 1987 (5 t), in 1998 (30 t) and in 1999 (14 t). This is largely compatible with Eurostat data. These MBM imports were traced by Chile's authorities and found having been exclusively used for fish feed, mainly for export to Japan.
- A ban on MBM imports from non-BSE free countries was introduced in 1990 and completed by a resolution in October 1991.

## 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 65 live cattle (CD) from BSE-risk countries, of which no one came from the UK. Together these imports represent a negligible external challenge, as given in table 3. This assessment takes into account the different aspects discussed above that allow to assume that certain imported cattle did not enter the domestic BSE/cattle system, i.e. were not rendered into feed.

- MBM imports:

In total the country imported over the period 1980 to 2001 49 tons of MBM (CD) from BSE-risk countries, of which no tons came from the UK. Together these imports represent a negligible external challenge. The resulting external challenge is as given in table 3. This assessment takes into account the different aspects discussed above that allow to assume that certain imported MBM did not enter the domestic BSE/cattle system or did not represent an external challenge for other reasons.

<b>External Challenge experienced by CHILE</b>				
<i>External challenge</i>		<i>Reason for this external challenge</i>		
<b>Period</b>	<b>Overall Level</b>	<b>Cattle imports</b>	<b>MBM imports</b>	<b>Comment</b>
<b>1980 to 2000</b>	Negligible	Negligible	Negligible	

**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.

<sup>2</sup> 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".

### 3. STABILITY

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

##### Feeding

According to the CD, there are 45 feed mills in Chile. Currently, the feed mills produce feed for different species on the same production lines.

##### Use of MBM in cattle feed

- According to the CD, most of the MBM annually produced is used for pets, some for poultry and pigs, and only a very small fraction for cattle. Concentrated cattle feed that includes MBM represent a very low fraction of the total concentrate cattle feed production. It is used mainly for fattening steers and dairy cows.
- The annual domestic MBM-consumption is around 8,000 tons (6,000 domestic and 2,000 imported in 2001).
- According to the information provided, the origin of proteins used in ruminant feeding stuffs is mainly from vegetable sources. Fish-meal is used occasionally. MBM is exceptionally used.
- According to CD, Soya and vegetable proteins are preferred to MBM for most animals other than pets because of the existing price differences. However, no detailed evidence of this assumed economic incentive of using plant protein rather than animal protein was provided.
- Given the fact that no MBM-ban existed until 2000, it is assumed that ruminant MBM was fed to cattle before that date. According to the CD, the ruminant MBM used in the past was domestically produced or imported from BSE free countries and it was only used in dairy cattle.
- As the current ban is only a ruminant MBM to ruminant ban, it is assumed that MBM, other than ruminant, is still fed to cattle. However, this includes only a small proportion of the whole cattle population (beef calves and dairy cows)

##### Feed ban

- Since December 2000, there is a ruminant MBM-to-ruminant feed ban (Resolution 3124).

##### Potential for cross-contamination and measures taken against

- Until the implementation of the ruminant MBM to ruminant feed ban in 2000, at least two of the feed mills were using ruminant material to prepare feed for ruminants. Therefore, before December 2000 cross-contamination was not an issue.
- Some measures to prevent cross-contamination are mentioned in the CD (Programs of internal Quality Guarantee, manufacturing for only one species per day, storing of imported ingredients separated from the national ones) and it is stated that the plants producing cattle feed are inspected every year. No detailed information is provided on the nature of these controls and on the results.

- As MBM is largely used for other farmed animals, including pigs, poultry and fish, on-farm cross-contamination due to cross feeding cannot be excluded.
- It is assumed that cross-contamination is likely to occur in the feed mills, during transportation and on farms.

#### Control of the feed ban and cross-contamination

- Before December 2000 cross-contamination was not an issue. According to the CD, after the implementation of the ruminant MBM to ruminant feed ban the feed mills are officially audited 1-2 times per year in order to verify their compliance. No information is available on the results.

#### Rendering

- Since February 2001 (Resolution 325) it is compulsory to apply the 133°C/3bar/20min standard in all rendering processes. According to the CD, official controls are performed each month. In case of non-compliance the plants are fined. Additional measures as the closing (temporary and permanent) of the plant are currently under study.
- According to the CD, at current there are 13 rendering plants operating in Chile. Detailed information has been provided on the parameters used currently and before February 2001, in all of the plants (table 4). All plants are attached to slaughterhouses. According to the CD, the discontinuous (batch) system is used in most of the plants. It is assumed that all parameters are related to the cooking steam.

PLANT	Current PARAMETERS				PARAMETERS before February 2001			
	°C	bar	Min	System	°C	Bar	Min	System
(1)	133	3	30	Batch	-	-	-	-
(2)	135	3-4,5	30	Batch	125	7	15	Batch
(3)	150	3,44	3,5 h	Batch	-	-	-	-
(4)	140	3	30	Batch	-	-	-	-
(5)	160	3	3 h	Batch	-	-	-	-
(6)	120	1	n.s.	Batch	130	7	3 h	Batch
(7)	133	3	1,5 h	Batch	-	-	-	-
(8)	133	3	20	Batch	105-110	6	25-30	Batch
(9)	135	3	30	Batch	120	3	60	Batch
(10)	133	6	2,5 h	Batch	110	6	2,5 h	Batch
(11)	133	3	20	Batch	-	-	-	-
(12)	133	3	45	Batch	114	6	3,5 h	Batch
(13)	140	3,7	20	Batch	140	8	20	Batch
(14)	-	-	-	-	110	5	7 h	Batch

**Table 4:** Summary of rendering parameters used in Chile in the different rendering plants. n.s.: Not specified

- The raw material used for rendering comes from rejected and/or unfit for human consumption material of animal origin produced from the slaughtering and/or processing of various species including cattle, pigs, sheep and horses. It varies in each rendering plant but usually it consists of complete carcasses, parts of carcasses, bones and offal as well as fallen stock and SRM.
- It is concluded that the rendering processes applied before February 2001 were not able to significantly reduce BSE-infectivity, should it have entered rendering.

**SRM and fallen stock**

- There is no SRM ban. According to the CD, this is justified because as Chile has never registered a BSE case there is no risk associated to this material. SRM is usually rendered. Only a small part of bovine brains and spinal cord is intended for human consumption.
- Fallen stock is usually rendered.

**Conclusion on the ability to avoid recycling**

- The system is not able to avoid recycling of the BSE-agent.

**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**

- The total cattle population in Chile is around 4 million heads.
- Of the total cattle population 37.7% are cows, 24.7% calves, 16.4% steers, 15% heifers, 4.5% bullocks and 1.7% bulls.
- 25% of living cattle are below 12 months, 31% are between 12 and 30 months and 44% are more than 30 months old.
- Approximately 1.7 million cattle are older than 30 months. Assuming 8% being between 24 and 30 months old, the estimated population of “adult” cattle (>24 months) would be estimated to be about 2 million heads.
- Slaughtering:
  - By type of cattle: 49.8% steers, 25.4% cows, 16.7% heifers, 3.3% bulls, 3.7% bullocks and 1% calves.
  - By age at slaughter: 66.5% were between 12 and 30 months, 32.5% (25.4% cows, 3.3% bulls, 3.7% bullocks) were more than 30 months old, and 1% between 0 and 12 months. The average age at slaughter is 6 years for cows and 8 years for bulls and oxen.
- The average annual slaughter is around 900.000 cattle.

**Husbandry systems**

- 42% of the dairy cows are kept in holdings with more than 68 cows. These herds can be assumed to be high performance herds.
- 66.5% of milk production is concentrated in one area where 38.7% of the cattle herds are situated.
- Beef cattle are mainly reared under extensive conditions.

**BSE surveillance**

- BSE is officially notifiable since 1990.
- An official definition of a BSE suspect case exists. It is included in an official Contingency Manual of animal TSEs as well as in a sampling protocol. According to the CD, all animals that are reported as suspects of a CNS disease are subjected to BSE investigation. According to the CD, the cases of cattle with CNS disease symptoms are very low due to the particular animal health status of Chile (free of Aujeszky disease and with an extremely low rabies incidence).
- The compensation programs for sanitary slaughter of cattle in case of exotic diseases has covered the compensation for the slaughtering of sick animals. Apparently, this compensation system would be applied in the case of BSE, too.
- The BSE surveillance system started in 1996. According to the CD, samples were collected from cattle older than 4-5 years of age at slaughterhouse level, showing CNS and/or chronic and progressive disease symptoms. The number of samples was adapted to the OIE requirements and was distributed according to the volume of annual slaughtering of the different regions and slaughterhouses.
- The data provided of the numbers of samples tested for BSE are not clear, especially for the period 2000-2001. 2 out of 766 bovine samples examined in 1996-1998 originated from suspected BSE-cases. The rest of the samples came out of the random sampling survey started in 1996. According to the CD, it applies the protocols described by OIE and CVL (UK) and is based on 0.5% prevalence (5,000/million) and 99% confidence (target: 1,000). It seems that most of the bovine brains examined were collected in 1997. Only 284 samples (total of cattle, sheep and goat brains) were examined in 1998.
- From 1999 to 2003, 24 samples (1 in 1999, 9 in 2000, 6 in 2001, 6 in 2002 and 2 in 2003) from BSE suspected animals were tested. In 2002, 587 samples were tested in the framework of the random survey. No information on the random testing in 1999, 2000 and 2001 is available. All these samples had a negative result.
- The national reference laboratory has been carrying out histopathological diagnosis of BSE only since 1996 (the immunoblotting technique is not implemented). Diagnosis of bovine brains is mainly done at the Central National Laboratory. One of the three regional laboratories is also allowed to carry out histopathological examinations.
- It is concluded that before 1990, the quality of the surveillance system was low. After 1990, the situation improved, as BSE became notifiable and the compensation system potentially increased the probability that BSE-suspects would be notified. However, until 1996 there was no capacity to carry out histopathological examination for BSE. Therefore it has to be assumed that the performance of the BSE surveillance remained unsatisfactory.
- Since 1996, active sampling for BSE started and a number of brains were analysed but in three years only 2 suspected cases. It is therefore concluded that despite its active (random) sampling component – which is not targeted at risk populations -, the system is not able to identify BSE-cases, should they occur.



### 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 (as updated in January 2002) is applied.

#### Feeding

Until December 2000 it was legally possible to feed MBM to cattle. According to the CD, although it was done at a low level, MBM was exceptionally used to feed cattle. Even after the introduction of the ruminant MBM to ruminant feed ban in the end of 2000 it is still legal to use non-ruminant MBM for cattle. Experience in EU has shown that a ruminant MBM to ruminant feed ban is extremely difficult to control. Therefore feeding is considered as “**not OK**”.

#### Rendering

Rendering exists in Chile and is common practice. Also bovine material is usually rendered. Until 2001, the rendering systems did not appear to meet the 133°C/3bar/20min standard. It is therefore assumed that they were not able to reduce BSE infectivity. Since 2001, the 133°C/3bar/20min standard is compulsory, although some rendering plants seem not to be able to comply with it. Therefore, rendering is considered as “**not OK**” throughout the reference period.

#### SRM-removal

As there is no SRM ban in Chile and SRM is usually rendered, SRM-removal is considered as “**not OK**”, throughout the reference period.

#### BSE surveillance

The level of surveillance was and is not able to detect low levels of BSE incidence.

Stability of the BSE/cattle system in CHILE over time					
Stability		Reasons			
Period	Level	Feeding	Rendering	SRM removal	BSE surveillance
1980 to 2000	Extremely Unstable	Not OK	Not OK	Not OK	↓
2001-					

**Table 5:** 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 Chile 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 CHILE			
Period	Stability	External Challenge	Internal challenge
1980 to 2000	Extremely Unstable	Negligible	Highly Unlikely
2001-			

**Table 6:** 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 extremely unstable system was exposed to a negligible challenge.
- The risk that BSE-infected material, derived from imported animals, entered the feed production was considered to be negligible, given the small number of animals.
- Given the negligible level of the external challenge, no internal challenges occurred.

### 4.2 Risk that BSE infectivity entered processing

- Given the negligible risk that BSE has been imported into Chile, the processing risk was always negligible.

### 4.3 Risk that BSE infectivity was recycled and propagated

- Due to the negligible risk that BSE-infectivity entered the country there was no risk that BSE-infectivity was recycled or propagated.

## **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 *I*, *i.e. it is highly unlikely* 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 external challenge remains negligible, the probability of cattle to be (pre-clinically or clinically) infected with the BSE-agent will remain very low.
- Due to the currently very unstable system, any substantial external challenge could lead to an increasing GBR.

### **5.3 Recommendations for influencing the future GBR**

- In order to ensure that the GBR remains as low as it, is recommended that additional efforts are made to enhance the stability of the system.
- Results from an appropriate intensive surveillance programme, targeting at risk populations such as adult cattle in fallen stock or in emergency slaughter could verify the current assessment and confirm the assumed absence of BSE from Chile.
- All measures that improve the stability of the BSE/cattle system of Chile would make the system less vulnerable and less dependent on the perfect functioning of a singular control measure.